

Web-Accessible Role-Playing Tool (WARPT)

By

Jeff Teague
Steve Mitchell

Submitted to
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in Partial Fulfillment of the Requirements for
the Degree of Bachelor of Science
in Information Engineering Technology

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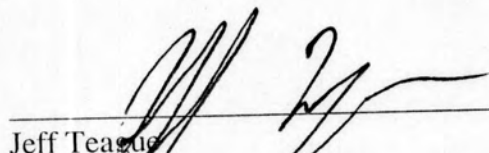
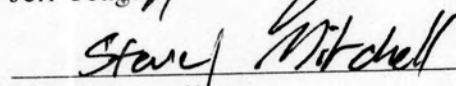
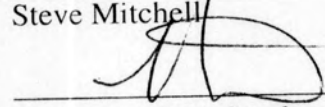
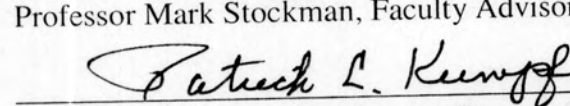
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Abstract

Current Play-by-E-Mail (PBeM) systems are little more than a message board and offer their customers little functionality related to the game which they serve. The Web-Accessible Role-Playing Tool (WARPT), a Web-based tool designed with a Dungeon Master (DM) for Dungeon and Dragons (D&D) version 3.5 (v3.5) in mind, exploits this unrealized opportunity as it relates to online asynchronous role-playing games (RPGs). Using PHP 4.1, JavaScript, and HTML web programming languages, tied with a MySQL 4.1 database backend, we intend to provide a message system with the added benefit of incorporating common D&D v3.5 rules for enhanced asynchronous game play.

Web-Accessible Role-Playing Tool (WARPT)

1. Product Description and Intended Use

RPGs are games where players assume the roles of characters and act out fantastical adventures, the outcomes of which are partially determined by chance, as by the roll of dice. What now is Wizards of the Coast, Inc.'s (WotC) D&D is the forerunner of all RPGs with nearly four million players worldwide (1).

When WotC assumed control of D&D, the core mechanics of the game were changed considerably. Adopting an easier to understand D20 system as the heart of its 3.0 editions of *Player's Handbook*, *Monsters Manual*, and *Dungeon Master Guide* (now known as Core Rulebooks) in 2000 (2), WotC has attempted to create a long-term commercial market for the system by applying pressure to other companies to adopt the standardized system like Microsoft did with its products (3). The attempt at standardization is working, as several companies have adopted the D20 system as their core system and are currently modifying it to suit their needs.

D&D's D20 system tracks character abilities, hit points, saves, equipment, skills, and many other character traits. The system quantifies these traits to develop guidelines that define how a character can react in any given situation. A DM sets benchmarks that these actions have to meet in order for the character to succeed or fail. This allows the

user to take the steps in creating a character's background through creating its ability to adventure.

D&D, played asynchronously, is little different than a typical table top game. A DM, the person who controls the game, e-mails the story to all of the players instead of speaking it aloud. The player then replies to the e-mail with the actions that his or her particular character would perform. The DM would read through all of the replies of the players, discern the quantifiable character actions and their results, and use them to add progression to the story. All dice rolls or "check" would be manually recorded in the e-mail pending the DM requirement.

Currently, players wishing to play and run D&D RPGs asynchronously find message boards, address books, and snail mail as their only means of communicating. Players flock to sites like Yahoo! and MSN where they find their messages archived and distributed to members of the groups.

The systems currently used by asynchronous gamers are crude and have significant potential to be improved. Much of the game-specific information has to be obtained elsewhere, an arduous task for DMs who don't have time for normal tabletop games. WARPT puts the rules of the game as well as character-specific data at the fingertips of the DM for easy use, with the system automatically resolving common actions and providing data necessary for advancing the story.

2. Solution

2.1 Project Design

WARPT will be created using three of the five areas specified for Senior Design projects. Database design, web programming, and multimedia production are the areas that WARPT will utilize in order to deliver its functionality to its clients.

2.1.1 Database

The database portion of the project will utilize My Structured Query Language (MySQL) 4.1 for a cost-effective relational database. This database will be accessible and updateable by the Administrator of the website.

2.1.2 Web programming

Several web programming languages will be used to define WARPT. PHP Hypertext Preprocessor (PHP) 4.1 will be used in calculations and to populate the pages with Hypertext Markup Language (HTML) and JavaScript code. JavaScript will be used in conjunction with PHP and HTML to provide data validation, user control, and navigation control.

Using PHP 4.1, JavaScript, and HTML to define the navigation, security, and interface of WARPT, the cost of the program will be kept at a minimum and therefore increase the possible profit margin. The web program will be hosted on

the server, allowing maintenance and changes to be quick, easy, and transparent to the DMs, Players and Lurkers.

2.1.3 Multimedia

The multimedia section of the project will be addressed through the map scratchpad utility. The DMs, Players, and Lurkers will have a graphical object to interface and coordinate game data. This will enable Lurkers, Players, and DMs to visualize the game play of this otherwise story-based game.

2.2 User Roles

The Web pages are divided between four user roles of the WARPT application. All user roles must have to have basic computer skills and complete knowledge contained within D&D v3.5 core rulebooks. The Administrator role will have full access to each portion of the program. The DM role will have partial control over specific portions of the application related to the game which they are moderating. The Player role will have rights to view and update their own character sheets and to reply to the messages posted in forums which they are members or otherwise given rights. The Lurker role cannot access character sheets and can only post or reply in forums to which they are given access.

2.2.1 Administrator Role

The Administrator will administrate the site. In addition to being capable to serve as a DM, the Administrator will control the site through location, player, and other administration.

2.2.1.1 Location Administration

In the location administration section of WARPT, only the Administrator will be able to do the following:

- Create Game
- Delete Game
- Pruning Posts

2.2.1.2 Player Administration

In the player administration section of WARPT, the Administrator will be able to do the following:

- Ban Control
- Disallow Names
- Ranks

2.2.1.3 Other Administration

Some of the other administrative options available to the administrator are:

- Backup Database
- WARPT Configuration
- Mass Email
- Restore Database

- Skills
- Word Censors

2.2.2 DM Role

The DM will serve as the moderator of a game. The DM will control the site through location, group, player, message, game, and character administration

2.2.2.1 Location Administration

In the location administration section of WARPT, the DM will be able to do the following:

- Create Location

2.2.2.2 Group Administration

In the group administration section of WARPT, the DM will be able to do the following:

- Create Groups
- Edit Groups
- Change DM
- Delete Groups

2.2.2.3 Player Administration

In the player administration section of WARPT, the DM will be able to do the following:

- Edit Players
- Delete Players

2.2.2.4 Message Administration

In the message administration section of WARPT, the DM will be able to do the following:

- Edit Messages
- Remove Messages
- Create Messages
- Reply to Messages

2.2.2.5 Game Administration

In the game administration section of WARPT, the DM will be able to do the following:

- Treasure Generation
- Map Scratch Pad
- Dice Roller
- DM Parsing Tool

2.2.2.6 Character Administration

In the character administration section of WARPT, the DM will be able to do the following:

- NPC Generation
- NPC Level-Up
- PC Viewing
- PC Editing

2.2.3 Player Role

The Player will server as the just a user to the site. The Player will control there game experience through message management, game management, and character management

2.2.3.1 Message Management

In the message management section of WARPT, the Player will be able to do the following:

- Reply to Messages
- And Various Game Management Functions

2.2.3.2 Game Management

In the game management section of WARPT, the Player will be able to do the following:

- Map Modifications

2.2.3.3 Character Management

In the character management section of WARPT, the Player will be able to do the following:

- PC Generation
- PC Level-Up
- PC Viewing

2.2.4 Lurker Role

The Lurker is nothing more than a guest to the site. They can only view the posts that are created. The Lurker controls their game experience through message management.

2.2.4.1 Message Management

In the message management section of WARPT, the Player will be able to do the following:

- View Message Post

2.3 WARPT Design Details

The flow of WARPT is detailed in the following drawings:

2.3.1 Use Case Diagram

The use case diagram shows the top level user roles information flow through the Web-Accessible Role-Playing Tool.

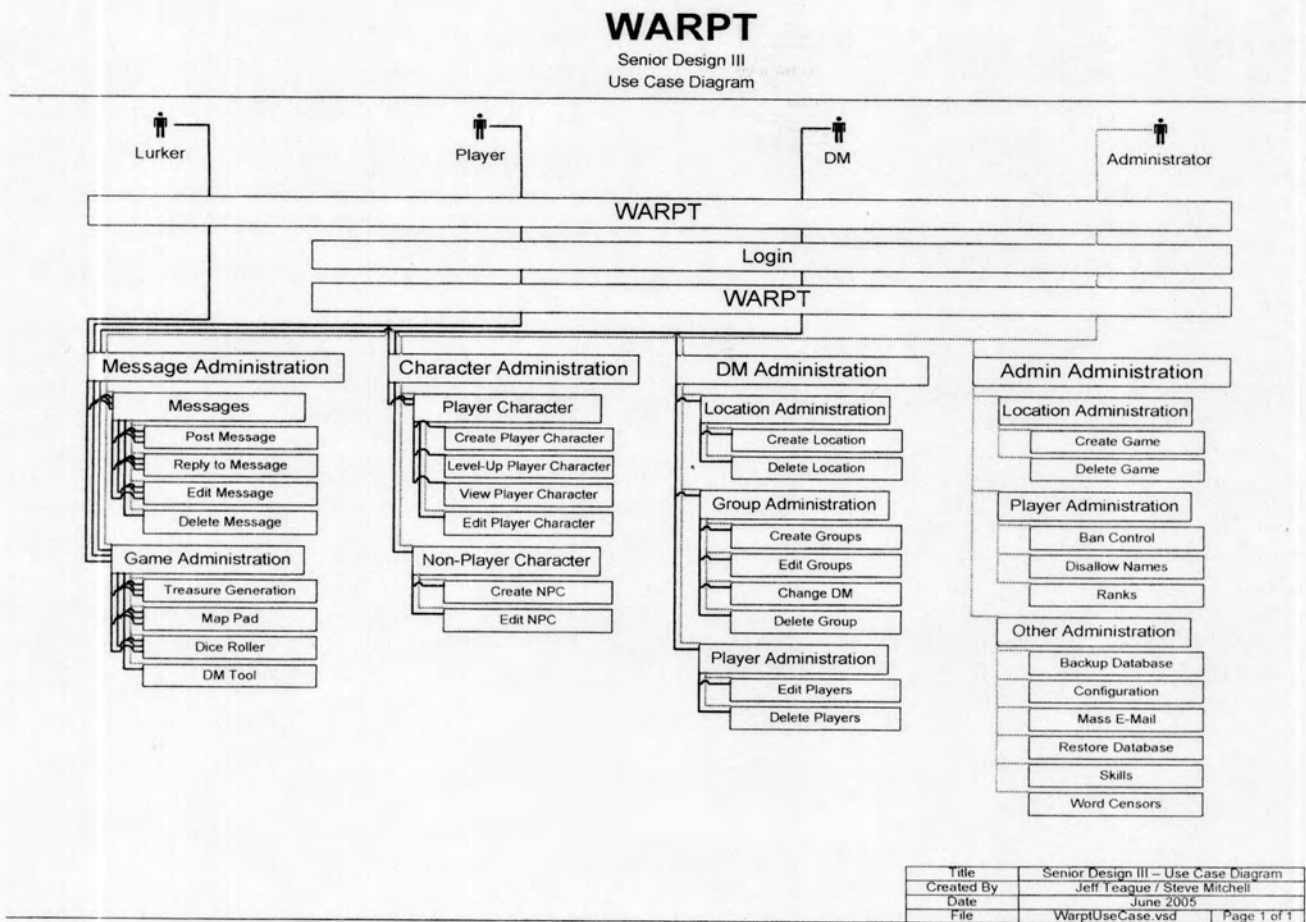


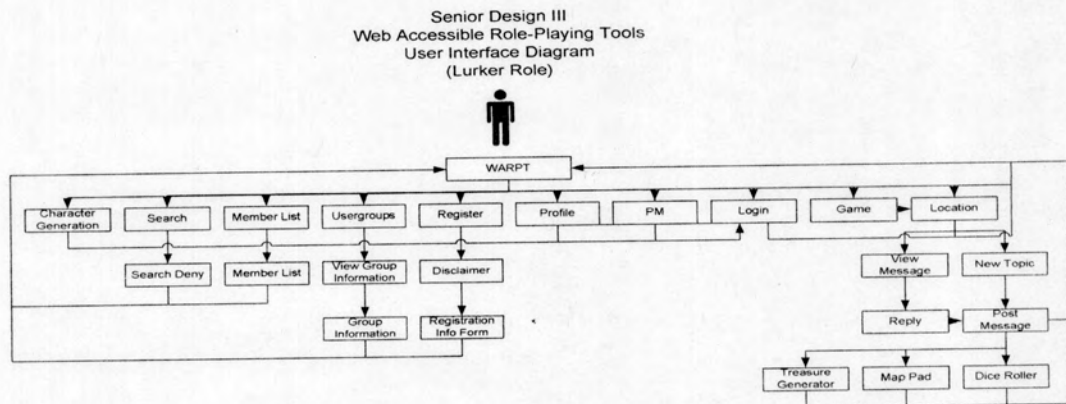
Figure 1. Use Case Diagram2.3.2 User Interface

The user interface details the schedule information flow for the three different user roles.

- Lurker
- Player
- Game Master

2.3.2.1 Lurker Role

A lurker can view and navigate through messages as well as viewing the map of the current combat scenario.

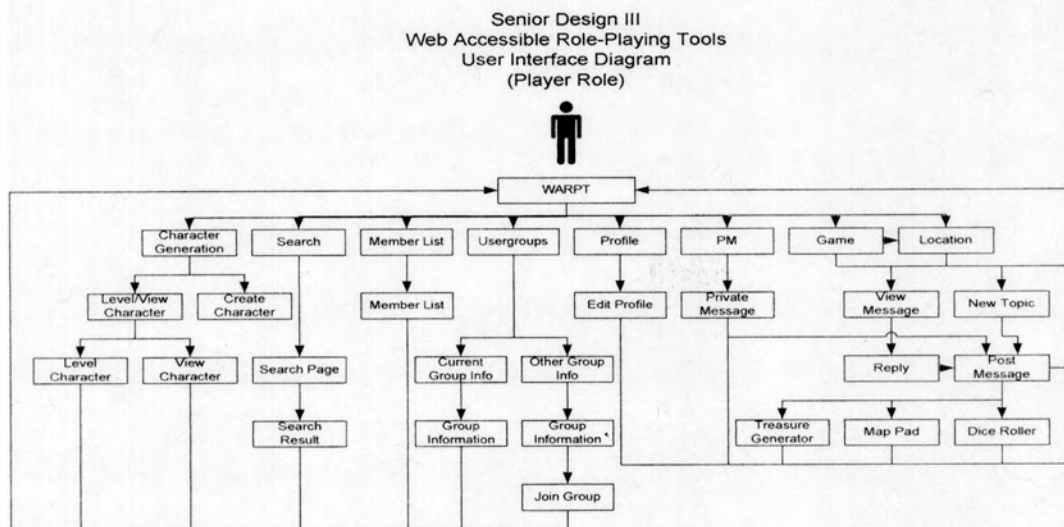


Title	Senior Design III – User Interface Diagram (Lurker)
Created By	Jeff Teague / Steve Mitchell
Date	June 2005
File	User Interface Diagram vsd Page 1 of 4

Figure 2. Lurker User Interface Diagram

2.3.2.2 Player Role

The player can do everything a lurker can do. They can also access the character portion of WARPT which will allow them to create a character, level-up a character, or view a character depending upon their current status. Additionally, the player can respond to posts and use the game-specific and map-specific data in their reply posts.

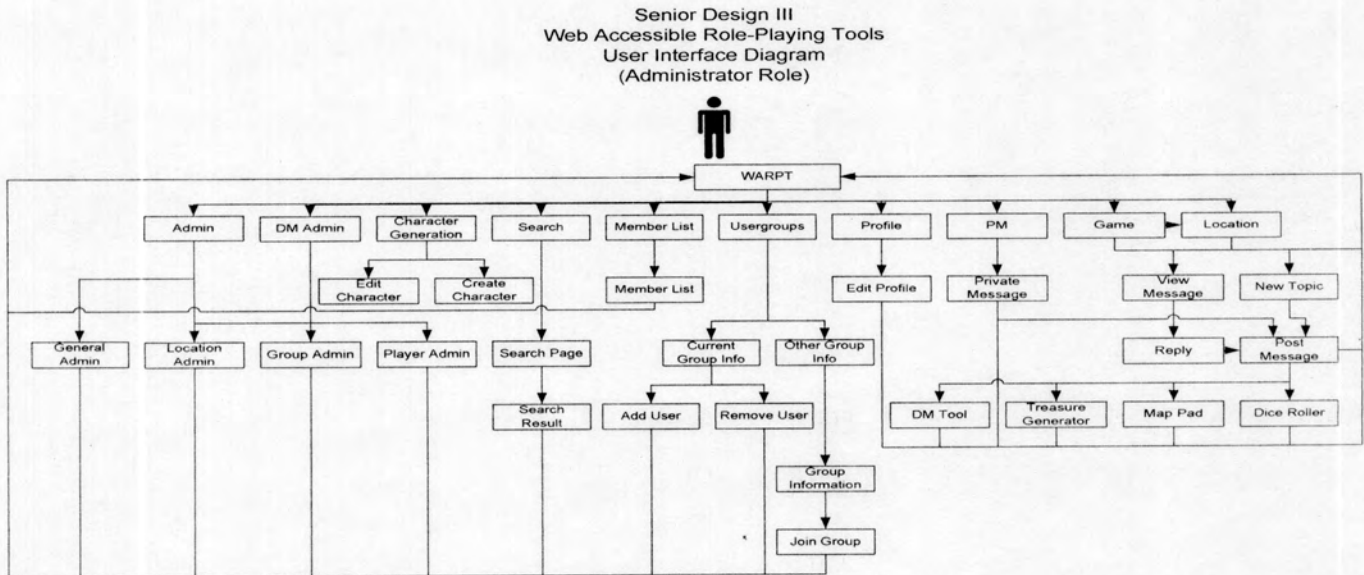


Title	Senior Design III – User Interface Diagram (Player)
Created By	Jeff Teague / Steve Mitchell
Date	June 2005
File	User Interface Diagram vsd Page 2 of 4

Figure 3. Player User Interface Diagram

2.3.2.3 Dungeon Master Role

The DM can do everything a player can do. Additionally, the DM can edit or delete messages, generate treasure, create and edit the map, manage NPCs (create, edit, and view), and manage the site through global settings and user management (update, delete, and ban users).

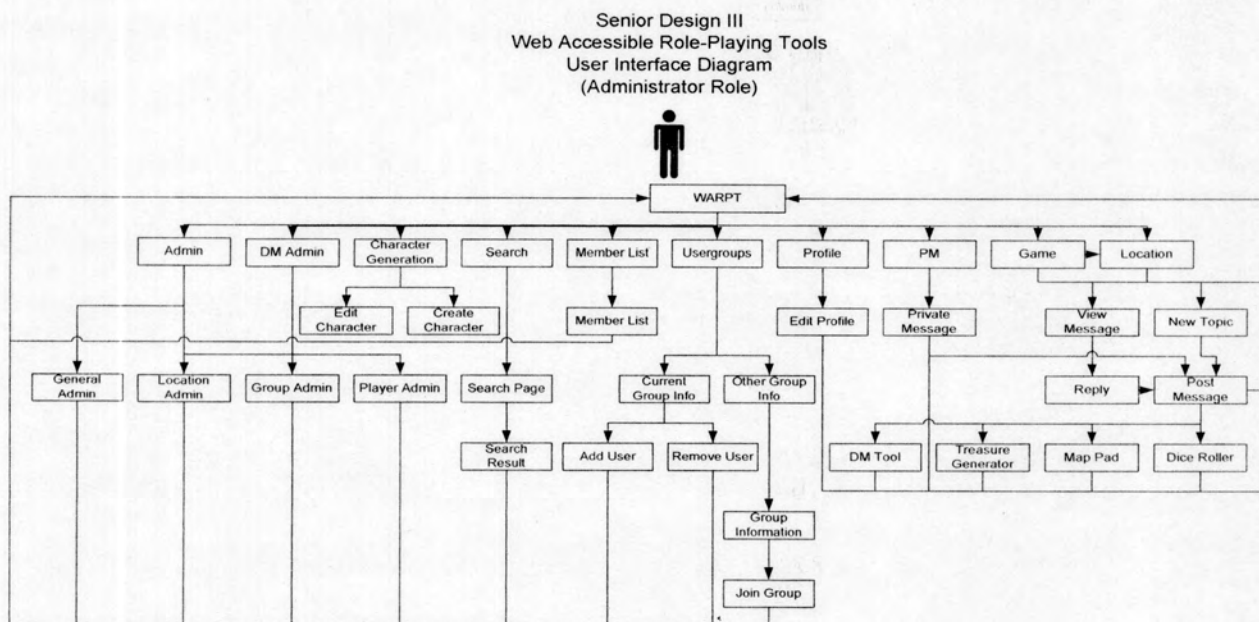


Title	Senior Design III – User Interface Diagram (Admin)
Created By	Jeff Teague / Steve Mitchell
Date	June 2005
File	User Interface Diagram.vsd Page 4 of 4

Figure 4. Dungeon Master User Interface Diagram

2.3.2.4 Administrator Role

The Administrator has all the rights that the DM has. In addition the Administrator controls the configuration of WARPT and is the only user level capable of creating a game.



Title	Senior Design III – User Interface Diagram (Admin)
Created By	Jeff Teague / Steve Mitchell
Date	June 2005
File	User Interface Diagram.vsd Page 4 of 4

Figure 5. Administrator Role User Interface Diagram

3. Deliverables

WARPT will have the following functionality upon its completion:

- Message Board
 - Security – WARPT will provide users with various levels of access as described in the “Solution” section of this document.
- Character Maintenance
 - Character Creation – WARPT will provide functionality that will allow each player to create a single character per game.
 - Level-Up Tool – Both Players and DMs will be able to interface with this tool to allow advancement of characters or NPCs according to established D&D v3.5 rules.
 - NPC Creation – Like the Character Creation, NPC Creation will allow DMs to create NPCs for PCs to interact with, but allowing a single DM to create multiple NPCs.
 - PC and NPC Editor – This functionality will allow for DMs to freely edit portions of PC and NPC information.
- Treasure Generation
 - Functionality of this section will randomly generate treasure for a DM to use with in a game location.
- Dice Roller
 - This function will allow players and DMs to roll single sets of common dice used in D&D v3.5.
- Mapping Tool
 - This tool offers a graphical representation of combat as it relates to PC and NPC location.

- Rules-Based Message Parser
 - Modifying existing code in phpBB we intend to use what was originally a smiley system to provide the basis of our rules based message parser, which parses a post for inline skill calculations and generates a report for the DM.

4. Design and Development

4.1 Budget

The funds for the proposed system will be provided by the development team.

OVERALL BUDGET		Cost
ONE TIME COST		
AMD 3000+, 1GB RAM, 300GB		\$1,200.00
PHP 4.1		0.00
Javascript		0.00
Total		\$1,200.00
YEARLY COST		
Domain Name Registration, No-IP.com		395.40
MYSQL / Server / Year		295.00
Time Warner Road Runner Cable High Speed		299.88
Micorsoft Windows 2003 Sever ENT 64bit, 5CL		4,198.00
Total		\$5,188.28

4.2 Timeline

4.2.1 Senior Design I

4.2.1.1 September 22, 2004 – SDI class begins

4.2.1.2 September 29, 2004 – Group meeting (Decided upon topic and subject focus of the project.)

4.2.1.3 October 10, 2004 – SDI Progress Report I reviewed and signed by Professor Schlemmer

4.2.1.4 October 12, 2004 – Project design started

4.2.1.5 October 13, 2004 – Project abstract created

4.2.1.6 October 19, 2004 – Group meeting (Compared and contrasted possible technologies to be used in project.)

4.2.1.7 October 26, 2004 – Group meeting (Prepared rough draft of proposal.)

4.2.1.8 November 2, 2004 – SDI Proposal Draft submitted to Professor Geonetta,
Group meeting (Further discussed design and technologies.)

4.2.1.9 November 3, 2004 – SDI Progress Report II reviewed and signed by
Professor Schlemmer

4.2.1.10 November 5, 2004 – Group meeting with Professor Wulf (Discussed focus of project and technologies.)

- 4.2.1.11 November 9, 2004 – Group meeting (Decided on utilizing free technologies in project design to increase marketability.), Requested review of proposal rough draft by Dr. Larkin
- 4.2.1.12 November 16, 2004 – Group meeting (Revised proposal rough draft.)
- 4.2.1.13 November 23, 2004 – Group meeting (Prepared proposal presentation.)
- 4.2.1.14 November 30, 2004 – Group meeting (Finalize proposal rough draft and presentation.)
- 4.2.1.15 December 2, 2004 – Present project to faculty
- 4.2.1.16 December 2, 2004 – SDI Proposal submitted to Professor Geonetta
- 4.2.1.17 December 6, 2004 – SDI class ends
- 4.2.2 Senior Design II
 - 4.2.2.1 January 2005 – SDII class begins
 - 4.2.2.2 January 6, 2005 – Group meeting (Database design in MySQL.)
 - 4.2.2.3 January 13, 2005 – Group meeting (Interface design.)
 - 4.2.2.4 January 20, 2005 – Group meeting with Professor Stockman to introduce the project
 - 4.2.2.5 January 27, 2005 – Group meeting (Technical documentation worked out with focus on PHP and MySQL.)
 - 4.2.2.6 February 3, 2005 – Group meeting (Prepared rough draft of design freeze.)

4.2.2.7 February 10, 2005 – Submitted Design Freeze Rough Draft and SDII

Progress Report I to Professor Stockman

4.2.2.8 February 17, 2005 – Group meeting (Discussed message board system.)

4.2.2.9 February 24, 2005 – Group meeting (Discussed user roles and permissions.)

4.2.2.10 March 3, 2005 – Group meeting (Discussed character creation.)

4.2.2.11 March 10, 2005 – Present prototype to faculty and submit Design Freeze
to Professor Humpert

4.2.2.12 March 10, 2005 – SDII class ends

4.2.3 Senior Design III

4.2.3.1 March 31, 2005 – SDIII class begins

4.2.3.2 March 2005 to June 2005 – Create and test working project

4.2.3.3 June 2005 – Present project to faculty

4.2.3.4 June 2005 – Submit final documentation and Lessons Learned to Professor
faculty

4.2.3.5 June 2005 – SDIII class ends

5. Proof of Design

The next section shows in detail how deliverables of the project were fulfilled and what challenges we encountered.

5.1 Web Introduction

Presentation of a website is very important. It is important to have a visually appealing and standardized way to display a site so that users can familiarize themselves with the formatting for ease of use as they use the website. The opening webpage has soft colors and font choices to make for easy reading (See Figure 6).

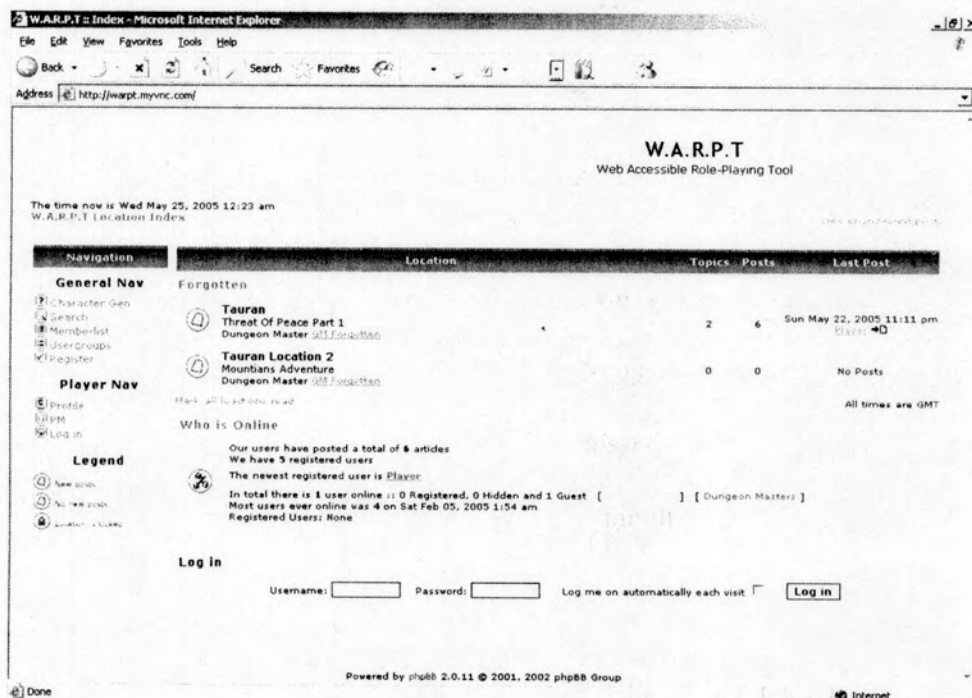


Figure 6. Opening Interface

5.2 PHP User Interface

With the option of using technologies that offer the source code for free we decided to use PHP. This section contains the connection to the database and scripting that requires server-side backend programming which was performed with PHP. We wanted to keep our source code of the interface to be available to the public after the design. We ran across the interface of phpBB, an existing forum template that with heavy modification would work for what we had planned for the beginning of our message board deliverable.

5.3 Message Board Security

The second part of the message board deliverable the development of security. The individual user roles of the message board and there security are specified in User Roles of this document. In the developing of WARPT we decided to use the existing Administration Panel of phpBB (See Figure 7).

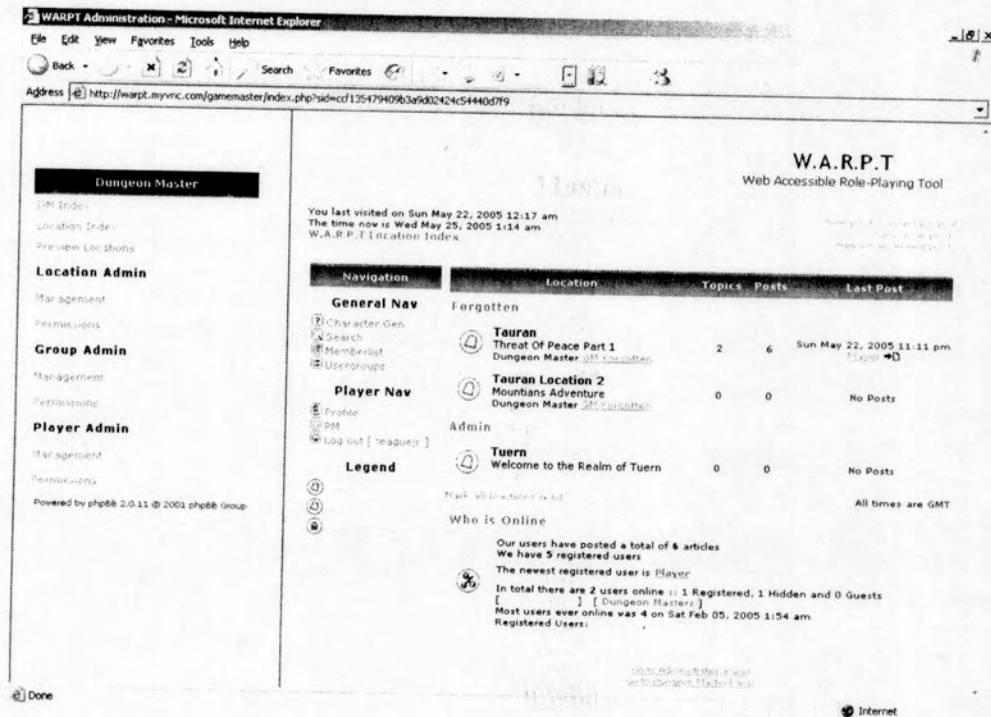


Figure 8. Dungeon Master Panel.

5.4 Character Maintenance

Within D&D the game really revolves around its characters because of this the tools needed for this deliverable are very intensive and have been divided into sections, player character (PC) creation, level-up tool, non-player character (NPC) creation, and PC and NPC editing. All of these functions can be found under the Character Gen link under the General Nav on the main forum. Depending on the role of the user depends on what is displayed under this option (See Figure 9 and Figure 10).

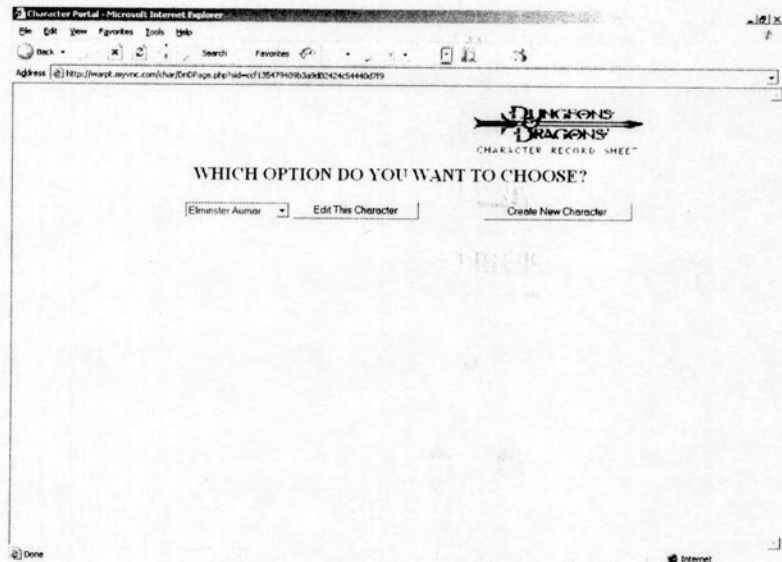


Figure 9. DM Character Gen

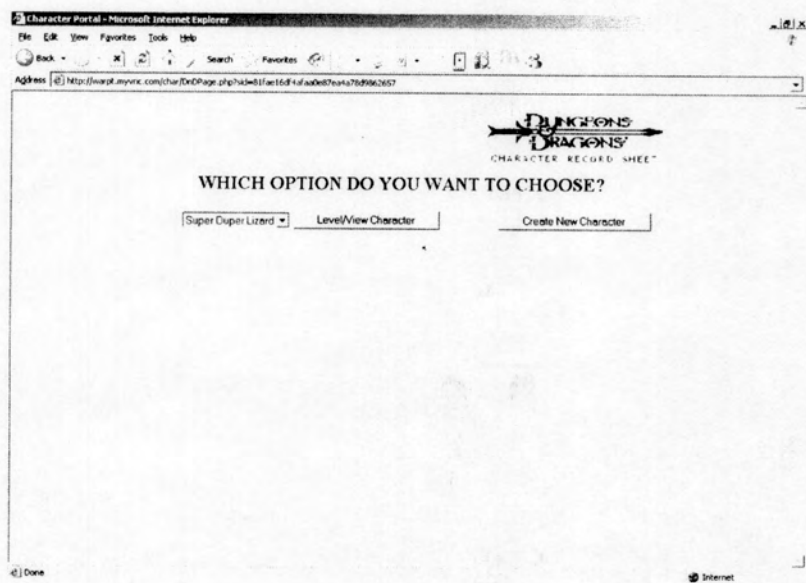


Figure 10. Player Character Gen

5.4.1 Player Character Creation

For this section of the deliverable we will discuss the ability to create a player character (PC). This function is only available to a register user that is not of a DM or Administration status. This forum pulls in the username and an added feature of the forum you will select what game the character is to be created. We developed this section to look just a though a character sheet would if you were not playing D&D online (See Figure 11).

The screenshot shows a web browser window titled "Character Generation - Microsoft Internet Explorer". The address bar displays "http://warpt.mynvnc.com/char/Create/NewChar2.php". The page features a "Dungeons & Dragons" logo and the text "CHARACTER RECORD SHEET". The form includes several input fields and checkboxes for character creation. The attributes section includes STR (Strength), DEX (Dexterity), CON (Constitution), INT (Intelligence), WIS (Wisdom), and CHA (Charisma). The skills section includes FORTITUDE, REFLEX, WILL, BASE ATTACK BONUS, and SPELL RESISTANCE. The skills table has columns for SKILL NAME, KEY, SKILL MOD, ABILITY MOD, and RANK. The form is designed to look like a traditional D&D character sheet.

Figure 11. PC Creation

5.4.2 Level-Up/View Tool

This section is designed for advancing a PC when its experience allows him to. This tool is designed such that if the current experience is greater than your target experience then show the Level-Up tool otherwise just let the player View there character. In the Level-Up function the forum has disabled all of the field that are not allowed to be edited during this process, whereas the View function the entire forum is disabled (See Figure 12 and Figure 13).

Character Generation - Microsoft Internet Explorer

Address: http://warpt.mymc.com/char/Edt/EdtChar2z.php

DUNGEONS & DRAGONS CHARACTER RECORD SHEET

CHARACTER NAME: Fred
 CLASS AND LEVEL: Fighter 1
 RACE: Dragon
 AGE: 19
 SEX: Male
 HEIGHT: 83
 WEIGHT: 199
 COMPLEXION: Blue
 HAIR: Brown
 EYES: Tan
 SKIN: Tan
 ALIGNMENT: Good
 MORALE: Evil
 FAVORITE WEAPON: Trick knee
 FAVORITE ARMOR: AC
 FAVORITE SPELL: 10/silv

STR	DEX	CON	INT	WIS	CHA
31	18	19	10	12	13

HP	AC	TOUCH	INITIATIVE
48	5	10	4

SKILL NAME	KEY ABILITY	SKILL MOD	ABILITY MOD	RANKS	MISC MOD
Acrobatics	DEX	3	0	3	0
Balance	DEX	2	0	2	0
Bushcraft	WIS	0	0	0	0
Climb	STR	2	0	2	0
Concentration	CON	0	0	0	0
Darkvision	CON	0	0	0	0

BASE ATTACK BONUS: 4
 SPELL RESISTANCE: 0

Figure 12. Level-Up Tool

5.4.4 PC and NPC Editing

This section of the deliverables we designed for the users given the access of DM. DMs, because they are in the position of developing the story, may at any point need to edit exiting characters. The DMs Character Gen page is very similar to the Players except they do not need the view function (See Figure 9). Figure 9 also displays all character within the database for the DM rather then just the Player's specific character. The page that follows is similar to the Level-Up tool but allows the DM to edit of the character more on the forum (See Figure 14).

The screenshot shows a web browser window titled "Character Generation - Microsoft Internet Explorer". The address bar displays "http://warpt.mynv.com/char/EditChar2.php". The page content is a "DUNGEONS & DRAGONS CHARACTER RECORD SHEET".

Character Information:

- Class: Fighter 1/ Rogue 2/ Cleric 3/ Wizard 24/
- Race: Human
- Level: 2000
- Age: 6
- Height: 185
- Weight: Brown
- Complexion: White
- Eye Color: Tan

Ability Scores:

- STR: 13
- DEX: 18
- CON: 24
- INT: 27
- WIS: 18
- CHA: 17

Derived Statistics:

- HP: 369
- AC: 18
- TOUCH: 18
- INITIATIVE: 0
- FLAT-FOOTED: 0

Skills Table:

SKILL NAME	PL	SKILL MOD	ADJUST MOD	BONUS	TOTAL MOD
CLIMB	1	0	0	0	1
CLIMB	1	0	0	0	1
CLIMB	1	0	0	0	1
CLIMB	1	0	0	0	1
CLIMB	1	0	0	0	1
CLIMB	1	0	0	0	1
CLIMB	1	0	0	0	1
CLIMB	1	0	0	0	1
CLIMB	1	0	0	0	1
CLIMB	1	0	0	0	1

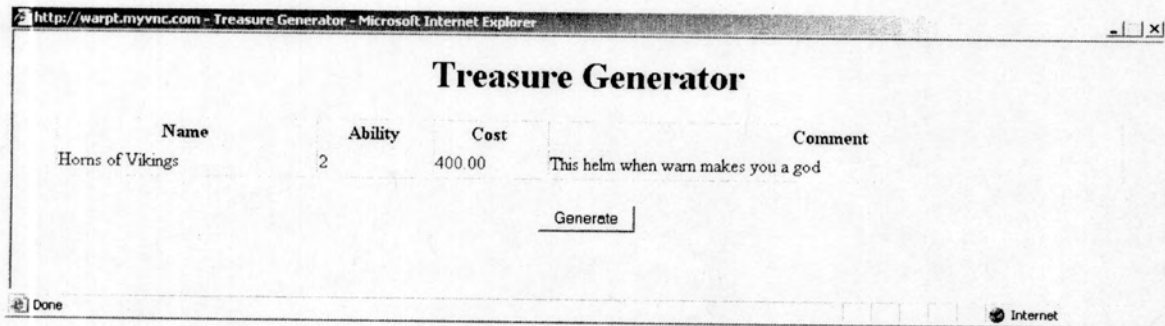
Other Statistics:

- FORTITUDE: 29
- REFLEX: 25
- WILL: 29
- BASE ATTACK BONUS: 39
- SPELL RESISTANCE: 100

Figure 14. PC and NPC Editing

5.4.5 Treasure Generation

This feature of the message board will be accessible by all users but only truly put into use by a DM. Accessible through a new post or reply this feature allows a person to generate a random piece of treasure from the database (See Figure 15).



The screenshot shows a web browser window titled "http://warpl.myvnc.com - Treasure Generator - Microsoft Internet Explorer". The main heading is "Treasure Generator". Below it is a table with four columns: Name, Ability, Cost, and Comment. The table contains one row of data: "Horns of Vikings", "2", "400.00", and "This helm when worn makes you a god". Below the table is a "Generate" button. The status bar at the bottom shows "Done" and "Internet".

Name	Ability	Cost	Comment
Horns of Vikings	2	400.00	This helm when worn makes you a god

Figure 15. Treasure Generation

5.4.6 Dice Roller

Also accessible for all users in a new post or reply this tool allows for a random dice role. Using a PHP random function to generate the numbers, we have include all the standard polyhedral dice (See Figure 16).

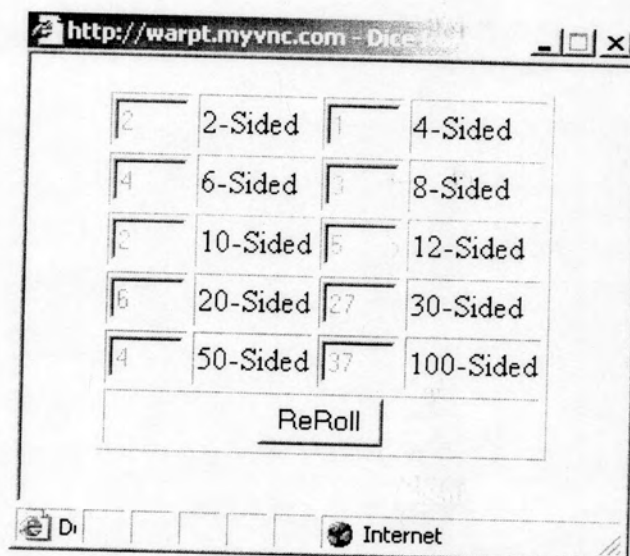


Figure 16. Dice Roller

5.4.7 Map Tool

Being a asynchronous communication and a text based forum, sometime during a game a DM will need to visualize the story that is being created in his or her mind. We created Map Pad, a scratch pad for creating a map to help a DM create a map to offer a graphical representation of combat as it relates to PC and NPC location (See Figure 17).

Figure 18. DM Tool For Rule Base Message Parsing

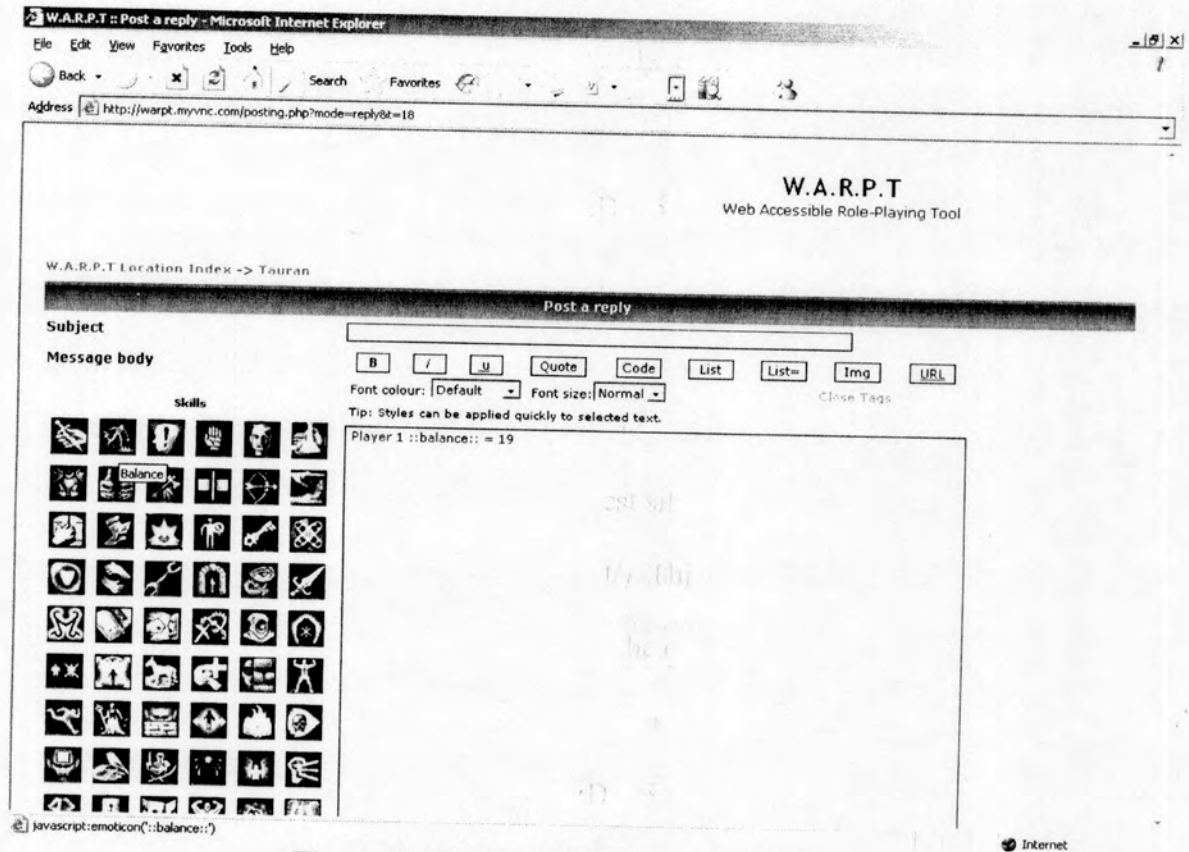


Figure 19. In Line Skill Icon Parsing

6. Testing Procedures

We plan on using the iterative testing model using fellow students unfamiliar with PBeM RPGs and experienced PBeMers through out test site (http://games.groups.yahoo.com/group/PBeM_Project/). This process will begin in week three of the third Senior Design class and continue for the duration of the project.

All of our test subjects must have the following criteria for testing:

- Testers must be fully educated in D&D 3.5.

- Testers must have previous experience with online message boards.

The procedures for testing are as follows:

- Ensure that PHPBB performs as normally expected of a message board.
- Run a game utilizing D&D v3.5, ensuring that the following functionality works as expected:
 - Character management
 - Rules-based posting and resolution

Bugs and enhancements will be reported to the development team through the testing site, e-mail, and other forms of communication.

7. Conclusions and Recommendations

7.1 Conclusions

This is where our conclusions go.

7.2 Recommendations

This is where our recommendations go.

References

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