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PROJECTS

Professional

- **MTS to COM+ Conversion** (Suncor Energy Co.)
  - ⋆ AIRTAS - Application for reporting Accident and Incidents on site.
  - ⋆ Required by law to be functional 24x7.
  - ⋆ Three tiered web application with Oracle Backend, MTS Server and an ASP web front-end. Application was initially developed by Microsoft specifically for Suncor Energy Co.
  - ⋆ Application needed to be migrated to a COM+ application due to move from WinNT Server to Win 2000 server.
  - ⋆ Required going through DLLs, modifying MTS specific code and re-compiling DLLs.
  - ⋆ Implemented AIRTAS as a COM+ application by installing Windows 2000 Server and configuring it.
  - ⋆ Installing the recompiled DLLs on the new Server.
  - ⋆ New bugs found in MTS to COM+ conversion and reported to Microsoft
  - ⋆ Communicated with Microsoft Support to debug issue.
- **AIRTAS Admin Tools** (Suncor Energy Co.)
  - ⋆ Admin Tools provide specific users (Safety Reps for different Business Units) to update AIRTAS data and configuration which are not accessible to regular users using the web front.
  - ⋆ After MTS to COM+ conversion, AIRTAS Admin Tools failed to work due to version mismatch.
  - ⋆ Designed and implemented new AIRTAS Admin Tools using COM+ functions (DLLS) in conjunction with ASP to provide easy of use and similar functionality as before.
  - ⋆ Communicated with clients via regular scheduled meetings to confirm that new tools were meeting their standards.

Research

- **RTTPS - Research Project** (UNBC)
  - ⋆ Working on a parameter driven discrete event simulator for real-time transaction processing system (RTTPS).
  - ⋆ Built a front end/GUI (graphical user interface) for the RTTPS.
  - ⋆ Advanced features of the java foundation classes, and in particular the swing library, are employed to deliver a fast, impressive interface which accurately represents the simulation.
  - ⋆ With a variety of controls and feedback in the form of display of the current state of buffer, disk/CPU queues, events, preemption logs and graphs, the process of data analysis has become very manageable and intuitive
  - ⋆ Interface also allows the operator to reconstruct the events while analyzing a system placed under a combination of stresses
  - ⋆ Interface is fully featured with its own implementation of the pluggable look-and-feel with customized components that are mathematically scalable.
- **Mobile Computing** (In Progress - UNBC)*
  - ⋆ Working on a handover protocol for Light Weight Access Point Protocol (LWAPP).
  - ⋆ Studied currently available specifications for LWAPP, IAPP (Inter-Access Point Protocol), and Mobile IP
  - ⋆ Protocol initially created as a research project for CPSC 499 (special topics class)

- ⋆ Protocol supports caching context information for mobile stations at the Access Router Level. Access Points are made to be as light weight (least amount of work done at them) as possible.
- ⋆ Handover protocol created in XML format and then transformed to RFC using XML2RFC tool.
- ⋆ Currently in Internet Draft format and being submitted to IETF.

Academic (University Of Northern British Columbia

- **NCSSS Portal** (In Progress)*
  - ⋆ Re-designed and developed a portal system for NCSSS (Northern Computer Science Student Society)
  - ⋆ Portal provides services such as book buy back, tutoring services, and car pooling services.
  - ⋆ Determined what technologies to use and setup a development environment (apache server, oracle 9i MySQL, Java JSP).
  - ⋆ Setup SMTP host on Linux platform to be used with Java Mail for automatic notifications generated from the system.
  - ⋆ The system required users to register by providing a valid email to which their login info was sent. They could then logon and submit books the wish to sell, locate books they wish to purchase and contact the sellers.
  - ⋆ The system also contains a tutoring service where users can offer and request tutoring services for specific subjects.
  - ⋆ The system also offered car pooling service where users can offer or request for car pooling services.
  - ⋆ System is self maintained and was done as part of Database systems course. Extreme importance was paid to issues such as database constraints and normalization.
- **Database Systems** (Seminar)*
  - ⋆ Built a university result tracking system to keep track of grades of all students for all possible classes.
  - ⋆ Provided functionality such as table viewing, inserting and deleting records, deleting and creating tables, running scripts.
  - ⋆ Oracle 9i and Microsoft Access used as backend databases and Interface developed using Java and Microsoft Access
- **Operating Systems** (Team Project)*
  - ⋆ Studied and modified Nachos software, which simulates a real (Unix based) operating systems using C++.
  - ⋆ Dealt with concurrency issues through locks, conditions, semaphores and monitors.
  - ⋆ Implemented process management, virtual memory and a file system from the base Nachos software provided.
- **Compiler Construction** (Individual Project - In Progress)*
  - ⋆ Implementing a compiler for Prolog, MathML, Java, SQL using C++
  - ⋆ Concepts to be used and implemented are scanning, parsing, semantic analyzing, code generation and code optimization.
- **Network Programming** (Individual Project - In Progress)*
  - ⋆ Implement a client/serer system using C++ that passes messages (varying sizes) amongst each other and computed network latency.
  - ⋆ Develop a N-way talk protocol based on unreliable UDP communications, coupled with synchronization principles.
  - ⋆ Implemented a client/server Report Submission system, using C++ and TCP sockets.

⋆Demo/Code Available upon request.