**ASSIGNMENT-1 B**

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**Batch: 1**

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**Subject: Artificial Intelligence**

**Problem Statement:** Implementing any two-player game by implementing the AI technique. (tic-tac-toe)

**Code:**

package Assignments;

import java.util.Scanner;

public class ass1\_Non\_AI {

    public static void main(String[] args) {

        char[] positions = { '1', '2', '3', '4', '5', '6', '7', '8', '9' };

        char currentPlayer = 'X';

        int moves = 0;

        Scanner sc = new Scanner(System.in);

        while (moves < 9) {

            printPositions(positions); // Display positions

            System.out.print("\nPlayer " + currentPlayer + "'s turn. Enter position (1-9): ");

            int position = sc.nextInt();

            if (position >= 1 && position <= 9) {

                position -= 1;

                if (positions[position] == '1' || positions[position] == '2' || positions[position] == '3'

                        || positions[position] == '4' || positions[position] == '5' || positions[position] == '6'

                        || positions[position] == '7' || positions[position] == '8' || positions[position] == '9') {

                    positions[position] = currentPlayer;

                    moves++;

                    if (checkWin(positions, currentPlayer)) {

                        printPositions(positions);

                        System.out.println("\nPlayer " + currentPlayer + " wins!");

                        break;

                    }

                    currentPlayer = (currentPlayer == 'X') ? 'O' : 'X'; // Change Player

                } else {

                    System.out.println("That position is already taken. Try again!!!");

                }

            } else {

                System.out.println("Invalid position.");

                System.out.println("Please enter a value between 0 and 8.\n");

            }

        }

        if (moves == 9) {

            printPositions(positions);

            System.out.println("\nIt's a draw!");

        }

        sc.close();

    }

    // Display Tic Tac Toe positions

    public static void printPositions(char[] positions) {

        System.out.println(" " + positions[0] + " | " + positions[1] + " | " + positions[2]);

        System.out.println("---|---|---");

        System.out.println(" " + positions[3] + " | " + positions[4] + " | " + positions[5]);

        System.out.println("---|---|---");

        System.out.println(" " + positions[6] + " | " + positions[7] + " | " + positions[8]);

    }

    public static boolean checkWin(char[] positions, char player) {

        // Check rows columns and diagonals

        return (positions[0] == player && positions[1] == player && positions[2] == player) ||

                (positions[3] == player && positions[4] == player && positions[5] == player) ||

                (positions[6] == player && positions[7] == player && positions[8] == player) ||

                (positions[0] == player && positions[3] == player && positions[6] == player) ||

                (positions[1] == player && positions[4] == player && positions[7] == player) ||

                (positions[2] == player && positions[5] == player && positions[8] == player) ||

                (positions[0] == player && positions[4] == player && positions[8] == player) ||

                (positions[2] == player && positions[4] == player && positions[6] == player);

    }

}

**Result:**

1 | 2 | 3

---|---|---

4 | 5 | 6

---|---|---

7 | 8 | 9

Player X's turn. Enter position (1-9): 1

X | 2 | 3

---|---|---

4 | 5 | 6

---|---|---

7 | 8 | 9

Player O's turn. Enter position (1-9): 5

X | 2 | 3

---|---|---

4 | O | 6

---|---|---

7 | 8 | 9

Player X's turn. Enter position (1-9): 2

X | X | 3

---|---|---

4 | O | 6

---|---|---

7 | 8 | 9

Player O's turn. Enter position (1-9): 6

X | X | 3

---|---|---

4 | O | O

---|---|---

7 | 8 | 9

Player X's turn. Enter position (1-9): 3

X | X | X

---|---|---

4 | O | O

---|---|---

7 | 8 | 9

Player X wins!