Alliance

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Our Project

What began as a farfetched idea at the end of our Junior year at Taylor University eventually became our proposed project for our Senior Capstone Project. We spent a lot of time talking, debating, creating concept work, and simply thinking about our idea; when it came time to submit our Senior Capstone Proposals we knew exactly what we wanted to do. We wanted to build a video game, but not just any video game. We wanted to create a game that we could share with our friends, something that would last and be enjoyed by any number of people. Our video game is a multiplayer, adventure role-playing game (for those who are nerds like us, we wanted to create an MMORPG). Our end goal for our project was to not only allow people to have a character in our game and be able to move their character anywhere in the created environment, but to be able to see others in this environment, chat and interact with them, and even fight alone or together with others against enemies.

A screen shot from our gaming world, players are able to move about and see other players that are logged in.

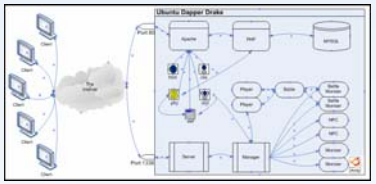
A screen shot from a battle sequence. This sequence shows a single player versus a single monster. In the near future we will be adding functionality that will allow users to group and fight a single monster or a number of monsters as a team.

Challenges

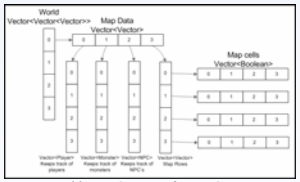
- Having to switch from using C++ to Java as the language our server was written in
- Wasting time implementing ClipsMM and JClips
- Getting art
- Optimizing and rewriting our server and engine

As Taylor Computer Science majors we've taken dozens of classes. What can we do now with all this knowledge we've gained? The answer is obvious; build a video game.

The components of our project consist of a three-piece server, our database, a chat server and the Flash client. Our server was built using Java and not only keeps track of all the users currently logged in, but also tracks all the monsters and NPCs (Non-Player Characters) in every map. The three-piece server includes the front end that waits for connections and hands off connections to the manager, a manager for managing threads, and the threads themselves for each user and individual battle. Our server tracks each map using our multi-Vector data structure that notes all players, monsters , NPCs, and the map itself.



System Architecture



World Data Structure for our Server

Results

For Senior Capstone we completed four of our five preset phases, which includes a persistent world, being able to see other players, and battling. Due to challenges and reworking our system several times to allow for expansion in the future, we simply did not have enough time to finish phase five, allowing people to group and battle together.

The Future

With essentially the infrastructure of a game in place we are planning on putting our game online and allow anyone to create a free account to play. We plan to develop our game over the next months and years and hopefully create an online community where people can come together to play or chat.

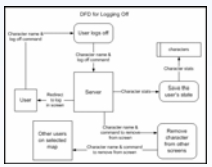
Our Education And Experiences

Software Engineering (COS 340)

In Software Engineering we not only talked about planning projects but also having an appropriate workspace to work in. We took this to heart and claimed the best workstation in the science labs for our project and made it even more comfortable for us to work in. In Software Engineering we also began programming more extensively in Java. We utilized this knowledge to write our server and engine.

Information Systems Analysis (SYS 390)

Using the planning and designing skills we learned in ISA we've been able to schedule certain goals and checkpoints for us to hit and to logically design a database that will serve the purposes of our project.



Information Systems Design (SYS 394)

Using the experience gained from ISD, where we learned how to bring together the several languages to create and manipulate a useful database to store information and poll it for data, we have been able to successfully create a database and scripts using PHP and mySQL that will be used for not only pulling information from our database, but writing, updating and deleting as well.

Knowledge Based Systems (SYS 352)

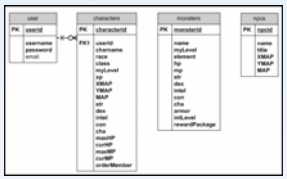
Using the knowledge gained in Knowledge Based Systems we have been able to create a "Gaming Expert System" which is being used for our enemies' intelligence within our battle system. This expert system serves as the decision process for which ability a monster will use.

Data Communications (COS 331)

Taking the knowledge we've learned in Data Communications we have been able to set up a Linux based server with Ubuntu Dapper Drake and write our own networking protocol. We have written our own Java based server for both the environment and the battles. We have also set up an Apache server, a Samba server for file sharing, JClips to handle CLIPS, a mySQL database, phpMyAdmin for database maintenance, and PHP5.

Database Concepts (COS 341)

Using knowledge from Database Concepts we've been able to plan and design a database that will be able to enable our environment to have a persistent state.



Human Computer Interaction (COS 314)

Using our knowledge from HCI we have been able to analyze our needs and create a useful and intuitive interface. Our interfaces hope to not only be aesthetically pleasing but easy to use and understand.

Interactive Application Development (COS 264)

Using our knowledge from IAD we have been able to create a multitude of PHP scripts that are used to bridge Flash and our database. PHP is being utilized for all of our login scripts and database manipulation outside of Flash.

The desire to pursue further education outside of the classroom

Our desire to continue our learning outside of the classroom has led us to learn to use the program Macromedia Flash and its primary scripting language, Actionscript.