

Computer Science Senior Papers 1984 – 2007

1984

Patricia J.Chapin No title: An interactive program employing text files and Boolean picture files to instruct students of upper high school and college level in the process of cell division, mitosis, in animal cells.

1987

Rachael Bryd-McGraw No title: Program in which user enter certain accounting information. The program then determines the following: liquidity, leverage, profitability, activity and debt ratios and compares them to industry averages.

1988

John Israel Fractional Noise: Software package that will have a computer communicate directly with a synthesizer.

Russell Brown Parallel Processing with the C - Development System: Learn how to run parallel processes using the C computer language.

Shari Vanderlinden Computer Center Internship Program 1988-1989: Enables faculty members to access information from and about Faculty Senate meetings.

1989

Craig Carter Expanded Billing System for In-House Advertising Department: Asked to help with the expansion and achievement of better quality service. Allowed in-house advertising department to expand their range of services to businesses and companies outside of Ingles' subordinates.

Jack Tackett Jr. A CPU Simulator and Assembler: Program that includes 35 files and over 10,000 lines of code used to create a cpu simulator and assembler.

Iris Mitlacher B-tree purging algorithm: This project adds another task to Dr. Daugherty's B-tree program. It does this in two different parts. The first part is to add a deletion algorithm, and the second part will require the separation of the Btree program into modules.

Jeffrey D. Robasse North Carolina Highway Mapping System: The program will display a Highway map which will connect at least 10 cities. The program will use Graph Theory to find different roads to take between cities on the map.

George Pruitt No title: Program that will make bar charts. Used by Commodity Research Institute.

Billy Silver Mcsgrade Grading system Program: Program designed to aid schools in the printing of monthly bills, progress reports, and ordering lists.

Debi Braun Computer Center Internship: Summer and Winter Semesters, 1989 Summary of internship experience in the computer center.

1990

Janet Schroeder No title: Design and implementation of an interactive graphical interface to display a B+ tree. Incorporated designing both the interface and the B+ Structure itself.

Brian J. Winter A Vivid Utility: This program allows users to receive a hard copy of circuit design without having to run several programs to have the information translated so that it could be reproduced.

Mark Splawn No title: This project will utilize a Unisys A4FX system, DMSII database and COBOL74 language to produce

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	a monthly report for the Consumer Loan Department of First Federal Savings Bank of Hendersonville, NC. It will generate totals for the department as well as produce a summary of the open loans broken down for each branch, loan officer, property type, and insurance company code.
Kevin Fitzpatrick	Inter-nation Simulation: The program was designed to be an update that would replace the INS2, which was created by Dr. Farzanegan.
Stephanie Freeman	No title: Magazine subscriptions system written in COBOL.
Ryan Nelson	The NMC 6-Bit code for Digitized Raster-Format Maps: Designed to make an image from a packed rasterized graphics file. NCDC planned to use this to substitute the current method of sending the actual hard copy of the weather map through the mail.
Paul T. Simmons	Dune The Game: This game is based on Frank Herbert's novel dealing with desert plant of Arrakis.
Eric Thurston	Mossbauer Micro Select: A program for IBM PCs that will allow searching a data subset of the Mossbauer Effect Data Center reference and data files.
Robert D. McDaniel	An Implementation of a Bloom Filter: A data structure designed to reduce access to auxiliary storage devices
Douglas K. Shearon	Distributed Mandelbrot Calculation: This application involves the generation of fractal images in a distributed environment.
Lisa D. Hensley	Medical Patient Filing System: A program that allows user to keep up with medical records. Allows the user to add new patients as well as update existing patient files.
Missy Myers	Black Jack: This version of the game black jack written in turbo c. It allows a person to play against the computer. Graphics were used to give the illusion of a sacino.
John McLennan	Mold Draw: Mold draw is a drawing tool to aid in the designing of plastic injection molds. Its purpose is to draw a quick initial drawing so a mold can be started while the complete drawing in being finished.
1991	
Susan Humphrey	North Carolina Center for Creative Retirement NC-CCR Sail Database System: Database system design specifically for the NC Center for Creative Retirement. Used to match seniors with students for tutoring and career advisement and with faculty for research work and lecturing.
Norman E. Harris Jr.	Parts.PAS: This program is a small time working model of what an actual Auto Parts maintenance program would look like. The program contains procedures that allow such transaction as: Ordering Stock, Deleting Stock, Product Lookup, Product Update, Special Order Stock, Quick Scan the parts database, and Printing of Report Summaries.
Devery Lane Taylor	On-line Production Control/Inventory System: This program was designed to track inventory from the time it enters the warehouse until it goes on the assembly line for Eaton Company, Fluid Power company.
Randy Trantham	No title: Designed specifically for Westinghouse Electric Corporation, Electrical Components Division's, printed circuit board manufacturing facility. The project will enable them to test and calibrate four different types of printed circuit boards.
John Mullins	No title: A program written for use in a business. Includes three subprograms which are: a payroll program, a customer list program, and an inventory list program.

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William Bruce Harris	No title: The project is a study in the behavior of hashing schemes, with an associated look at collision handling with data structures.
Bayan M. R. Alhaddad Khaled	Partial Differential Equations: An interactive program that does numerical integration of hyperbolic, an elliptic partial differential equations.
Kenny Austin	No title: A system that will generate a food order list for a given weekly menu and a set number of customers.
David W. Reynolds	RSO - Remote System Operator: RSO is a software product that simplifies management of networked VMS system by providing a means of displaying detailed information about elements of the system on which it is installed and a user friendly method of modifying a subset of this information. These services are provided for all systems running this product which can be reached via DECnet.
Keith Staton	Maintenance Request System: System designed for the users of computer and programs to make request to the programmers for corrections and improvements.
Victoria Lynn Vaughn	CLAES: Computerized Lab Assistant Expert System CLAES, or computerized lab assistant expert system, is an expert system to be programmed in C-Prolog, designed to aid computer users with question and problems when there is no Lab Assistant available.
Ruba Fakhoury	Model Spell Check Program that uses tries: Word spelling facilities today use many elaborate methods for their programs. With so many programs on the market today, I was fascinated to see the best method for the user depending on their computer speed and memory. My program represents a low-level word spell using three different methods to determine for the user the most time effective method
David Bass	Exceleator and the Luxury Inns Design: Checkout and Billing system designed for use by a hotel. Allows guests to charge things to their room that will be paid upon leaving the hotel.
Wesley S. Montieth	Tutorial on the person computer with an emphasis on graphics: Program that combines graphics in programming language C and the commercial software package PC Paintbrush by Zsoft.
Joe Gamble	Robotic Navigation and Obstacle Avoidance Simulator: A computer simulation of a robotic navigation system, using a command line parsing scheme for inputting navigation points, special instructions, and other pertinent data. A finite state machine will be implemented to handle obstacle avoidance control as well as target finding and navigation.
1992	
Sharon K. Miller	No title: An old program from a 1989 operating systems class was take and ensured that it still worked correctly. It was then translated from Pascal to C and modified into a client-server relationship.
Peter Jones	Timerec Analyst Hours Time Records: System designed to track the data about the hours and pay of all programmers and analysts work for Prelude Associates, Inc. and WIS:DOM Information System, Inc. and to produce necessary reports of the data, such as an invoice for the customers of Prelude and WIS:DOM. This system tracks these reports, queries, etc. draw from what is defined to be the current year's data.
Jeanne M. Brych	ORE Microscopy Expert System: An artificial intelligence expert system to be used in conjunction with the study of one ceroscopy - the identification of ore samples under the microscope.
Robert K. Benites	No title: This program was a modification of a class assignment given in CSCI-346, Computer Graphics. It was changed from one that used a pure X-windows Xlib application program interface (API) to one that

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uses Motif Windowed Objects (widgets) API. This change improved the user interface while providing the same function as the original program.

1994

Steven Thomas Jasion Western Carolina Women's Coalition Conference Registration System: The creation of a computerized information system to aid the Western Carolina Women's Coalition in gathering accurate conference registration information for their 1994 conference.

1995

Annette Davis Check maintenance system Ingles Markets: This is a system that was created for an Ingles grocery store.

Karen Slough A database project for the affordable housing coalition: Database program written for The Affordable housing Coalition to track of those they help and to help them prepare their monthly statements.

Sean Sullivan VIVID Vehicle Infringement & Vehicle Information Database: Involved the development of a new ticket and registration program for the Security Office at the University of North Carolina at Asheville.

Vicki Tziavelis dBase IV Project: This system was created in order to keep track of performing artists that come to Asheville, and to make aware the mailing list of interested people of these performances. These people would eventually receive form letters of some type making them aware that an artist in whom they might be interested will be coming to the area.

April E. Laurents Forty something-Midlife Health Service: A service developed especially for women ages 40-65 This project created a database system for the Women's' Health program at Waukesha Memorial Hospital that provided information on referral sources for midlife health. It also developed graphic materials to reach those women in the targeted age groups: 25-40 and 40-65.

Greg Miller Little Caesar's Information System: This information system is a database application written in FoxPro 2.5 for DOS that incorporates such procedures as employee records, sales information, and inventory calculation.

Lynn Fitzpatrick LAPROG: This is an update to the payroll system that the Computer Center has been using for some time to do payroll function.

James D. Mulder Go_Feral UNCA's on-line Events Calendar: This project is for UNCA. The University provides academic, educational, cultural, arts, sports, etc. events for its students and the community. The announcements for these events presently can be found on paper flyers and sometimes Gopher. At the present time there is no network support for such a calendar at UNCA. To continue growing as a competitive university, UNCA must keep up with the technology and the times. As the use of the internet grows, it becomes more important for the university to provide an on-line events calendar to attract the users, and even new students. Since the number of people getting on the super-highway is increasing rapidly, the demand for services keeps growing exponentially. This growth of the internet is why UNCA needs an on-line calendar of events.

Jeffrey M. Ancheta The Life After Cancer Information management System: Designed to enhance their ability to store, retrieve, an report information for their current and future mailing list and tracking system of those named above, as well as other supporters, volunteers, and staff.

Mitch Taylor Sales and Billing Application: The purpose of this project is to develop a software program that will record, bill and log sales events when they occur during the business day and to archive this data for future use.

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- Reid Jackson Sigma Pi Database: There are many assets that a fraternity must be able to utilize in order to survive, and this system will enable the fraternity to be able to organize those assets for their benefit in terms of financial and other means. The system will allow the fraternity to access information in order to utilize them as an asset and inform them of the local fraternity actions and events.
- 1996**
- Michal Marko Parallel Cascade: To improve Dr. Daugherty's Astrophysics package. First thing would be the cascade program. This is a program that takes several hours to run because it calculates complex electron paths on the surface of a neutron star. I would like to convert Dr. Daugherty's algorithm to a parallel one. This would allow to run the simulation not only on multiple computers, but also on various architectures.
- Jamie Norton MidSouth Data System Database Application: This is a database program design of use by MidSouth to maintain a list of current employees and their relevant information.
- Steven Yates MidSouth Data System Database Application This is a database program design of use by MidSouth to maintain a list of current employees and their relevant information.
- James Fry Simulation of CPU Scheduling Algorithms: This program will simulate the various algorithms that may be used by a short term scheduler to maintain and select from a ready-queue of processes awaiting allocation of CPU time. The scheduling algorithms will be first-come first-served, shortest job first, priority scheduling, round-robin and multi-level queue scheduling. Where scheduling between queues is necessary, it will be implemented as a fixed priority preemptive scheduling.
- Jacob D. Millspaugh NCDC Contour/Vector Graphing Options: The object of this particular project is to allow Internet user that connect to the National Climatic Data Center's World Wide Web server the ability to produce contour plots of the center's First Order Summary of the Day weather data. These plots are two be generated on-the-fly and will encompass the entire period of record of the data. The plots must be quick, accurate and easy to produce
- David Thurman Delmarva Power Supplier Quality Program: Pro2Call is a database designed for use by Belmarva Power in their Supplier Quality Program. The supplier Quality Program schedules contract inspectors for the performance of inspection visits at facilities worldwide, where equipment is being built for specific plant upgrades and new construction. Scheduling contract inspectors, which live within a 100 mile radius of the fabrication facilities, has proven to be a beneficial alternative to flying project engineers from Delmarva Power to the fabrication sites. A contract inspection costs about 1/3 of the direct costs associated with sending the project engineer. Indirect savings are also realized for Delmarva Power because the project engineers are able to direct more activities at the Demarva Power construction site, while documentation of supplier performance is gathered in a structured, consistent manner.
- Christopher Andrew Schmechel Distributed Object Systems using the Spring Research Distribution: To create an example of a distributed object application program written using C++ and the Spring Operating System on a network of Sun SPARC stations. The program will examine the ability to facilitate operations on objects on more than one machine using the "village" concept of the Spring Operating System. The "village" concept implies a tighter coupling between machines in a network through specific design. Each client can be aware of other machines in the network.
- Richard Glass UNCA Art Department Slide Catalog: The Art Department has a very large collection of slides that are used by the campus faculty during class presentations. The slides are presently being cataloged, by hand, on index cards. If a faculty member wishes to find a particular slide, he/she must know as much of the following information as possible about the slide: artist's name, title of work, period work was done, era work was done, country where work was done, nationality of artist, school of study of artist, permanent location of work, media type. The primary focus of this project was to design a system that would provide

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a search/maintaining mechanism for the slides in the catalog. The slide information will be entered into the database (FoxPro) by the users. Once the information has been entered, the user will be able to search for a particular slide using any of the slide information categories. Reports can be produced which list the various slides contained in each of the categories or an entire listing of all slides contained in the catalog. Individual file cards will be produced to be located with the slide in the storage drawers.

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| Karen G. Walton | Life After Cancer Project: Life After Cancer is a non-profit organization who helps cancer patients and supporters to deal with the trauma of cancer and cancer treatment. There is at present 400+ people getting help through individual counseling, group counseling, and retreats. This organization would like an information system that will enhance their ability to maintain records. |
| Jennifer M. Pressley | UNCA's Human Resource System From Test to Production: The human resource department at UNCA has outgrown their current computer system. They are in need of a more complex system that will replace their in-house, single file system. This past fall, UNCA purchased a new commercial system referred to as HRS. Before the system can be brought into operation, minor modifications have to be made to the system. Also, the university does not purchase the training provided by the developers of HRS. This presents a major obstacle--we must first learn the system ourselves, and then train the users. This new system will be able to integrate with both the Financial Information System and Student Information System which are currently in operation at UNCA. |
| Andrew Wenczel | Graphical User Interface for Dr. Joseph Daugherty's SPECTRUM Program: This project was designed to update the original work of Dr. Joseph Daugherty by adding a graphical user interface to a program he had previously written. |
| Terry Oakes | No title: The project that I developed consists of three parts which perform processes for handling various medical service tasks. These three systems replaced tasks that were being performed by word processors, typewriters, hand writing, and filing cabinets. The three parts include: Health Care Facility, Insurance Company, and Vendor Information System, Health Care Facility Order System, and Inventory Reorder System. |
| Raymond Edward Wilson | Disc Jockey Information System: This project was developed to reduce math errors and the time involved in recording and totaling daily sales for a retail music store. It was designed with Visual dBase because of its ability to create a nice graphical user interface and because Visual dBase provides a program that is easy to modify to meet the future needs of the user. The project has taught me several things including a better understanding of Visual dBase and that project designs must be flexible to adapt to monitor space, paper dimensions and requirement of the software being used to develop the program. |
| Jeffery L. Dunning | XYZ National Bank Financial Data System: The recently established XYZ National Bank is in need of a COBOL program for their bank tellers. This program needs to allow them to add and delete customer accounts to and from the banks master file as well as to make deposits, withdrawals, and inquiries on the accounts |
| Kenny Griffin | No title: To design a library system for the cataloging, circulation, and administrative services for small holdings. Materials would be cataloged by subject, subdivided by material type, and referenced by a unique barcode. They would be circulated to people requesting the use of the materials and assigned an appropriate due date. Late materials could be assessed a charge depending on the amount of overdue time and status of the returning patron. The administrative services would include tracking the cost of materials, accounting for patron fees and charges, as well as tracking material usage to determine popular subjects and obtain reordering information. |
| Kenneth Woodruff | Intertalk: To develop an original client/server software package which allow keyboard communication between two users in remote locations. |

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- Charles Tobias Hurst Olympic Boxing: This project makes use of the XILINX field programmable gate array (FPGA). The goal is to design a tool which will eliminate subjectivity in scoring the sport of boxing.
- John Bierce-Wilson Xspec Curved Perspective Translation: The development of an algorithm which translates three dimensional coordinates into two dimensional using curved perspectives, and the analysis of this algorithm.
- Daniel P. Maher Hydraulic MIDI Sequencing: Hydraulic is a four-track MIDI sequencing program designed to be a quick, small, "musical sketchpad" for musicians. Designed on a Macintosh Centris 610, Hydraulic will comfortably run on most Macintoshes even with a limited amount of RAM.
- Kevin D. Chapman Creating 3D graphics using OpenGL and C++: To render a three dimensional walk-through of a virtual landscape. This landscape will include recognizable natural and architectural features. I want to combine this with a graphical user interface to allow for changing of certain aspects of the scene interactively.
- 1997**
- Lori Hughes Computerized Rural Route Forms: To replace five forms that the postmaster must fill out by hand computer based.
- Danny LaPrade Jr. Image Processing Fourier Transform: Fourier Transform is any periodic wave with frequency f can be synthesized using sine wave with frequencies f , $2f$, $3f$, $4f$, ... and proper phases. The Fourier Series can be a series of sine functions with different phases or a series of sine and cosine functions. The Fast Fourier Transform uses the sine and cosine functions for implementation.
- Sarah Wilkins Hinvent, Jr. The UNCA Computer Center Inventory System: The UNCA Computer Center orders, receives, prepares, and installs an average of 25 new PC systems alone per academic semester. In addition to new systems, the Computer Center is also involved in setup, maintenance and distribution of other hardware-oriented peripherals. Often the installation of a new computer does not cease once the machine is placed on the desk. In most cases, the change reverberates throughout a department, or many departments, as old computers shift in a "hand-me-down" fashion. Keeping up with which computer went to whom is a test for anyone's memory. The ability to quickly investigate who is due for an upgrade and to modify the system's owner once a change has been made will greatly improve the service and lessen confusion.
- Michelle Conkin Tangela's Database: Melissa Mathews, the owner of Tangela's, needs some type of system to keep up with customer information and an easier way for mailing information to her customers. The shop sells tanning packages of two hundred or three hundred minutes. Ms. Mathews also offers bonus time for certain things, such as referring other customers. She wants a way to keep track of all this in addition to billing the customers
- Christopher S. Miller CAST Customer/Accessory Sales Tracker: The CAST system is a relational database that was developed using Visual dBase 5.5. It is intended for use at Hunter Nissan, Lincoln, Mercury.
- Joshua Cheung-Wuang Tan No title: To find a way to merge different students files with a newspaper file, on home town zip codes that will produce a list of students and pertinent information, which is then mailed to each newspaper that has subscribers in their respective zip codes.
- Shokaib Arif No title: To make practice exams available to certain students on campus.
- Nicki Fink File Tracking System: This is a File Tracking System (FTS) was created upon a request by the Plant Manager at a local manufacturing company in Burnsville, There are two specific problems he needed the

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system to address: (1) it is difficult for him to remember where a particular document is filed in his manual filing system, and (2) He also maintains a separate "tickle" file drawer that contains folders for each day of the current month, and a folder for each of the other months.

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| Kate McCracken
Robertson | Nazarene Christian School: This is a database system that will track information for the First Church of the Nazarene on Hazel Mill Road. This information that will be contained in the database will include information for the school, preschool, Sunday School, and the After-School-Care and for the Camp |
| Brad Bullers | TACKL Team And Coach Knowledge Library: To devise a system that will help a football coach keep track of his players and statistics. This system must allow the user to enter, delete, or modify player statistics in a database. The system should calculate the necessary percentages, averages, and so forth for each player and as a team. Also it should produce the required screens and reports. Finally, the system must be easy to use and understand. |
| Janet Cody | Fuddruckers Employee Daily Roster System: This project was designed to update the system that Fuddruckers was using because the old system that was in place requires the management to do a great deal of paperwork every day. This new system would eliminate most of this paperwork. |
| Amy Hargreaves | Garden Plotter: To create a working garden planning program. |
| Mary Frances J.
Austin | Development of a Generic Networking Protocol for a Motorola Microcontroller: This project will involve constructing and programming an autonomous robot to play robot soccer. This project was chosen because it involves soldering circuits, engineering and designing a robot, and programming the robot to be completely autonomous. This is interesting from an academic perspective. This is also interesting from an industrial perspective as robotics is used heavily in industry |
| J. Damon
Whittemore | MIDI97 Sequencer and Standard MIDI File Utility: This package operates as a single track MIDI sequencer and Standard MIDI File utility. It supports a standard Macintosh interface for record and playback functions, monitoring the MIDI data appearing at the input port, changing port characteristics, selecting channel assignments, creating random events and manipulating MIDI thru and clock speed options. File saving and retrieval are handled through standard file dialog boxes and MIDI bulk dumps are supported. The Standard MIDI File utility reads and writes type 1 Standard MIDI files. |
| Dwight Dabbs | Java Registration Form: This project considers the process of creating and setting up a Java bases registration form on the Internet to provide a quick, easy alternative to direct contact registration methods. In this project I used the Java programming language to produce a program that will generate a form on the end users computer screen. The layout is based on the specifications programmed into it by the programmer at the time of implementation. The registration form program can be made accessible via the Internet and used by anyone with a Java compatible Web browser. The program is platform independent enabling it to be accessed by a large number of computers. Fundamental security issues involving data transfers over the Internet have been addressed in this project. |
| Brian Bero | No title: This project concerned the development of a WWW version of an existing system to NCDC. |
| Patrick Garrett | Tenant Utility Database: To design a program that will figure the allowance for tenants utilities bills so that the Housing Authority will know how much to pay and how much the tenant will need to pay, without having to enter all the data for each tenant. |
| Earl Williams | No title: To write a program that will take an image and encode a text file within the data of the image. After the encoding process you will still be able to view the image, but you will not be able to tell that there is a text file contained within it. |

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- Meredith Mead Meredith "skip" Mead: This project was designed to make information about hotel rooms and their availability to the public via the internet.
- William Elmer The Trough's Inventory System: This is an inventory system that keeps track of items purchased and vendor information for a fictitious family style restaurant called "The Trough."
- Stephen Allison Electrical Life Switch Tester: The purpose of this project is to use knowledge obtained to develop a machine that will test electrical life of a switch. The information gained from this machine will be used by design engineers in ongoing product research to meet specific customer requirement and also in future planning and development.
- Sharon Williams Welcome to the BODS The Books Database System: The purpose of this project is that I have a lot of books that I am going to put in boxes to be stored. But before putting them into boxes I want to create a database that will keep track of all the books that I have. In doing this database I want to be able to add, edit, update, or even delete the books that I no longer want or wish to get rid of. Also, I want to create this database since I am going to expend it in the future to include all of the differently types of magazines, and other books that we have lying around the house
- Debbie Bowles Drapery Fashions, Inc. Drapery Work Order Database: To design a system that will allow the company to appoint anyone within the organization to input data and not be well versed in the special calculation. It will execute the same calculations over and over with different variables. This system will prompt the user to input what type of window treatment (chosen from over 280 items on the price list) that is to be made along with the width, length, returns, and pattern repeat or other particulars that are needed for specific items. It will then calculate the yardage of fabric to be used and the cutting lengths. The yardage is then verified against what was supplied by the designer are architect.
- Robert E. Conard F.D.E.R.M.S. Fire Department Emergency Response Management System: This project will replace the paper work that they must fill out for each call and implement the new system on their present computer system. The project will record the time, place of the call, date, report number, equipment response, duty crew, automatic & mutual aid, remarks, and other information the fire department requires. The program will allow the user to select which fire person went on the call. It will also record the total time on the call for the paid fire persons, for payroll purposes.
- Sandra Aydt ATS Business System: I purpose to make a system that will allow the user to enter their patient's identification number and all the appropriate information will appear on the selected document. This will help reduce redundancy and create less time with paperwork. There will be preset codes to prevent miscommunications on the worksheets. The system will produce a weekly time sheet for each therapist, a weekly report of services that will be transferred to a monthly report and three forms on demand.
- Kelby Cody Easy Quiz Pro An Online Quizzing System: Easy Quiz Pro was created to make courses easier for instructors to teach and for students to take. In the past instructors have had to type up notes and quizzes, make their own copies, and pass out the papers in class, in hopes that all of their students would get a copy. When designing this project the ultimate goal was to create a system which made the old process mush easier. With the use of the Internet becoming so prominent in today's businesses and schools it is important we find effective ways to take advantage of the possibilities the Internet has to offer. Easy Quiz Pro is one of many new tools on the World Wide Web to make teaching and learning easier. The quizzing system was created using HTML and Perl. What this tool does is allow instructors to create five or ten question quizzes and publish them on the World Wide Web for their students to take and learn from. The creation process takes less than ten minutes and can be accessed by students from any computer in the world with Internet access. This easy access to information is what makes Easy Quiz Pro a success. Not only does it save valuable time for instructors, it also gives the students another resource to tap when preparing for exams and/or learning new course material.

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- Barry Johnson Play Ball! The Ultimate in Baseball Scoring: Writing a computer program to take care of all of the tedious tasks involved in keeping score of a game would come in very handy for many people. I have envisioned your average business man, playing in a softball league, keeping score of the game as it progresses, on his laptop computer. This program would also benefit parents of little league baseball players, who would like to keep track of the team's statistics, rather than using the messy pencil and paper method. Finally, anyone could use this program while watching their favorite major league team, and keep season-long statistics on their favorite players. I decided that if I could find the correct application resources, I could probably pull it off.
- 1998**
- Jennifer L. Jones Visiting Health Professional's Laboratory Requisition System: Program written to aid Visiting Health Professionals with problems that occur in their daily work. These include: errors in patient information, and claims being denied because of an incorrect diagnosis statement.
- Bobby Metz The Sound Card, A Different Method of Data Storage on Magnetic Tape: The purpose of this project is to develop a new backup process for PC owners. Many PC owners have experienced some form of data loss, either by floppy or hard drive failure. Owners often do not have a backup copy of this data. Even with the decreased cost of backup media, prices are high enough to discourage the average user from backing up the PC hard drive. To owners of a Sound Blaster 16, this process will present a new method that is both cheaper and more readily available.
- Michael R. Freeman No title: This program, after completion, could induce an individual's objective mind to recede and his subjective mind to move in its place. In theory this program should induce a subject into a hypnotic slumber. Once in the hypnotic slumber, at most, he could accept posthypnotic commands. Or, at the least, the subject of this program should come away from the program feeling a deep sense of relaxation, with posthypnotic commands from this program, the individual can find help, at home, for such things as nervous habits, hypertension, shyness, etc
- Nate Conroy Banner Online Editor Documentation: A document intended to help the Banner Online editor. It assumes that he/she has been trained for the job by the previous editor as well as that he/she has web experience.
- Kris Haupt Waterflowers Client/Inventory Tracking System: The Waterflowers project is a software solution to the problems experienced by Waterflowers, a wholesale manufacturing company based out of central Florida. Waterflowers is not currently employing any electronic means of data collection. It is experiencing rapid growth, expanding product lines, additional suppliers and above average orders. The Waterflower Client/Inventory Tracking System has provided an electronic means to track inventory, sales orders, customers and suppliers as well as to maintain a database of important information.
- Victoria Bush Irwin Bill of Material Comparison: To create a program that prompts the user for two different part numbers, explodes the bill of material for each, and generates a report that lists the common parts.
- Joseph Peek Community Help Information Local Database: Community Help Information Local Database (CHILD) was originally a CSCI 446 project which only completed design for the Save the Children Eastern Area Office which had not had a database previously. CHILD input come from programs in seven states which serves 15,000 sponsored children and almost triple that number in unsponsored children. CHILD, while maintaining the organization to program relationship, tracks utilization of programs and funds. The original project was designed on Microsoft Access 7.0 instead of the 2.0 version available to the user. If the project had reached the testing phase, the CSCI 446 team would have realized the large amount of design rework necessary for the code to work properly. The elimination in unnecessary relationships and tables, as well as, redesign of the forms proposed made up for shortfalls in Access 2.0 capabilities. The

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CHILD program will help the 8 Eastern Area staff members deal with the ever increasing administrative burdens being placed upon them. CHILD, once implemented at the Asheville Office, will be made available to other area offices throughout the United States.

- Brent Briggs A study of robotics control with a modern multitasking operating system: To investigate whether a robot could be interfaced with a PC running Linux and if the control software could be developed using the Linux OS.
- David Reed David's Lighting Laboratory: This is a program that uses OpenGL and explores different lighting techniques in a three-dimensional environment.
- Dave Young Statistical Analysis of Sorting Algorithm Efficiency: This project presents a statistical analysis of the efficiency (in terms of raw speed) of eleven sorting algorithms. Each algorithm is used to sort 300 arrays of random integers. The first 100 arrays are of increasing length, from 100 to 10,000 elements, and the remaining 200 arrays each contain 5,000 elements. Every sort is timed to the nearest millisecond, and each algorithm's set of sort time is saved in a file. The data from the first 100 arrays is used to plot a line graph of sort time vs. array size for each algorithm. The mean, median, and standard deviation of this data is calculated and displayed with the histogram. The user also has the option to display a composite line graph of each algorithm's first 100 sort time, for a direct visual comparison of the speed of the algorithms.
- Faith Renee Cable RakeNLeafs: Mrs. Fran Smith, a professional genealogist, spends a great deal of time gathering bits of information often from ancient archives in order to put together family histories. This information can often be elusive and hard to find. While researching one individual, she sometimes encounters bits of information on another. But the time to investigate this second individual will come at a later time; first, she must complete the information on the targeted individual. Because of the nature of her research, she is often left with an immense amount of paperwork and very little in the way of easily tracking it or associating it to other information. Maintaining control of all this information, often in the form of notes on various scraps of paper consumes an enormous amount of Mrs. Smith's time. This is time that Mrs. Smith says she would rather spend doing research. After reviewing several pre-packaged genealogy programs, she has yet to find one that does little more than map family trees. These trees can only be mapped after the information has been found and verified. She expressed a strong need to put her notes together in such a way that would make the information more convenient to locate and tie together. She expressed a formidable frustration at having spent time looking up information on an individual only to discover she already had it but couldn't find it easily. For my senior project, I proposed to create a database that would allow Mrs. Smith to catalog and cross-reference her data.
- Michael B. Darnell GLOBE OpenGL Object Engine: This project was designed to address a problem pertaining to 3-dimensional graphics. The project would include the development of a "graphics engine" and a graphical interface that allows a user to interact with said environment.
- Richard Preston Binary Multiplier Applet: This project entails creating a Java applet which will simulate the function of a parallel AND gate array multiplier of a flexible size. The applet will provide a graphical user interface which will allow a user to specify the size of the array and enter the binary numbers to be multiplied by clicking on icon representing the binary numbers.
- Tracy Tymko Parallel Ray Tracer: To create a parallel ray tracing library utilizing pvm or mpi to allow the library to be portable to various machines when used in user applications.
- M. Brian White The use of Java language to communicate with databases: The purpose of this project was to examine the possibilities of using the Java language to query different types of databases. To query databases on multiple platforms would require a unique program. Different platforms typically mean different

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programs to execute the same SQL statements. My project was to utilize the methods java provides to solve this problem.

1999

- Peter S. Hill Pizza Hut Delivery Information System: Provided a computer system using Microsoft Access to handle all of a Pizza Hut Delivery store's operations
- Mark W. Fox The Book Trader! Where UNCA students buy, sell, & trade books: To create an interactive system which Computer Science majors can use to buy, sell, and trade used book with other students of the same major, in addition to being an interactive web based database, the program is intended to be nearly maintenance free. The program will be run on a UNCA computer server so that the program may be accessed on campus or off campus.
- Weldon Hamrick Greedy Jack, The Wumpus Killer: I am proposing to make an agent that will act and survive in the hostile wumpus world. The wumpii will not be stationary, and the world will have randomly placed pits within its borders--grid sizes of 4x4 to 10x10.
- Jeremy Gustrowsky Prototype for a New CLIMVIS: Extension of the Climate Visualization system. This system allows world wide web user to dynamically create data plots of various kinds of weather data. The extension made available temperature and precipitation data collected by the Global Historical Climatological Network.
- Roger B. Batsel Jr. NetLert Offline Message Server: The NetLert Offline Message Server (NOMS) is a specialized server designed to provide remote access functionality to the NetLert messaging system, an existing software product developed and marketed by SoftBase Systems, Inc. The NetLert Messaging system is a vertical-market product which provides instant desktop messaging to the help/support desk and telemarketing call center industries. Typical implementation environments for NetLert might be a 50-agent call center taking reservations for a rental car company, or perhaps a larger 400-seat telemarketing contractor providing services for a variety of clients. The NetLert system allows managers/supervisors in these networked call centers to send critical messages to specific desktops (agents) or to predefined groups of agents. A variety of message formatting, scheduling, and automation functions are provided to the message sender, through the NetLert Communicator application. Agent messages are displayed in an unobtrusive, scrolling desktop marquee.
- Vance Bell JFtp A Java FTP Client: JFtp is a graphical FTP client written in Java. An FTP client is a program that allows the user to connect to a remote server and transfer files to and from the server. JFtp has a graphical interface that allows the user to execute commands by simply pressing a button or dragging an object somewhere. Visual confirmation to command execution is given in two ways: by a progress bar and by a log window. The purpose of this project is to combine as many of the flavors of computer science as possible into one discrete package.
- Terrance Rayner Java Loghours: The project that I am undertaking addresses the issue of logging hours into a central database in an intranet-based office. Multiple workstations on a TCP/IP network will connect to a server hosting the database in which to log one's daily hours. One or two other people, considered administrators, will access this database for creating biweekly reports or other administrative tasks.
- Tom Cheeck Web Distributed Database Application Multi-Property Motel Reservation System: The software is designed to provide a dynamically updateable only reservation system for small independently owned lodging properties. I chose to design this type of software after having worked in a hotel and using a large corporate reservation system. The idea is that a small start-up business could get properties to join this system, titled Carolina Mountain Lodging. The software would provide an only reservation system for Web surfers and staff members taking reservations by phone. Both would be using the same interface and accessing the same data.

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- Lizzette Gonzalez-Stefanon A graphical representation of the wumpus world: Creation of a graphical representation of the Wumpus World game as executed by a Human Player. The Wumpus World is a computer game used in the Artificial Intelligence course taught at UNCA.
- Mark McDiarmid Audubon Tree Central North Carolina: The goal of my project is to create a local area network (LAN), a corporate web-presence, assist with advertising, and help design a basic database for Audubon Tree Services, Inc.
- Melissa Boring S.A.F.E.N.E.T: Creation of an application that a Victim Liaison Officer can use in the field while interviewing crime victims. It will take information about the victim and the crime in which there were involved, provide a list of community agencies and services to the victim, and provide a follow-up mechanism.
- Angelica Mendoza No title: The problem is to create an application that will provide an educational interactive 3D graphical simulation of two families from the Odontoceti species of whales. Among these families of whales there are nine whales including the Long Fin Pilot, Orca and the Great Sperm Whale. The application must provide educational information that would normally be obtained from a 2D medium. The application must be able to provide transparent 3D graphical cross-section of the anatomy of the whale and educational text that appears when the sections of the whale are clicked on by the mouse. The application needs to demonstrate the life cycle, geographical locations, feeding patterns, and information on breeding of each of the whales in both a text and interactive 3D graphics image.
- Benjamin S. Weigand No title: Development of a graphical user interface as a front-end to a pre-existing program. Specifically to develop an OpenGL interface for a checkers game implemented with a command line interface
- 2000**
- Tim Gautreau Track & Field Database: Stan Rosenthal has to keep track of a multitude of information concerning the track team. Items such as: workouts, workout times, races, race times, race splits, running conditions, and various other information for each athlete. The problem with his current system is that he stores this information on paper. This make the desired information hard to retrieve for specific workouts or races, due to the fact that he must search stacks of paper to find what he wants.
- Michael French Adding a Touch of Reality to Animation: Skeletal Mesh: Creating graphical images that look like real people for computer games.
- Allison F. Leider The Gnome Microprocessor: Electronic design automation (EDA) and hardware descriptive languages (HDL) are reshaping the integrated circuit (IC) industry. An HDL is a computer-based language having special constructs and semantics to model, represent and simulate the functional behavior and timing of digital hardware. HDLs provide an alternative to traditional schematic based design styles, where designers focused on transistor and gate level abstractions. HDLs enable designers to focus on the relationships between input and output signals, not on the circuit detail supporting the physical/structural implementation. EDA provides the synthesis tools needed to automatically create a schematic from an HDL behavioral description. This description can then be mapped into hardware technology, such as an FPGA, to meet timing and area constraints.
- Stephen Garren Peppertree Overnight Reservation System: To find a way to merge three departments into one database in order to speed up the overnight reservations process for eight different resorts. All processes are currently being done manually which is slow and inefficient.
- Seth Buckley Dye House Control System: To integrate an older text-based Btrieve database system programmed with QBASIC into an existing Microsoft Access 97 database system using Visual Basic for the Graphical User

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Interface.

- Karl Pierce Cellular Phone Database Conversion: Community Care Partners' Information Systems department is currently developing a cellular phone database for its employees. Community care Partners (CCP) has a contract with Bell Atlantic Mobile (BAM) in which CCP purchases a bulk amount of cellular minutes. These minutes are in turn offered to the employees of CCP at a reduce cost. The database includes all of the necessary data to calculate each employee's charges base on individual plans, and generate reports. CCP is currently negotiating a contract with US Cellular (USC) to purchase bulk minutes in an effort to offer the employees of CCP a greater service area. The cell phone database that contains BAM data will be used to store and process the USC data. The purpose of this project is to alter and redesign the preexisting BAM cell phone database so that it will accommodate USC data and compute the correct charger for the employees.
- Steven R. Ingram Maze Drawer 1.0: An interactive Maze Created with the OpenGL API OpenGL is an Application Programmers Interface that works in conjunction with the C++ programming language. This interface allows programmers to display two and three dimensional interactive models on specified output devices. For the purposes of this project a two-dimensional interactive model was created. The Maze Drawer program takes as input the two integers M and N and then draws an NxM maze. It will generate a graphical rat that can be guided through the maze via the left and right mouse buttons and the "f" key on the keyboard.
- Michael Elliott Implement Electronic Commerce for a Small Business: To broaden a small business' customer base by providing internet access to this business. Additionally provide a way of selling products by allowing a customer to enter the quantity of a desired product checkout and calculate necessary shipping costs. This project will allow me to explore the aspects of electronic commerce and discover ways of developing small online databases. Also, this project will allow me to discover the use of CGI scripts
- Doug Miles Credit Card Validation: This library contains routines to validate submitted credit card information.
Margarita Carter Ingles Annual Bonus System: The project that I am proposing for UNCA will be phase I of an Ingles Markets, Inc. project to convert their legacy Cobol accounting system to an ERP solution using SAP. The data that will need to be converted resides in files of types indexed, line sequential, binary sequential and relative. It includes account receivable, accounts payable, General ledger balances, and payroll/Human resources data.
- James Brian Tysinger Material Safety Data Sheets Online Mountain Technology Systems: Material Safety Data Sheets (MSDS) are used in almost every company in the United States. MSDS are documents that contain information on a specific chemical or substance used within the company. Information includes chemical identification, manufacturer, first aid, etc. Currently, the MSDS at Community CarePartners are all stuffed in large binders, which are located around the campus. Henry Barton, the director of Plant Operations at Community CarePartners has asked me to create a database to store our MSDS online. The MSDS will be accessible via our local intranet by each department.
- Brendan McGrane UNCA Athletic Department Book Entry System: Development of a computerized system to handle the UNCA athletic department book scholarship system. The system will allow the students to enter the information (via the Internet) about all the classes they are taking and this information will build a database of books that need to be ordered from the bookstore
- Alton L. Absher III Palm Scheduling Application: This project is an application designed primarily for college students who want an easy way to keep their course assignments and deadlines organized. Palm devices, such as the one that this application was tested on, are becoming ubiquitous in today's fastpaced world. With the growing popularity of multi-purpose cellular phones, applications such as this one will only become more in demand.

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- Benjamin S. Weigand Checker GUI: Develop a graphical user interface as a front-end to a pre-existing program. Specifically to develop this front end utility using OpenGL to interface with a command line checkers game.
- Michael Maher A Web Accessible Database: Implement a web site for a growing business and implement electronic commerce for that web site.
- Christopher Rickman Acabodera Wars: Acabodera Wars is a turn-based strategy game made for playing online against an opponent. Each player is in control of two characters. During each character's turn, the player may have that character perform one action and one movement. The action may either be an attack to an adjacent square or the use of an ability. Movement is simply the moving of the character to another square. The objective of the game is to knock out both of the other player's characters by depleting their hit points with attacks and/or abilities.
- 2001**
- Melissa Clontz Preferred Properties The Preferred Properties Web Site Application: Preferred Properties, a local real estate company, has a current website that was created using the database MySQL and the PHP3 HTML embedded scripting language. The company that created this site for them is no longer in business. They have been unable to find local assistance in updating their site and would like a new site designed using popular web technologies and browser support for Microsoft IE 4.x.
- Ed Johnson No title: Beginning the fall semester of 2001 the Computer Science Department at UNCA will be using Java as the programming language for the 201, 202 sequence. Clearly, substantial work will be necessary to develop or modify both lectures and laboratories for the 2001 academic year. The author proposes to write a package of 10 labs for CSCI202 with solutions for publication on the Web. This set would form a core for the CSCI202 labs that would substantially aid the transition to Java, fulfill the goals stated below, and allow individual instructors to customize by writing the remaining labs. The author believes it would be advantageous to both the students and the department if there were a large subset of the CSCI202 labs standardized across the sections. Students could feel confident that as they move on the upper level courses the faculty's expectations of their skills will be met. Also, faculty could then cease spending time in upper level courses ensuring that all students had the necessary background to perform as directed.
- Anthony C. Reidler M.I.D.A.S. Marketing Information Database Application System: Develop a custom marketing database application to track statistical information relating to specific Independent Insurance Agents. In addition, develop an internet-based front-end that will allow authorized users to query the database. Query results, consisting of various reports and/or charts, will be presented via an internet browser in the form of HTML generated web pages.
- William Hirst Rowan County GIS Online Data Access: Implement a server running SQL Server 2000 and design an easy to use graphical user interface for geographic and tax data entry, viewing, and manipulation for the Rowan County Planning Department. This will be used to simplify the tedious process of tax data preparation for use in Geographic Information System (GIS) applications such as ArcView and ArcInfo. Currently in order to modify tax records or geographic data to be used for GIS, multiple queries must be run in order to find the appropriate record. My graphical user interface to the SQL Server will eliminate the need for multiple user queries and will allow the user to simply and easily modify the data based on his/her specific GIS or tax records needs.
- Gina Noto An Internet Whiteboard System: Voice and Chat communications over the Internet lacks the visual element that can be an important part of business and technical communication. I propose to solve this problem by creating a shared whiteboard, accessed through standard web browsers via the Internet. Users will be able to draw freehand, erase previous drawings and possibly choose from predefined shapes to place on the whiteboard. The viewer will be able to see what is being drawn and add his or her

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own drawings to the whiteboard area.

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| Keith Alan Sellers | The Core Graphics System in Java: This senior project is to implement the Core Graphics System using the Java programming language so that the graphics system can be run on microcomputers and includes a plan to achieve this objective. |
| James H. Thompson | OMIDSA Occupational Medicine Internet Database Software Application: Develop and implement a medical database on a web server. |
| Andrew Kendall | Java Missile Defender: Design and Implementation: To design a computer game like Missile Command that will play smooth and has accurate controls. |
| Torie R. Leslie | YMICC Archival Database System: To develop a Microsoft Access 2000 system in which table fields follow the Dublin Core format for the YMICC Inc. These Access tables will be linked to forms and queries that will allow the YMICC staff to accurately archive the collections that the Cultural Center holds. |
| Steven Marcus | Using the Parallel Port to Control Stepper Motors: To design the software for a 'Cartesian robot' and build the model to prove that the software works. The robot will resemble a flatbed plotter and use stepper motors for motion. The model is intended to be a scale model of a larger robot that would move a router to cut 4'x 8' sheets of plywood. The software takes input for a cutting path, and then allows the path to be edited, named and saved to file for later retrieval. There are also utilities to change the address of the LPT port and control setting for the stepper motors. In addition was the need to design the controllers for the stepper motors. The stepper motors as well as other parts of the model were salvaged from old Hewlett Packard inkjet printers. The program was written with Borland Turbo C++ for DOS and intended to run under DOS on very simple, old 80386 - 80486 class computers. The project is designed for an industrial setting where excessive dust and physical hazards would be common. |
| Anson Ellstrom | CCP Call Center: Community Care Partners uses a single call center. The call center for Community Care Partners doesn't know how to contact all the current employees. Employee phone and pager numbers are being stored in 3 different databases. The databases have conflicting information including using a person's preferred name instead of first name. Community Care Partners needs to have one database front end be able to update the other three databases. This way they will all have the current information they need without conflicts arising. The call center needs a front end that will allow them to quickly locate contact information such as a phone number, extension, or pager number for any employee. |
| Miron Costant | Prospective Student Web System and redesign of Computer Science Website: To develop e-commerce components with database connectivity for the UNCA Computer Science WebPage and redesign the CS WebPage. |
| Sergio Maldonado | FrameStudio A Visual Design Java Application: The main goal of this project is to provide a software solution to retailers in the picture framing trade. This software will combine a database application, an imaging system, and web integration. The problem presented it this: How can a retailer in the picture framing industry move all aspects of their business to a single, integrated system? These aspects include inventory, ordering, sales tickets, financial controls, customer and employee information, and image visualization, to name a few. |
| David Schlabach | CD Jukebox: The problem I am trying to solve is the lag time of changing from one music CD to another. To solve this problem, I will be using two CD-ROMs and a robotic arm. An inexpensive but fast computer would control all aspects of this CD jukebox. As one CD is playing the selected track, the robotic arm would then load the next Cd that the user had selected. Once the first Cd is finished playing its selection, the second Cd will then begin to play. The lag from one CD to the next would be equivalent to change tracks on the same CD. The whole system with robotic arm, if implemented, could be contained in a |

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tower-like structure with a keypad on the front for user inputs

Robert Lance Berrier	Welcome to Midas!: Develop an Internet based interface to act as a front-end to a Microsoft Access Database. Specifically to develop a user-friendly web based payroll system for UNCA University Computing to replace the cumbersome system currently in use.
Juliana Stempel	The Center for Creative Living: The Center for Creative Living, a Science of Mind church, currently uses three separate databases, (two software programs), to maintain membership and contribution records. This system is both time consuming to maintain and extremely limited in its ability to provide meaningful information to the minister about interests, activities and participation of members. She desires one database that will allow for single entry of data as well as in-depth manipulation of data.
Nick Duncan	Duncan Machine & Tool Database: A local machine shop is outgrowing its current system of managing data. This business would like a database system that will run on a Windows based PC. This database will allow for the rapid entry and retrieval of data relevant to the business there will be queries, forms, and reports included in this database system.
Arthur Fotos	Material Testing Machine Interface: The objective is to design windows-based software to replace an existing text-based system. The software will provide three main functions: (1) interface a Pc running MS Windows with a material testing machine using a serial port and the RS-232 communications. Protocol, (2) provide an interface to a database to allow additional data to be manually added in addition to the data obtained from the material-testing machine. Approximately 40 to 60 pieces of data are stored for each sample tested and half of these need to be manually entered, (3) provide multiple reporting options
Terry Littleton	Radiology Office Web-Based Appointment Scheduling System: I propose to prototype a Web-based scheduling system for a generic radiology practice, to be used by referring physicians' offices to schedule appointments for radiological tests.
Kathy Brown	Ricker Trucking System: Ricker Trucking is in need of a computer system to store information on equipment, employees, customers, loads, and expenses. The system should also provide reports and print bills. Darrell Ricker is the owner and dispatcher of this independent trucking company. The employees are independent truckers who rely on Darrell to find their loads. Darrell currently uses a computer to type and print bills.
David Skema	Computing Securities Fraud Litigation Aggregate Damages: To devise an algorithm for the Proportionate Decay Model and write a user-friendly software interface that will allow in-house computation of aggregate damages by staff. Variants on the model will provide single-trader, Double-trader, and accelerated-trader analysis. Final output of the software will include a summary of the aggregate damages and a graph of the stock price and trading volume during the class period.
Rebecca Lilly	Sagebrush Steakhouse On-line Menu: Develop and implement a recipe database, including all menu items and bar items on a web server.
Gardner Treneman	Online Literature Gallery for Claxton Elementary School of Arts and Humanities: To create an online Literature Gallery for Lacton Elementary School, in Asheville, NC. Linda Ferguson, principal of the school, expressed interest in placing the student's hand written pieces, poems, short stories, etc., online, as to allow everyone to see their work. The main online interface will be done in Macromedia's Flash 5 that will be connected to an offline database, most likely SQL, through either PHP or ASP. By using a database backend, the site can be easily upgraded.
Jonathon McDonald	OpenGL Drag strip: To simulate a drag racing game. The game will be laid out in a fashion of an actual drag way. There will be a field on either side of the track with the drag strip going down the center. The

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drag strip will be to scale at 660 feet from start to finish, and return roads connecting the start and finish. There will be a functional Christmas tree that will allow the use of staging lights, timing lights, and foul lights. The Christmas tree will function on either side of the trash and will carry translucent lights for night runs.

Angelica Mendoza The Auto connection Express: Provide vehicle sellers or dealers with a place to advertise their product via the internet.

Nick Kelischek EZWeb: The process of authoring web pages and getting them properly installed on a web server is still a daunting task for many people outside the sphere of computer science. The need to learn the complexities of html and ftp is simply not a high priority for a large group of people who wish to benefit from using the web as a communication medium. I propose creating a system that facilitates the construction and deployment of web pages using simple web forms that assist the user through the process. The pages that are created will be strode in a database as a collection of web assets. When the pages are later requested from a URL the assets will be retrieved from the database and supplied to a synthesis engine for page generation.

Josh Peart The JMelody Maker: To design an application that would compose a 16-bar musical melody based on a subset of rules taken from music theory.

2002

Ann Alene Seling MCD McKee Custom Drywall Financial Accounting System: McKee Custom Drywall is a locally owned and operating business in Western North Carolina. As a growing company, McKee Custom Drywall was in great need of a new form of a financial accounting system. At the time, approximately one year ago, MCD was dealing with completely too much paperwork and had a limited understanding of computer technologies available for their business. After hearing of their dilemma, I offered a solution to their problem. That solution was for me to create a financial accounting system which included a database that created a General Ledger, A/R, A./P, Equipment, Inventory, Invoices, Reports, Proposals, Quotes, Collection Letters, a Cash Flow Analysis, a Company/Vendor information log, and a checking account that was able to access information from the MCD bank account to keep financial information up to data forms.

Aida Dungan Firefighter Safety Association Database Application FSADA: FSA has asked me to design a database application to serve its organization. FSA personnel have indicated to me that, in their view, there are two main parts to this project. First, there is the problem of how to create the database for the firefighter members. FSA will use direct mail to fire departments, trade magazine advertising, and a website to promote memberships. FSA needs based membership data such as name, address, fire department, status, age, sex, employment, years of experience, rank in department, etc.

Max Volkov Kisscart Keep It Simple and Secure: My proposal consists of building a commercial shipping cart system that is modifiable by users through their system browser. The shopping cart will have capabilities of setting up you own user password, which will be controlled through the administration page. The administration page will also contain the owner's name, email, tax rate and state, which will then be used to determine shipping in subsequent pages.

Travis Brown CD-ROM Front End: The implementation of an informational front end for hybrid audio compact disks. The informational front end is an useful feature that will be incorporated into the business services of a local CD duplication business, CD Masters. When implemented this program should be able to launch in a Windows environment and detail anything the CD architect wants to impart upon the audience. Adaptability is key here, since the data incorporated into these CDs will come from a wide demographic.

David L. Stair IMUGE, an Interactive Multi-User Graphics Engine: To solve the dilemma of successful, seamless

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integration of network protocols with an interactive three-dimensional "world" to provide a threshold for functional, graphical multi-user interactivity. In order to acquire such multi-user interactivity, as part of my project. I also propose to construct a dedicated command line interface server which will synchronize multiple clients while minimizing bandwidth utilization.

- Richard Anthony Shreve West Asheville History CD-Rom: The project I intend to undertake is an interactive CD-ROM for the West Asheville History Project. Dr. Phyllis Lang recruited me to implement this project, and by good fortune I'm interested in the primary technologies at play here. The end goal will be to have a CD-ROM that provides an interactive interface for users to explore the history of West Asheville, which will ultimately be distributed by the West Asheville branch of the public library.
- Jean-Paul R. Deshaies The Sub-Lang Analysis System: Artificial Intelligence researchers in the Natural Language Processing field can use this system to draw conclusions concerning the meaning and usage of a subset of language. The meanings and usage of lexical item are typically represented by categories whose definitions are partially subjective.
- Troy Shurtleff MSN Messenger Client for Microsoft Pocket PC: Develop an MSN Messenger 1.0 client that will run on the Microsoft Pocket PC platform.
- Shelby Sebren The Towers of Hanoi: To design a three-dimensional computer game. The Game will be based on the Towers of Hanoi math problem. There is a legend that a Hindu temple contains three thin diamond poles on one of which there were placed 64 golden disks that decrease in size as they rise from the base of the pole. The priests of the temple work to transfer all the disks one by one. The priests must never place a larger disk on top of a smaller one. My game will be similar but instead of having 64 disks the player will be able to specify the number of disks. The game rules will be the same as in the math problem.
- John Tan ASIA Web: ASIA is a new student organization that I am an executive member of and am glad that students have banded together to start this organization; I hope that it will prosper and continue to grow. I believe ASIA will greatly benefit from having a web page that incorporates certain features: Meeting Schedule, Guest Book, Calendar of events Mailing list.
- Laim Bryan Liam's Cubish An Interactive Computer Game in OpenGL and GLUT: To create an intuitive, graphical interface to a Rubik's Cube.
- Adam Lydick Distributed Indexing in a Peer-to-peer Environment Peer-to-peer technology provides a powerful way for a group of people to distribute information at a low individual cost. A properly designed peer to peer network scales to a large number of users, is easy to use, and is resistant to "attack" from hostile parties. Current implementations of peer-to-peer networks are lacking in one or more of these areas.
- Michael Ball Isort A Card Sorting Application for Mac Developers: Card sorting exercises provide insight into how individuals mentally categorize data. The information derived from performing and analyzing many card sorts within a potential user base can be used to make websites or applications much more intuitive. Traditionally, this task involves creating multiple decks of index cards representing granular pieces of data fro the users to sort into categories of similar items. Then, an analyst would perform the task of analyzing the sorts with pencil and paper. To ease this task, a few applications were developed to automate the pairs require the Microsoft Windows platform. Considering the number of web developers using the Apple's Mac platform, I was surprised to find that no similar application existed for Apple's Mac OS X. For my senior project, I designed and implemented iSort, a single, native Mac application that provides comparable result to its Windows-based counterparts.
- Genie Jenkins Jazzy Side Up! UNCA Jazz Program Website Database: The Jazz Band Director is looking for ways to draw attention and support to the Jazz Band here at UNCA. One method he is looking into is creating a web

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site that allows users to listen to original music, view a recorded performance, or learn more about the musicians and the director himself through an online database.

- Michael P. Bouchelle DMZ Development & Deployment: Kearfort Guidance and Navigation corporation is designer and manufacturer of guidance and navigational components for commercial, military and space applications. Kearfott, located in Black Mountain, NC, is part of a multinational corporation parented by Astronautics of America with other divisions in New Jersey, Wisconsin, Mexico and Israel. Network services for Kearfott Precisions in Matamoros, Mexico are provided by Kearfott's division in Black Mountain, NC. Internet access, email and transmission of corporate data between divisions is essential for day-to-day operations. However, certain contractual information falls under export controls and cannot be transmitted outside US borders. Therefore, the need to provide network services yet keep sensitive data safe is extremely important. KGN-Ash is now in the process of restructuring their divisional network to incorporate a DMZ while still providing the necessary network functionality for the division in Mexico. Access outside the corporate network will be possible via a series of proxy servers and firewalls. All outgoing and incoming access is to be monitored for suspicious and/or non-work related activity.
- James Waddell Waddell Software Development LLC: Waddell Software Development has developed and marketed online scheduling software called Schedule Anyware. This package is designed for fire and rescue departments in larger cities. Waddell Software is expanding its presence with Schedule Anyware Lite. This software package is a less expensive alternative to Schedule Anyware designed for smaller departments.
- Lisa Sellers Ridge Medical Action Industries Safety Issues System: The Medical Action Safety Team needed a computer software system to log safety issues and resolutions. The Safety Issues System meets this need by providing an easy interface to log safety issues onto the computer with minimal input. In addition, the Safety Issues System is a powerful tool to track safety issues and provide valuable data analysis to reduce future safety incidents.
- L. Mark Case A Forms-based Billing Application for the Palm Operating System To create a forms-based application in the C/C++ programming language for the Palm operating system that will be used to record bills and Hot Sync with a Access database accessed through Visual Basic front end. This Palm application is for a user who is in the construction industry specifically electrical and plumbing.
- Richard Hart Pinkley The Market Place Restaurant Database: The Market Place Restaurant uses two different information systems and manual calculation to keep track of data and generate reports. They want to migrate their computer systems into a single system and relieve the burden of manual calculation. The owners want to perform this migration in stages. The first stage is to create a database that can keep track of data and render reports.
- Thomas W. Albright Java Applet Illustrating the Calculation of a CRC: This project has produced a java applet that visually displays the long division process used to calculate a cyclic redundancy checksum (CRC). A CRC is a method that uses binary modulo division to ensure that the transfer of data is accomplished without any corruption of the data. The applet takes user input in the form of a single letter and displays the polynomial form of the ASCII code for the letter as the data to be transmitted. The user then selects a generator polynomial and then has the applet divide the data by the generator polynomial to calculate the CRC checksum. After the CRC has been calculated, the data is appended with the CRC and displayed to the screen. At this point, the user is given the option to quit, the option to check the appended data without making any changes to the data, or to change some of the bits in the data to simulate the data being corrupted and then check the appended data. If the user chooses to check the appended message, the entire long division is again displayed along with a message to indicate whether the check detected any corruption of the original message. To make the applet friendlier for educational purposes, the user can control the speed that the applet operates at.

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- Elizabeth Pritchitt Expanded Grading Program: A driving force of the field of computer science is to find efficient solutions to problems, eliminating redundancy wherever possible. A problem requiring one such efficient solution is the professor's task of grading mass amounts of homework for lower-level undergraduate computer science programming courses. Here at UNC-A, Dr. Bruce is using a Perl script written by Dr. Brock to grade programming assignment from her CSCI 201 classes, Currently, the source files for given homework assignments) are stored and uses the copies in a working directory where the source files are compiled and executed iteratively for each student. The output for all students' programs is stored in a file to be printed and used by Dr. Bruce to grade each student's work. My goal is to make one or more of the following additions to Dr. Brock's program: (a) design and implement a "cheat checker," testing students' assignments for similarity; (b) modify the script to display the output of Java applets in addition to its current functionality.
- Andrew Smith Java Socket Chat: For my senior project I chose a windows based chat application. In fact, the program is a chat application, but in a working environment may bear more resemblance to an instant message application. The initial idea sprang from a need to connect directly with other students living on campus, who accessed the campus network. The program was designed with the UNCA campus in mind, but will of course connect any two computers and must run the program simultaneously.
- Joshua G. Calloway KimmelTrading.com: Mr. Joe Kimmel has an extensive collection of antiquities he wishes to display and keep inventory of on a website. This project will be to design, implement, test, and launch this website. This site will be database driven and require a public viewing section as well as an interface for database administration. The actual population of the database is beyond the scope of this project and will take place over an estimated 8 month period after project completion.
- Derek Meeker Java Guitar Tool: The problem I will try to solve is creating a guitar instructor program using the Java programming language. This will be a GUI (Graphical User Interface) program that will store and retrieve chords, provide a guitar tuner, and also feature a small drum loop section, so users can play along with a beat.
- Laura Washburn ITAIS: IT Asset Inventory System for Union County Public Schools: Union County Schools desires to implement an IT Asset inventory system. The primary goal of the system is to expedite the generation and submission of the Annual Media and Technology Report (AMTR) required by the North Carolina Department of Public Instruction. A secondary goal is to improve the support service provided by the Media and Technology Support staff to the schools by making the warranty information associated with IT assets readily accessible. A tertiary goal is to reduce the time and labor overhead associated with the yearly inventory process by automating as much of that process as possible. The final goal of the system is to improve the accuracy of the inventory data gathered. The project is being developed in stages.
- Jonathan Chapman BattleQuest: BattleQuest is a role-playing game where everything is randomly generated. Role-playing is a genre of gaming where you put yourself in the position of a fictional character, often in a fantasy story, in BattleQuest there is no story other than that of an explorer who must constantly fight to survive. The character is generated using a MFC based menu, which generates a text file. Upon execution of the main executable, the character is introduced to a randomly generated environment. The description of the area, the inhabitants, and the items both on the creatures and in the setting are all randomly decided. The player has skills which he/she must use to survive. This is achieved, again, with a random number generator balanced by modifiers of both the player's ability and the player's skill level.
- 2003**
- Anthony Elledge The Southern Pine Beetle Ecological and Economic Program: The USDA Forest Service, Forest Health Protection, currently uses an antiquated software system, developed in the early 1980's, to calculate economic information relating to treatment of southern pine beetle spots. This software, the Southern Pine Beetle Economic Evaluation Program gives forest health specialists an invaluable tool to determine

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feasible approaches to suppress field during aerial and ground spot checks, and calculates the economic practicability of funding suppression projects on state, national forest, other federal, and private lands. The current software is outdated and needs to be modernized.

Bill Scharf

US Forest Service Human Resource Tracking System: The Eastern Administration Zone of the US Forest Service is composed of more than 1,200 employees in over 75 units spread throughout 13 states and Puerto Rico. There is one Human Resources department, which services all the positions in the entire zone. The HR department receives over a thousand request a year and up until now attempted to track their processing via spreadsheets. This is cumbersome at best and requires many reports to be manually typed each week. The units, our customers, are dissatisfied with our timeliness and communication with them. They demand more than a weekly report and timeliness guidelines, in federal workdays, have been handed down statistical analysis of each step in the process. Data integrity, concurrent user support data normalization and duplication, and standardization of abbreviations are all serious problems. The database solves each of these issues and adds extra functionality.

Chris Pittman

West Asheville Multimedia CD: To create a multimedia tour of West Asheville. This multimedia tour is the result of an extensive project referred to as the West Asheville History Project. It is being sponsored by the West Branch Library of the Asheville Buncombe Library System. Dr. Phyllis Lang is supervising the data collection for the project and will also serve as a test user. Susan Reiser's BUI Design class is currently working on the project as well. That class will be responsible for designing and implementing a GUI for the project. Once complete, this GUI will need to be integrated with the content of the CD. A small selection of educational games will be created to accompany the CD. The final product is to be an educational CD containing text, audio clips, images, and games about West Asheville and its history.

Asako
Tetsubayashi

UNC-Asheville Athletic Department Website: Create a database driven web site for Athletic Department which let users update information, news and images through a web interface. Currently Mr. Mike Gore, my client, is the person who is updating the web pages for UNCA Athletic Department. The web pages are offering people, including students and faculties, information about the events, schedules, news and all other thing needed for people to know. The web pages need some kinds of interfaces that allow not only Mr. Gore, but also others, to update or change things without knowing HTML codes. Keeping the web pages current is very important for many people. Many people, especially students visit the web pages. The Athletic Department web page is linked from UNCA's home page. UNCA puts links on the top pages for easy access to students and others, and it implies that the links there are the most used links. One of the reasons why I decided to do this project is that currently Mr. Gore uses FTP to download the HTML-code and update by hand. Also he is the only one who does this job. Then a question came up in my mind - what happens if he is away? I have talked to him about this, and he liked the idea of updating things through web pages. This will allow him to update from anywhere, from any computer. Right now he must update from a computer with a particular FTP client installed. So he mostly just uses his computer in his office. This is very inefficient. I will use some parts of the website already exists and add ASP codes to generate some parts of the pages automatically generated from database.

Bart O'Ryan
McKinney

Maintenance Application: In order to conduct business with DaimlerChrysler, Ford Motor Company, and General Motors Corporation, a firm must be QS-9000 registered. One particular requirement of QS-9000 is to keep maintenance on all machines and keep a log of that maintenance. Since Smokey Mountain Machining, Inc., SMM, is QS-9000 registered; they must maintain this requirement and other requirement that QS-9000 specifies to sustain business with these "Big Three" auto manufacturers. Fulfilling requirement is no SMM's way of doing business. They like to "continuously improve their quality process and quality requirements". Building an application to remind the user when maintenance is needed and keeping track of that maintenance will greatly benefit the organization and accomplish their mission. This application allows adding, deleting, and editing of equipment, inventory manufactures, inventory vendors, inventory, and tasks. When equipment is added in the database, a maintenance task can be written up for that piece of equipment and on the specified day, it will remind the user when

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maintenance is needed on that piece of equipment. After the maintenance is completed, the work order can be closed and saved to show that maintenance has been completed.

Amy Kanupp

Marco's Pizzeria: What I'm trying to do with my senior project is to bring Marco's Pizzeria into the twentieth century. Currently waitresses use note pads to take orders on, then the order is given to the manager working that night to rewrite. The order is then placed on a spinning wheel where the cooks pull them off to read them and prepare them. The problem here is that the cooks can't always read the handwriting or the orders can fall off the spinning wheel. Where the orders are sometime stepped on and forgotten about until an upset customer wants to know what happened to their food. Also there is not a clear, decisive way to tell which order was placed first so some people wait longer for their food than others. Another reason for the system is that Marco's is expanding. They are opening a new store on Hendersonville road, and their business at the Merrimon store has been steadily increasing. This system hopes to solve all these problems also giving Marco's a new method of ordering and preparing the food as they open a second store.

Melissa J. Foyles

Immaculata Catholic School Application: Immaculata requested an application that would keep information about each parent of every child including addresses for parents who have different addresses than their child. The application would also need to keep track of if the child is catholic or not, the names and ages of any siblings that the child may have, and also the current grade the child is in. The application needed to have an area for attendance. This meant that there needed to be an ability to keep track of any absences, any time the child was tardy, and anytime the child only spent half a day at school. The user needed to be able to update the attendance on a daily basis and enter a date that corresponded to each time the child was absent, tardy, or spent only a half of a day at school. The application allows the ability to add, delete and update information about each child. In the future the user has requested a mail application.

Daniel W. Roberts

Pro-Assist: The need for quality, affordable, user maintainable, and dynamically generated Web Sites exists in a wide variety of market segments. One such segment is in the recreation area, specifically, as it relates to Golf and Tennis Instructing Professionals. Based on discussions and personal experience, the general problems this project will solve are threefold: 1) this site needs to be both a traditional "brochure type" marketing tool capable of promoting the "Pro" and developing new customer interest. It also needs to be an interactive training tool capable of bridging the time between lessons ultimately enhancing the student's learning experience. 2) The initial and ongoing expenses associated with the creation and maintaining of a custom designed, professional quality Web Site exceeds the financial commitments that most of these Professionals are willing or capable to commit. The site needs to be affordable and available to as many individuals as possible! 3) The lack of the technical expertise required for these individuals to proactively update and maintain Website content posed a significant obstacle. The site needs to be simple to maintain and update to address the needs of even the most "technically challenged"!

Jason Hawkins

JRing A java Sound performance tool: Jring is a Java application used as a performance tool for sound manipulating computer musicians. The program allows a user to load a selected sound file, which plays in an indefinite loop once a play button is pressed. The user interface contains two sections for manipulating the audio: one section to add amplitude modulation, which includes slider controls for frequency and amplitude of the modulator wave, as well as a selector for a sine or square waveform, and one section to do grain-gapping; the user selects through slider controls the length of 'grains' into which the audio file should be spliced, and the amount of silence or "gap" to be inserted between the grains. A volume control and bypass controls for each manipulation section are provided, as well as a control for the buffer size the application will use, to allow for the varied hardware on which a Java application might run.

Ryan Hodges

U.S. Cellular Agent Sale Tracking Database: The focus of this project was developing a solution to the

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price matrix problem and finding the right table design to store and calculate the data appropriately. Since these phone rebates depend on which phone is purchased, which plan the customer signs up for, and what date it is purchased. The final design relies heavily on views and a code module that assigns points to transactions based on several factors that determine the appropriate rebate.

- Adam Ramsey UNCA Housing Office Roommate Questionnaire and Matching Assistant: Currently the UNCA Housing Office sends out a Roommate Questionnaire to each incoming student. Once the contents of the form are completed and turned in, the rigorous tasks of assigning roommates based upon similar interest begins. Since the UNCA has well over 1000 students living on campus, the matching process can be quite tedious and drawn out. By making the Questionnaire an online form, not only did we reduce the time between receiving the completed forms, but it is also eliminates the need for sorting through nearly 1000 forms. Once the form is completed and placed on the web, all the information will be stored inside of a database. This same database will be used in the program I am developing that will allow the Residence Life Coordinators responsible for room assignments to simply "query" the database for residents with similar backgrounds and interests. Making room assignments a much faster and hopefully more effective progress. This program will also maintain an up to date listing of where students are, and can be updated unjust a few seconds, which also reduces paperwork during the change room periods.
- Brian Scheewe 3D Battle-bots: To create a 3d "Battle-Bot Arena" in which I could model and code robots to "fight". Using Alias-Wavefront's 3d package Maya, it is possible to make a world complete with friction, gravity, mass, turbulence etc. by using rigid body dynamics and collision detection. With these tools, I created a simple arena in which "intelligent" robots can be placed. I applied Maya's Embedded Language to these robots so that they could interact with the world around them and move about. Each robot was given a specified mass, speed and agility in which they are governed in world space. The robots' intelligence drive them in real-time to seek and take out any other robot. The robot that can successfully push all the other robots off of the arena is declared the winner.
- Carrie Hunt GL Conversion Database: Community Care Partners is currently developing a new enterprisewide system. As of now, the different agencies of CCP are using four different databases for their account balances written in Access, Informix, or SQL Server. The purpose of this project is to create one SQL database with the reports generated by Access, which will integrate existing account information from all agencies and show relationships with a new chart of accounts for each agency and CCP as a whole. Four interfaces will be produced which will extract the account data to put into the new database. The final product will be one database written in DQL Server 2000 at which time it will be used by all agencies.
- Jeffery S. Lilly Snakey - A Snake Game: Snakey is to be an open-source snake game similar to those of the titles "Znake", "Gnibbles", and "Nibbles". (There are others as well, but too many to list them all.) It is meant to be able to be run as either a Java Applet or a Java "stand-alone" program. The purpose of the game is to move around eating pieces of food. As you eat the food you grow or shrink and gain points. The object is to gain as many points as possible before you die. You die when you run into a wall, barrier, or yourself.
- Bryan Powell Braktal: My goal is to create an application for generating fully-customizable, two-dimensional fractals. Customizable features to include number of points, color of points, starting position, size of seed, step size, step speed, compression factors, rotation factors, and probability factors.
- Brian Sparks U.M.L. Designer: This project will create a simple UML design program applet with printing and exporting functions. UML is a versatile tool for use in software development and design. However, it is a complex language, including elements for all aspects of creation, from use cases to abstract class diagrams, and finally specific state and sequence diagrams. Normal UML development tools range from the hundreds to the thousands of dollars, depending on their range of use, and additional functionality. While remaining simple it will still contain the essential elements of UML design. The purpose of this program is to create a simple UML creation served, that will allow for Use, Class, State, and Sequence Diagrams, yet will

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remain easily portable to any platform internet browser compatible. Because of the simplicity of the design, strict enforcement of connections won't be in place, but the essential semantics of UML will be in place. By keeping the tool simple, it should also be easy to use, and accessible to anyone with knowledge of the uml language

- David Larkins Jr. QtDEM A USGS DEM viewing application: The US Geological Survey has in recent years been producing geological data for much of our nation. Since 1996 a Spatial Data Transfer Standard has been established for the creation of Digital Line Graphs and Digital Elevation Models. These files store elevation data in a regular array corresponding to Latitude and Longitude coordinates. These files require the usage of a special application to display the data in different kinds of viewable formats. Viewing in 3D provides the best results and allows the most versatility when working with these files. The rationale of this project is to create a USGS DEM map viewer for the Linux Operating System. It will display a 3D image of the map and allow the user to navigate in a first-person manner over and around the map. It will allow the manipulation of such properties as camera angle, lighting sources, color information for the elevations, water level, and other properties that will make this map more useful to the user.
- Caryl A. Sinfield Trainfest Registration Database: I have been a volunteer for Girl Scouts of Western North Carolina, Pisgah Council, for the past 12 years. When my supervisor learned I was seeking a project, she asked if I would be interested in designing a database for GSWNCPC's annual adult training event. Trainfest. This event offers 100 to 150 participants placement in up to seven classes and meals throughout the weekend. Until now, the tracking of the data was done manually, including class placement, and payment and analysis of fees. We estimated that we could possibly save up to 250 labor hours by creating a database that would facilitate tracking this data, and producing needed information from that data. I agreed to take on the project because one of my career goals is to develop a home-based business in which I can use existing database tools to help small businesses, not necessarily non-profits, gain the benefits of using databases, without incurring exorbitant consulting costs.
- Luke Withrow Highland Farms Prospect Information Management System The PIMS database tracks all prospective residents of the retirement community. The marketing director uses the system on a daily basis to add new prospective residents, to track communication with prospects, and to record purchase information when a new resident moves into the community. The database assists with a wide range of marketing function; from printing labels to analyzing where advertising funds are best spent. The redesign of the PIMS system offered many challenges. The system needed to be altered to meet changing needs and uses, but also had to provide a user interface similar to the former system so that the user could immediately switch to the new system. Converting the existing data to the new system was also a very challenging process. Some tables had as many as 30,000 records that had to be moved into the new PIMS database. The new system is an Access 2000 database. I used extensive VBA in order to achieve the necessary functionality while still keeping the program in Microsoft Access, as requested by the client. I was also able to extend my knowledge of SQL syntax by using it in many ways throughout the project.
- Paula Witherspoon Asheville Theatre for Young Audiences: A database created for the Asheville Theatre for Young Audiences.
- Jun Zhang EATON Lean Training Database Web Application: In this project I will try to implement a database system for the Lean trainings of Eaton Corp. The database will contain data from different training divisions and the system will allow the trainers to look up and update trainees' information using Access or through a web interface. It will also produce various reports using different sorting methods. The database will also be able to get inputs form Excel files. The web interface will be password protected. The database will also allow different searches to retrieve data.
- Alan Frazier Enchantedpoetess.com: The site, enchantedpoetess.com, will be interfaced with a database containing all their works to date and have the capability to have new material added once the user has logged into

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the site as well as a forum area were material can be viewed by anyone who visits the site and commented upon by anyone who is registered. The forum will be searchable by author, category, date, and keyword searches. To implement the site I have setup an apache web server, tomcat server, MySQL database server, mail server, ftp server, and telnet server, as well as Java, PHP, and Ant modules. Also, I used CSS to a minor extent in an effort to streamline formatting of the presented information. To interface with the database and allow content to be viewable and searchable I used java server technology and the login scripts were handled through PHP. The mail server further solidifies the group's online presence by allowing them to send and receive mail from their own domain. The ftp and telnet servers were setup so that remote administration of the website files and the MySQL database would be possible.

2004

Jeffery Ayers

Kitchen's by Design Inventory Order System: I have solicited a cabinet distributor to allow me to create for them a program that will keep track of their inventory, accounts, job names, the detain information about each cabinet, deposits for orders, funds due, and method of payment.

Colby Beam

The CCC Web Page Management System: Conner Computer Consultants, a local computer store in Rutherfordton, NC, would like to have a website that will showcase special sales and special items on the internet. This website should be easily updated with software that updates a database that in turn updates the web page with the items that should be shown on the website. The user of this system would like to be able to input and delete items in the database from a simple to use application, and then have the web page generated from information on the database. The user expressed the need to have a system that would be easily updated and noted this as being the primary reason that the company currently has no web presence. I propose to solve this problem by creating a visual basic application that allows the user to easily update the database on the server, create the store front web page, and have the web site generate pages with the appropriate information about sales from the information the user has entered into the updated database.

Jonathan Bert
O'Shields

Apple Country Lawn and Landscape: Apple Country Lawn and Landscape currently keeps all of their business information in paper form. I will create a computer application, which will computerize his paper process. The computer application will allow Mr. McCarson to: maintain company personnel records, maintain customer records and invoices, maintain company inventory of plants and landscaping materials, and maintain a database of Western North Carolina plants and shrubs.

Jeremy Twiggs

Remax Mountain Properties Database-Driven Website: Remax Mountain Properties is a real estate agency in Murphy North Carolina. They currently do not have a web presence, but would like for me to design and implement a web site for them. The owner has had experience with traditional web sites and the difficulties associated with constantly keeping them updated, so he has requested a site that is easy to update and allows him to make certain changes/additions whenever he likes. This problem can be solved with the use of a database to store the massive amount of property information and the use of ASP to pull information from this database and dynamically build each page. The site's functionality will also be boosted by using these techniques. I will build password protected web based interfaces that also the users to access the database and easily make changes or additions to their site. The site will not just be a place where property seekers can go to find real estate; it will be a tool for Remax Mountain Properties' employees to better serve their customers with. Since all of the company's property listings will be stored in a central location, they will be able to search through their inventory and easily find matches for what they are looking for.

Alan Ambrose

The Blue Banner Website: The UNCA student newspaper - The Blue Banner - has as extremely outdated, inefficient web site. My goal is to redesign and rebuild the web site using a database structure. The database will store all the information for the web site such as articles, editor information, and pictures. While I will be completing the database design, implementation and coding of the web pages, the focus

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of this project is on the database. The upgrade to a web site with a database, instead of static html pages will improve efficiency and ease of use for the Blue Banner online editor as well as increasing the functionality of the site.

- Tom Barber ABB Document Management System: For my senior project I will design and implement a database and a website. This database will be used to access the archived files of an engineering firm. The job I am outlining will be completed for Angola, Barber and Brundage, a civil engineering firm in Naples, Florida. The problem they face is that their files are poorly indexed in cumbersome boxes, which causes a waste of space along with a very inefficient searching method. Phase I of the project will consist of building a database that will aid the employees in searching for specific documents on the network. Phase II will be a database driven website that can be used to remotely access particular aspects of the file database.
- Wesley Jameson Band Management Software: For my project, I have created an on-line band management program. This program assists with many of the functions associated with the job of a band's manager. It keeps track of useful information for the band and also displays it via their website. A band's website has become a very valuable tool in promoting bands. As in any other business, bands require a way to advertise and promote their product. Since the coming of the computer age, bands have had to deep stride with other businesses and begin to do some of their work on-line. Many clubs and venues which feature live music will not even consider booking a band without a website which they can look at to find out about the band. This project not only provides the general public and potential venues the opportunity to investigate the band's music. It provides the band with the means to deep up with personal information regarding venues which they have played, email contacts, shows they have booked, and means to update their website instantaneously to keep it as current as possible.
- Ge Vang Vang Poultry Farms Pullet Productions: To create an interface that my father and I can use to keep track of our finances, inventory, equipment and daily transactions of the poultry farm. Since 1994, all paperwork, financial data and transactions have been done on paper. With this project, paperwork will still be generated, but data will be entered into the system for a more user-friendly environment to view and review crucial data for financial and statistical information to improve the farm's operations. Data will include data generated by the Case Farms, the company that contract the poultry out to us; financial data including our income, expenses and all transactions with respect to the farm, mortality records for the birds of each flock; environmental factors, like temperature and humidity of the poultry house as well as outside; and inventory of equipment, machinery and tools and their vendors.
- Mark Covert J2IRC: A Java IRC Client: To use the Java programming language to create a functional and user-friendly client for the Internet Relay Chat (IRC) network.
- Kenneth Bogert A Program to Convert and Link Access Databases to MySQL Microsoft Access is a commonly used database application in many small businesses. Access suffers from many performance problems, however, as the amount of data in a database grows. As a result, many businesses are finding that they are trapped; they cannot afford to install Microsoft SQL. Some programs exist to perform his transfer, however, I have found that they do not transfer table schema correctly. I will solve this problem by creating a free utility which can automatically extract table schema and data from an access database and put it into a MySQL database.
- Jonathon Walker JMail Mail Client: JMail is a cross-platform POP3 and SMTP mail client. This application is designed to run without modification on any architecture that supports and has installed the Java 2 runtime environment. It is likewise intended to adhere to applicable IEEE standards as defined by the relevant IETF Request For Comment documents, available at www.ietf.org Applicable standards are defined in RFC numbers 2821, 2822, and 1939. The application will be executable both from the command line and in a windowed form in a graphical user interface.

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- Joseph R. Dean Internet Explorer Logger IE-Logger V. 1.0: Owners of a computer need a way to view web history in a discrete manner. Computer owners are often surprised to see what websites have been visited by another user. Usually just attempting to view the web history is impossible because the user deleted it. With Inter Explorer Logger, the owner can start the application, then hide it so that the user will not know that their web history is being logged.
- Brandon Alspaugh Judicial Interface for the 28th Judicial District Bar Website: This project was intended to assess and develop a functional user interface for the 28th Judicial District Bar Website. The greater website is a multi-year project initially began by the CSCI 446 Systems Analysis and Design Project Class in Spring 2004. This project requires a number of skills from across the CSCI discipline, from database construction and extensive UML design to module coding and consistent user feedback. Perhaps the most beneficial aspect of this project, from my own perspective, was the experience of working with and for real-world users who understood very little about computer or technology, but had clear and defined notions of the sort of system they wanted to implement. Working with these users has been invaluable, not only from a business communications standpoint, but also a critical thinking standpoint; translating their requirements into practical technology solutions.
- Brooke Melton Grover Gosnell Construction Website and Database: Grover Gosnell Construction has done a lot of work for the people of Madison county, North Carolina, and Greene County, Tennessee. Grover Gosnell, owner of the company, needs to transform his invoice record keeping system from a paper-based system to an electronic system. Electronic invoice record keeping is becoming necessary due to time and efficiency demands.
- Alex Polzien SchplatSynth: A Plug-in Synthesizer Instrument For Macintosh: The purpose of this project is to create a virtual instrument plug-in to run on audio applications that support Apple's Audio Unit component framework. This will involve learning how to create and manipulate audio data digitally and how to handle control events.
- Lillian M. Perkins Active Server Pages for the 28th Judicial District Bar Website: My project will be to create programs to maintain the Bar Association website databases remotely via a web interface. These programs are to support adding, Deleting, filtering, updating, copying, and printing records. A given program to maintain a single table may use several ancillary tables for pull down menu information into the maintenance program. There will be at least six maintenance programs constructed and possibly more. Each of these programs will maintain a different table's information and will feature security so it will not run if the user is not logged into the web site with the appropriate permission. They will also have a common look, feel, and fit with the look and feel of the bar website.
- Matthew Mastin Bloodfield's: A Modern Day Two Player Game: Bloodfield's is a turn based two player game, that players shoot projectiles from their cannon, trying to destroy their enemy's base before they get hit. Each player has a set of keys to use to change the projectiles powder. They play over 5 unique levels, each with a different gravity. The winner is determined by the player with the highest score after the 5 levels.
- 2005**
- Robert Joseph McGimsey The Webpage Generator: The webpage generator is a tool that is meant to be used by computer novices to create personal webpages. The interface was designed so anyone with basic knowledge of using a web browser could generate a page of their own. The generated code is hidden from the user until the final step where they can look at it if they wish. This is so that user who are trying to learn how to write their own sites from scratch can look at some well-documented code. Every page that is generated has extensive comments to make it easy to flow through the source. Of course, no user is forced to interact with the source code directly if they do not want to. To add to the usefulness of the project, users are also assigned a page ID and password. This information allows them to log back in at a later date to make any changes to page. The edit interface is very similar to the initial design interface, complete with the

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user-friendly drop downs and text fields for the various variables.

- Gok Khen Cheng Conception, Discovery and Implementation: South Wind Motel Information System: South Wind Motel is a small family-owned business in Western North Carolina. The business is run on a day-to-day basis without the use of Information Systems. Much of the labor is manual and there is much room for less of data and error in storage of data, such as customer information, payment methods, rental dates and length of rentals (for tax purposes). Also, inventory of supplies for the business are unaccounted for at the moment and at times it is hard to account for stolen supplies and the number of supplies to reorder to restock. Currently, the business records rentals and expenses using the "receipt method" where they retain all receipt form purchases and rentals and sum them up to calculate at a later time. The application will deal with this tedious method of tracking rentals and expenses.
- Jeffery Pressley bookquery.com, A description of the process used to develop bookquery.com: Several of the challenges faced in the development cycle are explored and how they were overcome. Including how to quickly and accurately determine the price of a book from a bookseller, how to perform price searches based on author, title, or keyword, and how to reliably perform server to server communication through http requests.
- Michael Trent Griffin UNC Asheville Bookstore Website: I would like to build a website for the UNCA Bookstore that allows customers to place orders online. The orders will be filled offline, in batch mode. Currently there is a webpage, but it has very minimal information, does not allow online orders, and is not easily updates by the Bookstore personnel.
- Edward Mundy SRS Publications Database Interface: The Communications group at the Forest Service Southern Research Station is tasked with delivering Forest Service scientist's research to the world. The most effective way of doing this is to create electronic documents using Adobe's Portable Document Format (PDF). The communications group needs an updated database and interface to quickly and easily catalogue and deliver these documents to the public through the Southern Research Station website
- Thomas V. Frye Telephony Functionality for the 28th Judicial District Bar Association: The client often has formal legally mandated communications as well as less formal notices that must be sent to particular parties. The client wishes to be able to use their website to send requires messages, informal notices, and alerts to key parties. One method the client desires is to deliver messages by telephone, and this is to be accomplished with telephone, these messages are to be generated both by voice recording and automatically from stored information, possibly utilizing text-to-voice software.
- Ben Ayers 28th Judicial Bar Web-based Email Application: To create a web-based email program that will allow a user functionality to send messages, and to also received them using a simple interface. This program will be used by the 28th Judicial district Bar Association in Asheville.
- Adam Quilty Updating PARI's Remote Observation System: The purpose of this project was to update the Java code responsible for remotely controlling the radio telescope named Smily. The code was written with the outdated AWT module's limited functionality and has now been updated to Swing functionality at the user's request. This update had to be completed manually and required a thorough understanding of web-based Java applications and the Smiley control mechanism in particular. Increased versatility and aesthetic appeal as well as fixes of minor display bugs were the impetus for this project and have all been achieved successfully through its completion.
- Erin Fisher Bikeways Point of Sale/Inventory System: Design and implement a point of sale/inventory system for Bikeways, a local bicycle shop in Hendersonville, NC. The system will allow the user to received stock into inventory, query inventory, and sell stock from inventory. Bikeways currently have no inventory or point of sale system, other than handwritten. This system will provide a better way for sales and inventory to

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be handled and tracked.

- Thomas W. Dane Implementing a Web-based Calendar Tutorial: Special interest groups and non-profit organizations have a need to communicate to the public via the World Wide Web, when and where the groups events are to take place. Many times these groups are limited in funds and cannot budget consultants or web services but are willing to do it in house.
- Jason Cabe Privacy in Motion, Using Motion Detection to Help Secure Information on a Computer: Employees currently have no means of protecting themselves from "over-the-shoulder" monitoring of their computer monitors. Most employee work environments are set up in such a way that the placement of an employee's computer screen requires that an employee's back be to the entrance of their work area. More often than not an employee will find time in their day to view non-work related web pages and it is at those times that an employee is most vulnerable to a "walk-by," in which a manager observes them processing non-work-related program that they currently may have open, closed or minimized at the slightest detection of a manager behind them using video motion detection.
- Anishia Young SMS: A Server Monitoring System: The role of a network administrator is to monitor the network to make sure that it is running at optimal efficiency. There may be times when the network administrator cannot perform physical performance or trouble shooting tasks of the system. My program plans to solve this problem by using a TCP/IP client server socket program that will alert the network administrator of the status of system resources. Those resources will include but are not limited to CPU, disk space and memory usage.
- Adam Baxter Intercomparison of Model and Observational Data: This project will integrate data from multiple sources into operations for use in quality control, research, and servicing. The ASTEC proposal state that "the NOAA archive has no unified interface or format to access the varied data sources." This project will assist in the development of a unified access to NOAA data through the NOAA Operational Model Archive and Distribution System (NOMADS) and the data produced for use at NEMAC, especially the new North American Regional Reanalysis (NARR), from the Nation Center for Environmental Prediction (NCEP). The NARR data, under this research project, will be inter-compared to upper-air rawinsonde measurements from the Integrated Global Rawinsonde Archive (IGRA) reference quality database just developed at NCDC. The project will demonstrate both the distributed access of this data from an IT at NCDC. The project will demonstrate both the distributed access of this data from an IT perspective, as well as a new scientific perspective, that is, the comparison of two new datasets to identify potential time or observational based temperature dependent biases. At this time there is no maintained way to ingest and access National Weather Service (NWS) required "Service Records Retention System" (SRRS) datasets. These datasets as well as the NARR datasets must be made accessible to MEMAC by further developing the NOMADS interface. To be useable these datasets must be indexed and associates with a control file for use with the Grid Analysis and Display System (GrADS) Data Server (GDS). In doing so format neutral inter-comparisons between IGRA and NARR will be possible. The inter-comparison between the two datasets will provide NCDC with a better understanding of the biases of the systems used to retrieve the data.
- Christopher Thomas Miller Light Stone: I will design and implement an e-commerce website and store front for a small business owner in my hometown. This small business produces all natural soaps, shampoos, body care products, perfume, cologne, and essential oils.
- Justin Belleme AshevilleNow Interactive Web Forum: I have decided to develop an interactive web forum for a website that is called www.AshevilleNow.com. The forum will be completely of my own design, and will implement my own requirements, as well as suggestions from the clients of AshevilleNow. It will include features above and beyond the average web forum. These features include email notifications to clients when a question is left for them, email notification to user when their question has been answered,

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client and administrative logins to monitor questions and edit forum material, and self-monitoring server programs to archive old questions and deactivate flaffes question that may contain vulgar or inappropriate material.

- Nicholas Fisher University of North Carolina at Asheville Web Based Payroll System: This projects objective is to create a payroll system in which both staff and students workers for UNCA can enter their time via the Internet. Thus allowing the department head to easily print off and turn in the hours worked by each employee to the payroll office. The problem now is that the current program was written in 1982 and is outdated. This system would also eliminate the old fill in time sheet used by other departments at UNCA. The major problem with the hand written time sheet is that they can be manipulated and can be easily lost. Also this system would eliminate the chances of fraud that has occurred in the past by people claiming to have worked more hours than they have.
- Bobby Walters SAIM Simple AOL Instant Messenger: With the ever growing popularity of the AOL Instant Messaging (AIM) service someone has yet to create a reliable, feature rich, and aesthetically pleasing console client. The drive behind this project is to create an AIM client that can be run on systems with limited resources without giving up on a clean interface and features.
- Joel Collier Covenant Christian School Website: Covenant Christian School is an elementary through high school which I attended for six years during my early education days. They are a small Christian Classical education Private School located in Columbia, South Carolina and have never been on the cutting edge of technology and just recently in the past three years have received computer to teach a technology class. They also have created a website for increased exposure about their School. It is located at www.covenantcs.org. When the website was initially created several years ago it consisted of only one page with a single picture of the school, the banner, and contact information for the school which was the main office phone number and email address of the Headmaster. In the past two years since the first webpage several ideas have been discussed by the school board about what they want the website to look like and certain functions they wanted it to be equipped with. Two summers ago I created a small test webpage for them to gauge their response to a new website. The only problem which came up was the fact that I would be out of state creating this website since I was in school in Asheville and even though I informed them this was no problem because of the internet, etc they chose not to have me build them the website. Since that time the website has been updated but so do have the ideas for a more functional website. I have been asked to build this newer version and then present it to the board so they can see the finished product instead of a demo which was believed to also be part of the problem two years ago. Part of the new website will include database driven pages for easier updating of web pages instead of the standalone pages which are in place currently. Instead of having people download the forms to enrollment and teachers application I will create a database and submission form for online instant applications and email mailing lists.
- Ryan E. Lawing TruckLogic Computer Program: Harold Scott Trucking is a privately owned business in Leicester, North Carolina. The business has previously been operated in a "shoebox" method, that is, the owner kept all business related information and documents stored in a box. The business is comprised of a delivery system from North Carolina to California. The owner would like a way of keeping track of all business related information, any inventory he might acquire, and International Fuel Tax Agreement (IFTA) records. TruckLogic is my solution to these business problems. TruckLogic in comprised of an Access database and a Visual Basic 6.0 interface. This program allows the user to store information about employees, equipment, customers, and trips, as well as inventory and fuel tax records.
- Karen Elflein Recipe Collection Database: Preserving a family's heritage is essential to maintaining a sense of continuity and a connection with one's own past. Part of any family's heritage is culinary. Over the years grandmothers have passed down hand written recipes to mothers, who have added to the collection, and in turn passed them to their daughters. Cookbooks have also been acquired, contain hundreds of

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recipes some of which are more worthy of consumption than others. With all these disparate sources of culinary yumminess, how does one remember which recipes are fun, which ones are incredibly difficult, which one was grand-mother's favorite, as well as which was mother in law's least favorite? By compiling all this data into one source, not only will the process of recipe research be streamlined, the recipes themselves will be stored in one place and easily accessed. No more trying to translate faded hand written German text before making Christmas cookies and no more insults to mother in law with her least favorite dish all thanks to the convenience of modern technology.

Jason Scheewe

Web Services: A Web Service is a way of integrating Web-based applications using XML and other standards. Web Services allow different applications from different sources to communicate with each other without time consuming custom coding. The Gartner Group writes that Web Services may mean, "a re-thinking of the concept of components" and that Web Services "promise flexibility, dynamism and robust interoperability." In *Web Services: What the future holds*, Syed Simnani writes: Web Services are predicted to be the latest technological changes that will revolutionize business. The concept of Web Services is not currently integrated into the Computer Science curriculum. This project is an investigation of Web Services and a creation and demonstration of Web Services as part of a service oriented architecture (SOA) environment. The goal of this project is to identify the feasibility and practicality of incorporating Web Services demonstrations and labs into the Information Systems curriculum. It also shows how Web Services are used in a loosely coupled service oriented environment.

Brian May

Accumulated observed Precipitation Graphing: The purpose of this project is to expand CDO (Climate Data Online) by developing a system that will make Accumulated Observed Precipitation data available online. This data is calculated using Integrated Surface Hourly (ISH) data. ISH data has recently been made available online from 1901 to present

2006

Scott Embler

Algorithm Visualization: Information compression is a high priority in current and future technologies. Many of the innovations that we use today such as television broadcast, cellular phone service, internet file sharing, and computer multimedia require voluminous data transfers. The need to transmit increasingly large files puts heavy pressures on current compression technology and the people that develop it. This also means that as the rate of information distribution increases there will be further need for better compression algorithms. This is the problem that I wish to examine further in my project. The purpose of this project is to investigate a new data compression algorithm. This is a very broad and difficult goal however, so I do not wish to put myself to the task of developing a complete and efficient algorithm that is ready for public use. Instead I intend to only investigate ways of manipulating data to remove redundancy that have potential to become useful products. My main focus will be to develop an original compression algorithm since I do not wish to synthesize existing techniques together.

Ken Schmidt

MCDC Information Technology Access System ITAS: The National Climatic Data Center (NCDC)'s primary objective is to archive and service from eh archive climatic data gathered from around the world. In support of that objective, their organizational structure has many divisions and branches within those divisions that have specific roles to complete tasks. Each of these branch levels has their own independent mechanism for gathering, tracking, and sharing knowledge. This fact is also true of the organization's IT branch, whose goal is to place, develop, administer, and maintain the hardware and network infrastructure to meet NCDC's needs. It is critical, especially for continuity of operations, that knowledge on procedures, guidelines, and general information on business-related subject matters be retained and shared with current and future employees in the organization. At this time, in the Information Technology Branch alone, there are six knowledge bases that have no interoperability and no mechanism to share information from one knowledge base to another. The six knowledge bases are either based on a flat-file database (infrodesk, sbdesk), MySQL (Cerberus helpdesk and knowledge base), or FoxPro (IT Access System, IT Hardware Inventory). There are justifications for each system to be configured as it is, but primarily each system was developed, it seems, in a vacuum from other systems.

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As needs change or systems grow beyond their original intent or size, those systems are not always updated or migrated to newer designs that better meet current needs.

- Keith Redmon P.A.R.I. Enclosure Encoding Pisgah Astronomical Research Institute: The Pisgah Astronomical Research Institute (PARI) is a non-profit foundation dedicated to providing research and educational access to radio and optical astronomy located in Rosman, NC. At present PARI is in the process of bringing several optical telescopes online, to be accessed over the World Wide Web. The enclosures for the five telescopes include two "roll back" roofs, two "clam type" enclosures and one "swing up" door. All these telescopes are located over five hundred meters from the main control room. A computer in the main control room controls the opening and closing of the telescope enclosures; however, at present there is no encoding of the exact position of the roofs or doors as they open and close. Thus, at present, there is an "open" or "close" signal sent, with no feedback as to the progress of the operation of the roofs or doors. Dr. Denninsion and DR. Castelaz would like to have the position of the roofs and doors encoded such that the position would be known to within two to three centimeters.
- Nathan Kempner AshevilleNow's Exclusive Downtown Attractions Map: I will be working to create an interactive applet for a small yet developing web based company, apathy named AshevilleNow. This company, owned by recent CS graduate Justin Belleme, is a business website dedicated to virtually anyone's edification of everything Asheville and the surrounding area. My contributions to this site will be an interactive map of the greater downtown vicinity, including linked database highlights such as local art galleries or bars. Visual and detailed directions, highlights, media content, and relevant information will be provided inside of this program. These services will be free and offered to anyone worldwide as an informational public service to those interested in learning what makes Asheville special.
- Matthew Collins A Practical Implementation of Reflection Mapping: This project is a demonstration of cube environment mapping for simulation reflection in interactive 3D environments. This application is native to OS X with a complete GUI. It allows for users to open an external file that defines the objects in the world to be rendered. The interface allows for the user to rotate the loaded object in real time displaying the reflected surfaces as defined in the file. It was written in Objective-C++ with Xcode, uses JPEGs as textures, and a scenegraph file format inspired by XML
- Colin Holloway Implementing Web Services in the CEDAR System: My project's purpose was to web-enable the CEDAR system by implementing a web service on a web server and invoking it with the CEDAR client side program. In order to implement and install a web service into the CEDAR System I gained a fundamental understanding of both web services and the CEDAR System. I built the web service for CEDAR using Netbeans 5.0. Netbeans has great support and tutorials for web services built into it. Once built the service was deployed to the Sun Java System Application Server. After successful test, Dr. Brownsmith and I began the process of connecting the web service to both the client and server sides of the CEDAR System.
- Francisco Tomas Online Store - Prepaid Phone Cards: Econvoz.com is the name of the web site store which will sell prepaid phone cards. This web site contains a web application which consists of a shopping cart, an administrator control panel and a user panel. The user will be able to buy a phone card in 3 easy steps: First, the user will be able to search a phone card that is adequate for the user's calling destination. Then the user will be able to add as many phone cards as he/she wants to the shopping cart. When the user is ready to check out, he/she will be able to pay with PayPal and get the pin numbers and 1-800-numbers from the system right away. The user will be able to track the orders that have been made by him/her. Within each order, there will be a link to the card's) information. By doing this the user will be able to look at the pin #s as many times as he wants.
- Andrea Fey Programming in a Robotics simulation Environment: It is my intention to examine the intricacies of programming robots in a three-dimensional simulated environment. Robots receive a stream of

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information from the environment: information about other objects in the environment, boundaries, light intensity, color, other robots, and anything else the robot is programmed and hardwired to assess. Physical interactions must be considered as well, including gravity, friction, kinematics, and the mechanics of collisions. This information must be processed by the robot's brain to make decisions without external influence. The purpose of this project is to study the intricacies of robotics programming using cross-platform software which has multiple simulation environments available.

Justin Hyatt

CEAR and its Middleware Integration: Middleware is a successful technology in the business environment that allows companies to introduce flexibility into their business models and integrate multiple systems. This technology solves problems of communication between legacy applications and new applications by transforming data into a standard format. The purpose of this project is to research and develop a middleware solution for the Clustered Environmental Data Archive (CEDAR). CEDAR is operating not in a business environment but a science-based environment and runs large amounts of queries on extremely large data sources. Integrating it with a middleware component will allow extensibility of the current system. It will allow multiple data sources to be queried at once and allow transaction processing across distributed applications all because of a built-in rules engine that directs data and notifications based on states.

J. Christopher
Gibbs

ARC Valve Sizing Web Application: Tyco Valves & Controls produces various pressure relief and control valves for industrial use. These valves are primarily used to insure the protection of lives and property. An Automatic Recirculation (ARC) Valve is a valve that is designed to protect property in the form of a pump. The concept is that when a downstream process is stopped. The ARC valve will automatically redirect flow of a fluid into a reservoir to allow a pump to continue to operate. If the flow was not redirected, the pump would eventually "Dead-head" and be unable to push fluid into the process line causing damage to the pump. Determining the correct valve in order to properly size and select a valve. Since many consumers of this product do not have engineering degrees, and because internal engineering resources are limited, many potential customers choose to do business with competitors that have software applications that help them to size and select the proper valve for their application.

Mead P. Walker

Asheville Thermoform Plastics Pricing and Quoting: Asheville Thermoform Plastics is a small manufacturing company located in Fletcher, NC that produces a variety of thermoformed plastic products. As of right now for every customer, new or existing, when a new product is ordered only one person in the company, the owner, is able to give the customer a quote. The owner would like an application that will allow anyone in the company to generate a quote for a customer.

Jason Baronciani

HourKeeper: Payroll systems are widely available to individuals and corporations for purchase and free use. Very few of these packages address many of the unique needs of independently contracted software developers. I propose to develop a software application that is widely available to these developers, which address the unique situations that it must be used in, such as the ability to access the system from anywhere, as well as to have multiple, projects and employers in the same interface. This application will be available in a web interface and new designed for both employers and employee's needs. The application will offer detailed reporting of hours and work done on projects, as well as the ability for a user to work for more than one employer without having multiple payroll systems. Being available on the internet they system will require some security measures to be in place, a simple username/password system will be used.

Steven Anthony

Marching Cubes Implementation in a Mac OS X Native Application: The field of computer graphics is becoming an increasingly important and influential part of computer science. Many techniques are used in computer graphics to create the image that is most suited for its purpose. The Marching Cubes algorithm is over of the most famous algorithms used in scientific visualization. This algorithm, which was first described by Harvey Cline and Bill Lorensen, is used to create a surface model from serial section. While this algorithm has been discussed in my classes, we did not implement the algorithm. The

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Marching Cubes algorithm is included in the Association of Computing machinery's juried publication of the forty-eight most important papers in Computer Graphics, Seminal Graphics: Pioneering Efforts That Shaped The Field, edited by Rosalee Wolfe. Unlike many famous algorithms, quick sort for example, the marching cubes algorithm implementation is not easily examinable. I would like to develop an application with an easy to use graphical user interface that implements the marching cubes algorithm. This application will be aimed towards an audience that is knowledgeable with the medical purposes of reconstructing an image from data slices. The application would allow the user to easily load the slides in, create a 3D model from them, and be able to easily manipulate this model. Features that the application will include are: Importing of multiple slides, Data preprocessing of the slides, Automatic reconstruction (changes will be immediate and noticeable), Zooming, rotation, and slicing of the 3D model.

Ethan Shepherd

Software Implementation of Die Siedler von Catan Robot Race - A Robo Rally Implementation in Java: This program is an implementation of the Wizards of the Coast board game RoboRally. The goal of the game is to navigate the dangerous factory floor in order to tag the two flags, and the first player to accomplish this is the winner. Players face obstacles on the board – in the form of conveyor belts, pits and rotators - an in the other players, both by being shot at and by being pushed off course. Players must plan carefully, as they are allowed only limited movement options each turn, and these become even more restricted as the robots take damage. Robot Race was written in Java using the Net Beans IDE. It imports .jpg and .png files for use as graphical elements, and reads a text file for board configuration.

Thomas Ryan
Burlison

Gallery On Demand: Gallery on demand is a photo sharing web application designed to make the process of sharing libraries of digital images fast and easy. Once an account has been created users are allowed to upload, group into galleries, comment, and rate their digital images. They then can give their username to friends and family allowing them to view their galleries. Incorporating a "drag and drop" system, creating galleries, and grouping images together can be done with ease. The application also supports several query options, allowing users to query images by date, search captions for keywords, or view by rating allowing easy access to images which user want to mark as their favorites.

Tom Fredrickson

I-WayInfo Mobile 2007, A Web Application for Mobile Devices: The owner of Oodena Zem, inc. asked me to develop a web application based on their existing product, I-WayInfo, which is currently a Palm Pilot application. This software provides interstate exit information within the United States for travelers in the forty-eight contiguous states. Additional details about the original product can be found at www.iWayInfo.com. The owner gave me a database containing data for three states and a palm Pilot with I-WayInfo installed. My goal was to develop a web-based proof of concept application with similar functionality to I-WayInfo. As a proof of concept, this project was designed to work on a limited set of mobile devices with the intent of adding support for more devices in the future. The web pages are written with XHTML BASIC to ensure compatibility with the greatest number of devices. Testing was performed using emulators provided by Microsoft for the 2003 Smartphone and the Mobile 5.0 Pocket PC. In the end, the customer is happy with the results and wishes to pursue further development. I am looking forward to seeing this project develop into a product.

Hui Te "Brian" Lee

Geometric Visualization: 1-D, 2-D, and 3-D Objects with Computer Graphics: I am a math tutor and I have found out that students do not like geometry, trigonometry, and calculus. Also, they do not know the geometric shapes well. So, they cannot figure out the line equation $y=mx+b$, nor even how to define slope = y/x . Therefore, I would like to use my senior project to create a geometry program. I have immersed myself in Eastern and Western culture and education, so I have two different philosophies to help me search for the right way to help my students and my program. The strategy for my program is a simple, easy and fun way to learn geometric shapes, and I would like my students to enjoy learning math. My program will use a mouse and keyboard to input function. The keyboard will be used to choose colors or clear the drawing. The mouse is used for drawing. The Geometry Visualization: 1-D, 2-D, and 3-D Objects with Computer Graphics was written in Python and Pygame. Python is free, open source, and

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easy to use. Python scripts are portables across many platforms, all major Unix systems, Linux, Windows 95/98, Windows NT, and MacOS.

Eric St.Clair **The Universal Photo Editor:** The Universal Photo Editor is an image editing program created with those unaccustomed to image editing in mind. The program's interface is designed to be both intuitive and easy to use. After being loaded, an image can be rotated, flipped or cropped. The program includes tools to blur and sharpen an image to enhance the image's appearance. A customizable 3x3 image processing kernel is provided for more advanced users. The user can display a histogram of the image's color channels anytime during the editing process. When finished, the user can save the image in a format of the user's choice. All interfaces were designed so that new features could be added easily in future versions of the program. This application was created using the Java programming language so that it can be installed on any computer that supports java applications.

Kenneth Roberts **MediaWiki Intranet System for ENC Project Team:** The Eastern Forest Threat Assessment Center is an organization dedicated to providing science and technology for early detection and assessment of environmental threats. EFETAC recently began a project with the purpose of developing an information system that would use existing environmental data to aid in the early detection of threats to forests. The EFETAC project team, operating under James Fox and Karin Lichtenstein, is faced with the need to organize, categorize, index, and search through information relating to the risks threatening forests in the Eastern United States. In addition, the project team needs to be able to add to, update, delete, and view this data, and this data also needs to be viewable by other key groups and individuals. These needs are complicated by a couple factors. First, the paths leading to these data sources are often times disconnected or simply hard to follow. Secondly, the information the team is seeking is often times incongruent; that is, it comes from a wide variety of sources and is composed of differing data types.

2007

Daniel Robinson **Valence, A Tool for Interactive 3-D Software Visualization:** Programmers Responsible for software testing, maintenance, and quality assurance must understand the target program's structure and the ways in which its many pieces interact with each other and with the outside world. This is a difficult task, and often the programmer can attain this understanding only by reading thousands of line of source code. The field of software visualization aims to facilitate program comprehension by providing programmers with visual representations of the structure of the programs they develop and maintain. The speaker has developed a program for creating such visualizations, and will provide a brief overview and demonstration of this program.

Chad Motsinger **Events Calendar for AshevilleNow.com:** I will be creating an interactive events calendar for AshevilleNow.com. The calendar will be featured on the home page and will allow users to efficiently query the events database. These database queries will be by date and category, as well as other criteria, such as venue, price, etc. The design will implement the best features of other local and regional calendars. This event calendar will be a public service to locals and visitors of Asheville. It will also be a free service to venues. The final product will implement a simple interface for venues to upload events.

Christopher McGee **CRM for CSC: Creation and Implementation of a Customer Management System:** Currently, the technician staff of the small computer repair shop Charlotte Street Computers has a very unstructured and disorganized method of keeping track of customer data, including what the status of any given customer's computer is. When a customer calls the shop, one must try to find that customer on an ill kept shared spreadsheet and then hunt around the repair stations for that computer, often not knowing where the machine is or how far along any given machine is in the repair process. This often creates confusion and results in a degraded level of service. The project that I proposed will provide the technicians with information about the customer and the status of any machine which may reside in the shop associated with that customer upon request and whenever a customer calls. The main user will be the technicians; however the management staff will have access to the system as well. The project will

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also provide a more reliable and usable method for updating the customer and machine information and for the management of repair tickets.

Andrew
Buddenberg

Sherpa, Client-side Inventory Management Application: The purpose of this project is to provide Biblio Inc. with a client-side inventory management system that they can, in turn, offer to their customers as a free download. Biblio's principle business is aggregating "For Sale" listings of new, used, and rare books from thousands of booksellers around the world. Booksellers post their listing on biblio.com where a larger group of book buyers browse for items of interest. When a sale is made, Biblio Inc. handles the logistics of shipping and ensuring the prompt receipt of both goods and money for both the buy and the seller. For this service, Biblio charges a commission. Currently, booksellers use a variety of third party applications to manage their individual inventories, including some applications provided by Biblio's competitors and things like Microsoft Excel. Customers are required to export the data from their application of choice and upload the file via FTP. This process puts Biblio at a disadvantage in many ways: first, the loss of brand identification by using competitors' products negatively affects Biblio's marketing efforts; second, new and less technically-oriented users often have difficulty exporting and FTPing data to Biblio; third, Biblio's competitors often feel the need to change the file format of their applications with predictable results. This project intends to remedy these issues by integrating file generation and transmission into a simple, wizard-like dialog available to the user from within the program. This project also aims to implement a default Biblio file format.

Chen Chen

A System for Updating Time-based Database Data: The Eastern Forest Environmental Threat Assessment Center (EFETAC) and the National Environmental Modeling and Analysis Center (NEMAC) Collaborative (ENC) have undertaken a project involving the design and implementation of a large database of text, maps, and images related to forest threats. Some of this information is time-sensitive in that it becomes obsolete and needs to be reloaded from Forest Service Web servers. A manual system for keeping the database current is not practical due to the large volume of data anticipated. An automated system for detecting obsolete data and obtaining updates is described.

Paul Jolly

McDowell County Rescue Squad Project: McDowell County Rescue Squad is without a web page and functional database; both are a basic need for any company or organization in today's world. These two programs can both promote and monitor this organization's needs, with the convenience of modern technology. The McDowell County Rescue Squad has been an organization since 1959. The organization has 50 volunteer members except for one full-time member. To help promote McDowell County Rescue Squad and give members access to the squad information, they have decided to have a web page built. Also, until now, the tracking of the data was done manually, including monitoring rescue calls, squad expenses, and members' educational classes. I estimated that they could possibly save up to 150 labor hours by me volunteering my time on the project. Creating a database that would facilitate tracking this data, and producing needed information from that database. I agreed to take on the project because of my career goals to learn how to develop a database. For which I can use existing database tools to help small businesses, not necessarily nonprofits, gain the benefits of using databases.

Kyle Anderson

Explore and Discover: This project will consist of a game engine that allows the user to load and play one of many games. A game will consist of a 3D environment, a 3D character model, at least one 3D model of a collectible item, as well as starting positions for the character and collectible. These games can be developed by any party with 3D modeling experience, which will allow the game engine to be adapted to various styles and age-levels of games. Once the game is loaded, the game engine will provide the mechanics for the user to move the character around the environment in search of the collectible.

Charles Lindsay

overlynegative.com: The overarching goal is to create a modern social networking website that caters to people who are quicker to negativity than positivity. This will be achieved by providing the means for users to create topics on which they and other users can "rant." Users will also be able to "tag" rants and leave comments on them. Tags will be used to classify rants and facilitate browsing and searching. A



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simple voting system that allows users to agree or disagree with other users' rants will make it possible to group user by their opinions. Specifically, the central hub of the website will be focused around the topics users are ranting about. Topics with new and highly-rated rants will be prominently displayed, to facilitate finding new content. Selecting a topic shows the list of rants for the topic, each paired with the user who wrote it. Finding a topic one feels strongly about allows one to easily find others who feel strongly about that topic, thus making it easy to find people in agreement on important issues. As with any social networking site, users will of course have a profile page, listing rants they've written. Users will be able to have explicit "friends," and be updated on those friends' rants, but will also be grouped implicitly based on the votes they give other users' rants, allowing another way to find people who share opinions. Thus, the social networking goal of connecting people who have something in common will be achieved. With a little profile information such as geographic location, this allows for users to form particularly relevant communities both on and off-line.