



Atma Ram Sanatan Dharma College

Class Assignment

Practical File

Question 6

SUBMITTED BY

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Roll no : 22/28006
Semester : 2
Subject : Discrete Mathematical Structures
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6) Write a program to check if a given graph is a complete graph. Represent the graph using the Adjacency Matrix representation..

CODE

```
6.py - question 1 - Visual Studio Code
Welcome 1.py 5.py question6 6.py x
6.py > main
1 #function checking whether the graph is complete or not
2 def checkGraph(graph):
3     vertices=len(graph) #number of vertices in the graph
4     for i in range(1,vertices+1):
5         for j in range(1,vertices+1):
6             if i!=j and graph[i-1][j-1]==0:
7                 return False
8     return True
9
10 def main():
11     vertices=int(input("enter the number of vertices in the graph:")) #taking number of vertices from the user
12     graph=[]
13
14     #loop to get 1 or 0 depending on whether the vertices are connected or not
15     for i in range(1,vertices+1):
16         rows=[]
17         for j in range(1,vertices+1):
18             inputValue=int(input(f"enter 1 if the ({i},{j}) are connected otherwise 0:"))
19             rows.append(inputValue)
20         graph.append(rows)
21
22     print("input graph is:\n",graph)
23     completeGraph=checkGraph(graph) #calling the function
24     if completeGraph==True:
25         print("The given graph is complete")
26     else:
27         print("The given graph is not complete")
28     main()
```

Output

```
15 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 |
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
PS C:\Users\ankit\Desktop\DMS\question 1> python -u "c:\Users\ankit\Desktop\DMS\question 1\6.py"
enter the number of vertices in the graph:4
enter 1 if the (1,1) are connected otherwise 0:1
enter 1 if the (1,2) are connected otherwise 0:1
enter 1 if the (1,3) are connected otherwise 0:1
enter 1 if the (1,4) are connected otherwise 0:1
enter 1 if the (2,1) are connected otherwise 0:1
enter 1 if the (2,2) are connected otherwise 0:0
enter 1 if the (2,3) are connected otherwise 0:1
enter 1 if the (2,4) are connected otherwise 0:1
enter 1 if the (3,1) are connected otherwise 0:1
enter 1 if the (3,2) are connected otherwise 0:1
enter 1 if the (3,3) are connected otherwise 0:0
enter 1 if the (3,4) are connected otherwise 0:1
enter 1 if the (4,1) are connected otherwise 0:1
enter 1 if the (4,2) are connected otherwise 0:1
enter 1 if the (4,3) are connected otherwise 0:1
enter 1 if the (4,4) are connected otherwise 0:0
input graph is:
[[1, 1, 1, 1], [1, 0, 1, 1], [1, 1, 0, 1], [1, 1, 1, 0]]
The given graph is complete
PS C:\Users\ankit\Desktop\DMS\question 1>
```

