Knight's Guard

Project Legacy

COP4331C, Fall, 2014

Team Name: Group 1

Team Members:

- Megan Postava
- Katie Jurek
- David Moore
- Miguel Corona
- William Adkins
- Jonathan Bennett

Modification history:

Version	Date	Who	Comment
v0.1	11/19/14	Jonathan Bennett	Created and filled in much of the Analysis section
v0.2	11/23/14	Miguel Corona	Small additions/changes to analysis section
v0.3	11/24/14	Jonathan Bennett	Added several details for each document in the Roles section.
v0.4	11/25/14	Miguel Corona	Added details for various documents in the Roles section.
v1.0	11/25/14	David Moore, Megan Postava, William Adkins	Added various details, finalized document

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Contents of this Document

Roles

This section details the contribution of each member towards all of the project deliverables.

Deliverables #1

- **Concept of Operations**
  - Jonathan Bennett (Percentage: 50%)
    - Completed sections “The Current System” and “The Proposed System: Needs, Users & Modes of Operation”, and added details to “Implementation”.
  - Megan Postava (Percentage: 50%)
    - Completed sections “Implementation” and “Operational Scenarios”.

- **Software Requirements Specification**
  - Jonathan Bennett (Percentage: 40%)
    - Added details to section “Specific Requirements”, helped modify use case diagram in section “Product Overview”, added section “Supporting Material”, defined definitions, and finalized document.
  - Miguel Corona (Percentage: 60%)
    - Completed section “Product overview” and majority of section “Specific Requirements”.

- **Project Management Plan**
  - David Moore (Percentage: 40%)
    - Completed sections “Configuration Management,” “Quality Assurance,” and “Risk Management,” and added details to “Software Life Cycle Process” and “Tools and Computing Environment.”
  - Jonathan Bennett (Percentage: 60%)
    - Completed sections “Project Overview,” “Applicable Standards,” ”Project Team Organization,” “Deliverables,” “Table of Work Packages,” “Time Estimates,” and “Assignments,” and added details to “Software Life Cycle Process” and “Tools and Computing Environment.”

- **Test Plan**
  - Katie Jurek (Percentage: 80%)
    - Filled out Overall Objective, Test Environment, Stopping Criteria, and Test Cases
  - Jonathan Bennett (Percentage: 20%)
    - Added the Introduction and details to Test Environment, Stopping Criteria, and Test Cases.

Deliverables #2

- **High Level Design**
  - Jonathan Bennett (Percentage: 85%)
    - Completed “High Level Architecture”, completed majority of the design issues section, and finalized the document.
  - Miguel Corona (Percentage: 15%)
    - Filled in portions of the design issues section.

- **Detailed Design**
  - Jonathan Bennett (Percentage: 65%)
    - Completed majority of the design issues section. Added all the diagrams and finished the trace requirements section.
  - Miguel Corona (Percentage: 20%)
    - Created the Trace requirement section with requirements. Contributed to the design issue section.
  - Katie Jurek (Percentage: 15%)
    - Provided the implementation locations in the trace requirements section.

- **Presentation #1**
  - Megan Postava (Percentage: 16.6%)
  - Jonathan Bennett (Percentage: 16.6%)
  - David Moore (Percentage: 16.6%)
  - Katie Jurek (Percentage: 16.6%)
  - Miguel Corona (Percentage: 16.6%)
  - William Adkins (Percentage: 16.6%)

Deliverables #3

- **User’s Manual**
  - Jonathan Bennett (Percentage: 47.5%)
    - Completed “Introduction”, “How to Play”, and “Towers” sections. Contributed to the credits section as well.
  - Miguel Corona (Percentage: 47.5%)
    - Completed the “Controls”, “Enemies” and “Credits” sections.
  - Megan Postava (Percentage: 5%)
    - Various minor edits.

- **Test Results**
  - Jonathan Bennett (Percentage: 20%)
    - Created initial document, ran test cases 2, 5, 7, 16, and 18.
  - Megan Postava (Percentage: 40%)
    - Ran test cases 3, 4, 8, 9, 11, 12, 14, 15, and 16.
  - David Moore (Percentage: 20%)
    - Ran test cases 1, 6, 13, and 16.
  - William Adkins (Percentage: 20%)
    - Ran test cases 10, 16, and 17.

- **Project Legacy**
    - Jonathan Bennett (Percentage: 60%)
        - Created and filled most of the “Analysis” section. Added several details for each document in the “Roles” section.
    - Megan Postava (Percentage: 10%)
        - Added details for various points in the “Analysis” section, added details in the “Roles” section.
    - Miguel Corona (Percentage: 10%)
        - Added details for various documents in the “Roles” section
        - Added points to “Suggestions for the Future”, and “Configuration Management” sections
    - David Moore (Percentage: 10%)
        - Added Code Tweaks
        - Contributed to Defect Analysis
    - William Adkins (Percentage: 10%)
        - Added details for the “Roles” section
- **Build Instructions**
    - William Adkins (Percentage: 75%)
        - Completed Requirements, Build Instructions, Installation instructions
    - Megan Postava (Percentage: 15%)
        - Started requirements and installation sections
    - Jonathan Bennett (Percentage: 10%)
        - Created initial document, added alternative run instructions

- **Presentation #2**
    - Megan Postava (Percentage: 16.6%)
    - Jonathan Bennett (Percentage: 16.6%)
    - David Moore (Percentage: 16.6%)
    - Katie Jurek (Percentage: 16.6%)
    - Miguel Corona (Percentage: 16.6%)
    - William Adkins (Percentage: 16.6%)

- **Source Code (Game & Artwork & Sound)**
    - **Design (Gameplay Ideas & Concepts)**
        - Megan Postava (Percentage: 16.6%)
        - Jonathan Bennett (Percentage: 16.6%)
        - David Moore (Percentage: 16.6%)
        - Katie Jurek (Percentage: 16.6%)
        - Miguel Corona (Percentage: 16.6%)
        - William Adkins (Percentage: 16.6%)
    - **Code Base (GameMaker Language, PHP, MySQL)**
        - Katie Jurek (Percentage: 50%)
            - Game foundation and general logic/data flow
            - Pathfinding
            - Enemy logic
            - Game completion/finalization
        - David Moore (Percentage: 25%)
            - Tower objects

            - Normalized RNG (Gauss algorithm)
            - Lead fire
            - Enemy objects
            - Bug fixes/Balancing
        - Jonathan Bennett (Percentage: 25%)
            - Scoreboard integration; GameMaker and web using PHP & MySQL
            - Area of Effect towers
            - Bug fixes/Balancing
    - **Code Tweaks**
        - Jonathan Bennett (Percentage: 35%)
            - Bug Fixes
            - Game Balancing
        - David Moore(Percentage: 65%)
            - Bug Fixes
            - Game Balancing
    - **Artwork (Sprites, Maps, Backgrounds, Buttons)**
        - Megan Postava (Percentage: 50%)
            - Game map, based on UCF campus
            - Sprites and animations for all enemies
        - Jonathan Bennett (Percentage: 40%)
            - Title screen, Scoreboard, Registration screen, Death screen
            - Projectiles (arrows, cannonball)
            - Tower sprite
        - William Adkins (Percentage: 10%)
            - Gimp tips and tricks
    - **Music & Sound Effects**
        - Miguel Corona (Percentage: 95%)
            - Title screen and game music
            - Various weapon sound effects
                - Arrow
                - Tower Build
                - Round Start
                - Catapult
        - Jonathan Bennett (Percentage: 5%)
            - Helped finalize music and sound effect choices

Analysis

In this section we provide an analysis of the processes and product metrics for the group project.

- **Assessment of the Quality of the Final Product:**
    - Under normal gameplay circumstances, provided the user is playing on a capable Windows 7 machine, the product works exactly as intended and planned, with a few minor deviations. The majority of the test cases pass and all of the must-have features have been implemented into the game. The game has been playtested to ensure a fair amount of difficulty.

- **Recommended Use of the Final Product:**
    - The primary purpose of the product as a video game is for entertainment; to play and have fun.
    - The game was created to be uniquely catered to UCF students with its theme, and it was designed to be easy to get into and play so that even casual gamers can enjoy it quickly.
- **Known Problems:**
    - A mobile version of the game was a desired optional feature, but was not able to be completed in time. It is the only feature we were not able to complete.
        - Note: We completed all must-have features and one optional feature (the web scoreboard).
    - With a few more weeks of work, a beta version for the mobile Android platform could have been made available. Most of the game design decisions would scale well to a smaller screen, but some of the interface and controls would need to be changed.
- **Adherence to Project Plan:**
    - Estimate Accuracy
        - The estimates for the project were mostly accurate. There were some tasks that took longer than expected, but most tasks were completed on time or ahead of time.
    - Planned Process Adherence
        - We adhered to our project management plan and processes closely, with few exceptions. We met weekly with each other, met several times with the client, created multiple prototypes along the way, and in general stuck to our Agile processes for development. We did not create quite as many prototypes as we initially planned, but this did not prevent us from continuing to progress successfully. Our task management system could also have been utilized more thoroughly.
    - Root Cause of Deviations
        - The two main causes for deviations from our estimates were inexperience with the programming language (for most of the team) and unexpected delays due to other classes or illnesses. However, we planned on having potential emergencies when making our estimates, so it did not have much of an effect on the outcome.
- **Defect Analysis:**
    - In the last phase of the project, we identified a bug with our arrow shooting algorithm that would cause it to always miss enemies that were standing still. This would normally not be an issue because enemies are typically moving, however the algorithm was adjusted to target non-moving enemies as well.
    - During the middle phase of the project, there was an issue with the web scoreboard that could cause the game to crash if the web server was not responding quickly enough to the Gamemaker client. This was corrected by introducing a wait function into the code to wait for the data to be received before it is used.
    - In the last phase, there was an issue where the illness enemy was not spawning correctly. This was caused by an error with the spawn points on the map. The bug was identified in the code and corrected for the final version.
    - In the last phase, there was an issue where two enemies would spawn when only one should. The bug was isolated and corrected for the final version.
- **Quality Assurance:**

    - The game was tested at all points of development to assure quality and expected results. The final product was tested extensively, and all test cases that were valid passed.
    - The tests were completed in a timely manner after the final product was completed.
    - The QA activities could possibly be improved by having multiple developers test the same task in order to double-check its correctness. The disadvantage is that this would take more time.
- **Configuration Management:**
    - The CM practices that we used were sufficient at getting the project completed. Github provided a method of sharing the source code to each member of the group for editing purposes.
    - Google docs provided an easy way to complete the required documentation deliverables.
    - The CM practices could have been improved by deciding on the Git branching strategies in advance, holding a more formal training session for members who are new to Git, and by setting up Git to ignore files that did not need to be committed (and thus caused some confusion when merging branches/code).
- **Suggestions for the Future:**
    - Technical Processes
        - Be sure to choose technical software that can be learned quickly. Do not use software that none of your group has used previously.
        - Discuss coding techniques ahead so the code is easy to trace in the future.
        - Decide early on who should focus on the different pieces of the project.
    - Future Team Suggestions
        - For future teams, we suggest an honest focus on open and frequent communication, a clear plan with understood expectations for each team member, and to do your best to avoid going overboard with feature ideas.
        - It is better to implement fewer features and execute them well than to have many sloppy features in your product.
        - It is also important to meet and discuss with your client regularly. You cannot reliably know if your product is meeting their expectations if you do not meet with them to verify.
    - What parts of your process would you change and what would you keep if you were assigned to work on a project of roughly 10 times the size and scope of this project?
        - Sticking to deadlines is a must-have when completing group projects. With a larger project, we would have to change our process and be sure to meet deadlines that we set as a group.
        - Maintaining good communication within your teammates is a necessity. We would keep a scheduled meeting time at least once a week to discuss issues and desired changes throughout the project.
    - What about 100 times the size and scope?
        - We would want to split up the group into multiple teams, with each team having a team leader and being responsible for a particular part of the app that no other team is working with.
        - With a project of this size, we would again maintain a strict time for discussions among the different groups that are working on the project.