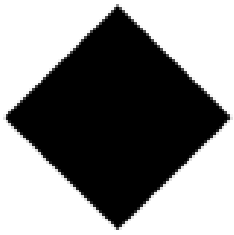

# Software Masters

Software Requirements Specification

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Software Masters

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Software Masters

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# 1. Introduction

## 1.1 Purpose

This document describes the functional requirements for the Wheel of Jeopardy video game.

## 1.2 Scope

In this initial draft, we have limited the scope to those requirements essential for gameplay. Future revisions will describe additional requirements as they are communicated to us by the stakeholders and any missing requirements discovered by the team.

## 1.3 Glossary

| | |
|---|---|
| Actor | User(s) that engage in the activities described in the use case |
| Alternate Scenario | An alternate set of steps from the Main Success Scenario that the actor(s) may execute |
| GUI | Graphic User Interface |
| Main Success Scenario | The set of steps that the actor(s) must carry out to successfully complete the use case |
| Precondition | Condition(s) that must be true before the use case can begins |
| Postcondition | Condition(s) that must be true after the use case completes |
| Trigger | Event that causes the use case to begin |
| Type | Describes the trigger type; either external input to the system or internal to the system |
| WoJ | Wheel of Jeopardy |

## 1.4 Reference Documents

Wheel of Jeopardy Problem Description
Team Charter
Project Plan
Vision Document
Design Document

# 2. Software Architecture

## 2.1 Presentation Subsystem

The Presentation subsystem of the WoJ system consists of all the visual aspects of the WoJ system and handles all the user input into the system. The visual aspects include the wheel, question board, scoreboard, and user controls, all of which are encompassed in the GUI. The user controls consist of actions the user can take during gameplay, such as spin wheel, use spin token, choose a category, and answer a question, but also include a settings option to change the question set before the game begins. The user control area of the GUI is where the Presentation subsystem gathers user input into the system. All user input is transferred from the Presentation subsystem to the Application subsystem to be handled, and hence the Presentation system only interfaces with the Application subsystem.

## 2.2 Application Subsystem

The Application subsystem of the WoJ system implements and manages the WoJ game logic. This subsystem is responsible for managing player logistics such as turn tracking, players' points, and free spin tokens as well as implementing the correct action for each wheel sector when it is landed on. This subsystem is also responsible for tracking the total number of wheel spins as well as the number of remaining questions so that the round will end at 50 spins or with zero questions left unanswered. The Application subsystem connects the Presentation subsystem to the Data subsystem; all communication with the Presentation subsystem is done through the Application subsystem. All user input to the system, such as question answers, must go through the Application subsystem which will then communicate with the Data subsystem, such as checking the user's answer against the correct answer stored in the database. The Application subsystem interfaces with both the Presentation and Data subsystems.

## 2.3 Data Subsystem

The Data subsystem of the WoJ system consists of the game system's database. The database holds the question and answer sets for the game board as well as all-time game rankings. The database will hold a number of question and answer sets for the game that a user will be able to choose before a game begins if they wish, otherwise questions will be chosen randomly by default. The Data subsystem does not interface at all with the Presentation subsystem, and instead communicates with the Presentation subsystem via the Application subsystem. The

Application subsystem interfaces with the Data subsystem to retrieve the chosen question set as well as to store user rankings based on total score at the end of the game.

## 2.4 Interfaces

As it was described above, the WoJ system will consist of four interfaces:

- The Presentation subsystem must interface with the Application subsystem
- The Application subsystem must interface with the Presentation subsystem
- The Application subsystem must interface with the Data subsystem
- The Data subsystem must interface with the Application subsystem

The subsystems and their interfaces are further illustrated in Figure 1 below.

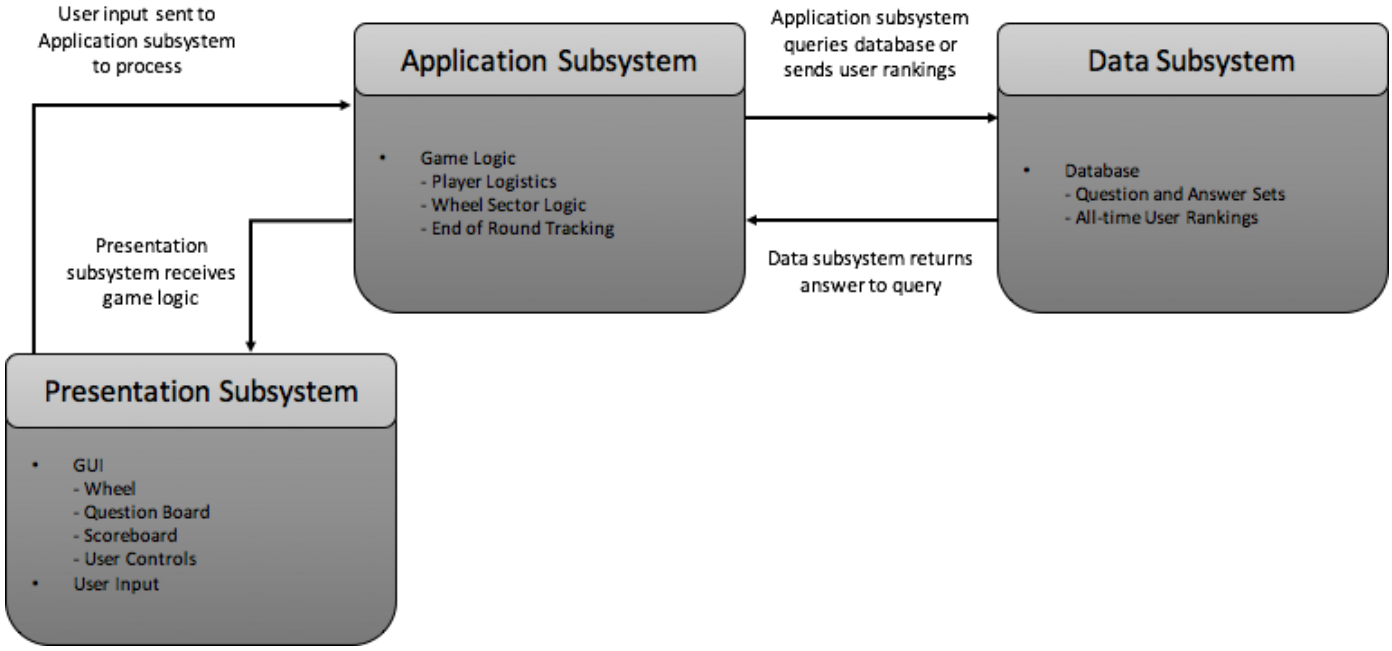


**Figure 1:** Wheel of Jeopardy Subsystems and Interfaces

# 3. Use Cases

| **Use Case Name:** Lose a turn | **ID:** WJ-01 | **Priority:** Normal |
|---|---|---|
| **Description:** Player lands on the “Lose a Turn” sector and the next player’s turn starts | | |
| **Actor:** Current player and next player | | |
| **Trigger:** The wheel lands on the “Lose a Turn” sector<br>**Type:** External | | |
| **Preconditions:**<br>1. The player spins the wheel<br>2. The wheel lands on the “Lose a Turn” sector | | |
| **Main Success Scenario:**<br>1. The current player’s turn is over<br>2. The next player’s turn begins | | |
| **Alternative Scenario:**<br>1. The current player has a “Free Spin” token<br>2. The system asks the current player if they want to use the “Free Spin”<br>a. If yes, it remains the current player’s turn and they lose their “Free Spin” token<br>b. If no, the next player’s turn begins | | |
| **Postconditions:** None | | |

| **Use Case Name:** Free turn | **ID:** WJ-02 | **Priority:** Normal |
|---|---|---|
| **Description:** Player lands on the “Free Turn” sector and they receive a “Free Spin” token | | |
| **Actor:** Player | | |
| **Trigger:** The wheel lands on the “Free Turn” sector<br>**Type:** External | | |
| **Preconditions:**<br>1. The player spins the wheel<br>2. The wheel lands on the “Free Turn” sector | | |
| **Main Success Scenario:** | | |

| |
|---|
| 1. The player receives a “Free Spin” token<br>2. The player continues their turn |
| **Alternative Scenario:** None |
| **Postconditions:** None |

| **Use Case Name:** Bankrupt | **ID:** WJ-03 | **Priority:** Normal |
|---|---|---|
| **Description:** Player lands on the “Bankrupt” sector and they lose all their points | | |
| **Actor:** Player | | |
| **Trigger:** The wheel lands on the “Bankrupt” sector<br>**Type:** External | | |
| **Preconditions:**<br>1. The player spins the wheel<br>2. The wheel lands on the “Bankrupt” sector | | |
| **Main Success Scenario:**<br>1. The player is bankrupt<br>2. The player’s score is set to zero<br>3. The next player’s turn begins | | |
| **Alternative Scenario:** None | | |
| **Postconditions:** None | | |

| **Use Case Name:** Player’s choice | **ID:** WJ-04 | **Priority:** Normal |
|---|---|---|
| **Description:** Player lands on the “Player’s choice” sector and they select their category | | |
| **Actor:** Player | | |
| **Trigger:** The wheel lands on the “Player’s choice” sector<br>**Type:** External | | |
| **Preconditions:**<br>1. The player spins the wheel<br>2. The wheel lands on the “Player’s choice” sector | | |

| |
|---|
| **Main Success Scenario:**<br>1. The system prompts the player to select a category<br>2. The player gets asked the next question from the category they select<br>3. The “Submit an answer” use case scenario is performed |
| **Alternative Scenario:**<br>1. The system prompts the player to select a category<br>2. The player selects a “Daily Double” question<br>3. The system asks the player to wager points<br>4. The “Submit an answer” use case scenario is performed |
| **Postconditions:** None |

| **Use Case Name:** Opponents’ choice | **ID:** WJ-05 | **Priority:** Normal |
|---|---|---|
| **Description:** Player lands on the “Opponents’ choice” sector and an opponent selects the category | | |
| **Actor:** Player and Opponent | | |
| **Trigger:** The wheel lands on the “Opponents’ choice” sector<br>**Type:** External | | |
| **Preconditions:**<br>1. The player spins the wheel<br>2. The wheel lands on the “Opponents’ choice” sector | | |
| **Main Success Scenario:**<br>1. The system prompts a random opponent to select a category<br>2. The player gets asked the next question in the category the opponent selects<br>3. The “Submit an answer” use case scenario is performed | | |
| **Alternative Scenario:**<br>1. The system prompts the opponent to select a category<br>2. The opponent selects a “Daily Double” question<br>3. The system asks the player to wager points<br>4. The “Submit an answer” use case scenario is performed | | |
| **Postconditions:** None | | |

| **Use Case Name:** Spin again | **ID:** WJ-06 | **Priority:** Normal |
|---|---|---|
| **Description:** Player lands on the “Spin again” sector and they spin the wheel again | | |
| **Actor:** Player | | |
| **Trigger:** The wheel lands on the “Spin again” sector<br>**Type:** External | | |
| **Preconditions:**<br>1. The player spins the wheel<br>2. The wheel lands on the “Spin again” sector | | |
| **Main Success Scenario:**<br>1. The system notifies the player they need to spin again<br>2. The “Spin the Wheel” use case scenario is performed | | |
| **Alternative Scenario:** None | | |
| **Postconditions:** None | | |

| **Use Case Name:** Start the game | **ID:** WJ-07 | **Priority:** Low |
|---|---|---|
| **Actor:** Player | | |
| **Description:** This use case describes how a player starts the game | | |
| **Trigger:** The user has started the game<br>**Type:** External | | |
| **Preconditions:** None | | |
| **Main Success Scenario:**<br>1. The player clicks “Start the Game” to initiate the game<br>2. Players enter their name in the textbox<br>3. The player clicks “Begin” to start the gameplay<br>4. Player is selected randomly to go first | | |
| **Postconditions:**<br>1. The game has started<br>2. First player to go has been decided | | |

| **Use Case Name:** Spin The Wheel | **ID:** WJ-08 | **Priority:** Low |
|---|---|---|
| **Actor:** Player | | |
| **Description:** This use case describes how a player spins the wheel in the WoJ game | | |
| **Trigger:** The user has initiated their turn to spin the wheel<br>**Type:** External | | |
| **Preconditions:**<br>1. It is the player's turn<br>2. The player has chosen to spin the wheel | | |
| **Main Success Scenario:**<br>1. The player clicks to "Spin the wheel"<br>2. If there have been less than 50 spins, the wheel begins to spin<br>3. The wheel lands on a certain category or action on board | | |
| **Postconditions:**<br>1. Category or actions are selected | | |

| **Use Case Name:** Exit the game | **ID:** WJ-09 | **Priority:** Low |
|---|---|---|
| **Actor:** Player | | |
| **Description:** This use case describes how a player exits the game | | |
| **Trigger:** The game has finished and the user chooses to exit the game<br>**Type:** External | | |
| **Preconditions:** None | | |
| **Main Success Scenario:**<br>1. The player clicks "Exit The Game"<br>2. The system exits the current game and returns to main menu | | |
| **Postconditions:** None | | |

| **Use Case Name:** Submit an answer | **ID:** WJ-10 | **Priority:** Low |
|---|---|---|
| **Actor:** Player | | |
| **Description:** This use case describes how a player would answer the question given. | | |
| **Trigger:** The user has been given the question<br>**Type:** External | | |
| **Preconditions:**<br>1. It is the player's turn<br>2. A category has been chosen through "Spin the wheel," "Player's Choice," or Opponents' Choice" use case scenarios<br>3. The next question in the chosen category is displayed | | |
| **Main Success Scenario:**<br>1. The player types in their answer in the text box<br>2. If the player clicks:<br>a. "Submit Answer", the answer types is compared to the actual answer.<br>b. "Clear Answer", the text box is cleared<br>3. If the player answers:<br>a. Correctly, then the point value of the question is awarded<br>b. Incorrectly, then the point value of the question is deducted | | |
| **Postconditions:** None | | |

| **Use Case Name:** Game Over | **ID:** WJ-11 | **Priority:** Low |
|---|---|---|
| **Actor:** Players | | |
| **Description:** This use case describes how the game ends | | |
| **Trigger:** The game has finished<br>**Type:** External | | |
| **Preconditions:**<br>1. Two rounds have been played OR<br>2. The wheel has been spun more than 50 times | | |

| |
|---|
| **Main Success Scenario:**<br>1. The system displays that the game has ended<br>2. The system displays the final scores and the winner |
| **Postconditions:** The system asks the user to quit, play again, or return to the main menu |

# 4. Supplementary Specification

## 4.1 Functional Requirements

### 4.1.1 Two Round Gameplay

The game shall consist of two rounds. In Round 1, point values for each category are 200, 400, 600, 800, and 1000. In Round 2, they are 400, 800, 1200, 1600, and 2000. A player can only gain or lose points equal to the value of the question they answered, unless the player spins “bankrupt.” Then the player’s score for the round is set to zero.The scores for each round are tallied separately and added together at the end of the game. The system will declare the player with the highest total score the winner.

### 4.1.2 Question Board

Each round shall include a new set of six categories and five different questions per category, mapped to a point value on the question board. Questions for each category shall be selected in order of ascending point value.

### 4.1.3 The Wheel

The wheel shall contain 12 sectors: Lose Turn, Free Turn, Bankrupt, Player’s Choice, Opponents’ Choice, Spin Again, and one for each of the six categories. The sectors are randomly distributed.

### 4.1.4 Free Turns

When the system ends a player’s turn, there must be an opportunity for the player to spend a free turn token and spin again. There are no limits on the number of tokens that can be acquired and spent. The player can use a token after losing a turn or answering incorrectly but not after spinning Bankrupt.

## 4.2 Business Rules

### 4.2.1 Questions can be asked only once per round.

Functional Requirement: Choose Category
Related Use Cases: WJ-04, WJ-05, WJ-08

When a player spins a category or a player or opponent selects one, the system will display the next unanswered question with the lowest point value in that category. If all questions in the category have been answered during the round, if the category was chosen by the wheel, the system prompts the player to spin again or if the category was chosen by the player or opponent, the system prompts them to choose a different category.

### 4.2.2 Players have a limited time to answer questions.

Functional Requirement: Submit Answer
Related Use Cases: WJ-10

A timer shall count down from 60 seconds at the time a question is displayed. When a player answers a question, the system subtracts points and ends the player's turn if the timer reaches zero or if their answer does not match the answer on file. If the player answers correctly within the time limit, the system adds the points to their score and the player spins again.

### 4.2.3 Rounds are limited to 50 spins or no questions remaining.

Functional Requirement: Two Round Gameplay
Related Use Cases: WJ-08, WJ-10, WJ-11

The GUI will display a counter for the number of spins remaining, counting down from 50. If the spin count for the round reaches zero, the round ends at the end of the current player's turn. Alternatively, when the last unanswered question on the board is answered, the round ends. When Round 1 ends, the spin count is reset to 50 and play resumes. If Round 2 ends, the game ends and the system declares the player with the highest total score the winner.

## 4.3 Usability

The system shall be easy to use for any adult or child with English literacy and a basic understanding of navigating software game applications. The user interface will be intuitive and simple enough that no instructions are required to play, with appropriate feedback from the system to guide player actions. A variety of general knowledge questions will be included in the software and should match the approximate difficulty level of a typical game show so as to keep the average user engaged. The software will also include a setting that allows users to edit questions and categories in order to accommodate different skill levels.

## 4.4 Supportability

The Software Masters shall maintain thorough documentation of the software and all updates. The software will be modular to facilitate design changes.

## 4.5 Design & Implementation Constraints

The system design will be limited to the capabilities of Java and its GUI tools. The design must meet all requirements documented in the Wheel of Jeopardy Project Description and this SRS. We must be able to implement all aspects of the design before the project deadline, August 15, 2016.

## 4.6 Hardware, Software & User Interfaces

System users will interface with the Java GUI using a keyboard and mouse. The initial release will allow up to four players to compete against each other while face-to-face using the same computer equipment. The game shall run on any computer hardware and operating system that supports Java Runtime Environment (JRE) Version 8.

## 4.7 Legal, Copyright, & Other Notices

OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.