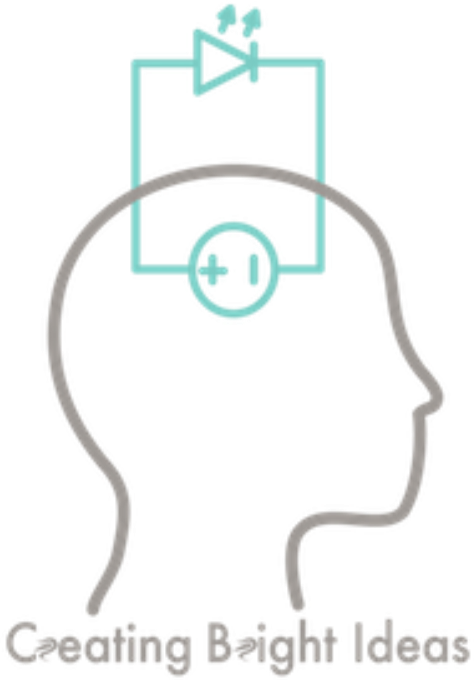

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Foundations of Software Engineering

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1 INTRODUCTION

1.1 PURPOSE

The purpose of this document is to outline the vision for the development of the computer version of Wheel of Jeopardy in accordance with the goals and objectives of the identified stakeholders.

1.2 SCOPE

This document will address the following:

- Definition of the development objective
- Identification of stakeholders, users, and their needs respectively
- An overview of the proposed product
- Identification of product features and constraints

1.3 DEFINITIONS, ACRONYMS, ABBREVIATIONS

A glossary containing relevant definitions, acronyms, and abbreviations will be provided as a separate document.

2 POSITIONING

2.1 PROBLEM STATEMENT

Because the game shows Wheel of Fortune and Jeopardy have amassed such large audiences but air simultaneously, viewers are conflicted with making the decision of choosing one game experience over another. A solution to this problem would be to provide a game experience that combines these two game programs and provides an interface that utilizes a bridge between the relevant equipment and rules from each game. A solution like this would deliver an innovative and interactive gaming experience that would eclipse the current user/audience experience of either game.

3 STAKEHOLDER & USER DESCRIPTION

3.1 STAKEHOLDER SUMMARY

Stakeholder Name	Stakeholder Type	Represents	Role
Foundations of Software Engineering Summer 2018 Instructors	Authorities	Instructors for the class.	Experts in regards to the problem and solution domain who provide guidance and evaluation of product
Team Bright Ideas	Developers	Software Development Team comprised of various roles	Project Management, Architecture, Testing, Quality Assurance, Software Development, Configuration Management, Editing
Foundations of Software Engineering Summer 2018 Students	Users/customers	Users of the final product as well as parallel development teams that will learn from Team Bright Idea's process	Evaluation of final product

3.2 USER ENVIRONMENT

The primary users of the Wheel of Jeopardy game are the Bright Ideas development team. The team consists of 3 members who take on multiple roles as primary task leads and secondary contributors to other tasks that facilitate the development of the software product. The types of task leads are listed as follows:

- Project Manager
- Architect
- Developer
- Tester
- Quality Assurer
- Editor

Action items for each task have been scheduled out according to the given requirements. Typically, larger tasks are broken down into smaller more easily manageable tasks and given

a week or less to complete. There is a firm timeline for the submission of deliverables so it is important that the team stay on schedule.

The development team will be utilizing a rapid prototype development approach. The backend development encompasses all Java development for the core code base. All inputs and outputs will be text based, and the code should account for all test cases. The frontend development is for the JavaScript development for the GUI of Wheel of Jeopardy. This portion will design GUI-based input and output, and will marry up with messages passed from the backend code.

3.3 STAKEHOLDER PROFILES

3.3.1 Foundations of Software Engineering Summer 2018 Instructors

Description	Instructors of the class
Type	Experts in regards to the problem and solution domain
Responsibilities	Provide minimal requirements for software product and overall guidance when necessary throughout software development process
Success Criteria	Deliver a software product that meets the minimal requirements and implements innovative features within the specified time frame.
Involvement	Advisor
Comments and Issues	Any issues that require clarification or additional detail can be addressed in the class office hour's discussion board.

3.3.2 Team Bright Ideas – Project Manager

Description	Leader of Team Bright Ideas
Type	Experienced professional with strong technical background
Responsibilities	Provide guidance to develop the software product and make final decisions on concerns or ideas related to the development process and deliverables
Success Criteria	Delegated tasks are completed by appropriate team personnel in a timely manner and working deliverables are produced

Involvement	Collaborates with the team in regards to all decisions and deliverables
Comments and Issues	The project manager has the final say on all issues amongst the team.

3.3.3 Team Bright Ideas – Architect

Description	Software product design lead
Type	Experienced professional with strong technical background
Responsibilities	Making design choices as well as determining technical standards to abide by for the product in regards to software coding, tools, and platforms
Success Criteria	Software product that is developed meets the requirements and designs laid out in architecture plan
Involvement	Works closely with the programmers of the development team
Comments and Issues	A firm understanding of the requirements for the software product are imperative for the architect to plan and design effectively

3.3.4 Team Bright Ideas – Testing

Description	Software product test lead
Type	Experienced professional with strong technical background
Responsibilities	Stress testing the software product and relaying any issues encountered to the development team for repair
Success Criteria	Software product implements all necessary requirements and performs efficiently
Involvement	Works closely with the programmers of the development team
Comments and Issues	Must be specific on communicating errors or bugs found in the software product so that they can be addressed accordingly

3.3.5 Team Bright Ideas – Quality Assurance

Description	Software product and process maintainer
Type	Experienced professional with strong technical background

Responsibilities	Monitors the software engineering processes and methods throughout the development lifecycle to ensure the developed software meets and complies with desired requirements
Success Criteria	Every stage of the process of delivery or production meets a desired level of quality
Involvement	Communicates often with the development team, testers, and management to ensure product quality
Comments and Issues	The same emphasis placed on ensuring the quality of the final product must be utilized in regards to the development process and the associated milestones

3.3.6 Team Bright Ideas - Developer

Description	Software product programmer
Type	Experienced professional with strong technical background
Responsibilities	Writing and thoroughly documenting the code for the software product.
Success Criteria	The code produced works and addresses all the requirements and design specifications laid out by the architecture
Involvement	Interacts with architecture and testing teams to understand objectives and fortify code respectively
Comments and Issues	A firm understanding if what is expected according to the architecture is imperative

3.3.7 Team Bright Ideas – Configuration Manager

Description	Software product documentation manager
Type	Experienced professional with strong technical background
Responsibilities	Responsible for backing up all documentation relevant to the project, and maintaining a history of software iterations.
Success Criteria	Maintain an updated and team accessible log of documentation history

Involvement	Manages a Git repository for every project document that is accessible by all team members
Comments and Issues	In addition to Git repository, the file exchange feature from blackboard can also be used to log project documentation

3.3.8 Team Bright Ideas – Editor

Description	Software product documentation editor
Type	Experienced professional with strong technical background
Responsibilities	Responsible for generating documents for delivery
Success Criteria	Documentation intended for delivery meets all requirements in regards to content and clarity
Involvement	All documentation produced by development team must eventually go through the editor
Comments and Issues	It is important for the editor to receive documentation in a timely manner in order effectively review the content

3.3.9 Foundations of Software Engineering Summer 2018 Students

Description	Users of the software product and parallel developers
Type	Familiar with the concepts of Wheel of Fortune and Jeopardy
Responsibilities	Play the Wheel of Jeopardy game and learn from Bright Idea team process
Success Criteria	Game experience provides an interface that utilizes the game equipment and rules associated with Wheel of Jeopardy
Involvement	The user will provide feedback to the other stakeholders
Comments and Issues	The stakeholders rely heavily on the feedback from the users

3.4 KEY STAKEHOLDER GOALS/NEEDS

3.4.1 Instructors:

Need a computer version of a combination of two TV game programs: Wheel of Fortune and Jeopardy to create Wheel of Jeopardy. The priority for this is high. The current solution is to experience the game programs separately on TV. The proposed solution is to develop an interface that incorporates and combines the equipment and rules from both games and potentially add enhancements to provide a more innovative and interactive gaming experience.

3.4.2 Team Bright Ideas:

Need communication and feedback from other stakeholders. Team Bright Ideas relies on instructors to inform the team of all minimal requirements and constraints in regards to the proposed software product. Team Bright Ideas relies on the users to provide feedback on the actual software product once it is complete to determine success. Finally, Team Bright ideas relies on the various teams/roles that comprise the overall development team to work together and communicate necessary requirements to facilitate the execution of tasks at hand. Considering this is a pioneer effort, there is no current solution and the proposed solution is to develop the product according to the specified requirements and constraints.

3.4.3 Students:

Need the software product to experience a more innovative and interactive version of the two games. The fellow students are also developers themselves of similar products so they hope to learn from the Bright Idea team process and deliverable.

4 PRODUCT OVERVIEW

4.1 PRODUCT PERSPECTIVE

This software product will have a Java backend, and a JavaScript frontend. The JavaScript front end will need to be run in the user's web browser. The Java backend will be already compiled, and should not need additional support. Apart from the internet browser dependency, the product will be completely standalone.

4.2 SUMMARY OF CAPABILITIES

There are several additional benefits that come with the base Wheel of Jeopardy product, which are as follows.

Customer Benefit	Supporting Features
Bugs are easy to identify and track down for the testing team	JavaDocs Documentation and thorough error handling provides comprehensive breakdown of the Java backend

Oversight and risk are mitigated with an iterative development process	The backend and frontend teams develop with a rapid prototyping approach, so difficult requirements are broken down and understood early in the development process
Questions on the game board are easy to personalize and modify by testers and customers	Several example input files will be provided for the customer to use right away, or to use as a formatting reference for their own custom question sets

4.3 Assumptions and Dependencies

The product is required to run on the personal computer of each of the developers. The product must also run on both MacOS and the Windows OS, each with an operational web browser as well as Java and JavaScript.

Additionally, the product requires a properly formatted and complete input file. If the input file containing the questions and answers is improperly formatted, or does not contain the data for two rounds, then the program will not run as desired.

Wheel of Jeopardy requires exactly two players to participate. If there are more or less than two players, the program may not run as intended.

5 Product Features

5.1 Game Equipment

Users want an interface that incorporates a wheel and question board analogous to the wheel and game board used in the TV programs Wheel of Fortune and Jeopardy respectively. The wheel has multiple sectors that indicate either question categories or other game options. The question board displays questions for the appropriate categories based on which category the wheel points to.

5.2 Question Editor

Users want a convenient way for someone to edit the set of questions, answers, and categories from game to game.

5.3 Answer Board

Users require an option to submit their answers and an option to determine if the given answer is correct or incorrect

5.4 SCORE INDICATOR

Users need to be able to keep track of the score as it fluctuates based off correct or incorrect answers and point value dependent on question or game round.

5.5 TIME INDICATOR

Users need to know how much time they have left to answer a question in accordance with the game rules

6 CONSTRAINTS

6.1 GAME WHEEL

The game wheel must have 12 sectors distributed randomly. The necessary sectors are:

- Six sectors representing the six categories of questions
- One “lose turn” sector
- One “free turn” sector
- One “bankrupt” sector
- One “players choice” sector
- One “opponents choice” sector
- One “double your score” sector

6.2 QUESTIONS

Questions are answered in the order of increasing point value

6.3 SCORING

Correct answers are awarded the corresponding points based on the question and result in an additional spin. Incorrect answers result in the corresponding points being subtracted from the player’s score and the loss of that player's turn (Negative scores are possible).

6.4 GAME ROUNDS

The game is played in two rounds. In the second round the point values are doubled.

6.5 WHEEL SPINS

In each round there is a maximum of 50 spins of the wheel. A round is over if either all of the questions have been answered or if the spin count goes to zero.