

ENSF409 – B01

Term Project – Task I

Analysis and Design

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System requirements and scope

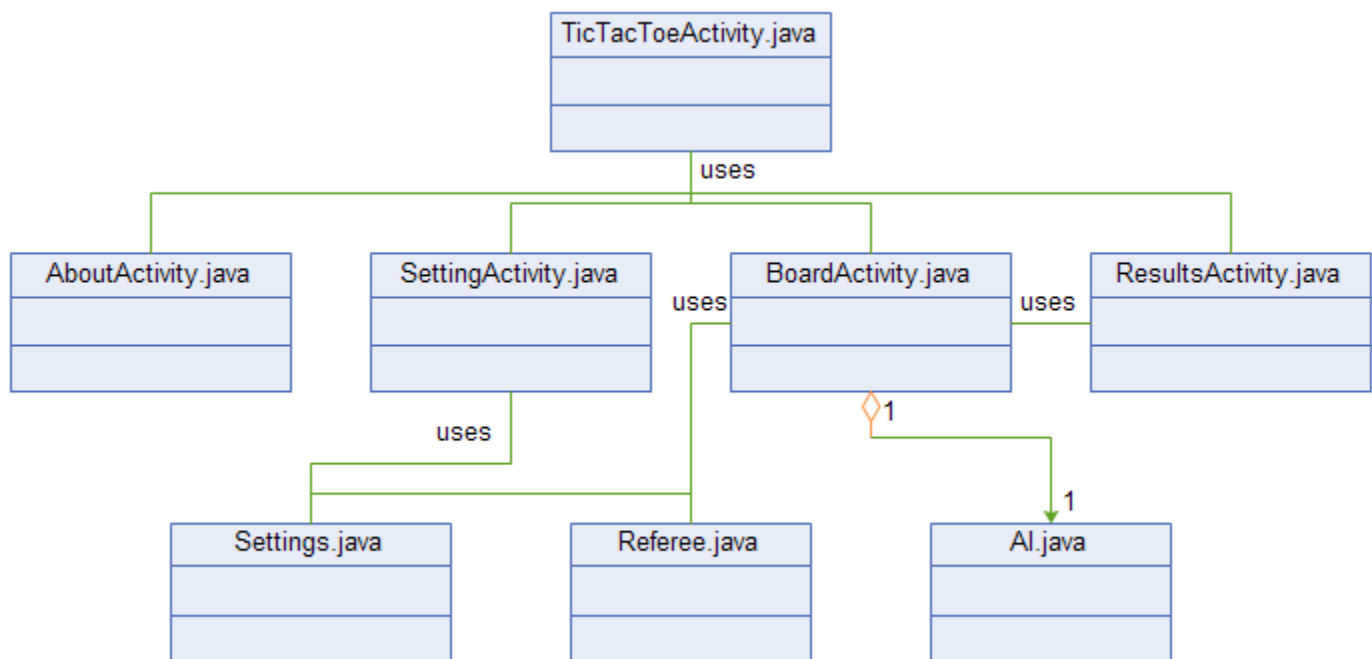
System Requirements:

The program runs on 4.0.3, API Level 15, as well as earlier configurations.

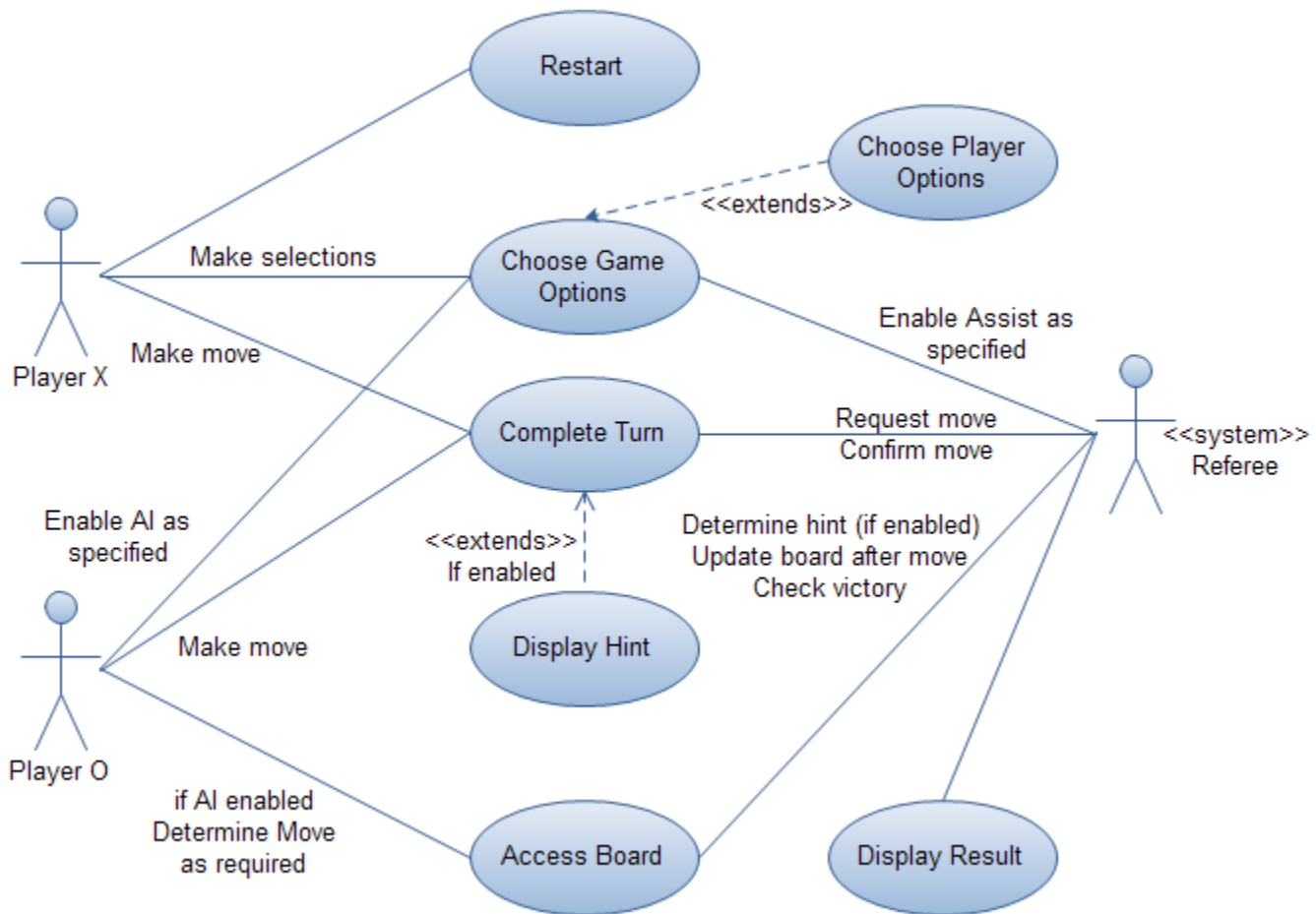
System Scope:

- Display information about the program and its developers
- Allow user the choice of playing with another human or with a random, blocking, smart, or impossible AI
- Allow user the choice of receiving hints on turns of user and/or player O (if human)
- Request a turn
- Confirm a turn
- Display hint (if enabled)
- Check for victory
- Check for winning move
- Display results
- Maintain victory count
- Store settings for the duration of a match
- Reset settings on 'to menu'
- Reset the board after each game

Class Diagram



Use Case Diagram



Use Case Descriptions

Choose game options: The human player X interacts with the main menu displayed on program startup to either quit, make player option selections, or start the game with the default settings.

Choose Player Options: The human player X interacts with the settings menu to choose whether hints are to be displayed and whether player O is to be human or an AI of one of four difficulty levels.

Turn Dialog: The referee requests that the player(s) make their move and presents the player with a representation of the board that allows the selection of any unoccupied space.

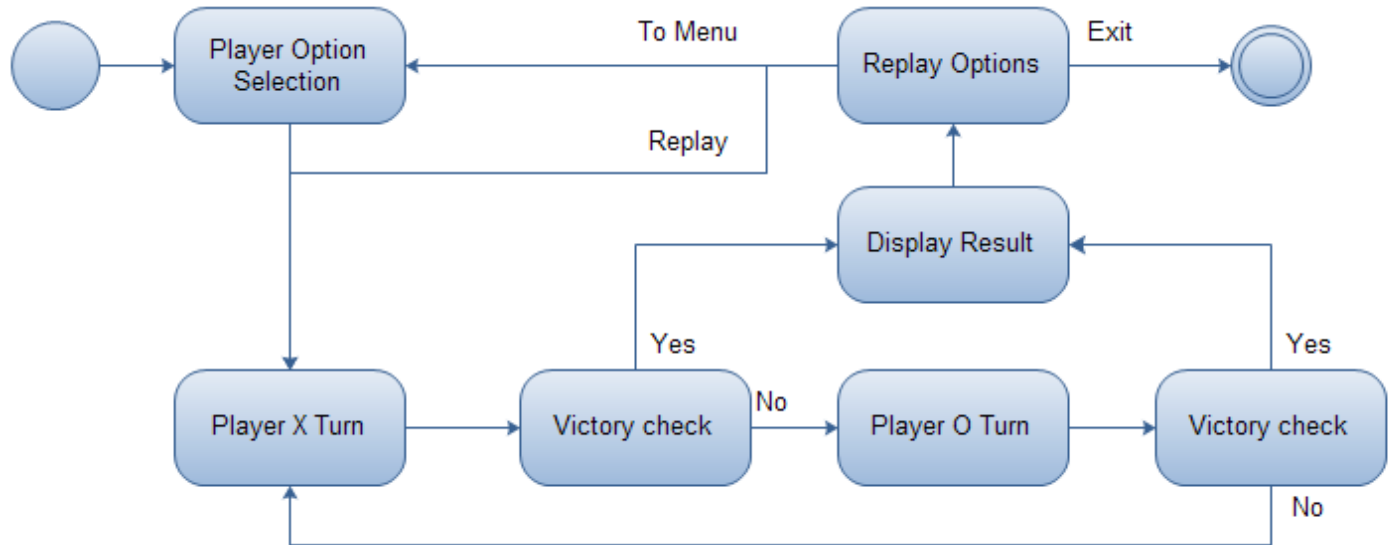
Display Hint: If corresponding option was selected in the settings, and a winning move is located, or the opposing player needs to be prevented from winning, the computer makes that move for the player

Board: The board is accessed for the purposes of updating, checking if a victory has occurred, and if it is possible for a player to win on the next move.

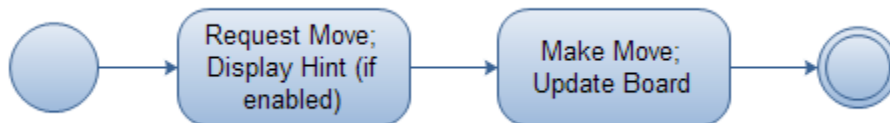
Display Result: The winner of the match, along with the current match statistics are displayed on the screen.

Restart: The human player X interacts with the restart menu displayed at the end of a game to either quit, return to the main menu (erasing match history), or replay with the same settings.

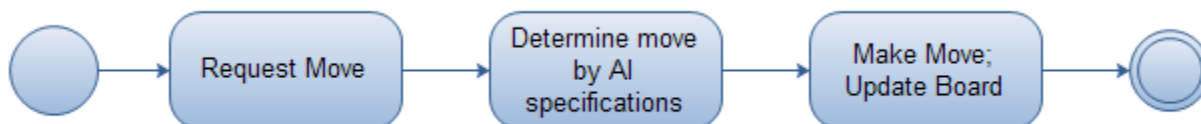
State Transition Diagram – TIC TAC TOE



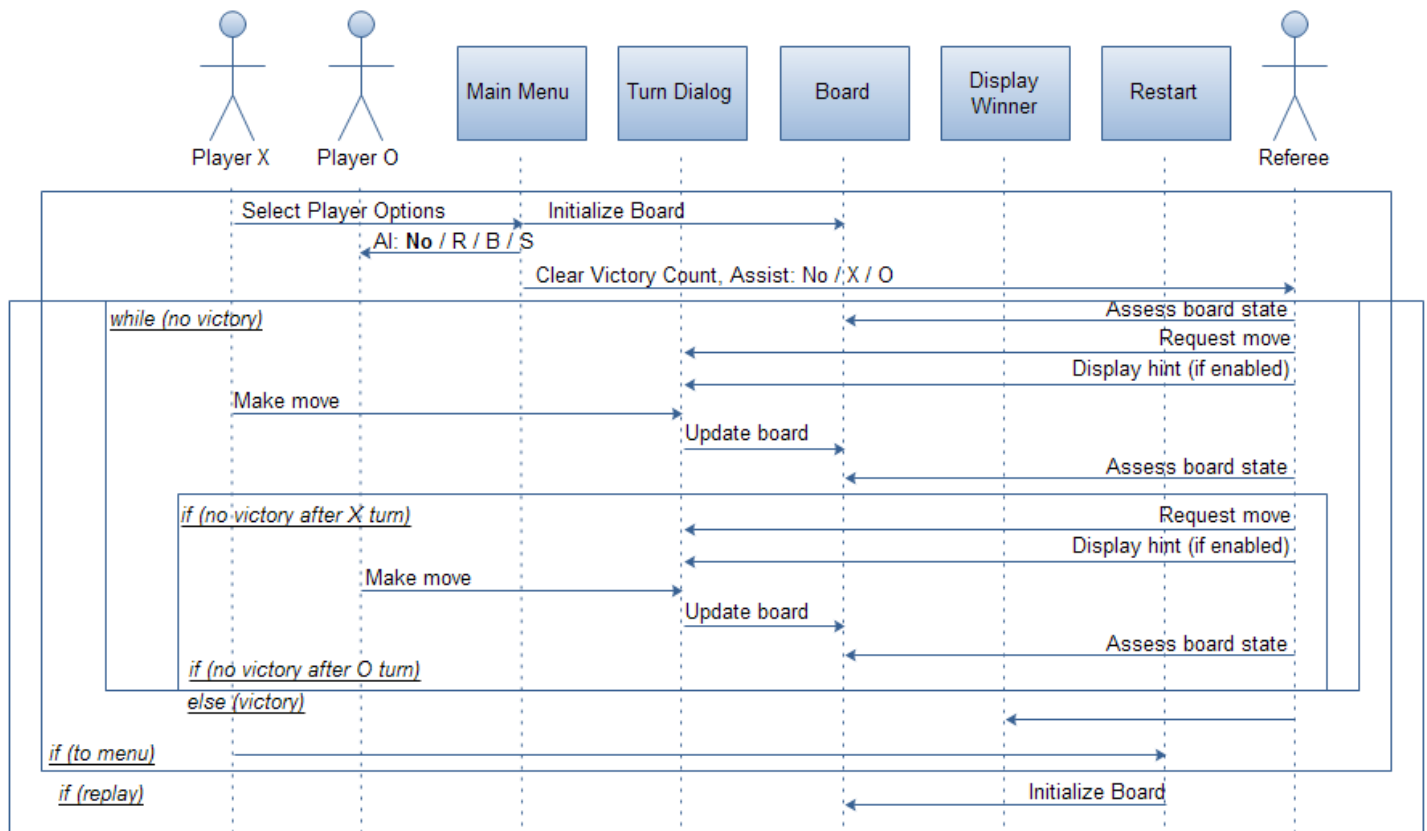
State Transition Diagram - Player X / Human Player O Turn



State Transition Diagram – AI Player O Turn



Sequence Diagram – Human Player O



Sequence Diagram – AI Player O

