Project Charter

Tic-Tac-Toe Project
Team 4

Shidokht Hejazi Sepehr 40002808
Sushil Patil 27148917
Neha Sharma 27733240
Beerpreet Singh Guliani 27644930
Keerthana Gudavalli 27588569
Ramanjeet Gill 27732902
Ramanjit Dhillon 40010613

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Revision History

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1.0			

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1 Project Objective

Our aim in this project is to make a Tic-Tac-Toe application (3*3 grid) in which we have two players who play with each other and the one who places similar marks in a horizontal, vertical, or diagonal row wins. This game will be developed as desktop application and mobile app for android platform. It will have the feature of human playing an artificially intelligent computer as well as human vs. human.

2 Project Scope Definition and Boundaries

Our Java application of Tic-tac-toe is a board game for two players who take turns marking the spaces in a 3×3 board, which can be occupied by one icon: an 'X' or an 'O' where the user clicks. The player who succeeds in placing three of their marks in a horizontal, vertical, or diagonal will be declared the winner by the system. If all the squares of the board are filled and no user is the winner then game is declared as a draw (Tie) by the system. The system will also keep the score for each player as long as it's open.

Our application could be used on desktop and android mobile platform. The tic-tac-toe game can be played with 2 human players or with a human against a computer player that uses a heuristic to attempt to beat the human player.

For developing this application at first the focus is going to be on creating the board and adding the ability to add 'X' and 'O' where the user clicks. Then the win/lose logic required for two human players will be added and the android app will be created. Finally, an AI will be developed to play with a human.

Main features of the application are as follows:

Features	Description
Declare winner and loser	Players take turn placing their mark on the board. The player who succeeds in placing three of their marks in a horizontal, vertical, or diagonal row will be declared the winner. So, the opponent player is considered as the loser. Otherwise the game is declared as a tie.
Choose player turn	Players can decide who wants to start the game. A player can play with another human or choose to play with the computer.

Display Score board	Players' scores are displayed during the game.
Confirm exit	When a player wants to exit in the middle of a game, a message will be displayed to the user warning them that a game is in progress and asking for confirmation that they want to close the application.
Start new game	New Game can be started at any time even during the game.

3 Project Constraints

Identified constraints for the project are as follows:

- Time
  Timeframe for this project is very short. Deadlines for deliverables of this project are very close to each other. The risk of not being able to finish tasks on time is the highest for the third deliverable where an AI needs to be developed to play the game with the human.
- Resource skills
  Our team does not have a lot of programming experience and few of our team members have done Java programming. There needs to be some time allocated for learning Java. Development time will be affected because of this constraint.
  Also we don't have experience in converting the Java program to an android app.
- Tools
  Since it's our first time creating an android app, finding and picking the right tools for this process is a risk.

4 Project Assumptions

Assumptions made about the application are as follows:

1) Mode of game:
   - There will be two different modes in this game: two human players and human vs. computer player. Users are prompted to choose the mode when

they start the game. They also have choice to change the mode while playing the game.

2) Player names:
   - In two player mode default names will be Player1 and Player2. Users can edit their names.
   - In one player mode default name will be Player1 which the user can edit. Computer name can't be changed.
   - Names can be changed before the start of the game

3) Player turn:
   - By modifying the names in two player mode, users also pick their turn.
   - For Computer mode user can select who will play first before the start of the game.
   - 'X' mark will be assigned to Player 1 and 'O' will be assigned to Player 2 by default in both modes.

4) Closing the game:
   - If game is in progress and user presses the exit button, a message box will be displayed to get closure confirmation.

5) The following are visible to the user while playing the game:
   - score board with players' name and total score
   - New Game button which will reset and start a new game
   - Current player, showing whose turn it is
   - Help icon which displays the help material at any point of the game

Eclipse debugger and JUnit will be used for testing the application.