CINEC Campus
Faculty of Engineering and Technology
Department of Information Technology
BSc (Hons) in Software Engineering
IT_UGC_001/IT_IFLS_001

Year 3 Semester 2

Assignment 01

IT3216 - Graph Theory

- Create a folder in the desktop with your calling name. All your workings should be saved in that folder.
- Create word document and a java project and save them in the folder you create.
- This is an open book assignment and you can't browse internet.
- Copy and paste the implementation codes with the correct question number to your answer sheet and a screenshot of output (if any).
- You can use the given sample codes for the implementations.

Date: 2024.04.07 **Time: 02 hrs**

Consider the following scenario.

A,B,C,D,E,F and G are 7 buildings in a housing residence called "Maze". The authority plans to install water pipes to the apartment complex. Building A is the one nearest to the main gate. To get to the building B you have to go left pass the building A, and to get to the building C, you have to go right pas the building A. If you go to left from building B, You will end up at building D, and if you go to right from building B, you will end up at building E. You can reach to the building F if you go pass the building D, and from building F there is another way to building E. From building E there is a route to reach building G. and also you can get to the building G from building C too.

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1) Implement the map of "Maze" according to the graph theory fundamentals using adjacency list in Java language. Clearly mention if there are any assumptions you have made.

(30 Marks)

2) Suppose the capacities of the pipelines going to be installed between the buildings as follows.

Route	Capacity
A → B	7
A → C	5
B → D	2
B → E	4
D → F	8
F → E	6
E → G	9
C → G	7

Update the implemented map of "Maze" in question no.01 to represent the given data. Clearly mention if there are any assumptions you have made.

(20 Marks)

3) Find the net water flow of the proposed pipeline system.

(50 Marks)

----------END OF THE ASSIGNMENT----------