**Jake Burke Final Writeup**

**Abstract:**

For my Java project I will be recreating the Game Tic-Tac-Toe in Java. Tic-Tac-Toe is normally played on a piece of paper with a pen or pencil. In this project I will be using multiple classes and methods to create the best Java Tic-Tac-Toe game I can code.

**Introduction:**

When I first read the project specifications, I knew I wanted to create a game for everyone to play. I took a few days and came up with the idea of Tic-Tac-Toe. The game of Tic-Tac-Toe goes all the way back to the Roman empire, the game was called Terni Lapilli. In order to win this game, you need to get three pieces in a row which is the same thing as modern-day Tic-Tac-Toe. After doing some more research I found out that that there have been multiple versions of Tic-tac-Toe created throughout history and throughout multiple countries. Some of these games were called Three Men’s Morris, Nine Men’s Morris, Pente, Gomoku, Qubic and many more. In order to win these games, you had to get a certain amount in a row. After doing my research I knew I wanted to make this game in Java. Soon after, I started to lay out how I will create my game. I knew I would need some type of board, a player1 and player2, a way to make a mark and ask for user input, somehow to check the rows, a way to print the board and lastly a way to find out who won or if there was a tie. Being able to get a working version of this game would be a great accomplishment and another great project to add to my resume. Technology is our future and one day everything is going to be on the computer. Tic-Tac-Toe in java is just another advancement in today’s society.

**Detailed System Description:**

The code for the Tic-Tac-Toe game is fairly simple but has many parts to it which makes it complicated at times. The game has a main class that creates the player, row, and Column for the grid. The main class is also what starts the game, and the allows the first player to choose a location. It displays the grid and askes for you to choose a spot. It also checks if that spot is available. The game plays out and then checks if someone is the winner or a tie. The game class is where most of the complicated coding used. On the other hand, we also have the game class which is where all the code is hidden. This class has all the methods and its code. The start game method starts the game. Next the checkIfOpen method checks if the spot you choose is available. The game class also contains the code that displays the grid and changes the grid. The grid is made up of dashes and lines that are labeled by numbers which is used to tell what row and column it is. This glass also contains the code to change the player and check who is the winner. Multiple if and else statements are used to check if you have 3 in a row. If no one has 3 in a row it falls back to the check if tie method which then will display if there is a tie.

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| --- |
| **Game** |
| +grid[]:char |
|  |
| +startGame():int |
| **+**checkIfOpen():int |
| +changeBoard():int |
| +displayBoard():void |
| +changePlayer():char |
| +checkIfWinner():bool |
| +checkIfTie():bool |

|  |
| --- |
| **Main** |
| +player:char |
| **+**row:int |
| **+**col:int |
|  |
| **+**startGame():int |
| **+**displayBoard():void |
| **+**changeBoard():int |
| **+**checkIfOpen():int |
| **+**checkIfWinner():bool |
| **+**checkIfTie():bool |

**UML Diagram:**

**Requirements:**

By recreating Tic-Tac-Toe in Java, I am creating a fun game for many people to enjoy. This game is not fixing a problem but instead creating entertainment for users. Tic-Tac-Toe is a quick game that is simple to play anywhere. It is a good time killer and even can have strategy. This game works your brain and makes you think about making smart moves. This game should be easily accessible, so it can be played anywhere. By coding a game like this it will eliminate the typical pen and pencil. This code could even be turned into an app which would make it accessible anywhere.

**Literature Survey:**

Tic-Tac-Toe has been created and reproduced in multiple ways throughout our time. It has been coded in multiple languages and many physical copies of this game have been sold. On top of that you can create this game with a pen or pencil and a piece of paper. With a few lines and marks you have your own Tic-Tac-Toe. My personal idea was to take this game and make it into a computerized version. Games are everywhere, and I thought making a simple old school game in Java would be a good learning curve and even a good start to possible game creation. The game may be basic, but it was complicated when it came to figure out who’s turn it was, where to place the mark and even how to check who won. Tic-Tac-Toe in Java is just the start of many other potential games to be created.

**User Manual:**

Tic-Tac-Toe is played on a 3 by 3 grid. It requires two players to take turns placing their marks on the grid until one player has 3 in a row, vertical, horizontal or diagonal. If neither player does not get 3 in a row it is considered a tie and you restart. When you load up the game follow the directions and enter your mark when it says it is your turn. Place your mark strategically and remember you need to get 3 in a row in order to win. Good Luck!

**Conclusion:**

After a few hours of coding and multiple hours of testing I have completed my Java Project. The traditional game of Tic-Tac-Toe is now completely working. Creating this game myself felt very rewarding in the fact that it is possible that I can create games for others to enjoy. Creating this game pushes, me to create more and maybe even one day possibly create my own game. I am very happy with my results and I hope you enjoy playing my game.