

Tic Tac Toe

SRS report

Presented to: Prof. Omar Nasr



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1. Game Modes and Mechanics

Standard Mode

- we must start the game with a blank 3x3 grid
- player x may always start the game
- players are switching turns after each move
- once any player of the 2 has reached any of the 8 winning patterns the board must be locked to prevent players from editing it
- the winning patterns are 3 rows or 3 columns or the diagonals

Infinite Mode

- for the infinite mode we only allow each player to have 3 moves on the board
- while the player is playing his 4th move on the board the first move they has placed on board must be deleted and popped out so the player will only have 3 moves on the grid
- the player can not place the 4th move at the same place of the move that is about to be popped
- same winning cases apply as normal mode

Single Player Mode with AI

- for the AI the player takes only the X role and the Minmax algorithm takes the O role
- the AI has 3 different difficulty levels: easy , normal , hard
- the Minmax algorithm determines the best move and places it on the grid
- same turns switching applies as the normal mode
- same winning patterns apply as normal mode

after each game finishes the game result is saved in the database with the detailed game history including moves sequence.

2. Game Finish and Replay

- the player can watch immediately the game he has just finished or he can restart a new game
- game replay allows the player to watch the game with moves that was placed in the same sequence the game was played with a 500ms delay between each move.

3. Account System and Security

Login Panel on First Launch

- Options:
 - Sign up
 - Login
 - Continue as Guest

Account Behavior

- Logged-in users:
 - Have the last 5 games stored, including full histories.
 - Can replay past games anytime.
- Guests:
 - Can play and replay the immediate game, but no data is stored.

Authentication and Session Integrity

- Each login creates a unique authentication file.
- The file verifies the session and prevents unauthorized edits to the database.
- If the database is altered without an associated auth file, the game auto-logs out the session to maintain integrity.

Security and Data Handling

- All account credentials and user data are stored in a secure, encrypted format.
- Active session information is securely maintained and validated via the authentication file.

