Cairo University

Faculty of Engineering

Electronics & Electric Communications Dep.

Documentation Title	SRS
Course	ELC2080
Group Name	Blaze
Date	26-6-2024

1.Introduction

1.1 Document Purpose

The purpose of this document is to present a detailed description of the Tic Tac Toe game software . It will explain the purpose and features of the software, the interfaces of the software, what the software will do and the constraints under which it must operate. This document is intended for users of the software and also potential developers.

1.2 Product Scope

The Tic Tac Toe software application is a game that allows users to register, log in, and play Tic Tac Toe either against an AI with three difficulty levels (easy, medium, hard) or against another player in multiplayer mode. The software will also keep a history of games played, allowing users to review past games and see each turn until the winner wins.

1.3 Intended Audience

- Development Team: This document provides detailed requirements for the development team to design and implement the Tic Tac Toe software.

- Testers: The testers will use this document to understand the expected functionality and performance criteria to create test cases and validate the software**.**

- **Stakeholders**: including project managers and product owners will use this document to understand the scope and features of the software, ensuring it meets their expectations and requirements
- **End Users:** While not the primary audience, end users may refer to this document to understand the capabilities and limitations of the software & how to use its modes.

1.4 Document Overview

This SRS document is organized into three main sections. The first section provides an introduction to the project. The second section gives an overall description of the software, including its context and major features. The third section details the specific requirements of the software**.**

2. Overall Description

2.1 Product Perspective

The Tic Tac Toe software application is a standalone product. It will be accessible through a user-friendly interface where users can register, log in, play games, and view game history.

2.2 Product Functions

- User Registration and Login
- Single-player mode against AI with 3 levels (easy, medium, hard)
- Multiplayer mode
- Game history viewing

2.3 User Characteristics

The intended users are individuals who enjoy playing Tic Tac Toe. They may range from beginners to experienced players. The software will preview different skill levels through the AI difficulty settings or playing in multiplayer mode with another user.

2.4 Constraints

- The software must run on the specified operating systems as Windows & Mac.
- User Registration info. must be secure.
- The game history must be accurately recorded and displayed.

2.5 Assumptions & Dependencies

- Users will have an active internet connection for registration, login, and multiplayer mode.

3. Specific Requirements

3.1 Functional Requirements & System Features

3.1.1 User Registration and Login

- The software shall provide a registration window for new users to sign up using a username and password or log in using the username & password as shown in Fig.1 .

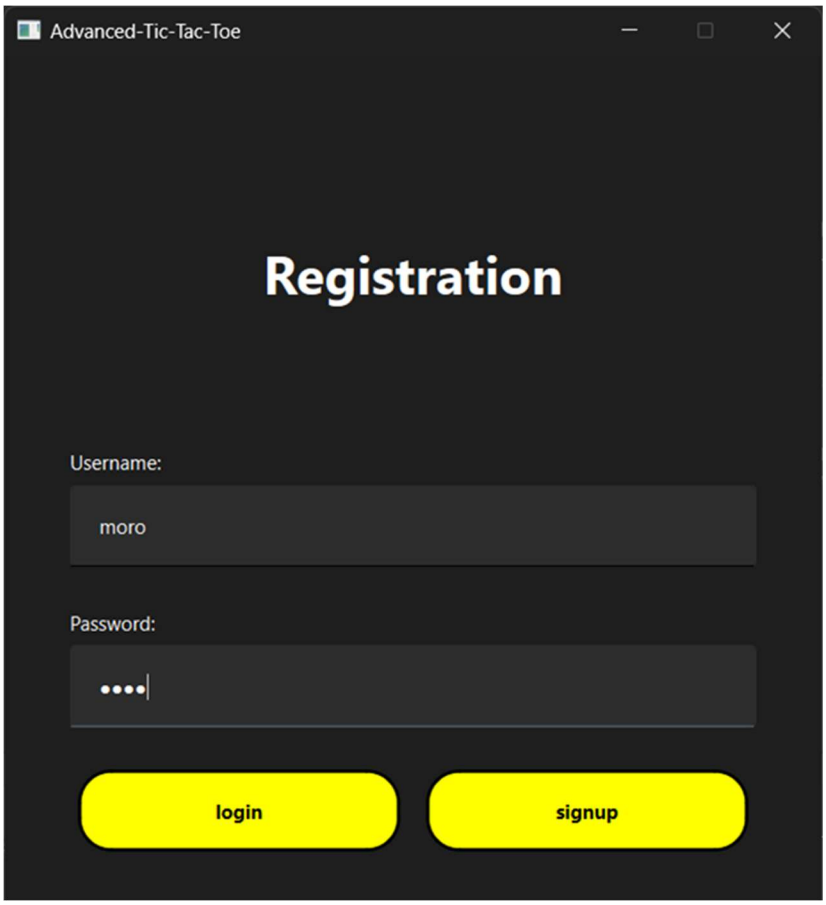

Fig. 1

3.1.2 Game Modes

-The software shall allow users to play against an AI.

-The AI mode shall have three difficulty levels: easy, medium, and hard.

-The software shall allow users to play against another player in multiplayer mode as shown in Fig.2 .

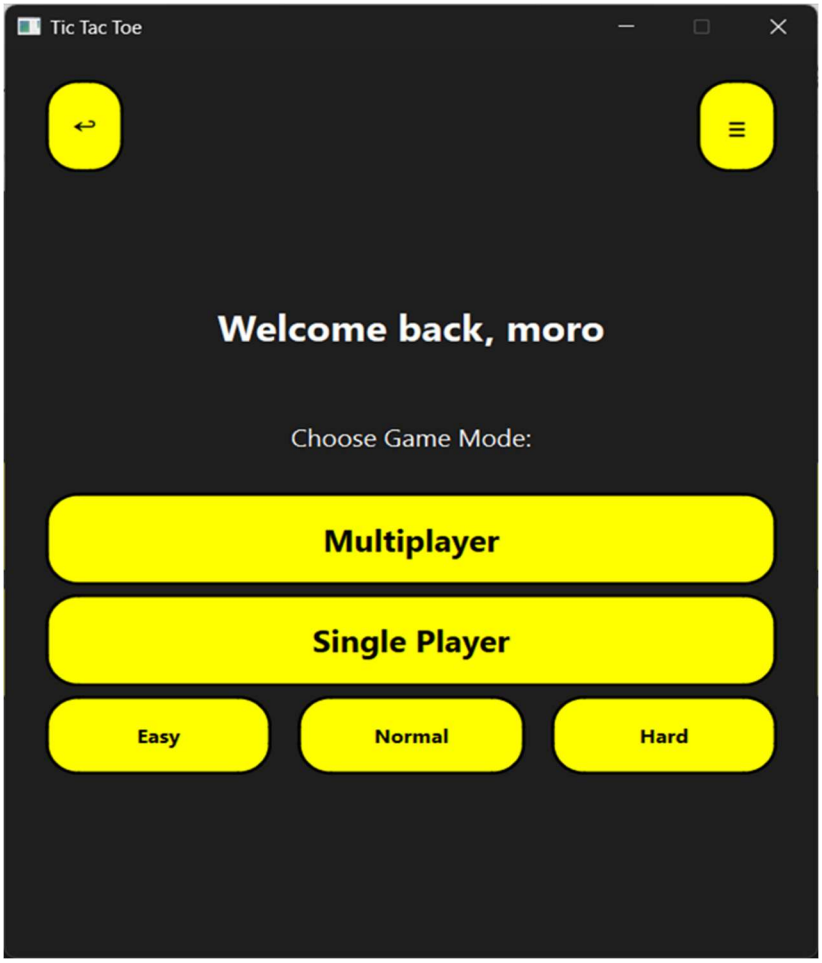

Fig. 2 Showing mode for playing

3.1.3 Game History

- The software shall record the history of all games played.

- The software shall provide an option for users to view their game history as shown in Fig.3 .

-The software shall display each turn of a selected game until the winner wins.

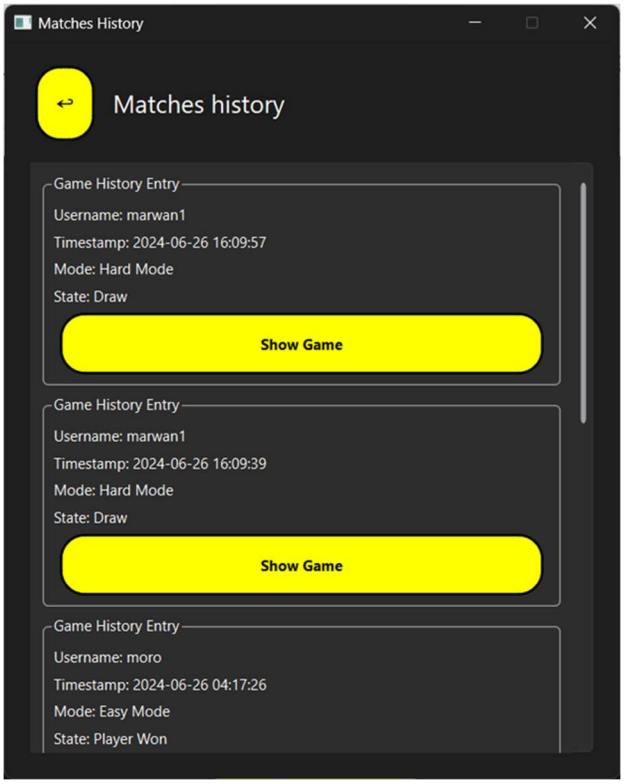

Fig. 3 Showing example of games history

- The game history shall show the info for each game played as the username played this game & the time this game played at & the mode of the game and the result of the game if it was a win for the user or lose or draw as shown in Fig.3

3.1.4 Use Case Description

- For any player starts the game he should Register in the **Registration Screen** as shown in Fig.1 and choose either to **Sign up** if it is the first time to register in the game or **log in** by his username and password
- Then choose the mode of playing either **Multiplayer** (against another user on the same device) or **Single player** (against Ai) then choose the difficulty of the game (easy – medium - hard) as shown in Fig.2 .
- After choosing the mode (assume he has chosen easy mode) The gameplay screen will show empty board as shown in Fig.4 .

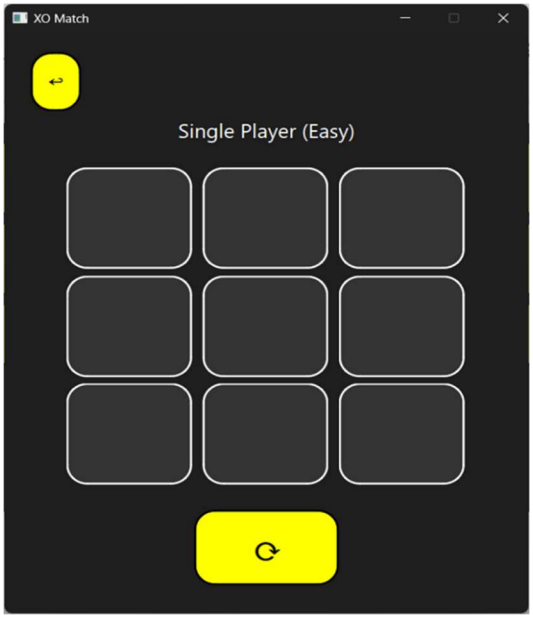

Fig. 4

-The User to win he should try to get three successive 'X' in a row or in a column or in a diagonal to win

-There is an option for user to Restart the game once needed by the '⟳' button

- It is a case shown from the **Game History** as the user played in **Single player** mode in **Hard level** and the game ended in a **draw result** as there wasn't any three consecutive 'X' or 'O' in row or in a column or in a diagonal as shown in Fig.5 .

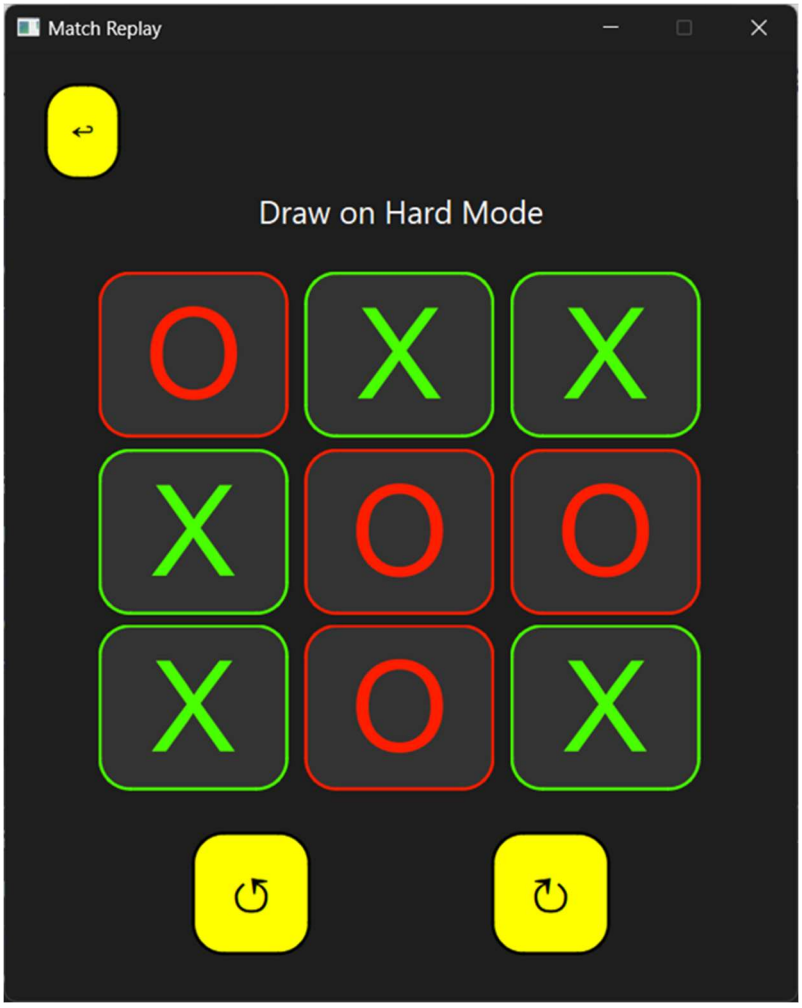

Fig.5

-There is an option to retrieve each move from the game by clicking on 'ↀ' to show the **previous move** or 'ↁ' to show the **next move** as shown in Fig.5 **.**

3.2 Non-Functional Requirements

3.2.1 Performance

- The software shall respond to user inputs within less than one second.
- The software shall load the game history within less than one second.

3.2.2 Security

-The software shall securely store user username & password encryption using hashing algorithm to prevent getting the password easily from the Database.
-The software shall ensure that only authenticated users can access their game history.

3.2.2 Usability

-The software shall have an intuitive and user-friendly interface.

- The software shall provide clear instructions for registration, login, and gameplay.

3.3 External Interface Requirements

3.3.1 Ui Interfaces

- The software shall provide graphical user interfaces for registration, login, game modes, and game history.

3.3.2 Hardware Interfaces

- The software shall be compatible with standard input devices such as a keyboard for registration and mouse for gameplay & registration.

3.3.3 Software Interfaces

- The software shall use standard APIs for authentication & encryption by hashing algo. and data storage for the registration info as username & password in the Database.

4. Appendices

4.1 Glossary

SRS : Software Requirements Specification

Ai : Artificial Intelligence

Ui : User Interface

Authentication : The process of verifying the identity of a user

Multiplayer : A mode where multiple users can play the game together

Singleplayer : A mode where user can play against the Ai

Game History : A record of all games played, including moves & username & password & level of the mode & state of the game if it win or lose or draw & time of playing.