**EXPERIMENT 9 - Tic-Tac-Toe**

**Aim:**

Write a program to implement a tic-tac-toe game in python.

**Theoretical Background:**

Tic-Tac-Toe is a very popular game for two players, X and O, who take turns marking the space in a 3x3 grid. The player who succeeds in placing 3 of their marks in a horizontal, vertical or diagonal row wins the game. The Tic-Tac-Toe game is based on the minimax algorithm.

**Algorithm:**

Step 1: Start.

Step 2: Create a board using a 2-dimensional array and initialize each element as empty.

Step 3: Write a function to check whether the board is filled or not. Iterate over the board and return false if the board contains an empty sign or else return true.

Step 4: Write a function to check whether a player has won or not, i.e., check if 3 same marks are present vertically, horizontally or diagonally.

Step 5: Write a function to start the game and perform the following operations.

Step 5.1: Select the first turn of the player randomly.

Step 5.2: Write an infinite loop that breaks when the game is over (either win or draw).

Step 5.2.1: Show the board to the user to select the spot for the next move.

Step 5.2.2: Ask the user to enter the row and column number.

Step 5.2.3: Update the spot with the respective player sign.

Step 5.2.4: Check whether the current player won the game or not.

Step 5.2.5: If the current player won the game, then print a winning message and break the infinite loop.

Step 5.2.6: Check whether the board is filled or not.

Step 5.2.7: If the board is filled, then print the draw message and break the infinite loop.

Step 6: Display the final view of the board.

Step 7: Stop

**Conclusion:**

Python program to implement the Tic-Tac-Toe game is successfully implemented.