Ex 10	Mini Project

Aim

To develop a Tic-Tac-Toe game using Java.

Definition

Tic-Tac-Toe game

Tic-Tac-Toe is a classic game that two people can enjoy together. It is played on a **3x3 grid** where players take turns placing their marks, **X or O,** in empty spots. The main goal is to get three of the same marks in a row-horizontally, vertically, or diagonally.

Procedure

Open NetBeans IDE.

To create a Project go to File Menu → choose New Project → choose Java from Categories →choose Java Application from Projects →click next →specify the project name as Game → click Finish.

Type the following codes in Game.java,

Game.java

```
// A simple Java program to demonstrate
// Tic-Tac-Toe Game
package game;
import java.util.*;

public class Game {

    static String[] board;
    static String turn;

    // CheckWinner method will decide the winner
    static String checkWinner() {
        for (int a = 0; a < 8; a++) {
            String line = null;

            switch (a) {
                case 0:
                    line = board[0] + board[1] + board[2];
                    break;
                case 1:
                    line = board[3] + board[4] + board[5];
                    break;
                case 2:
                    line = board[6] + board[7] + board[8];
```

```
            break;
        case 3:
            line = board[0] + board[3] + board[6];
            break;
        case 4:
            line = board[1] + board[4] + board[7];
            break;
        case 5:
            line = board[2] + board[5] + board[8];
            break;
        case 6:
            line = board[0] + board[4] + board[8];
            break;
        case 7:
            line = board[2] + board[4] + board[6];
            break;
    }

    // For X winner
    if (line.equals("XXX")) {
        return "X";
    }

    // For O winner
    else if (line.equals("OOO")) {
        return "O";
    }
}

for (int a = 0; a < 9; a++) {
```

```
        if (Arrays.asList(board).contains(String.valueOf(a + 1))) {
            break;
        } else if (a == 8) {
            return "draw";
        }
    }

    System.out.println(turn + "'s turn; enter a slot number to place " + turn + " in:");
    return null;
}

// To print the board
static void printBoard() {
    System.out.println("|---|---|---|");
    System.out.println("| " + board[0] + " | " + board[1] + " | " + board[2] + " |");
    System.out.println("|-----------|");
    System.out.println("| " + board[3] + " | " + board[4] + " | " + board[5] + " |");
    System.out.println("|-----------|");
    System.out.println("| " + board[6] + " | " + board[7] + " | " + board[8] + " |");
    System.out.println("|---|---|---|");
}

public static void main(String[] args) {
    Scanner in = new Scanner(System.in);
    board = new String[9];
    turn = "X";
    String winner = null;

    for (int a = 0; a < 9; a++) {
        board[a] = String.valueOf(a + 1);
```

```
}

System.out.println("Welcome to 3x3 Tic Tac Toe.");
printBoard();
System.out.println("X will play first. Enter a slot number to place X in:");

while (winner == null) {
   int numInput;

   try {
      numInput = in.nextInt();

      // Check range
      if (!(numInput > 0 && numInput <= 9)) {
         System.out.println("Invalid input; re-enter slot number:");
         continue;
      }

      // Check if slot is available
      if (board[numInput - 1].equals(String.valueOf(numInput))) {
         board[numInput - 1] = turn;

         // Toggle turn
         turn = turn.equals("X") ? "O" : "X";

         printBoard();
         winner = checkWinner();
      } else {
         System.out.println("Slot already taken; re-enter slot number:");
      }
```

```
            } catch (InputMismatchException e) {
                System.out.println("Invalid input; re-enter slot number:");
                in.nextLine(); // Consume invalid input to prevent infinite loop
            }
        }

        // Final result
        if (winner.equalsIgnoreCase("draw")) {
            System.out.println("It's a draw! Thanks for playing.");
        } else {
            System.out.println("Congratulations! " + winner + "'s have won! Thanks for playing.");
        }

        in.close();
    }
}
```

Right click on Game.java → choose Run File.

Output

```
run:
Welcome to 3x3 Tic Tac Toe.
|---|---|---|
| 1 | 2 | 3 |
|-----------|
| 4 | 5 | 6 |
|-----------|
| 7 | 8 | 9 |
|---|---|---|
X will play first. Enter a slot number to place X in:
```

9

|---|---|---|

| 1 | 2 | 3 |

|-----------|

| 4 | 5 | 6 |

|-----------|

| 7 | 8 | X |

|---|---|---|

O's turn; enter a slot number to place O in:

5

|---|---|---|

| 1 | 2 | 3 |

|-----------|

| 4 | O | 6 |

|-----------|

| 7 | 8 | X |

|---|---|---|

X's turn; enter a slot number to place X in:

4

|---|---|---|

| 1 | 2 | 3 |

|-----------|

| X | O | 6 |

|-----------|

| 7 | 8 | X |

|---|---|---|

O's turn; enter a slot number to place O in:

2

|---|---|---|

| 1 | O | 3 |

|-----------|

| X | O | 6 |

|-----------|

| 7 | 8 | X |

|---|---|---|

X's turn; enter a slot number to place X in:

1

|---|---|---|

| X | O | 3 |

|-----------|

| X | O | 6 |

|-----------|

| 7 | 8 | X |

|---|---|---|

O's turn; enter a slot number to place O in:

6

|---|---|---|

| X | O | 3 |

|-----------|

| X | O | O |

|-----------|

| 7 | 8 | X |

|---|---|---|

X's turn; enter a slot number to place X in:

3

|---|---|---|

| X | O | X |

|-----------|

| X | O | O |

|-----------|

| 7 | 8 | X |

|---|---|---|

O's turn; enter a slot number to place O in:

8

|---|---|---|

| X | O | X |

|-----------|

| X | O | O |

|-----------|

| 7 | O | X |

|---|---|---|

Congratulations! O's have won! Thanks for playing.

BUILD SUCCESSFUL (total time: 31 seconds)

Result

Thus, a game application has been developed and deployed in java.