

# Cairo University Faculty of Engineering Dept. of Electronics and Electrical Communications Second Year Embedded systems

**Advanced Tic Tac Toe Game  
AI-XO**

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# Software Requirements Specification (SRS):

# Introduction:

## Purpose:

The purpose of this document is to detail the functional and non-functional requirements for the development of an advanced Tic Tac Toe game. The game will feature user authentication, personalized game history, and an intelligent AI opponent.

## Scope:

The project will follow best practices in software engineering, including secure user management, rigorous testing, and professional version control workflows.

It includes:

* Tic-Tac-Toe Gameplay
* AI Opponent
* User Authentication and Management
* Personalized Game History
* Graphical User Interface (GUI)
* Testing and Quality Assurance
* CI/CD Integration
* Performance Optimization

## Definitions, Acronyms, and Abbreviations:

* **AI**: Artificial Intelligence
* **GUI**: Graphical User Interface
* **SRS**: Software Requirements Specification
* **CI/CD**: Continuous Integration/Continuous Deployment
* **UML**: Unified Modeling Language

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| Software Requirements Specification | |
| Name | Advanced Tic Tac Toe Game |
| purpose | advanced Tic Tac Toe game with AI player and user profile and history |
| inputs | User name, Password, Player Moves (Mouse Clicks) |
| Output | Board Display, User Profile Information, Game History |

# Functions:

Interactive gameplay for two players or player vs. AI

User authentication and profile management

Personalized game history tracking

AI opponent using the Minimax algorithm with alpha-beta pruning

GUI with game board, login, registration, and history views