JAVA LAB PROJECT

BACHELOR OF TECHNOLOGY

IN

ELECTRONICS AND COMMUNICATION ENGINEERING

By

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SUBMITTED TO
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ACKNOWLEDGEMENT

To begin with we would like to thank the almighty for giving us the chance and to have been showing his blessings throughout the process.

We would also like to extend our heartiest & sincere gratitude towards our mentor *(Dr.) Emjee Puthoran* for guiding us through and having faith and belief in our project. It is their cognizant efforts that our endeavors have seen the light of the day. They kept us motivated throughout and helped us in every step of the way. It has been a great privilege & honor to work & learn under their guidance.

We would like to express our gratitude to *Jaypee University of Information Technology, Solan,* for promoting students to make more innovative projects.

This gives us the opportunity to explore the new dimensions of upcoming technology.

What is Java technology ?

Java is a programming language and computing platform first released by Sun Microsystems in 1995. It has evolved from humble beginnings to power a large share of today's digital world, by providing the reliable platform upon which many services and applications are built. New, innovative products and digital services designed for the future continue to rely on Java, as well.

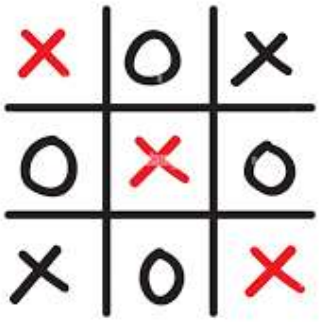
Java is a technology consisting of both a programming language and a software platform. To create an application using Java, you need to download the Java Development Kit (JDK), which is available for Windows, macOS, and Linux. You write the program in the Java programming language, then a compiler turns the program into Java bytecode—the instruction set for the Java Virtual Machine (JVM) that is a part of the Java runtime environment (JRE). Java bytecode runs without modification on any system that supports JVMs, allowing your Java code to be run anywhere.

The Java software platform consists of the JVM, the Java API, and a complete development environment. The JVM parses and runs (interprets) the Java bytecode. The Java API consists of an extensive set of libraries including basic objects, networking and security functions; Extensible Markup Language (XML) generation; and web services. Taken together, the Java language and the Java software platform create a powerful, proven technology for enterprise software development.

TIC TAC TOE GAME

What is tic toe game?

Tic Tac Toe is traditionally played on a 3 × 3 grid. Players take turns placing a mark in one of the cells of the grid. The goal of the game is for players to position their marks so that they make a continuous line of three cells vertically, horizontally, or diagonally



Created a game using Java Programming language.

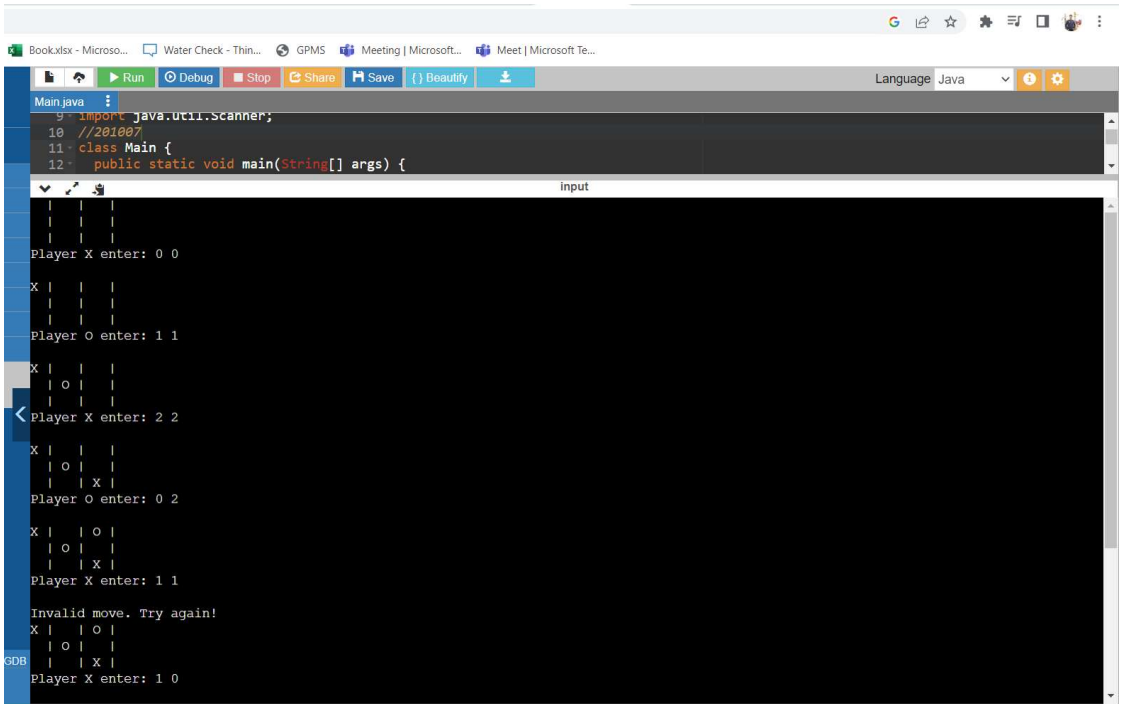
Code :

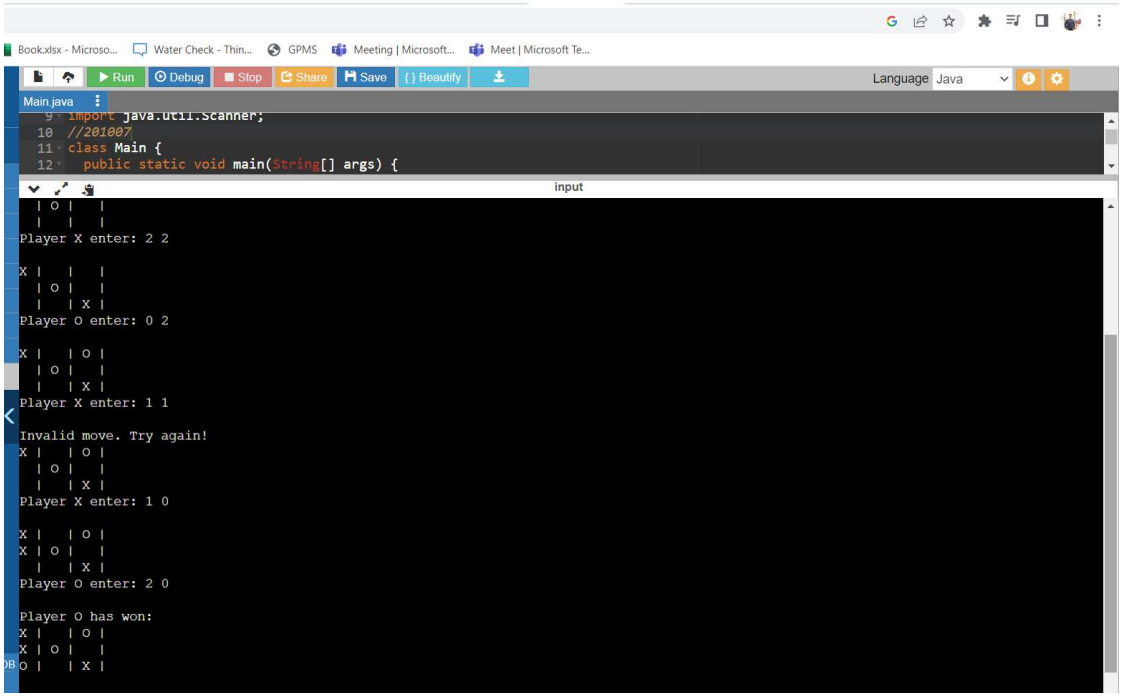
```
import java.util.Scanner;
//201007
class Main {
  public static void main(String[] args) {
    char[][] board = new char[3][3];
    for (int row = 0; row < board.length; row++) {
      for (int col = 0; col < board[row].length; col++) {
        board[row][col] = ' ';
      }
    }

    char player = 'X';
    boolean gameOver = false;
    Scanner scanner = new Scanner(System.in);

    while (!gameOver) {
      printBoard(board);
```

```
    System.out.print("Player " + player + " enter: ");
    int row = scanner.nextInt();
    int col = scanner.nextInt();
    System.out.println();

    if (board[row][col] == ' ') {
      board[row][col] = player; // place the element
      gameOver = haveWon(board, player);
      if (gameOver) {
        System.out.println("Player " + player + " has won: ");
      } else {
        // if (player == 'X') {
        // player = 'O';
        // } else {
        // player = 'X';
        // }
        player = (player == 'X') ? 'O' : 'X';
      }
    } else {
      System.out.println("Invalid move. Try again!");
    }
  }
  printBoard(board);
}

public static boolean haveWon(char[][] board, char player) {
  // check the rows
  for (int row = 0; row < board.length; row++) {
    if (board[row][0] == player && board[row][1] == player && board[row][2] == player) {
      return true;
    }
  }

  // check for col
  for (int col = 0; col < board[0].length; col++) {
    if (board[0][col] == player && board[1][col] == player && board[2][col] == player) {
      return true;
    }
  }

  // diagonal
  if (board[0][0] == player && board[1][1] == player && board[2][2] == player) {
    return true;
  }

  if (board[0][2] == player && board[1][1] == player && board[2][0] == player) {
    return true;
  }
```

```
    return false;
  }

  public static void printBoard(char[][] board) {
    for (int row = 0; row < board.length; row++) {
      for (int col = 0; col < board[row].length; col++) {
        System.out.print(board[row][col] + " | ");
      }
      System.out.println();
    }
  }
}
```

Results :

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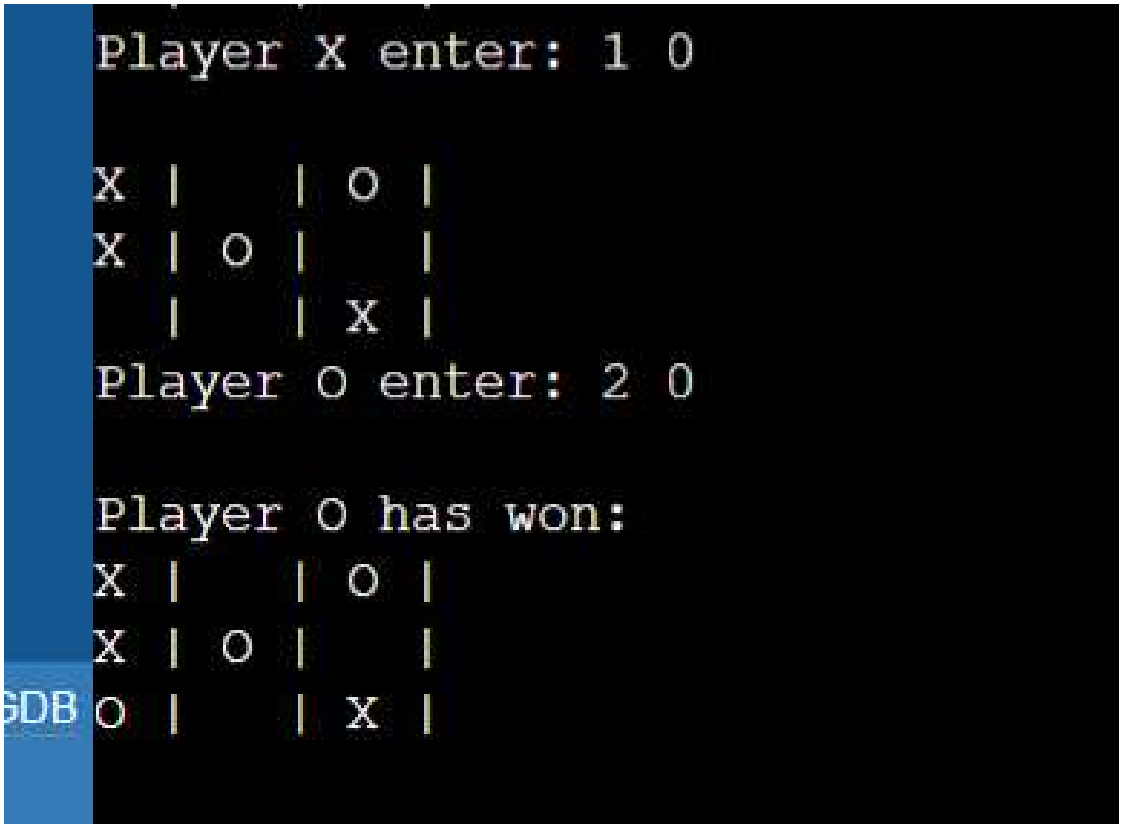
Language
Java
Main.java
9 import java.util.Scanner;
10 //201007
11 class Main {
12 public static void main(String[] args) {
input
| O | |
| | |
Player X enter: 2 2
X | | |
| O | |
| | X |
Player O enter: 0 2
X | | O |
| O | |
| | X |
Player X enter: 1 1
Invalid move. Try again!
X | | O |
| O | |
| | X |
Player X enter: 1 0
X | | O |
X | O | |
| | X |
Player O enter: 2 0
Player O has won:
X | | O |
X | O | |
O | | X |


Player X enter: 1 0
X | | O |
X | O | |
| | X |
Player O enter: 2 0
Player O has won:
X | | O |
X | O | |
O | | X |

Conclusion :

Implemented the interactive game "**TIC TAC TOE GAME**" using java programming language. Used arrays and multiple functions to run the game. Also, handled invalid cases of the game. Here, in this game two players can easily play the game and as a future work GUI is to be made.