Artificial Intelligence (18CSC305J)
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Team Tesla 2.0

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Experiment 1 - Implementation of toy problem

Problem Statement:

To implement the '**Tic Tac Toe**' problem, i.e, using dictionary elements create a grid to play the game using python.

Algorithm:

1. Use a dictionary to create a board.
2. Create a print board function
3. Initiate a Loop with a range of '10' to get input from users. I.e, user with 'X' and a user with 'O'
4. Check if the user input slot is free, if not inform the user before taking input from the next user.
5. Check for winning conditions with every user input after a minimum of five inputs, there are a total of 8 combinations.
6. Print 'GAME OVER' if winning combination is achieved
7. Break the loop and ask the user whether they wanna play again.

Code:

```python
B = {'7': ' ' , '8': ' ' , '9': ' ' ,
     '4': ' ' , '5': ' ' , '6': ' ' ,
     '1': ' ' , '2': ' ' , '3': ' ' }

bk = []

for key in B:
    bk.append(key)


def printB(X):
    print(X['7'] + '|' + X['8'] + '|' + X['9'])
    print('-+-+-')
    print(X['4'] + '|' + X['5'] + '|' + X['6'])
    print('-+-+-')
    print(X['1'] + '|' + X['2'] + '|' + X['3'])

def game():

    turn = 'X'
    count = 0


    for i in range(10):
        printB(B)
        print("It's your turn," + turn + ".Move to which place?")

        move = input()

        if B[move] == ' ':
            B[move] = turn
            count += 1
        else:
            print("That place is already filled.\nMove to which place?")
            continue
```

```python
        if count >= 5:
            if B['7'] == B['8'] == B['9'] != ' ': # across the top
                printB(B)
                print("\nGame Over.\n")
                print(" **** " +turn + " won. ****")
                break
            elif B['4'] == B['5'] == B['6'] != ' ': # across the middle
                printB(B)
                print("\nGame Over.\n")
                print(" **** " +turn + " won. ****")
                break
            elif B['1'] == B['2'] == B['3'] != ' ': # across the bottom
                printB(B)
                print("\nGame Over.\n")
                print(" **** " +turn + " won. ****")
                break
            elif B['1'] == B['4'] == B['7'] != ' ': # down the left side
                printB(B)
                print("\nGame Over.\n")
                print(" **** " +turn + " won. ****")
                break
            elif B['2'] == B['5'] == B['8'] != ' ': # down the middle
                printB(B)
                print("\nGame Over.\n")
                print(" **** " +turn + " won. ****")
                break
            elif B['3'] == B['6'] == B['9'] != ' ': # down the right
side
                printB(B)
                print("\nGame Over.\n")
                print(" **** " +turn + " won. ****")
                break
            elif B['7'] == B['5'] == B['3'] != ' ': # diagonal
                printB(B)
                print("\nGame Over.\n")
                print(" **** " +turn + " won. ****")
                break
            elif B['1'] == B['5'] == B['9'] != ' ': # diagonal
                printB(B)
```

```python
                print("\nGame Over.\n")
                print(" **** " +turn + " won. ****")
                break



        if count == 9:
            print("\nGame Over.\n")
            print("It's a Tie!!")

        if turn =='X':
            turn = 'O'
        else:
            turn = 'X'
    restart = input("Do want to play Again?(y/n)")
    if restart == "y" or restart == "Y":
        for key in bk:
            B[key] = " "

        game()

if __name__ == "__main__":
    game()
```

Output :

```
 | |
-+-+-
 | |
-+-+-
 | |
It's your turn,X.Move to which place?
1
 | |
-+-+-
 | |
-+-+-
X| |
It's your turn,O.Move to which place?
3
 | |
-+-+-
 | |
-+-+-
X| |O
It's your turn,X.Move to which place?
5
 | |
-+-+-
 |X|
-+-+-
X| |O
It's your turn,O.Move to which place?
6
 | |
-+-+-
 |X|O
-+-+-
X| |O
It's your turn,X.Move to which place?
9
 | |X
-+-+-
 |X|O
-+-+-
X| |O

Game Over.

 **** X won. ****
Do want to play Again?(y/n)n


...Program finished with exit code 0
Press ENTER to exit console.
```

Real World Solution:

Spatial Analysis for Geography Mapping solves location problems basically using math in maps. It blends geography with modern technology to measure, quantify, and understand our world.

What is Spatial Analysis?

It's more of such manifest uncover patterns we've never seen before by studying their topological, geometric, and geographic properties. This is **spatial analysis**!
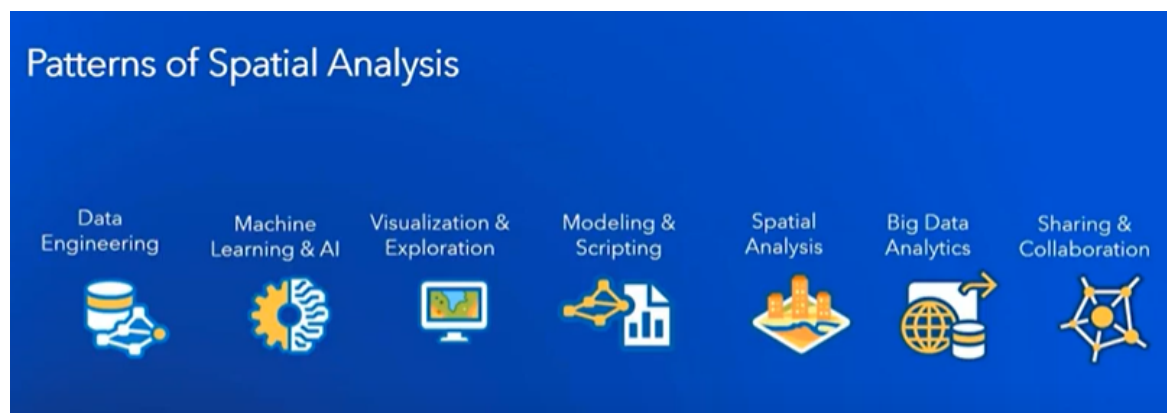
Understanding with Example:

Mr. X sets up his tic-tac-toe boards with intention and attention to detail. The 9-cell grid is designed to make sure that no matter which way a student chooses to make the 'three in a row,' they are showing their understanding of key concepts and ideas in different ways.

Now, Students show their basic **knowledge of a concept** with activities such as listing, defining, drawing, or labeling. When students choose a square to show they comprehend, they summarize, compare, and **discuss the concept**. This square asks students to **apply knowledge** in a new way, such as symbolizing, modifying or changing. Mr. X asks students to **analyze content** by explaining, ordering and classifying. So, Students may also choose to **arrange information** by rewriting, modifying the content. Finally, students can **evaluate content** by measuring, ranking, judging, arguing, and convincing.

Result: The 'Tic Tac Toe' problem has been implemented successfully.