# ARTIFICIAL INTELLIGENCE PRINCIPLE AND TECHNIQUES LAB

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## Practical 2

**Aim**: Create a python program to stimulate tic-tac-toe problem for man vs human.

## Code:

In [3]:
```
import random

board = ["-", "-", "-", "-", "-", "-", "-", "-", "-"]
currentPlayer = 'X'

def printboard(board):
    print(board[0] + "|" + board[1] + "|" + board[2])
    print("------")
    print(board[3] + "|" + board[4] + "|" + board[5])
    print("------")
    print(board[6] + "|" + board[7] + "|" + board[8])

def playerInput(board, currentPlayer):
    if currentPlayer == 'X':  # Human player
        while True:
            try:
                inp = int(input(f"Player {currentPlayer}, select a spot (1-9): "))
                if 1 <= inp <= 9 and board[inp - 1] == "-":
                    board[inp - 1] = currentPlayer
                    break
                else:
                    print("Invalid input or space already filled. Try again.")
            except ValueError:
                print("Invalid input. Please enter a number.")
    else:  # Computer player
        available_spots = [i for i, spot in enumerate(board) if spot == "-"]
        computer_choice = random.choice(available_spots)
        board[computer_choice] = currentPlayer

gameRunning = True

def checkHorizontal(board):
    if board[0] == board[1] == board[2] and board[0] != "-":
        return True
    if board[3] == board[4] == board[5] and board[3] != "-":
        return True
    if board[6] == board[7] == board[8] and board[6] != "-":
        return True
    return False

def checkVertical(board):
    if board[0] == board[3] == board[6] and board[0] != "-":
        return True
    if board[1] == board[4] == board[7] and board[1] != "-":
        return True
    if board[2] == board[5] == board[8] and board[2] != "-":
        return True
```

```
    if board[1] == board[4] == board[7] and board[1] != "-":
        return True
    if board[2] == board[5] == board[8] and board[2] != "-":
        return True
    return False

def checkDiagonal(board):
    if board[0] == board[4] == board[8] and board[0] != "-":
        return True
    if board[2] == board[4] == board[6] and board[2] != "-":
        return True
    return False

def checkIfWin(board):
    if checkHorizontal(board) or checkVertical(board) or checkDiagonal(board):
        return True
    return False

def checkIfTie(board):
    if "-" not in board:
        return True
    return False

def switchPlayer(currentPlayer):
    if currentPlayer == "X":
        return "O"
    else:
        return "X"

while gameRunning:
    printboard(board)
    playerInput(board, currentPlayer)
    if checkIfWin(board):
        printboard(board)
        if currentPlayer == 'X':
            print("Player X wins!")
        else:
            print("Computer wins!")
        break
    if checkIfTie(board):
        printboard(board)
        print("It's a tie!")
        break
    currentPlayer = switchPlayer(currentPlayer)
```

# Output:

```
-|-|-
-----
-|-|-
-----
-|-|-
Player X, select a spot (1-9): 1
X|-|-
-----
-|-|-
-----
-|-|-
X|-|-
-----
-|-|-
-----
O|-|-
Player X, select a spot (1-9): 5
X|-|-
-----
-|X|-
-----
O|-|-
X|O|-
-----
-|X|-
-----
O|-|-
Player X, select a spot (1-9): 9
X|O|-
-----
-|X|-
-----
O|-|X
Player X wins!
```

```
In [ ]:
```