Titan Quest

By Cody Ferguson. Sept. 22, 2013 – Report #4

This document is a report, used to convey a proposal for the CSC 493: Senior Projects class. Inside information is provided to give purpose as well as described the fundamental thought process behind the project as well as the process of developing the actual deliverable.

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Purpose #modified 9/22/13

The software to be written is a top-down, adventure role-playing game that will allow for a single player to adventure through a set of dungeons of varying difficulty, fending off enemies and solving puzzles to progress. In context, what the project Titan Quest aims to do is provide an experience that will be both enjoyable and challenging to the player, placing them into an environment that will interact with the player through the interface of gaming.

The primary goals of this project include the following: establishing a gauntlet-type game world that will require ingenuity of the player to complete tasks and generating enough playable content and rewards that there is a drive for the player to commit to playing. The audience of this project can be narrowed down to players that enjoy single player experiences, with puzzles to solve and enemies to fight. In essence, the project is about developing a gaming experience that will treat a player to a rich and challenging game world.

Functionality #modified 9/22/13

Titan Quest is to be written as a top-down, adventure role-playing game. Therefore, this project will have the expected functionality of allowing the user to create an avatar to exist in the game space and then allowing for this avatar to be further customized through an in-game advancement system and reward system.

Milieu #modified 9/22/13

This particular section is under ongoing research, however a well-known example of a similar product would The Legend of Zelda: Ocarina of Time, which is a video game for the Nintendo GameCube, originally for the Nintendo 64 console, and the handheld device Gameboy Advance. In the game, there is a single main character whose goal is to stop a great evil, finding items of ancient lore to aid him. This is very similar because in Titan Quest, the player will have to solve puzzles and fight monsters to stop the Evil Titan at the end of the game.

Novelty #modified 9/22/13

This idea is unfortunately not new in the sense of actual gameplay or functionality. However, Titan Quest is original in that the whole game is played in instances or dungeons, as opposed to an open game world where players roam and then find dungeons, form groups and then attempt to conquer them. Therefore, this solution is to simply design the whole game as a series of dungeons or instances for the player to conquer.

Resources #modified 9/22/13

The resources to be used in this project are as follows:

- Unity3D Game Engine
- C# and JavaScript programming languages
- A growing list of sprite sheets from OpenGameArt.org

The goal is to program the game in C# and JavaScript, utilizing the Unity3D game engine to create game objects and attach the code scripts as well as create the game world through connect scenes. The game world will be made from a growing list of sprite sheets and textures from OpenGameArt.org, which once official will be made available.

Challenges #modified 9/22/13

Challenges that can be foreseen are handling the scope of this project. From past experience in the game engines course at Berea College, deciding where to go with a project like a game and where not to go is a determining factor for the success of a project. In addition to the time constraints, designing and implementing the sprites as objects in three-dimensional space will prove challenging. As well, expanding and implementing game systems that are both rewarding and intricate will be challenging and time consuming.

Measures #modified 9/22/13

The measure of success for this project is two pronged, if a player has the ability to play through, without game related errors, a **single** gauntlet or dungeon, and enjoy the experience then this project has succeed. Additional dungeons or other features are improvements that can be made after the basic game play and mechanics are fully tested and working.

Future Extensions #modified 9/22/13

Possible extensions include additional dungeons, improvements on the avatar's customization, and more rewards such as achievements for timely completion of objectives. Beyond those minor improvements, dungeons or instances that the player has already completed can be made available in a more difficult form, allowing for more of a challenge as well as improved rewards for customization.

Inspiration

Motivation #modified 9/22/13

My personal motivation for this project is my love of gaming. I have played video games for a long time and contribute my graduation from high school to the playing of video games. Otherwise, I chose to make this project a game because, if there is one thing that I have learned about the game development industry is that if you have made a game and it works, then you are already ahead.

Profession #modified 9/22/13

Project Titan Quest is going to help my professional growth because I have aspirations of being a game designer/developer in the future. One of the main factors that a possible employer looks for in someone that is applying for a game design job is that they have the ability to create something. Therefore, creating a game world that is actually functional is my over-arching goal throughout this semester.

Vision and Scope #modified 9/22/13

Titan Quest, when finished, will present to the world an interesting take on the single player role playing experience in video games. By requiring that the player solve puzzles, with open ended puzzle solutions, to progress while fighting off monsters that attack in an almost unique way, the game will evolve with the player, as dungeons are completed.

Over the course of this semester, the game will be built from the ground up and potentially have five levels of play, all with unique puzzles, monsters, and a storyline for the player to write. The scope of this project is large, but not unmanageable. To define the scope, the following are the major features that are to be implemented. The game will include, a combat system, unique puzzles that limit progress until completed, and player character building in terms of skills and attributes. Functionality that is considered out of scope is custom-made art assets, more than five levels or dungeons for the player to explore, and extensive customization systems for the player avatars.

Software Requirements Specifications #modified 9/22/13

Below are the requirements for the software to be designed and implemented, Titan Quest.

Scenes

Number: **1.**

Statement: The Unity3D engine uses scenes to establish different levels or sections of the game. This step will design each scene, before filling each with content.

Evaluation Method: Scenes make logical sense in terms of flow, as well as being able to traverse from one scene to the next scene in that sequence.

Dependency: None. This is the first step.

Priority: **High.**

Requirement Revision History: **None.**

Puzzles

Number: **2.**

Statement: Puzzle design is an important part of this game, as the goal of each scene or level is to complete the puzzle to progress, therefore the game cannot be successful without properly designed puzzles for the player to solve.

Evaluation Method: Puzzles meet several criteria: Is the puzzle beatable? Is the goal straightforward, but are the solutions creative?

Dependency: Scenes, as these puzzles will connect the scenes.

Priority: **High.**

Requirement Revision History: **None**

Terrain

Number: **3.**

Statement: The underlying textures of each scene or level. This is paramount to setting the mood for the particular dungeon that the player is exploring.

Evaluation Method: Each scene has a distinct terrain, and the layout of these levels is appropriate, e.g. there is not lava tiles placed for the path that the player must utilize.

Dependency: Puzzles. The terrain is largely based on what the puzzle of the level is, as the terrain must mold into and be logically aligned with the puzzle's goal.

Priority: **Moderate.**

Requirement Revision History: **None.**

World

Number: **4.**

Statement: Previously mentioned puzzles and terrain, these are components of what is called the game world. The world however, is the look and feel of the game. How all of these are tied together to make an experience for the player.

Evaluation Method: The placement of trees and other environmental objects makes sense. This is to say, there is not a tree placed in lava. If the world does not seem illogical.

Dependency: Scenes, Puzzles and Terrain. This step is to combine all of these things and “breathe” life into a game world. Meaning that this will be the final aesthetic step.

Priority: **Moderate.**

Requirement Revision History: **None.**

Monsters

Number: **5.**

Statement: The enemies of the player, each level will have pre-defined enemy spawning or creating locations therefore this step is to plan and place these locations.

Evaluation Method: Do the monsters spawn too often? Are there too few enemies so that the level is too easy to complete?

Dependency: World, and all of its dependencies. These spawning locations will only make sense if there is a world to place them.

Priority: **High.**

Requirement Revision History: **None.**

Player Attributes

Number: **6.**

Statement: The health and power of the player, this will gauge how well the player can survive the difficulties and challenges inside of the game world.

Evaluation Method: Answering the question: Does the player have enough available resources to adequately experience and complete the level?

Dependency: World. The player must have a world to interact with, otherwise this would not make sense.

Priority: **High.**

Requirement Revision History: **None.**

Monster Attributes

Number: **7.**

Statement: The health and power of the monsters. This is important because this will effect overall game difficulty, meaning that without a balance of how many of a type of enemy is spawned and how much damage or health the monster has the game will not be enjoyable.

Evaluation Method: Player versus monster balance, game is designed to be played by a single player. Therefore, a single player should be able to defeat all of the monsters, reasonably.

Dependency: Player and World requirements. The monsters must fit correctly in the world, and not completely overpower the player.

Priority: **Moderate.**

Requirement Revision History: **None.**

Resources

Number: **8.**

Statement: These are the parameters that allow for the player to activate abilities, or to interact with the game world for solving puzzles.

Evaluation Method: Simple addition, does the player have enough health boosting resources to complete a level of moderate difficulty while defeating monsters along a fixed path? Does the amount of health add up to be more than the damage the monsters are capable of inflicting?

Dependency: World and Player attributes. The world must have obvious and hidden resources, some the player will have to "hunt" for, others freely given. The player parameters must be defined in order to boost them.

Priority: **Moderate.**

Requirement Revision History: **None.**

Player Abilities

Number: **9.**

Statement: The player's ability to use special moves, or attacks that assist in defeating monsters and solving puzzles, while utilizing a defined player resource to limit how much of these are able to be used at a single time.

Evaluation Method: Mathematical balance, does an ability provide too much assistance?

Dependency: Player attributes. Abilities will be modified by these values.

Priority: **Low.**

Requirement Revision History: **None.**

Environmental Effects

Number: **10.**

Statement: Examples of this would be traps and dangerous terrain.

Evaluation Method: If there is a trap, it does damage to the person who has “stepped on” or “activated” it.

Dependency: World and Puzzles, these depend on a properly designed world, one that only effects the player when they go out of normal or expected boundaries.

Priority: **Low.**

Requirement Revision History: **None.**

Player Character leveling

Number: **11.**

Statement: The player needs the ability to become stronger, this implementation will provide rewards for completely puzzles and defeating monsters. The reward being points to increase the effectiveness of abilities or increase basic attack damage or health, as well as the ability resource.

Evaluation Method: If the player can receive points and allocate them, this is complete.

Dependency: Player attributes, monster attributes, player abilities. These must be well defined to improve upon them.

Priority: **Low.**

Requirement Revision History: **None.**

Game Polish

Number: **12.**

Statement: This includes incorporating a storyline into the game, as well as achievements and rewards for obtaining them. Also, increased difficulty of dungeons.

Evaluation Method: Is the player exposed to a level's virtual history? Can the player obtain an achievement, e.g. kill twenty of a certain type of enemy? Is there additional difficult added to a dungeon that requires a player to be more attentive?

Dependency: Completion of the game. This requirement will only be met if the previous 11 requirements are completed.

Priority: **Low.**

Requirement Revision History: **None.**

System Design and Architecture

The system design and architecture below follow outlines, in a list format, the components that will make up the core functionality of Titan Quest. This list is currently growing, therefore these are the planned implementations as of September 22, 2013.

- PlayerCharacter Class
  - Will contain information regarding available skills, resources, and equipment in the form of member variables.
  - Functions for calculating damage output, subtracting health or a resource, adding health or a resource, and other manipulations of a player object's attributes.
- MonsterObject Class
  - Will contain information regarding resources in the form of member variables.
  - Functions for manipulating changes to member variables as well as interacting with a player object.
- GenericObject Class
  - Will contain triggers, or events, that the player will "set-off".
  - Functions that allow for a player object to interact with a GenericObject object to achieve some goal, usually a reward or progression through the current level or scene.
- Other various functionality will be implemented to aid these three main classes, usually with short scripts
  - A movement script to be used for moving the player character object through the game world.
  - A "sending" script to be used for mail handling between objects, manipulated with Unity3D colliders.

To: Mario Nakazawa, Project Director

From: Cody Ferguson

Subject: Titan Quest

Date: September 2, 2013

Accomplishments

This reporting period, I have accomplished the formulation of a concept for a video game, Titan Quest, and the completion of this report concerning a more detailed explanation of the concept.

Challenges

During the reporting period the major challenge was deciding on what the project was going to be, only recently had I come to a decision on the project's concept.

Time Spent

Approximately four hours of work was put into the creation and submission of this report, but that was essentially all of the time spent during this reporting period.

Goals

The goals for the following week are to close the researching period for finding a game engine to build the game from and finalize the decision for the language being used. Additionally, in terms of actual game design all maps, textures, and other assets will be either found or made and then compiled for future use to eliminate the possibility of being too art-centric. Finally, the code base will start being built and other planning documents will be stored there.

To: Mario Nakazawa, Project Director

CC: James Peruggia

From: Cody Ferguson

Subject: Titan Quest

Date: September 8, 2013

Accomplishments

During this reporting period I have come to some conclusions on what software to use for the further development of this project. For instance, I will be using Unity3D, which has a great amount of resources for making 2D games in the 3D space which will also leverage my familiarity with the software. In addition, I have collected and investigated links to websites that provide open source sprites and sprite sheets. No actual code has been written yet, however the language has been decided: C# with Unity3D using either MonoDevelop or Visual Studio 2012 Express. As well I have made updates to the challenges section outlining what I now see as challenges as well as updating my purpose to reflect the proper connectivity to be expected for the game.

Challenges

Challenges during this particular reporting period were finding and making decisions for the future of the project. In addition, I have researched further into networking and discovered that the libraries available for communication over a UDP network are going to be challenging to understand.

Time Spent

Week #2 Hours: 4.5

Total Hours: 8.5

Goals

My goals going into this next reporting period are to begin working on the overall design and implementation of the game world, resulting in five levels or dungeons completed and the addition of characters into the game world.

To: Mario Nakazawa, Project Director

CC: James Peruggia

From: Cody Ferguson

Subject: Titan Quest

Date: September 15, 2013

Accomplishments

This reporting period, I have further specified what the game will be like in terms of requirements and have identified a more defined scope for the project. Outlined above, in the Software Requirement Specifications, is the majority of the project's work this period. Additionally, the title scene for the game has been designed and warrants a new title. The game has been modified from "Tiamat: The Quest" to "Titan Quest" for the sake of making a more catchy or sensible name for the game.

Challenges

I did not meet my goals from the previous period, however, I have further ironed out how to complete those goals through adjusting the focus of the game. Now that I am better prepared, last week's goals are now much less difficult to complete.

Time Spent

Week #3 Hours: 3

Total Hours: 11.5

Goals

The goals from the previous week were incomplete, this means that they will be carried over. However, the step-wise design of the project has restructured what should be accomplished and when. Therefore the goals for this coming week are to complete the scene design, puzzle design and implement the terrain. Last week's goals were actually too large in scope.

To: Mario Nakazawa, Project Director

CC: James Peruggia

From: Cody Ferguson

Subject: Titan Quest

Date: September 22, 2013

Accomplishments

This reporting period, all of the sprites required for the first level and second level of the game have been collected, and spliced for usage. Additionally, the process for using sprites in a 3D space has been implemented. Research also into the networking capability of Unity3D has been done, and found to be a difficult task or one that must be purchased. Therefore the networking portion of Titan Quest is no longer a part of the project. Additionally, rolling changes have been made to the report's sections, updating the game from multiplayer to single player. In regards to actual game implementation, a small demo demonstrating collisions of a player character and monster has been implemented. However, the implementation is very basic, and simply a practice/test for building functionality.

Challenges

Challenges this reporting period were understanding the construction of two-dimensional objects inside of three-dimensional space with the Unity3D Game Engine. Otherwise, the work has gone smoothly.

Time Spent

Week #4 Hours: 5

Total Hours: 16.5

Goals

Implementation of the first level completely, including the puzzle triggers and a more functional combat system. Additionally, the inclusion of "health bars" and damage functionality along with "damage text" to display the amount of health being lost during combat with monsters.