



**SOEN 6011- Software Engineering Processes  
(Summer 2016)**

**Project Team: SmartTech (Group 10)**

**Assignment 2  
Requirements Document / Use Case Analysis  
On  
“Tic-Tac-Toe”**

**Submitted by:**

Vijay Shah (27735146)  
Amandeep Sharma (27260164)  
Bhawna Sharma (27568789)  
Amritpal Singh (27684878)  
Deepinder Singh (40004787)  
Hardilpreet Singh (27822200)  
Jatinderpal Singh (27727267)  
Manvir Singh (27680120)

**Submitted to:**

Dr. Nicolangelo Piccirilli

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# 1. Requirements

A requirement is a solitary documented physical and functional need that a specific item or service must be or perform. In other words, Requirements represent a specification for the new system which can be characterized as a contract between client and developer.

We usually distinguish requirements between functional and non-functional requirements.

- Functional requirements, which portray functions that the new system must support.
- Non-functional requirements, which force global constraints or requirements on the system.

## 1.1 Problem Statement

Problem statement is to develop a Tic-Tac-Toe game using Java programming which allows (1) A two player computer variant of the game against a computer player that uses a heuristic to attempt to beat the human player, or (2) a human to play against another human. The system will be able to permit clients to pick between these two choices. In this way, the famous game named “Tic-Tac- Toe” will be developed utilizing JAVA programming in the Eclipse environment. Android Studio is the authority IDE built up the Tic-Tac-Toe android application. We will be developing it for Android and Windows platform users.

## 1.2 Background information

In this course, we are going to plan, code, and test a program that implements the Tic-Tac-Toe game using java programming language. Tic Tac Toe is a game who then again place X's and O's upon a 3x3 playing board. Players alternate turn in putting their symbol in any unoccupied box (square) on the board. The first player to finish three of its symbols in (1) a horizontal row, (2) a vertical column, or (3) in either of the two cross diagonals wins the game. Otherwise the game proceeds with the other player's turn. If all of the fields or squares are filled with symbols and no one won, the game closes in a draw.

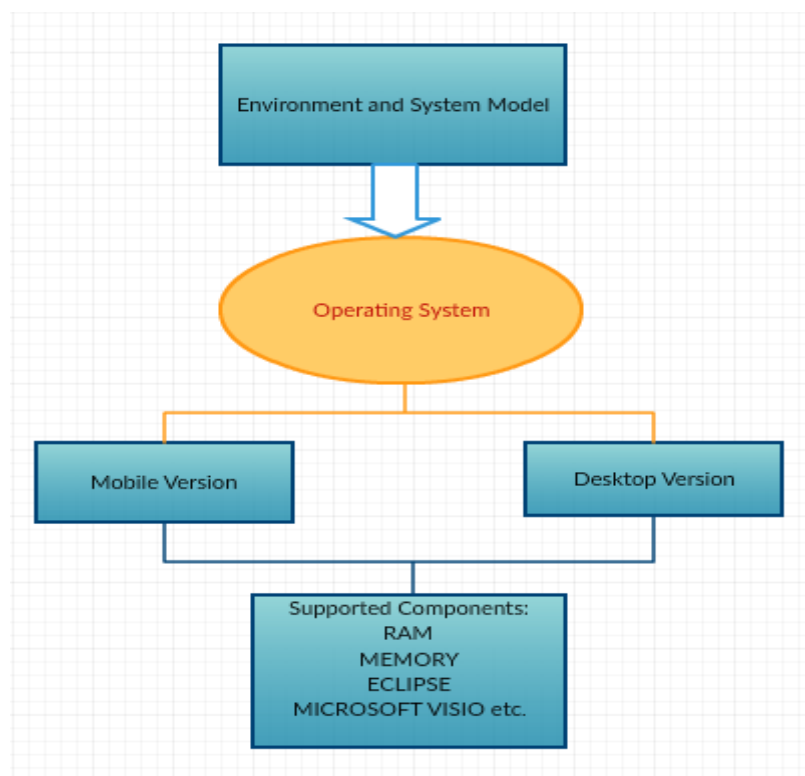
In first deliverable, we are going to develop an interactive tic-tac-toe game on desktop platform which is fit to show the 3\*3 board and ready to draw a "X" or an "O" on user demand (on user's click). Besides, due to proliferation in demand for android gadgets, this java application is good to take a shot at gadgets under Android Environment for two players which will eventually be the second deliverable of the project. Notwithstanding that, the final deliverable will be produced by including the feature of a computer heuristic wherein the user will be capable play against the computer. The methodology used to develop this project is based on the SMART criteria which implies accomplishing the desired product with adherence to well characterized specification inside expressed time period with a quantifiable progress.

## 1.3 Environment and system models

The environment refers to the operating environment in which the software will operate, including the hardware platform, operating system and versions, and any other software components or applications with which it must peacefully coexist.

The environment here in our project, is the either mobile phone or desktop version or both. Further the hardware platform includes different aspects like Ram, Memory, and processor and off course the different operating system like windows 8 or 7 along with its supported version. The number of other supported components for our project are like eclipse, Microsoft Visio, android studio etc.

The system models refer to the models for the development of software. It means a set of activates and their dependency relationship with each other in order to complete the project.



*Figure 1: Environment and system model*

## 1.4 Functional Requirements

Functional requirements are the desired functionality that the client want us to build and conveyed to them. A functional requirement portrays a connection between the system and its surroundings.

### 1.4.1 Deliverable 1

**A stand-alone Java application that is able to show the board and draw an “X” or an “O” where the user clicks.**

| RQ# | Requirements                                                                                   |
|-----|------------------------------------------------------------------------------------------------|
| RQ1 | The User is able to start a new game in the beginning.                                         |
| RQ2 | Player will be able to enter his/her name.                                                     |
| RQ3 | The User has an option to start the game with either “X” or an “O” which appears on the board. |
| RQ4 | A 3x3 board is used for the game on which the game is played.                                  |
| RQ5 | Player will be able to see his/her name while playing the game.                                |
| RQ6 | Player has the facility to check the rules of the game.                                        |
| RQ7 | The space on the board is filled up with the user’s selection.                                 |
| RQ8 | User can also reset the game to the beginning if required.                                     |
| RQ9 | User should be able to exit the game whenever desired.                                         |

### 1.4.2 Deliverable 2

**A java mobile application that works on Android devices for the full tic-tac-toe game. (2 human players)**

| RQ# | Requirements                                                                                                         |
|-----|----------------------------------------------------------------------------------------------------------------------|
| RQ1 | One of the human players acting as player 1 is able to initiate the game.                                            |
| RQ2 | Any player will be able to check how many games he/she has won.                                                      |
| RQ3 | Human Players will be able to have a best of 3 or best of 5 game series as a tournament.                             |
| RQ4 | User will be able to see whose turn it is and corresponding selected symbol X or O.                                  |
| RQ5 | User will be capable to see the high score list.                                                                     |
| RQ6 | User will be able to see the score of all players.                                                                   |
| RQ7 | User is able to check who is winning the tournament.                                                                 |
| RQ8 | The Players would have an option of either resetting the currently ongoing game or restarting the whole game series. |
| RQ9 | The system should be occupying the space on the board with either an “X” or “O” after every move done by a user.     |

### 1.4.3 Deliverable 3

**A two player computer version of the game against a computer player that uses a heuristic to attempt to beat the human player. Should work on desktop or android mobile.**

| RQ# | Requirements                                                                                                                                       |
|-----|----------------------------------------------------------------------------------------------------------------------------------------------------|
| RQ1 | Before the game is initiated the user can select among the various level of difficulty available. For example, Beginner, Intermediate and Advance. |
| RQ2 | User has the option to begin the game along with the computer as the opponent.                                                                     |
| RQ3 | The User has the option to choose if they want to play first or the computer would be making the initial move.                                     |
| RQ4 | For every move done by the user and computer, a background sound is played respectively.                                                           |
| RQ5 | Once the user defeats the computer, a form of virtual gift would be displayed to the user.                                                         |

## 1.5 Non-functional requirements

A non-functional requirement describes a limitation on the system that constrains our decisions for building a solution to the problem.

### 1.5.1 Deliverable 1

- **Modifiability:** The user interface should be effectively modifiable since new components will be must be included and showed later.
- **Operability:** The interface will be easy to utilize. What's more, well-formed so that it's easy to learn and operate it.
- **Usability:** The game developed has a user friendly interface ensuring that its really easy to perform the required action.

### 1.5.2 Deliverable 2

- **Portability:** The game will be compatible on both android gadgets and desktop PC.
- **Extensibility:** The system is developed considering the future improvements for the game such as the features, difficulty level.
- **Responsiveness:** The game will be able to react rapidly to the players and evolving environment. (Responsive comes under Performance Requirements)
- **Robustness:** The game will be robust to allow the scope of making errors by the players.
- **Usability:** The game provides a “help” option for the user to better understand the game and play accordingly.

### 1.5.3 Deliverable 3

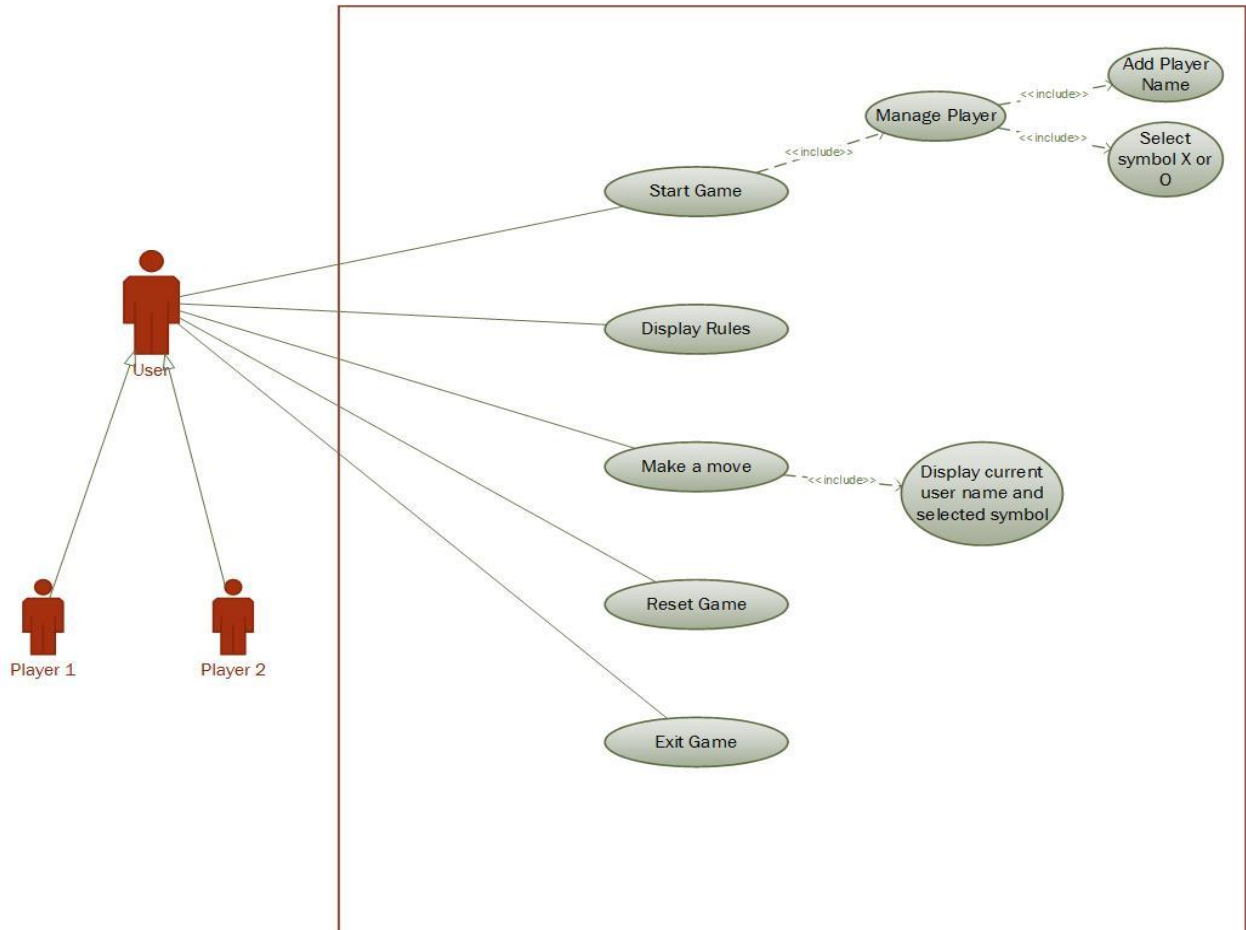
- **Interface:** The interface of the gam developed is easily understandable by any user.
- **Manageability:** With options such as to “reset” or “restart” the game, it makes the system to be easily manageable for any user.
- **Usability:** The game will be easy to use so that even the new player can adjust easily.
- **Performance Efficiency:** The game will be able to perform the functions under limited memory and graphic options.
- **Portability:** The game will be compact with that goal that it can keep running on both android devices and desktop computer.
- **Robustness:** The game will be robust to permit the extent of committing errors by the players.

## 2. Use Case Analysis

Requirements and correspond Use Cases:

### 2.1 For Deliverable 1

#### 2.1.1 Use Case Model



#### 2.1.2 List of Use Cases

| UC-# | UC Name       |
|------|---------------|
| UC-1 | Start Game    |
| UC-2 | Manage Player |
| UC-3 | Display Rules |
| UC-4 | Make a move   |
| UC-5 | Reset Game    |
| UC-6 | Exit Game     |

Table 1 - List of Use Cases

### 2.1.3 Use Case Description

#### 2.1.3.1 Use Case #1: Start Game

|                              |                                         |                                     |
|------------------------------|-----------------------------------------|-------------------------------------|
| <b>Use Case UC-1</b>         | Start Game                              |                                     |
| <b>Related Requirements:</b> | RQ-1, RQ-4                              |                                     |
| <b>Priority</b>              | High                                    |                                     |
| <b>Pre Conditions</b>        | Application should be opened.           |                                     |
| <b>Post Conditions</b>       | New window open to add user information |                                     |
| <b>Initiating Actors</b>     | User                                    |                                     |
| <b>Actor's Goal</b>          | To start playing game                   |                                     |
| <b>Trigger</b>               | User clicks on Start button             |                                     |
| <b>Main Scenario</b>         | <b>Step</b>                             | <b>Action</b>                       |
|                              | 1.                                      | User opens Tic Tac Toe application  |
|                              | 2.                                      | Application displays homepage.      |
|                              | 3.                                      | User clicks on 'Start Game' button. |

#### 2.1.3.2 Use Case #2: Manage Player

|                              |                                                        |                                  |
|------------------------------|--------------------------------------------------------|----------------------------------|
| <b>Use Case UC-2</b>         | Manage Player                                          |                                  |
| <b>Related Requirements:</b> | RQ-2, RQ-3                                             |                                  |
| <b>Priority</b>              | High                                                   |                                  |
| <b>Pre Conditions</b>        | Game should have been started.                         |                                  |
| <b>Post Conditions</b>       | 1. User's name is added.<br>2. The symbol is selected. |                                  |
| <b>Initiating Actors</b>     | User.                                                  |                                  |
| <b>Actor's Goal</b>          | 1. To input user name.<br>2. To select the symbol.     |                                  |
| <b>Trigger</b>               | None.                                                  |                                  |
| <b>Main Scenario</b>         | <b>Step</b>                                            | <b>Action</b>                    |
|                              | 1.                                                     | User enters his name.            |
|                              | 2.                                                     | User selects 'X' or 'O' symbol.  |
|                              | 3.                                                     | User clicks on the 'Run' button. |



| Alternate Scenario | Step | Action                                          |
|--------------------|------|-------------------------------------------------|
|                    | 1.   | User Clicks ‘Run’ button without entering name. |
|                    | 2.   | Application displays an error message.          |

#### 2.1.3.3 Use Case #3: Display Rules

|                              |                                               |                                                      |
|------------------------------|-----------------------------------------------|------------------------------------------------------|
| <b>Use Case UC-3</b>         | Display Rules                                 |                                                      |
| <b>Related Requirements:</b> | RQ-6                                          |                                                      |
| <b>Priority</b>              | Low                                           |                                                      |
| <b>Pre Conditions</b>        | Application should be opened.                 |                                                      |
| <b>Post conditions</b>       | New window open displaying rules of the game. |                                                      |
| <b>Initiating Actors</b>     | User                                          |                                                      |
| <b>Actor’s Goal</b>          | To view the rules of the game.                |                                                      |
| <b>Trigger</b>               | User clicks on ‘Help’ button.                 |                                                      |
| <b>Main Scenario</b>         | <b>Step</b>                                   | <b>Action</b>                                        |
|                              | 1.                                            | User clicks ‘Help’ button.                           |
|                              | 2.                                            | Application displays a window showing rules of game. |

#### 2.1.3.4 Use Case #4: Make a Move

|                              |                                                  |  |
|------------------------------|--------------------------------------------------|--|
| <b>Use Case UC-4</b>         | Make a Move                                      |  |
| <b>Related Requirements:</b> | RQ-7                                             |  |
| <b>Priority</b>              | High                                             |  |
| <b>Pre Conditions</b>        | Application should be running.                   |  |
| <b>Post Conditions</b>       | Selected symbol is displayed on the target box   |  |
| <b>Initiating Actors</b>     | User                                             |  |
| <b>Actor’s Goal</b>          | To display his selected symbol on desired target |  |
| <b>Trigger</b>               | User click on any box of the board.              |  |

| Main Scenario | Step | Action                                                  |
|---------------|------|---------------------------------------------------------|
|               | 1.   | User click on a box on the board.                       |
|               | 2.   | User's selected symbol is displayed on the selected box |

#### 2.1.3.5 Use Case #5: Reset Game

|                       |                                      |                                                                                               |
|-----------------------|--------------------------------------|-----------------------------------------------------------------------------------------------|
| Use Case UC-1         | Reset Game                           |                                                                                               |
| Related Requirements: | RQ-8                                 |                                                                                               |
| Priority              | Medium                               |                                                                                               |
| Pre Conditions        | User has made a move on the board.   |                                                                                               |
| Post Conditions       | The board is cleared of any symbols. |                                                                                               |
| Initiating Actors     | User                                 |                                                                                               |
| Actor's Goal          | To reset the current game            |                                                                                               |
| Trigger               | User clicks on 'Reset' button        |                                                                                               |
| Main Scenario         | Step                                 | Action                                                                                        |
|                       | 1.                                   | User selects a box on the board.                                                              |
|                       | 2.                                   | User clicks on the reset button.                                                              |
|                       | 3.                                   | Application displays a confirmation message.                                                  |
|                       | 4.                                   | 4.1 Application refreshes the current board and clears all the symbols if user selects 'Yes'. |
|                       |                                      | 4.2 Application resumes if user clicks on 'No'.                                               |

#### 2.1.3.6 Use Case #6: Exit Game

|                       |                            |
|-----------------------|----------------------------|
| Use Case UC-1         | Exit Game                  |
| Related Requirements: | RQ-9                       |
| Priority              | Medium                     |
| Pre Conditions        | Application is running.    |
| Post Conditions       | Application is terminated. |

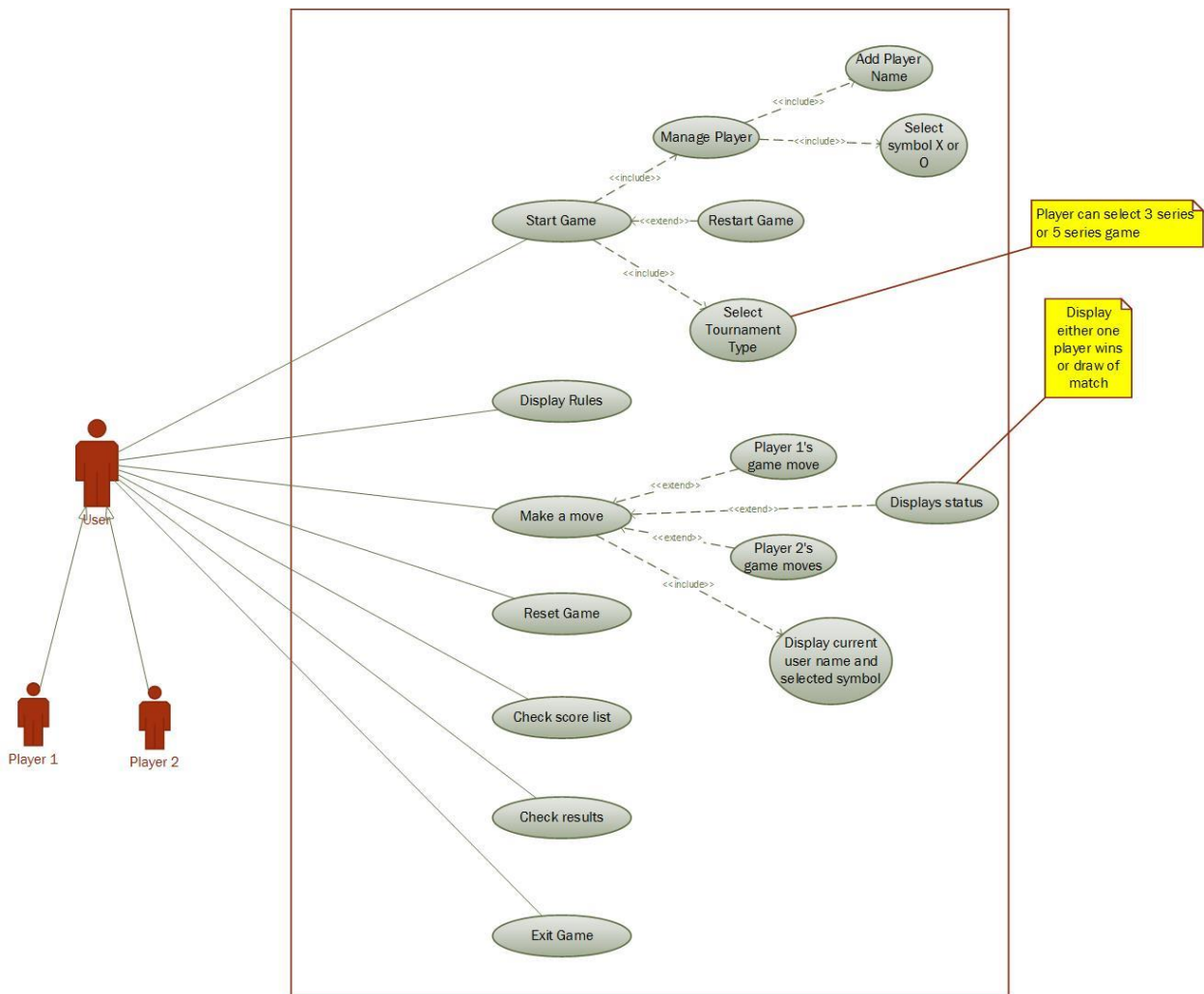
|                          |                              |                                                       |
|--------------------------|------------------------------|-------------------------------------------------------|
| <b>Initiating Actors</b> | User                         |                                                       |
| <b>Actor's Goal</b>      | To quit the application.     |                                                       |
| <b>Trigger</b>           | User clicks on 'Exit' button |                                                       |
| <b>Main Scenario</b>     | <b>Step</b>                  | <b>Action</b>                                         |
|                          | 1.                           | User clicks on the 'Exit' button.                     |
|                          | 2.                           | Application displays a confirmation message.          |
|                          | 3.                           | 3.1 Exit application if user clicks on 'Yes' option.  |
|                          |                              | 3.2 Resume application if user clicks on 'No' option. |

#### 2.1.4 Priority of requirements

| Requirement     | PW<br>(Priority Weightage) | UC1 | UC2 | UC3 | UC4 | UC5 | UC6 |
|-----------------|----------------------------|-----|-----|-----|-----|-----|-----|
| <b>RQ-1</b>     | 5                          | X   |     |     |     |     |     |
| <b>RQ-2</b>     | 5                          |     | X   |     |     |     |     |
| <b>RQ-3</b>     | 5                          |     | X   |     |     |     |     |
| <b>RQ-4</b>     | 5                          | X   |     |     |     |     |     |
| <b>RQ-5</b>     | 2                          |     |     |     | X   |     |     |
| <b>RQ-6</b>     | 2                          |     |     | X   |     |     |     |
| <b>RQ-7</b>     | 5                          |     |     |     | X   |     |     |
| <b>RQ-8</b>     | 3                          |     |     |     |     | X   |     |
| <b>RQ-9</b>     | 4                          |     |     |     |     |     | X   |
| <b>Max PW</b>   |                            | 5   | 5   | 2   | 5   | 3   | 4   |
| <b>Total PW</b> |                            | 10  | 10  | 2   | 7   | 3   | 4   |

### 3.3 For Deliverable 2

#### 3.3.1 Use Case Model



#### 3.3.2 List of Use Cases

| UC-# | UC Name                               |
|------|---------------------------------------|
| UC-1 | Start Game (Functionality Extended)   |
| UC-2 | Make a Moves (Functionality Extended) |
| UC-3 | Check score list                      |
| UC-4 | Check result                          |
| UC-5 | Restart Game                          |

Table 1 - List of Use Cases

### 3.3.3 Use Case Description

#### 3.3.3.1 Use Case #1: Start Game (Functionality Extended)

|                              |                                             |                                                        |
|------------------------------|---------------------------------------------|--------------------------------------------------------|
| <b>Use Case UC-1</b>         | Start Game (Functionality Extended)         |                                                        |
| <b>Related Requirements:</b> | RQ-1, RQ-3                                  |                                                        |
| <b>Priority</b>              | High                                        |                                                        |
| <b>Pre Conditions</b>        | Application should be opened.               |                                                        |
| <b>Post Conditions</b>       | New window opens to select tournament type. |                                                        |
| <b>Initiating Actors</b>     | Player 1                                    |                                                        |
| <b>Actor's Goal</b>          | To start playing game                       |                                                        |
| <b>Trigger</b>               | User clicks on Start button                 |                                                        |
| <b>Main Scenario</b>         | <b>Step</b>                                 | <b>Action</b>                                          |
|                              | 1.                                          | User opens Tic Tac Toe application                     |
|                              | 2.                                          | Application displays homepage.                         |
|                              | 3.                                          | User clicks on 'Start Game' button.                    |
|                              | 4.                                          | Application displays a page to select Tournament type. |
|                              | 5.                                          | Player1 selects Tournament type and clicks 'Ok'        |
|                              | 6.                                          | application displays a page to Enter user details      |
|                              | 7.                                          | Player1 enters his name and Player2's name.            |
|                              | 8.                                          | Player1 selects his symbol.                            |
|                              | 9.                                          | Player1 clicks on 'Run' button.                        |
| <b>Alternate Scenario</b>    | <b>Step</b>                                 | <b>Action</b>                                          |
|                              | 1.                                          | User Clicks 'Run' button without entering name.        |
|                              | 2.                                          | Application displays an error message.                 |

### 3.3.3.2 Use Case #2: Make a move (Functionality Extended)

|                              |                                                  |                                                                                                                                       |
|------------------------------|--------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| <b>Use Case UC-2</b>         | Make a Move(Functionality Extended)              |                                                                                                                                       |
| <b>Related Requirements:</b> | RQ-4                                             |                                                                                                                                       |
| <b>Priority</b>              | High                                             |                                                                                                                                       |
| <b>Pre Conditions</b>        | Board should be displayed on the screen.         |                                                                                                                                       |
| <b>Post Conditions</b>       | Either a Player wins or match draws.             |                                                                                                                                       |
| <b>Initiating Actors</b>     | Player1,Player2                                  |                                                                                                                                       |
| <b>Actor's Goal</b>          | To display his selected symbol on desired target |                                                                                                                                       |
| <b>Trigger</b>               | User click on any box of the board.              |                                                                                                                                       |
| <b>Main Scenario</b>         | <b>Step</b>                                      | <b>Action</b>                                                                                                                         |
|                              | 1.                                               | Application displays Player1's name and selected symbol.                                                                              |
|                              | 2.                                               | Player1 clicks on an empty box on the board.                                                                                          |
|                              | 3.                                               | Player1's symbol is displayed on the selected box                                                                                     |
|                              | 4.                                               | Application displays Player2's name and selected symbol.                                                                              |
|                              | 5.                                               | Player2 clicks on an empty box on the board.                                                                                          |
|                              | 6.                                               | Player2's symbol is displayed on the selected box                                                                                     |
|                              | 7.                                               | Step 1-6 repeats until one player wins (means there is horizontal or vertical or diagonal sequence of similar symbols ) or match draw |
|                              | 8.                                               | Application displays the game status (win/lose or draw).                                                                              |

### 3.3.3.3 Use Case #3: Check score list

|                              |                  |
|------------------------------|------------------|
| <b>Use Case UC-3</b>         | Check Score List |
| <b>Related Requirements:</b> | RQ-5, RQ-6       |

|                          |                                                                 |                                                          |
|--------------------------|-----------------------------------------------------------------|----------------------------------------------------------|
| <b>Priority</b>          | Low                                                             |                                                          |
| <b>Pre Conditions</b>    | Application should be running                                   |                                                          |
| <b>Post Conditions</b>   | A list is displayed containing the scores of different players. |                                                          |
| <b>Initiating Actors</b> | User                                                            |                                                          |
| <b>Actor's Goal</b>      | To view score of different players                              |                                                          |
| <b>Trigger</b>           | User clicks on 'Score list' button                              |                                                          |
| <b>Main Scenario</b>     | <b>Step</b>                                                     | <b>Action</b>                                            |
|                          | 1.                                                              | User clicks on 'Score list' button.                      |
|                          | 2.                                                              | Application displays a list of scores of all the players |

#### 3.3.3.4 Use Case #1: Check result

|                              |                                                       |                                                                     |
|------------------------------|-------------------------------------------------------|---------------------------------------------------------------------|
| <b>Use Case UC-3</b>         | Check result                                          |                                                                     |
| <b>Related Requirements:</b> | RQ-2, RQ-7                                            |                                                                     |
| <b>Priority</b>              | Low                                                   |                                                                     |
| <b>Pre Conditions</b>        | Two players should be playing a tournament.           |                                                                     |
| <b>Post Conditions</b>       | The system displays the result of current tournament. |                                                                     |
| <b>Initiating Actors</b>     | Player1,Player2                                       |                                                                     |
| <b>Actor's Goal</b>          | To view the result of current tournament              |                                                                     |
| <b>Trigger</b>               | User clicks on 'Result' button                        |                                                                     |
| <b>Main Scenario</b>         | <b>Step</b>                                           | <b>Action</b>                                                       |
|                              | 1.                                                    | User clicks on 'Result' button.                                     |
|                              | 2.                                                    | Application displays the result of current tournament.              |
| <b>Alternate Scenario</b>    | <b>Step</b>                                           | <b>Action</b>                                                       |
|                              | 1.                                                    | User clicks on 'Result' button.                                     |
|                              | 2.                                                    | Application displays error message if no player has yet won a game. |

### 3.3.3.5 Use Case #5: Restart Game

|                              |                                 |                                                                    |
|------------------------------|---------------------------------|--------------------------------------------------------------------|
| <b>Use Case UC-3</b>         | Restart Game                    |                                                                    |
| <b>Related Requirements:</b> | RQ-8                            |                                                                    |
| <b>Priority</b>              | Low                             |                                                                    |
| <b>Pre Conditions</b>        | User is already playing a game. |                                                                    |
| <b>Post Conditions</b>       | New tournament started          |                                                                    |
| <b>Initiating Actors</b>     | Player1,Player2                 |                                                                    |
| <b>Actor's Goal</b>          | User wants to start a new game  |                                                                    |
| <b>Trigger</b>               | User clicks on 'Restart' button |                                                                    |
| <b>Main Scenario</b>         | <b>Step</b>                     | <b>Action</b>                                                      |
|                              | 1.                              | User clicks on 'Restart' button.                                   |
|                              | 2.                              | Application restarts the tournament with same players and symbols. |

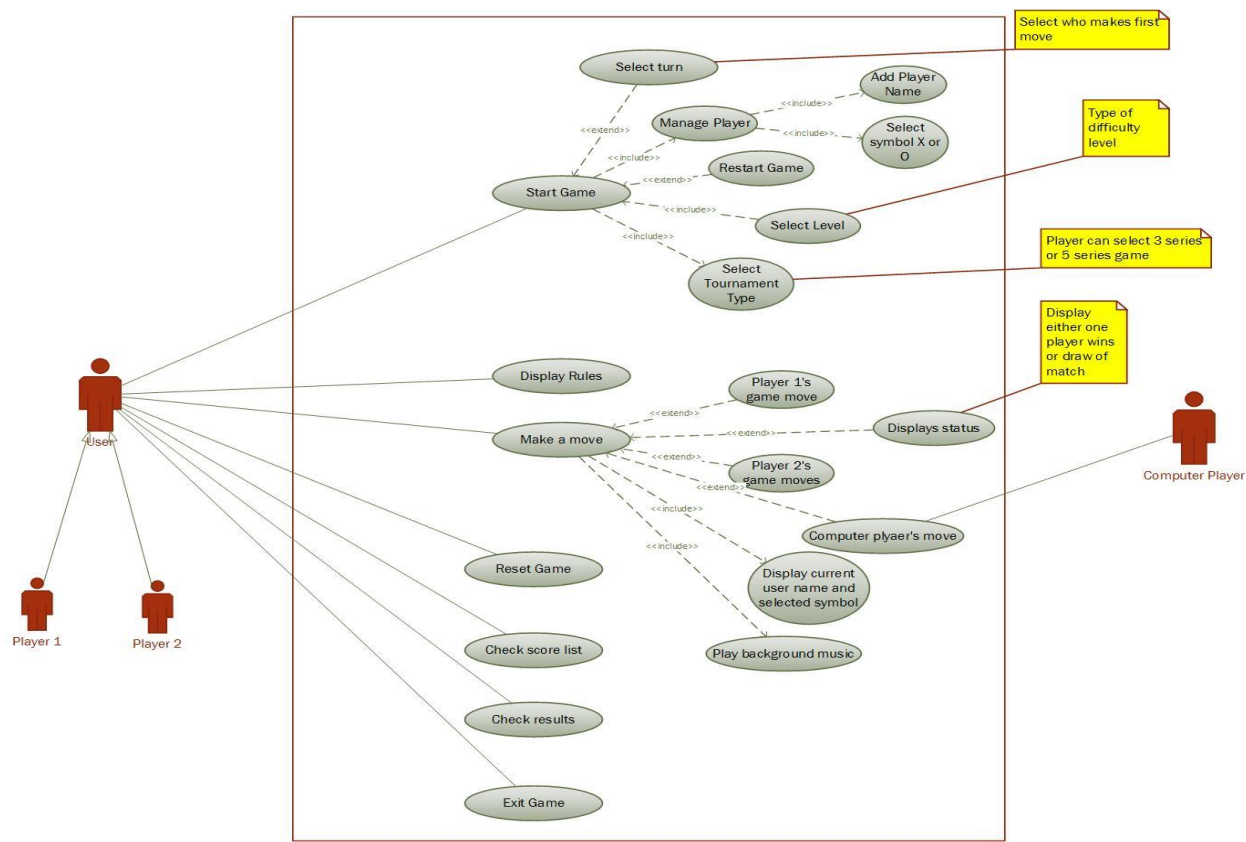
### 3.3.4 Priority of requirements

| Requirement     | PW | UC1 | UC2 | UC3 | UC4 | UC5 |
|-----------------|----|-----|-----|-----|-----|-----|
| <b>RQ-1</b>     | 5  | X   |     |     |     |     |
| <b>RQ-2</b>     | 3  |     |     |     | X   |     |
| <b>RQ-3</b>     | 5  | X   |     |     |     |     |
| <b>RQ-4</b>     | 3  |     | X   |     |     |     |
| <b>RQ-5</b>     | 2  |     |     | X   |     |     |
| <b>RQ-6</b>     | 2  |     |     | X   |     |     |
| <b>RQ-7</b>     | 3  |     |     |     | X   |     |
| <b>RQ-8</b>     | 2  |     |     |     |     | X   |
| <b>RQ-9</b>     | 5  |     | X   |     |     |     |
| <b>Max PW</b>   |    | 5   | 5   | 2   | 3   | 2   |
| <b>Total PW</b> |    | 10  | 8   | 4   | 6   | 2   |



3.4 For Deliverable 3

3.4.1 Use Case Model



3.4.2 List of Use Cases

| UC-# | UC Name                 |
|------|-------------------------|
| UC-1 | Select Turn             |
| UC-2 | Select Level            |
| UC-3 | Computer Player's moves |

Table 1 - List of Use Cases

3.4.3 Use Case Description

3.4.3.1 Use Case #1: Select Turn

|                       |             |
|-----------------------|-------------|
| Use Case UC-1         | Select Turn |
| Related Requirements: | RQ-8        |
| Priority              | High        |

|                          |                                         |                                                                 |
|--------------------------|-----------------------------------------|-----------------------------------------------------------------|
| <b>Pre Conditions</b>    | User has already started the game.      |                                                                 |
| <b>Post Conditions</b>   | User has successfully selected the turn |                                                                 |
| <b>Initiating Actors</b> | Player1                                 |                                                                 |
| <b>Actor's Goal</b>      | User wants to select the turn           |                                                                 |
| <b>Trigger</b>           | None                                    |                                                                 |
| <b>Main Scenario</b>     | <b>Step</b>                             | <b>Action</b>                                                   |
|                          | 1.                                      | User opens Tic Tac Toe application                              |
|                          | 2.                                      | Application displays homepage.                                  |
|                          | 3.                                      | User clicks on 'Start Game' button.                             |
|                          | 4.                                      | Player1 selects Tournament type and clicks 'Ok'                 |
|                          | 5.                                      | Application displays a page to Enter user details               |
|                          | 6.                                      | Player1 enters his name.                                        |
|                          | 7.                                      | Player1 selects his symbol and select who will make first move. |

#### 3.4.3.2 Use Case #2: Select Level

|                              |                                      |                                    |
|------------------------------|--------------------------------------|------------------------------------|
| <b>Use Case UC-1</b>         | Select Level                         |                                    |
| <b>Related Requirements:</b> | RQ-8                                 |                                    |
| <b>Priority</b>              | High                                 |                                    |
| <b>Pre Conditions</b>        | User has already started the game    |                                    |
| <b>Post Conditions</b>       | User has successfully selected level |                                    |
| <b>Initiating Actors</b>     | Player1                              |                                    |
| <b>Actor's Goal</b>          | User wants to select the level       |                                    |
| <b>Trigger</b>               | None                                 |                                    |
| <b>Main Scenario</b>         | <b>Step</b>                          | <b>Action</b>                      |
|                              | 1.                                   | User opens Tic Tac Toe application |
|                              | 2.                                   | Application displays homepage.     |

|  |    |                                                 |
|--|----|-------------------------------------------------|
|  | 3. | User clicks on 'Start Game' button.             |
|  | 4. | Player1 selects Tournament type and clicks 'Ok' |
|  | 5. | Player1 selects game level and clicks 'Ok'      |

#### 3.4.3.3 Use Case #3: Computer Player's moves

|                              |                                                  |                                                          |
|------------------------------|--------------------------------------------------|----------------------------------------------------------|
| <b>Use Case UC-1</b>         | Computer Player's moves                          |                                                          |
| <b>Related Requirements:</b> | RQ-8                                             |                                                          |
| <b>Priority</b>              | High                                             |                                                          |
| <b>Pre Conditions</b>        | Board should be displayed on the screen          |                                                          |
| <b>Post Conditions</b>       | Computer player has successfully made a move     |                                                          |
| <b>Initiating Actors</b>     | Computer Player                                  |                                                          |
| <b>Actor's Goal</b>          | To display his selected symbol on desired target |                                                          |
| <b>Trigger</b>               | Player click on any box of the board             |                                                          |
| <b>Main Scenario</b>         | <b>Step</b>                                      | <b>Action</b>                                            |
|                              | 1.                                               | Application displays selected symbol for computer player |
|                              | 2.                                               | Computer player's symbol is displayed on the board.      |

#### 3.4.4. Priority of requirements

| Requirement     | PW | UC1 | UC2 | UC3 |
|-----------------|----|-----|-----|-----|
| <b>RQ-1</b>     | 5  |     | X   |     |
| <b>RQ-2</b>     | 5  |     |     | X   |
| <b>RQ-3</b>     | 3  | X   |     |     |
| <b>RQ-4</b>     | 3  |     |     | X   |
| <b>RQ-5</b>     | 5  |     |     | X   |
| <b>Max PW</b>   |    | 3   | 5   | 5   |
| <b>Total PW</b> |    | 3   | 5   | 13  |

### 3 References

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