Lunar

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CS 151 Section 3

**Assignment 1: Functional Specifications**

**Problem Statement:** The client wants a program where the user can play rock-paper-scissors against a computer player.

**Objectives:** The objective is to implement a program where the user can play rock-paper-scissor with the computer and the computer will determine it’s choice without knowing the user’s choice.

**Functional Requirements:**

* + has to take user input
    - user can specify number of throws
    - user types choice
  + Ability to keep track of scores of matches including ties
  + Should be able to decide the computer’s choice
  + Keep updating the score of the game after each play
  + The program should be able to display:
    - Computer’s choice
    - User’s choice
    - the number of throws won by the human
    - the number of throws won by the computer
    - the number of ties
    - who is the winner of the match
  + Display help message upon user’s request
  + Start the program
  + Create new game
  + Quit the program

**Nonfunctional Requirements:**

* Time-limit per throw (User/Computers)
* Minimum system requirements, Java supportability.
* Displays messages in multiple languages: English, Spanish, and Chinese.

**The use case diagram and all the use cases has been changed.**

**Use Case Diagram**



**Note: In the use case description, every time it is written that the user types in something, it also indicates that the user typed Enter afterwards.**

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| **Use Case Name** | | **Start the Game** | |
| **Overview** | | This is the sequence that begins when the User Player first begins the program. | |
| **Actors** | | User Player, Computer Player | |
| **Pre-conditions** | | The User Player has opened the file containing the program | |
| **Trigger** | | The file has been clicked on | |
| **Basic Flow** | | | |
| **Step 1:** | The program starts and the system asks the User Player what language he/she would like to use: English, Spanish, or Chinese. | | |
| **Step 2:** | The user enters one of the three languages specified. | | |
| **Step 3:** | The system starts using the specified language. | | |
| **Step 4:** | The system asks the User Player to enter his name. | | |
| **Step 4:** | The User Player enters his name | | |
| **Step 5:** | The system asks the User Player to enter the number of throws he/she wants to play | | |
| **Step 6:** | The User Player enters the number of throws | | |
| **Step 7:** | The system begins **Play a Round** – refer to the Play a Round use case description. | | |
| **Post Conditions** | | | |
| The User Player has entered the number of throws they wish to play ant the system is ready to begin | | | |
| **Alternative Paths:** | | | |
| The user typed in something else (followed by the Enter key). The user typed:  An invalid command – Display error message and ask the user to enter a valid command.  “Help” – Refer to the Display the Help Message use case description.  “Restart” – Refer to the Start a New Game use case description.  “Quit” – Refer to the Quit the Game use case description.  “Score” – Refer to the Display the Score use case description. | | | |
| **Nonfunctional Requirements** | | | The system must respond within a 5 secs |
| **Glossary** | | | quit - The user types “quit” to close the game.  restart - The user types “restart” to start a new game.  help - The user types “help” to display a help message about how to play the game, what are the rules, and what are the commands.  score – the user types “score” to display the current score |

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| **Use Case Name** | | **Restart the game** | |
| **Overview** | | This is the sequence that begins when the User Player wishes to restart the game from the beginning. | |
| **Actors** | | User Player, Computer Player | |
| **Pre-conditions** | | The Game is already in session | |
| **Trigger** | | The User Player types in “restart” | |
| **Basic Flow** | | | |
| **Step 1:** | The User Player types in “restart” | | |
| **Step 2:** | The System asks if they are sure and asks the User Player to to enter yes or no. | | |
| **Step 3:** | The UserPlayer types in “yes” | | |
| **Step 4:** | The System quits the current game and the score is reset | | |
| **Step 5:** | The Systems starts the game from beginning. Refer to the basic flow of Start the Game use case description. | | |
| **Post Conditions** | | | |
| The UserPlayer has entered the number of throws they wish to play ant the system is ready to begin | | | |
| **Alternative Paths:** | | | |
| The user typed in something else (followed by the Enter key). The user typed:  An invalid command – Display error message and ask the user to enter a valid command.  “Help” – Refer to the Display the Help Message use case description.  “Restart” – Refer to the Start a New Game use case description.  “Quit” – Refer to the Quit the Game use case description.  “Score” – Refer to the Display the Score use case description. | | | |
| **Nonfunctional Requirements** | | | The system must respond within a 5 seconds. |
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| **Glossary** | | | quit - The user types “quit” to close the game.  restart - The user types “restart” to start a new game.  help - The user types “help” to display a help message about how to play the game, what are the rules, and what are the commands.  score – the user types “score” to display the current score |

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| **Use Case Name** | **Play a round** |
| **Overview** | This is to play a round in the game. |
| **Actors** | User Player and the Computer Player |
| **Pre-conditions** | The game is on. The numbers of rounds are not yet completed. |
| **Trigger** | The user has just started the game by identifying the number of rounds in the game or there is already a game going on and the system printed out the score for the previous round. |
| **Basic Flow** | |
| **Step 1:** | The user player types in Rock, Paper, or Scissors and hits enter. |
| **Step 2:** | The computer player determines it’s choice |
| **Step 3:** | The number of rounds to be played is reduced by one. |
| **Step 4:** | The system displays the scores for the game.  If the numbers of rounds are completed, display the winner based on who has the highest wins. Also, refer to the Start a New Game use case description. |
| **Post Conditions:** The system has displayed the current score for the game and the number of rounds to be played is reduced by one. | |
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| **Alternative**  **Sequence.** | The user typed in something else (followed by the Enter key). The user typed:  An invalid command – Display error message and ask the user to enter a valid command.  “Help” – Refer to the Display the Help Message use case description.  “Restart” – Refer to the Start a New Game use case description.  “Quit” – Refer to the Quit the Game use case description.  “Score” – Refer to the Display the Score use case description. |
| **Alternative Post Conditions:** The game has been resumed if the user did not type in “Restart” or “Quit.” | |
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| **Nonfunctional Requirements** | The system responds within 5 seconds. |
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| **Glossary** | quit - The user types “quit” to close the game.  restart - The user types “restart” to start a new game.  help - The user types “help” to display a help message about how to play the game, what are the rules, and what are the commands.  score – the user types “score” to display the current score |

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| **Use Case Name** | **Display help message** |
| **Overview** | This is to display the help message upon user’s request. |
| **Actors** | User Player |
| **Pre-conditions** | The game is on. |
| **Trigger** | The user typed in “help” followed by the Enter key. |
| **Basic Flow** | |
| **Step 1:** | The user player types in “help”. |
| **Step 2:** | The system displays the Help Message. |
| **Post Conditions:** The system has displayed the help message and resumes the game. | |
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| **Alternative**  **Sequence.** | The user typed in something else (followed by the Enter key). The user typed:  An invalid command – Display error message and ask the user to enter a valid command.  “Help” – Refer to the Display the Help Message use case description.  “Restart” – Refer to the Start a New Game use case description.  “Quit” – Refer to the Quit the Game use case description.  “Score” – Refer to the Display the Score use case description. |
| **Alternative Post Conditions:** The game has been resumed if the user did not type in “Restart” or “Quit.” | |
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| **Nonfunctional Requirements** | The system responds within 5 seconds. |
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| **Glossary** | quit - The user types “quit” to close the game.  restart - The user types “restart” to start a new game.  help - The user types “help” to display a help message about how to play the game, what are the rules, and what are the commands.  score – the user types “score” to display the current score |

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| **Use Case Name** | **Quit the game** |
| **Overview** | User Player can end the game at any point by using “quit” as a command line. |
| **Actors** | User Player |
| **Pre-conditions** | The game is on. |
| **Trigger** | User player has entered “quit” in command line. |
| **Basic Flow** | |
| **Step 1:** | User player enters “quit” in command line followed by the Enter key. |
| **Step 2:** | User player is asked for conformation with Y/N (Yes/No) option. |
| **Step 3:** | If the user enters yes, quit the game. If the user enters no, resume the game. |
| **Post Conditions:** The game is closed. | |
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| **Alternative**  **Sequence.** | The user typed in something else (followed by the Enter key). The user typed:  An invalid command – Display error message and ask the user to enter a valid command.  “Help” – Refer to the Display the Help Message use case description.  “Restart” – Refer to the Start a New Game use case description.  “Quit” – Refer to the Quit the Game use case description.  “Score” – Refer to the Display the Score use case description. |
| **Alternative Post Conditions:** The game has been resumed if the user did not type in “Restart” or “Quit.” | |
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| **Nonfunctional Requirements** | The system responds within 5 seconds. |
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| **Glossary** | quit - The user types “quit” to close the game.  restart - The user types “restart” to start a new game.  help - The user types “help” to display a help message about how to play the game, what are the rules, and what are the commands.  score – the user types “score” to display the current score |

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| **Use Case Name** | **Quit the game** |
| **Use Case Name** | **Display the scores** |
| **Overview** | This is to display the scores upon user’s request. |
| **Actors** | User Player and the Computer Player |
| **Pre-conditions** | The game is on. The numbers of rounds are not yet completed. |
| **Trigger** | The user types in “score” followed by the Enter key. |
| **Basic Flow** | |
| **Step 1:** | The user types in “score” followed by the Enter key. |
| **Step 2:** | The system displays the current score. |
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| **Post Conditions:** The system has displayed the current score for the game. | |
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| **Alternative**  **Sequence.** | The user typed in something else (followed by the Enter key). The user typed:  An invalid command – Display error message and ask the user to enter a valid command.  “Help” – Refer to the Display the Help Message use case description.  “Restart” – Refer to the Start a New Game use case description.  “Quit” – Refer to the Quit the Game use case description.  “Score” – Refer to the Display the Score use case description. |
| **Alternative Post Conditions:** The game has been resumed if the user did not type in “Restart” or “Quit.” | |
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| **Nonfunctional Requirements** | The system responds within 5 seconds. |
|  | |
| **Glossary** | quit - The user types “quit” to close the game.  restart - The user types “restart” to start a new game.  help - The user types “help” to display a help message about how to play the game, what are the rules, and what are the commands.  score – the user types “score” to display the current score |

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| **Use Case Name** | **Display the Scores** |
| **Use Case Title** | **Start a new game** |
| **Overview** | This is to start a new game after the previous game has ended. |
| **Actors** | User Player |
| **Pre-conditions** | The previous game has just ended (the number of rounds specified by the User Player are over). The scores and the winner have been displayed. |
| **Trigger** | The number of rounds for the previous game has been completed. |
| **Basic Flow** | |
| **Step 1:** | The number of rounds for the previous game has been completed. |
| **Step 2:** | The system asks the User Player whether he would like to continue (Yes or No). |
| **Step 3:** | If the user enters no, close the program.  If the user enters yes, ask the User Player how many rounds he would like to play. After the user has entered number of rounds, refer to the Play a Round use case diagram. |
| **Post Conditions:** The game is closed if the user typed no or a new game begins if the user typed yes to begin to the game. | |
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| **Alternative**  **Sequence.** | The user typed in something else (followed by the Enter key). The user typed:  An invalid command – Display error message and ask the user to enter a valid command.  “Help” – Refer to the Display the Help Message use case description.  “Restart” – Refer to the Start a New Game use case description.  “Quit” – Refer to the Quit the Game use case description.  “Score” – Refer to the Display the Score use case description. |
| **Alternative Post Conditions:** The game has been resumed if the user did not type in “Restart” or “Quit.” | |
|  | |
| **Nonfunctional Requirements** | The system responds within 5 seconds. |
|  | |
| **Glossary** | quit - The user types “quit” to close the game.  restart - The user types “restart” to start a new game.  help - The user types “help” to display a help message about how to play the game, what are the rules, and what are the commands.  score – the user types “score” to display the current score |

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