Senior Project Proposal

ExpsGaming

Experience Gaming

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3. Revision History

Author	Company	Version	Date	File Name	Comments
David Foltz	ExpsGaming	0.1	5/23/2012	Senior Project Proposal.docx	First Draft of the proposal
David Foltz	ExpsGaming	1.0	6/8/2012	Senior Project Proposal.docx	First public version - fixed grammar errors, added items and monsters to functional requirements, and changed some function requirements

4. Signature Page

This document accepted by:

_____   _____

Signature (Calvin Caldwell)   Date

This document submitted by:

_____   6 - 8 - 12

Signature (David Foltz)   Date

5. Table of Contents

6. Introduction

6.1 Overview

The information provided by this document is indented to serve as an overview of the proposed dungeon crawler game *Tower of Endless Stairs*. It is provided as a means to inform the prospective client of the proposed idea and allow for possible implementation, outline revision, and modification of design. It also provides the necessary framework to begin designing software requirements and listing functional requirements.

6.2 Purpose

The purpose of this document is to propose the design and implementation of the *Tower of Endless Stairs*. The following sections and their related subsections are dedicated to explaining the format of this document as well as describing the intended design plans. If this proposal is accepted, this document will provide the necessary documentation to being implementation, as well as a guide to constrain the implementation process.

6.3 Scope

The scope of this document is limited to project management, system general discussion, and a description of the product requirements which will describe in limited detail the intended design features and functionality. This document will not elaborate on specific functionality of modules, or otherwise discrete details that may later be added to the software design specifications.

6.4 Intended Audience

The intended audience of this document is Professor Calvin Caldwell, David Foltz, and any third party, which may review this document out of interest or curiosity of the project.

6.5 References

This section is intentionally left blank.

7. Project Management

7.1 Change Management Procedure

In the event of request of a change of the system the CAT team will be consulted upon the change. The request of change will follow the information provided in section 7.2.

7.2 CAT Team, Time Lines, Documentation

CAT Team - The CAT team will consist of the senior project instructor and me (David Foltz). The team will evaluate the impact that a change will have on the production of the system. Submitted changes can be accepted or rejected by the team with a brief statement to explain why.

Medium – Any changes must first be filled out on the 'Change Form' (Appendix A) by either the instructor or me. No digital versions will be accepted. The form will need to be printed out for each requested change. Two copies must be provided, one for the senior project instructor and one for me.

Response Time – The Change Form will be processed over a period of two to three business days. A response will sent to the e-mail provided on the submitted Change Form.

Impact Analysis – Before a change moves forward, the impact it would have on the project time line will be inspected. If the change will increase the timeline past the maximum time frame it will automatically be denied.

Time Frame – In the case of an accepted change, the time frame will have to be adjusted to fit the change. This may be an increase or decrease in the time frame.

7.3 Software Delivery, Installation and Acceptance Criteria

Software delivery will be distributed to all parties for evaluation. The delivery will include an installation package, written documentation of system requirements, and a Read Me test file with help for the install process while not released. When the system is released it will be accessible from Google Play. Acceptance criteria will be based on the completeness of the above items and acceptable operation of the software provided.

7.4 Documentation and On-Line Help

Software documentation will be available in three formats: paper documentation, program help, and through an on-line website (expsgaming.com). This documentation will describe system requirements, installation process, and the operation of the software described by this document.

7.5 Project Risks

Project risks include the successful operation of the software on a wide variety of android platforms and the available time for the scope of the project. The time scope of this project is very big due to the different android platforms. The target goal will be for cell phones and then tablet androids.

7.6 Customer Responsibilities

The customer is responsible for evaluating the performance of the software and providing necessary feedback for the continuing evolution of the development process. The customer will also provide evaluation in a timely manner before the requested date for feedback.

7.7 Status Reporting

Status reporting will be provided on a bi-weekly basis in a memo format to the senior project professor. The report will include, but not be limited by the following:

- Work done for the two weeks
- Work planned for the following two weeks
- Known issues
- Possible solutions to issues
- Anything else of importance to the project

8. System General Description

8.1 Problem Statement

The problem approached by this project is the growing need for good video games on mobile platforms. The dungeon crawler genre is not very common type on the android and I want to bring this genre to the android. Dungeon crawlers are not a very common game type on the android platform due to the movement limitations the phone provides. It is my goal to revolutionize a new movement method that has not been put into games as far as I can tell.

The project I am proposing will have the player climbing a 'tower of endless stairs' to escape his or her destiny, however the game has no plan for an end (Maybe in a later release). The objective of the game is to be a time spender for the user (player). It is not desired of the player to lose track of time while playing the game, however it is intended for the player to spend free time playing the game to pass time.

8.2 Perspective

8.2.1 History/Background/ Prior Releases

Tower of Endless Stairs was first conceived in 2011 as a project for windows. Two pre-alpha releases were given out to test ideas and functionality of the game. Over the summer of 2011 the project was halted until a new target platform for the game was determined. As it can be noted in this document, the project will be underway once again for the targeted platform of android.

8.2.2 Major Subsystems

The system will be broken down into one major subsystem.

The main system will make use of a subsystem Linux server with a database to host high scores of players for competitive play amongst players. The server system does not affect any aspect of game play and is used for holding statistical information for players.

8.2.3 Relation of System to Existing System(s)

This system will be dependent on the android SDK. The SDK will be necessary to produce the game in order to develop the game on the android platform. The Android SDK requires AVD Manager for emulating the android on the system for debugging purposes.

8.2.4 Hardware Platform Description

- Android Phone or Android Tablet
- Ubuntu Server
  - 700 MHz Processor
  - 512 MB RAM
  - 5 GB of HDD (USB ok)
  - VGA capable of 1024x768 resolution
  - CD/DVD drive OR USA port for install

8.2.5 Software Platform Description

- 4.0 version of Android (Ice Cream Sandwich)
- Ubuntu Server (Version 12.04 LTS)

8.3 Product Requirements

8.3.1 Functional

1) Level layout
  1.1 The levels(floors) shall be grid based
    1.1.1 The grid will be 20 units wide
    1.1.2 The grid will be 20 units long
    1.1.3 The first floor grid will be static
    1.1.4 Floors above first level will be randomly generated
  1.2 There will never be more than 5 monsters on any floor
    1.2.1 Slimes will have a 75% chance to spawn per monster location*
      1.2.1.1 Slimes can spawn on any floor above the first floor
      1.2.1.2 Slime spawns on modulus 25th floor will be of boss quality

1.2.2		Spiders will have a 65% chance to spawn per monster location*
	1.2.2.1	Spiders can spawn on any modulus 3 floors above the first floor
	1.2.2.2	Spider spawn on modulus 25th floor will be of boss quality
1.2.3		Wolfs will have a 50% chance to spawn per monster location*
	1.2.3.1	Wolfs can spawn on any modulus 5 floors above the first floor
	1.2.3.2	Wolf spawns on modulus 25th floor will be of boss quality
1.2.4		Bosses will always spawn on every 25th floor
	1.2.4.1	No other monsters will spawn with a boss on the floor
	1.2.4.2	Boss monsters will have a slight color difference

2) Starting Area

2.1	The first floor will be the starting location
2.2	The first floor will have three stores
2.2.1	Store one will sell armor
2.2.2	Store two will sell weapons
2.2.3	Store three will sell potions
2.2.4	Store inventory will chance according to the player's max floor traveled
2.3	The first floor will have a hospital
2.3.1	The hospital will restore max hit points instantly to the player
2.4	The first floor will have a bank
2.4.1	The bank will store the player's items
2.4.2	The bank storage can be increased with the cost of feathers

3) The Player

3.1	The player will use a stats system
3.1.1	The player will have a raw attack value dependant on level
3.1.2	The player will have a raw defense value dependant on level
3.2	The player will be able to level up
3.2.1	The player will gain experience points by traveling up new floors
3.2.2	The player will gain experience points by slaying monsters
3.2.3	The player will gain one attack point upon leveling
3.2.4	The player will gain one defense point upon leveling
3.2.5	The experience points will reset to 0 upon leveling
3.3	The player will have bag space to hold items
3.3.1	The player will be able to use items from bag
3.3.2	The player will be able to equip items from bag
3.3.3	The player will be able to increase bag space with the cost of feathers

3.4   The player will be able to equip items

     3.4.1   The player will be able to equip a weapon

     3.4.2   The player will be able to equip an armor

     3.4.3   The player will be able to equip a trinket

3.5   The player will have a status screen

     3.5.1   The status screen will display the player's name

     3.5.2   The status screen will display the player's level

     3.5.3   The status screen will display the player's total health

     3.5.4   The status screen will display the player's current health

     3.5.5   The status screen will display the player's total defense modifier

        3.5.5.1   The defense stat will display the equipped armor value

        3.5.5.2   The defense stat will display the player's raw defense value

     3.5.6   The status screen will display the player's total attack modifier

        3.5.6.1   The attack stat will display the equipped weapon value

        3.5.6.2   The attack stat will display the player's raw attack value

     3.5.7   The status screen will display current experience

     3.5.8   The status screen will display how much experience till next level

     3.5.9   The status screen will display accumulative experience gained

3.6   The player will be able to recall from the status screen

3.7   The player will be able to select a floor to teleport to from the status screen

3.8   The player will be able to see what max floor they can teleport to

3.9   The status screen will display total floors traveled

3.10   The status screen will display the highest floor traveled

3.11   The status screen will the player's feathers

     3.11.1   The feathers is a form of currency

3.12   The player will be able to move in 4 different directions

     3.12.1   The player will be able to move north

     3.12.2   The player will be able to move south

     3.12.3   The player will be able to move west

     3.12.4   The player will be able to move east

3.13   The player will automatic climb stairs when move upon them

3.14   The player will attack a monster by trying to move into a monster's space

3.15   The player will be able to loot a monster after it's death

4) Items

4.1		The game will contain 4 different basic items
4.2		The first basic item will be a weapon
	4.2.1	The weapon can be a sword
	4.2.2	The weapon can be a staff
	4.2.3	The weapon can be a knife
	4.2.4	A weapon will have a 35% chance to drop from a monster*
4.3		The second basic item will be an armor
	4.3.1	The armor can be chain mail
	4.3.2	The armor can be leather torso
	4.3.3	The armor can be cloth robe
	4.3.4	An armor will have a 35% chance to drop from a monster*
4.4		The third basic item will be a trinket
	4.4.1	The trinket can be an amulet
	4.4.2	The trinket can be a pendant
	4.4.3	The trinket can be a necklace
	4.4.4	A trinket will have a 30% chance to drop from a monster *
4.5		The fourth basic item will be a potion
	4.5.1	A potion will have different ranks
	4.5.2	A potion will restore health depending on the rank
	4.5.3	A potion's rank will be dependent on the level of the player
	4.5.4	A potion's rank will change when a player levels up

5) Monsters

5.1		The game will have 3 different monsters
5.2		First basic monster will be a Slime
	5.2.1	The Slime's movement pattern will be based on a 2 square radius
		5.2.1.1 The Slime will move towards the player if inside the radius
		5.2.1.2 The Slime will attack the player on turn if adjacent to player
	5.2.2	The Slime will have a 50% chance to drop an item on death*
5.3		Second basic monster will be a Spider
	5.3.1	The Spider's movement pattern will be based on a 5 square radius
		5.3.1.1 The Spider will move towards the player if inside the radius
		5.3.1.2 The Spider will attack the player on turn if adjacent to player
	5.3.2	The Spider will have a 25% chance to drop an item on death*
5.4		Third basic monster will be a Wolf
	5.4.1	The Wolf's movement pattern will be based on a 20 square radius

	5.4.1.1	The Wolf will move towards the player if inside the radius
	5.4.1.2	The Wolf will attack the player on turn if adjacent to player
5.4.2		The Wolf will have a 1% chance to drop an item on death*
5.5		Each monsters will have a boss version of it
5.5.1		Boss monsters will have 0-256 (random) extra stats to it
5.5.2		The extra stats for boss monsters will be affected by the floor number
	5.5.2.1	The max an extra stat can be will be divided by the floor level
5.5.3		Any skipped bosses will give the next encountered boss extra stats
	5.5.3.1	Skipped boss stats will never exceed the 5.5.2.1 requirement
	5.5.3.2	Skipped boss stats will reset back to 0 when a boss is killed
5.5.4		Any extra stats will be added to the attack and defense modifier
5.5.5		Bosses will have a 50% increased drop rate to items

* See the appendix for more information

8.3.2 Performance

Performance will be high quality. A player should be able to flow through the game with little to no loading times, however an initial start-up loading screen may occur to initialize the system. The dependency on the network connection to access a database not located on the phone cannot be evaluated under performance due to a variety of external forces.

8.3.3 Reliability

The reliability of this software will work 98% of the time. Issues that the user may see from the game would be during server backup or maintenance time periods; however it will not impact game play for the user. The downtime period would only prevent players from accessing the score boards.

8.3.4 Interfaces

Software library and module interfaces will include:

- Android SDK
- Ubuntu Server
- MySQL

Hardware Interfaces will include:

- Android Cellphone
- Android Tablet
- Wireless Internet Connection

8.3.5 Data Description

The user's android will include:

- An encrypted file to store game data

Data transports will include:

- MySQL Server transport language

8.3.6 Security/Safety

The player's cell phone information and the player's stats will be transferred over TCP/IP in encrypted packets.

8.3.7 Constrains

The ability to play my game should follow all civil and federal laws with the use of cell phones. (No any person should be playing and driving if it's illegal) Programming the game will follow the use of the android SDK (java) programming language.

8.4 User Profiles

Users of this software will fit one or all of the following descriptions:

- Interest in video games
- Interest in randomly generated games
- Interest in friendly competition

Appendices

*Basic ideas for algorithms in the functional requirement sections such as drop rates and 'random chances' are not exact and is possible to change for fair game play amongst the players. These numbers are provided to give readers a basic idea of how the system will run.

Please see the following attached page for the 'Change Form'.

Change Form

Name (Print): _____

Response E-mail: _____

Request of Change:

Purpose of request of change:

Additional Comments: