Atma Ram Sanatan Dharma College

Class Assignment

Practical File

Question 7

SUBMITTED BY

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Course : Bsc.(Hons) Computer Science

Roll no : 22/28006

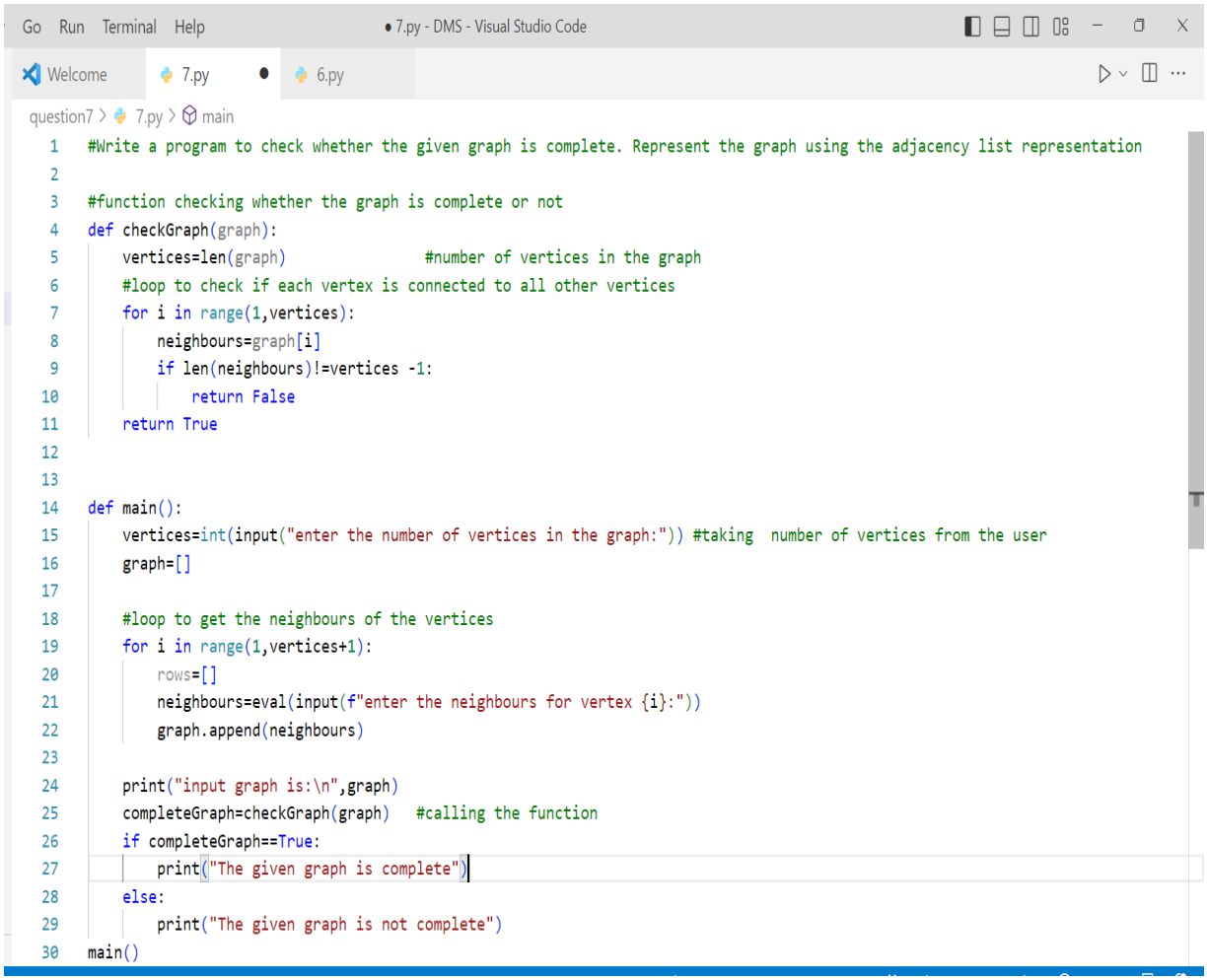
Semester : 2

Subject : Discrete Mathematical Structures

Teacher : Dr. Shalini Gupta(Faculty Of Computer Science)

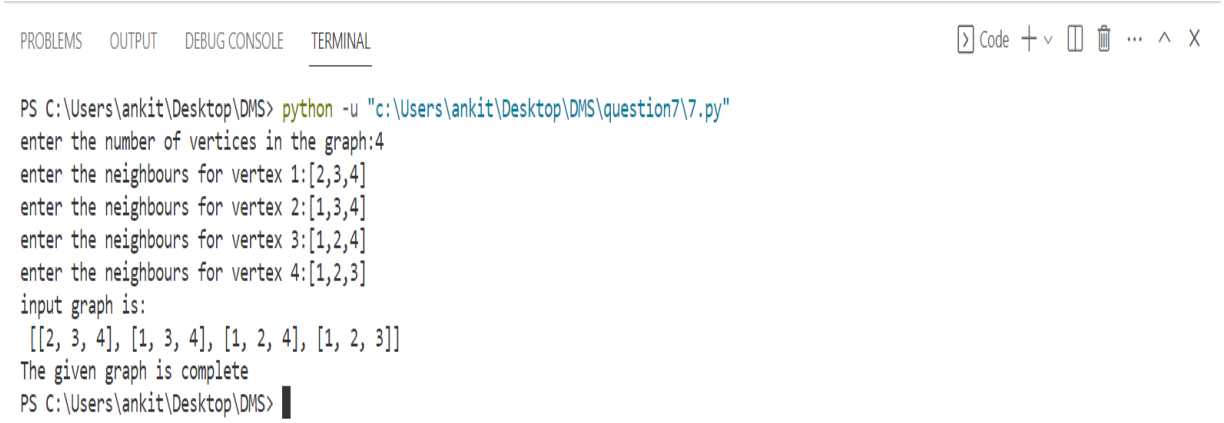
7) Write a program to check if a given graph is a complete graph. Represent the graph using the Adjacency list representation.

CODE



```python
#Write a program to check whether the given graph is complete. Represent the graph using the adjacency list representation

#function checking whether the graph is complete or not
def checkGraph(graph):
    vertices=len(graph)               #number of vertices in the graph
    #loop to check if each vertex is connected to all other vertices
    for i in range(1,vertices):
        neighbours=graph[i]
        if len(neighbours)!=vertices -1:
            return False
    return True


def main():
    vertices=int(input("enter the number of vertices in the graph:")) #taking  number of vertices from the user
    graph=[]

    #loop to get the neighbours of the vertices
    for i in range(1,vertices+1):
        rows=[]
        neighbours=eval(input(f"enter the neighbours for vertex {i}:"))
        graph.append(neighbours)

    print("input graph is:\n",graph)
    completeGraph=checkGraph(graph)   #calling the function
    if completeGraph==True:
        print("The given graph is complete")
    else:
        print("The given graph is not complete")
main()
```

Output



```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL

PS C:\Users\ankit\Desktop\DMS> python -u "c:\Users\ankit\Desktop\DMS\question7\7.py"
enter the number of vertices in the graph:4
enter the neighbours for vertex 1:[2,3,4]
enter the neighbours for vertex 2:[1,3,4]
enter the neighbours for vertex 3:[1,2,4]
enter the neighbours for vertex 4:[1,2,3]
input graph is:
 [[2, 3, 4], [1, 3, 4], [1, 2, 4], [1, 2, 3]]
The given graph is complete
PS C:\Users\ankit\Desktop\DMS>
```