Mini Project: Game Program Using Java
TIC TAC TOE

Aim:

To create a java game using java language and to run the game. The game is TIC TAC TOE.

Algorithm:

- Import java packages.
- Create a 3x3 array to represent the tic tac toe board and fill it with dashes.
- Ask the users for their names. Create a function that draws the board and prints it out like a 3x3 square.
- Print out the correct player's turn and store the player's char (x or o).Ask the user for the row and col and check if it is valid.
- Use a loop to keep asking the player to enter a valid row and col. Set the right position on the board to the player char.
- Create a function that checks if either player has won.
- Print out which player has won if a player has won. Check if the game has ended in a tie.

Program:

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

public class GFG {

	static String[] board;
	static String turn;


	// CheckWinner method will
	// decide the combination
	// of three box given below.
	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";
                }
        }

// To enter the X Or O at the exact place on board.
        System.out.println(
                turn + "'s turn; enter a slot number to place "
                + turn + " in:");
        return null;
}

// To print out the board.
```

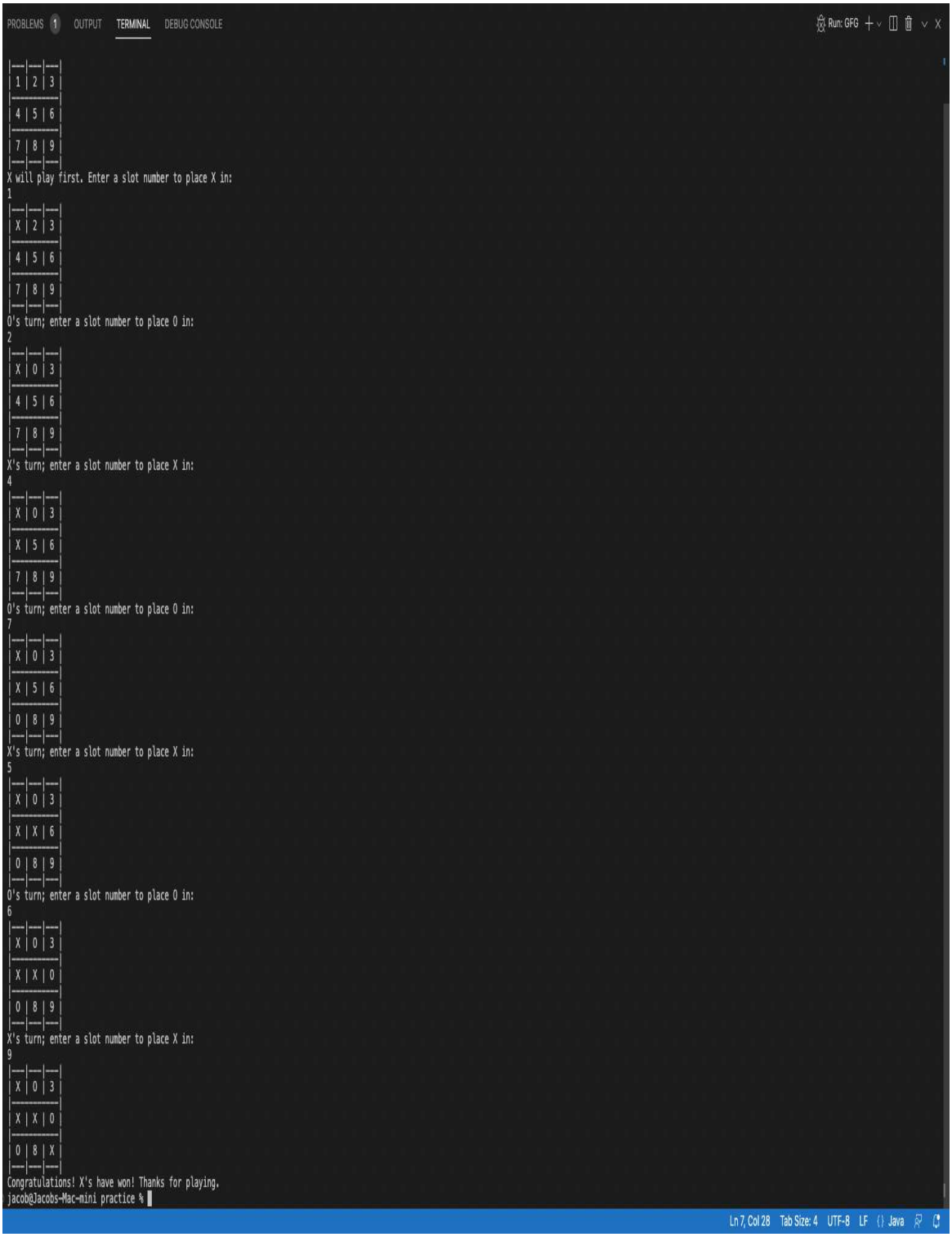
```
/* |---|---|---|
| 1 | 2 | 3 |
|-----------|
| 4 | 5 | 6 |
|-----------|
| 7 | 8 | 9 |
|---|---|---|*/

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;

	// Exception handling.
	// numInput will take input from user like from 1 to 9.
	// If it is not in range from 1 to 9.
	// then it will show you an error "Invalid input."
		try {
```

```
                        numInput = in.nextInt();
                        if (!(numInput> 0 &&numInput<= 9)) {
                                System.out.println(
                                        "Invalid input; re-enter slot number:");
                                continue;
                        }
                }
                catch (InputMismatchException e) {
                        System.out.println(
                                "Invalid input; re-enter slot number:");
                        continue;
                }

                // This game has two player x and O.
                // Here is the logic to decide the turn.
                if (board[numInput - 1].equals(
                                String.valueOf(numInput))) {
                        board[numInput - 1] = turn;

                        if (turn.equals("X")) {
                                turn = "O";
                        }
                        else {
                                turn = "X";
                        }

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

        // If no one win or lose from both player x and O.
        // then here is the logic to print "draw".
        if (winner.equalsIgnoreCase("draw")) {
                System.out.println(
                        "It's a draw! Thanks for playing.");
        }

        // For winner -to display Congratulations! message.
        else {
                System.out.println(
                        "Congratulations! " + winner
                        + "'s have won! Thanks for playing.");
        }
    }
}
```

Result:

Thus the implementation of the game using java has been successfully executed.

Output:



By

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