TEB1043: Object Oriented Programming - May 2024

Project Documentation – Tic Tac Toe

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YouTube Video Demonstration Link:

https://www.youtube.com/watch?v=5QbteQ5By5Y

Project Details

This Tic Tac Toe game project is a Java-based application designed to offer a seamless user experience for playing Tic Tac Toe. The application includes features for user authentication, registration, gameplay, and various settings, ensuring an engaging and customizable experience for users.

Classes and Functionalities

1. Login Page

    o Username: Field for user to enter their username.

    o Password: Field for user to enter their account's password.

    o Buttons:

        ▪ Login: Logs in the user and navigates to the main menu.

        ▪ Register: Opens the registration page.

        ▪ Cancel: Exits the program.

2. Registration Page

    o Fields:

        ▪ First Name: Field for user to enter their first name.

        ▪ Last Name: Field for user to enter their last name.

        ▪ Username: Field for user to enter their preferred username.

        ▪ Gender: Combo box for user to select their gender between male, female, and "Prefer not to say".

        ▪ Age: Field for entering the age.

        ▪ Email: Field for user to enter their preferred email.

        ▪ Password: Field for user to enter their preferred password.

    o Buttons:

        ▪ Show Password Button: Toggles the visibility of the password.

        ▪ Register Button: Registers a new user account.

        ▪ Back Button: Returns to the Login Page.

3. Main Menu

   o Buttons:

     ▪ Play Button: Starts a new Tic Tac Toe game.

     ▪ How to Play Button: Opens the How to Play Page.

     ▪ Settings Button: Opens the Settings Page.

     ▪ About Us Button: Displays information about the developers or the application.

     ▪ Exit Button: Exits the application.

     ▪ Logout Button: Logs out the current user and returns to the Login Page.

4. Game

   o Game Board: A 3x3 grid representing the Tic Tac Toe board.

   o Buttons:

     ▪ Main Menu Button: Returns to the main menu.

     ▪ Restart Button: Restarts the current game.

     ▪ Score Board Button: Opens the Scoreboard.

5. Score Board

   o Score Table: A table with three columns for X Score, O Score, and Result.

   o Back To Game Button: Returns to the ongoing game.

6. How to Play Page

   o Instructions and rules for playing Tic Tac Toe.

7. Settings Page

   o Buttons:

     ▪ Font Colour Button: Randomises the colour for the labels.

     ▪ Background Colour Button: Randomises the colour for the background.

8. About Us Page

   o Personal development background of the game and the developers.

Login page

Registration page
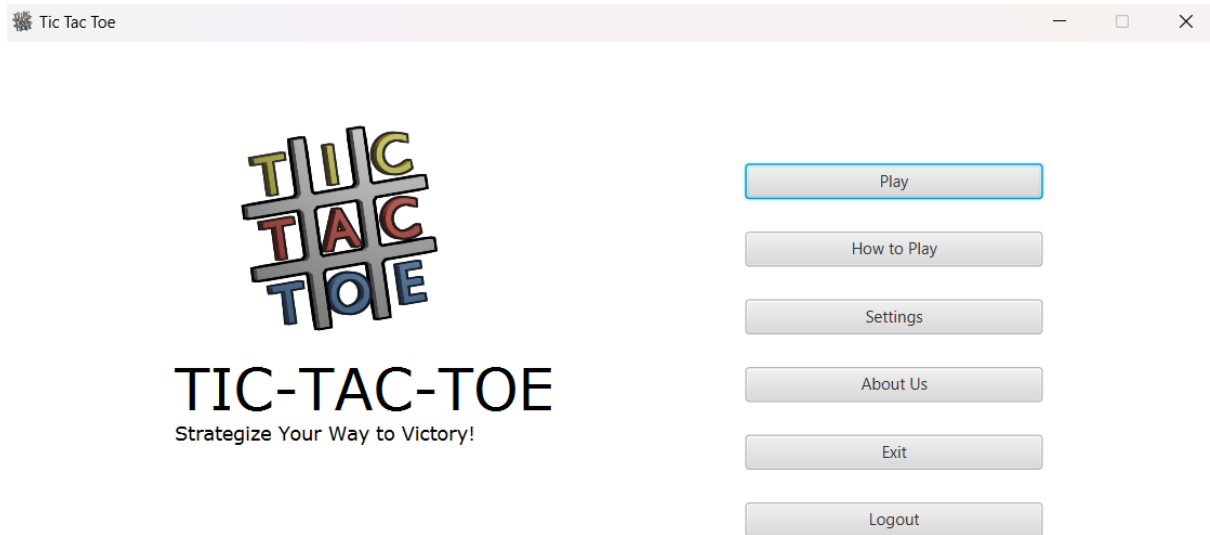
Main menu
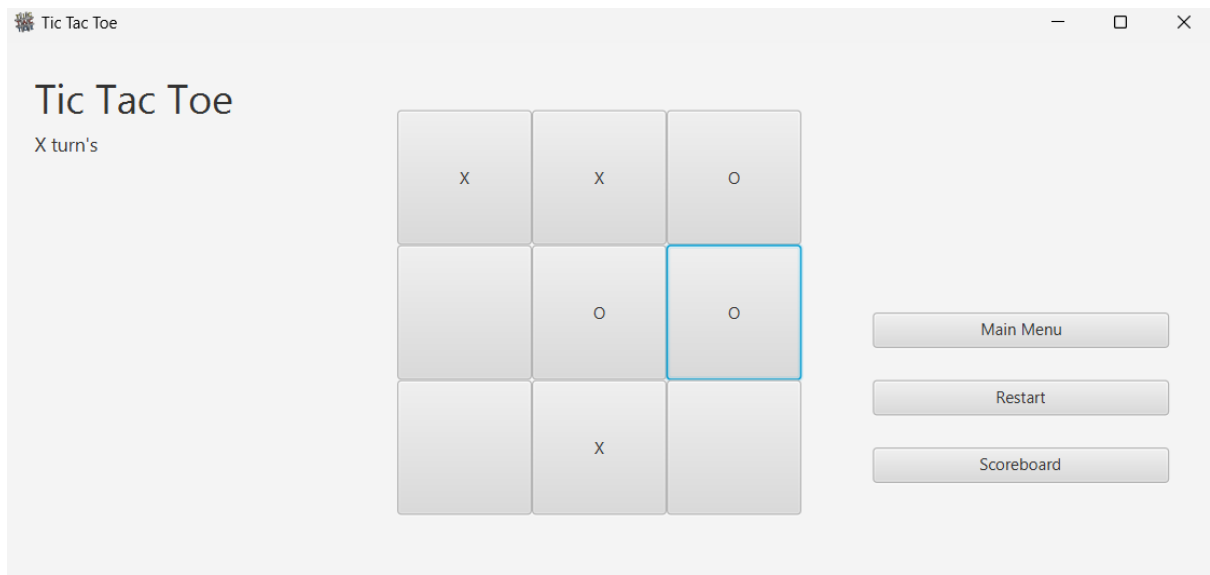
Game board

Scoreboard

X Wins: 5

O Wins: 2

Ties: 1

X Score	O Score	Result
1	0	X wins
2	0	X wins
3	0	X wins
4	0	X wins
4	1	O wins
4	2	O wins
5	2	X wins
5	2	Tie

Back to Game

Score board

How To Play

Classic Tic-Tac-Toe, place your X's or O's and try to get three in a row and prevent your opponent from getting three in a row.

Back

How to play page

Settings page

About us page

UML Diagram

LoginPage

- usernameField: TextField
- passwordField: PasswordField
- showPasswordField: TextField
- messageLabel: Label
- primaryStage: Stage

+ start(primaryStage: Stage)
+ handleLogin()
+ showPassword()
+ hidePassword()
+ handleCancel()
+ navigateToRegistrationPage()
+ navigateToMainPage()
+ main(args: String[])
+ displaySuccessMessage()

RegistrationPage

- firstNameField: TextField
- lastNameField: TextField
- usernameField: TextField
- ageField: TextField
- emailField: TextField
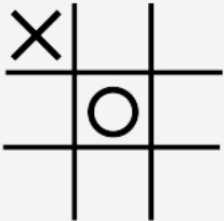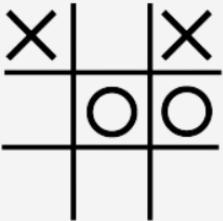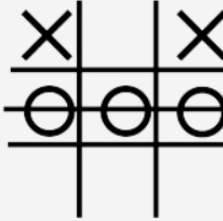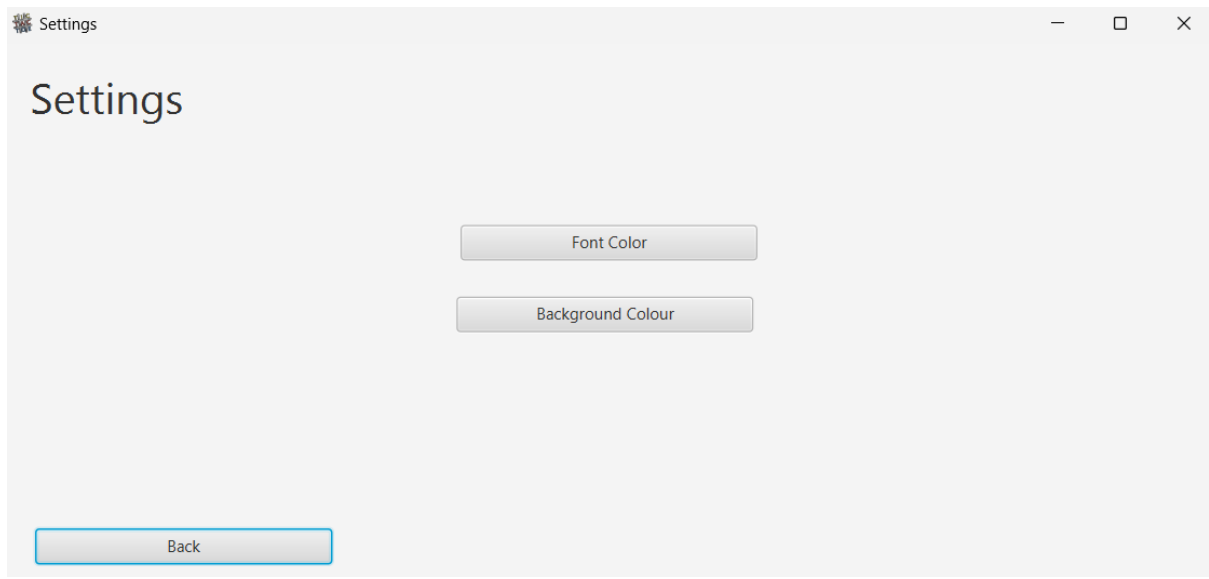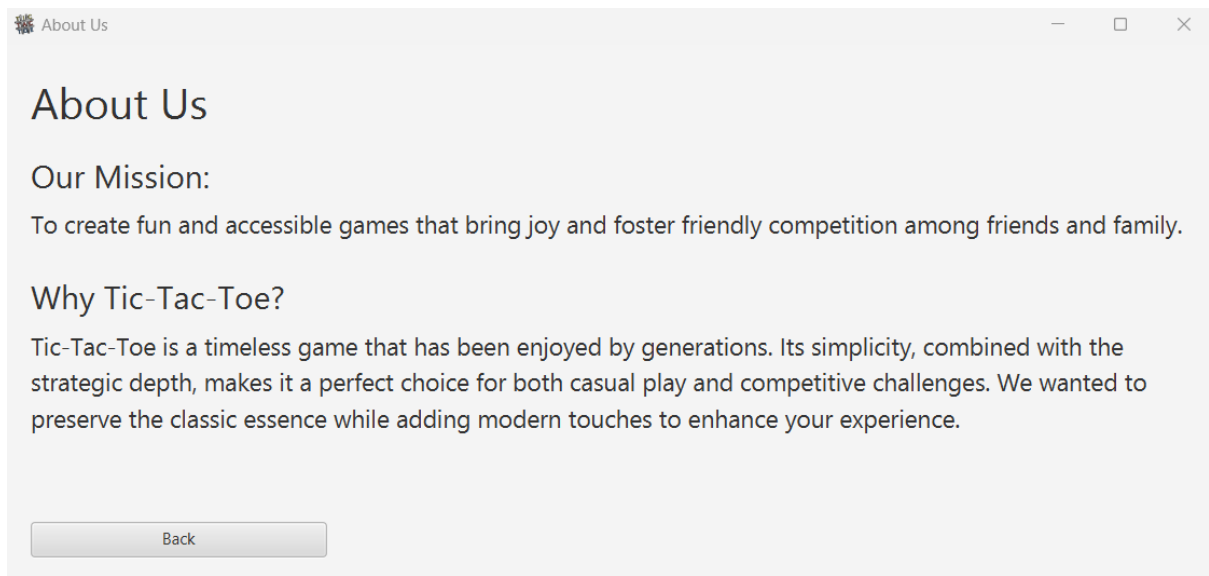- passwordField: PasswordField
- showPasswordField: TextField
- genderComboBox: Combo<String>
- messageLabel: Label
- primaryStage: Stage

+ start(primaryStage: Stage)
+ handleRegister()
+ showPassword()
+ hidePassword()
+ navigateToLoginPage()
+ navigateToLoginPageWithSuccess()
+ main(args: String[])

WinRecord

+ xScore: int
+ oScore: int
+ result: String

+ getXScore(): int
+ getOScore(): int
+ getResult(): String

MainPage

- instance: Mainpage
- root: VBox
- primaryStage: Stage
- backgroundColor: Color
- fontColor: Color

+ MainPage()
+ getInstance()
+ applyBackgroundColor(color: Color)
+ applyFontColor(color: Color)
+ applyFontColorToLabels(pane: Pane)
+ getRoot()
+ toHexString(color: Color): String
+ start(primaryStage: Stage)
+ showMainMenu()
+ showHelpPage()
+ showAboutUsPage()
+ logout()
+ getPrimaryStage(): Stage
+ main(args: String[])

Settings

- backgroundColors: Color[]
- random: Random

+ start(Stage)
+ toHexString(Color): String

GameAndScore

- xTurn: boolean
- buttons: Button[][]
- statusLabel: Label
- xScore: int
- oScore: int
- ties: int
- winRecords: List<WinRecord>
- gameScene: Scene
- scoreboardScene: Scene

+ start(Stage)
+ handleButtonClick(Button)
+ checkWinner()
+ isBoardFull(): boolean
+ showWinner(String)
+ disableButtons()
+ resetGame()
+ resetBoard()
+ updateScoreboard(Stage)