Assignment -:

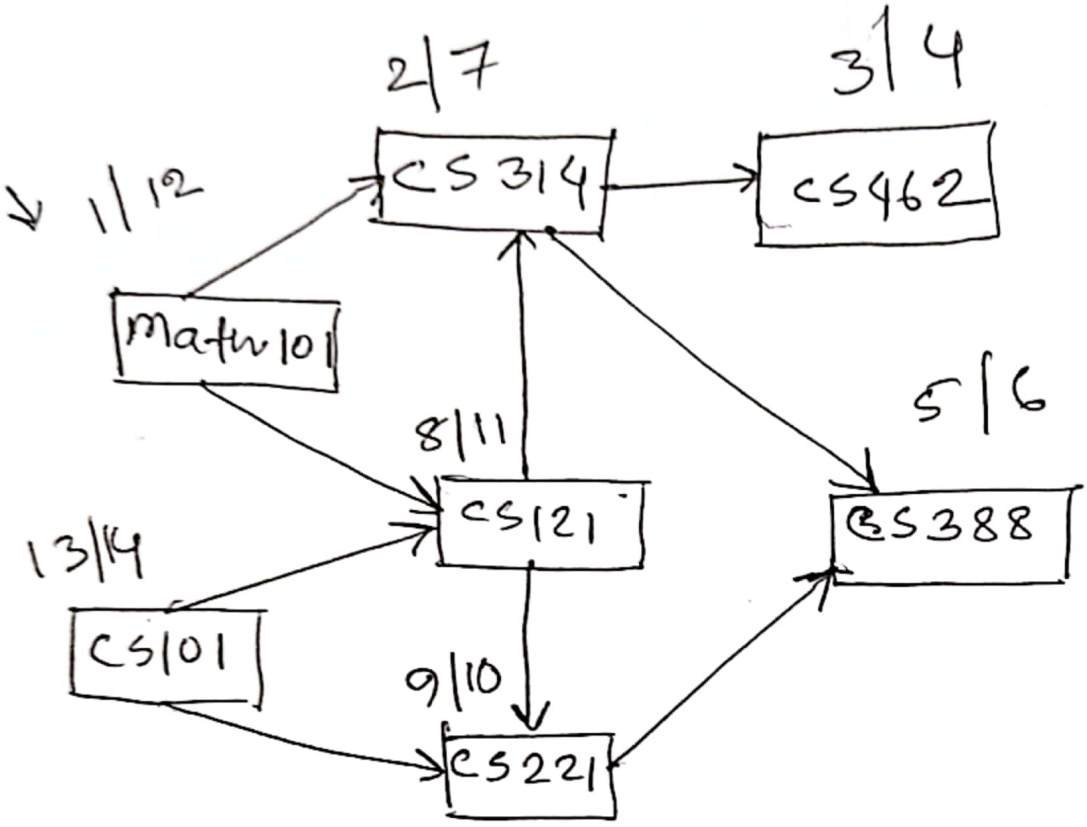
Shamim Rahman Niloy

ID: 011202271

DSA theory - 2

CamScanner

Question-1

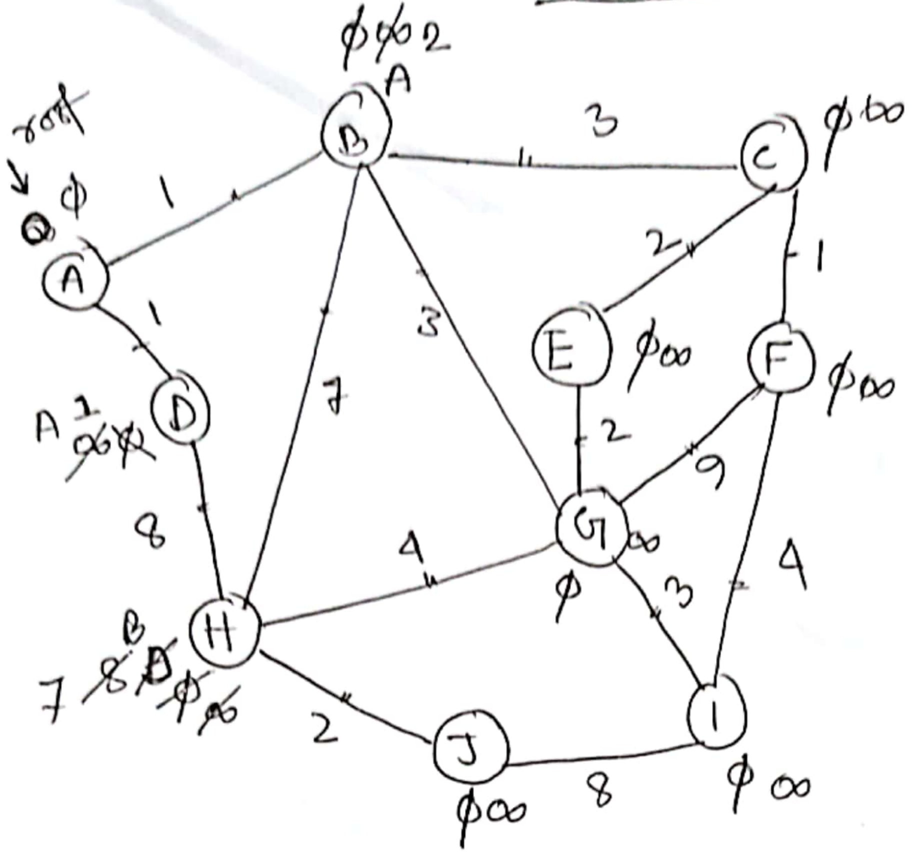


CS101 → Math101

↓

CS462 ← CS388 ← CS314 ← CS221 ← CS121

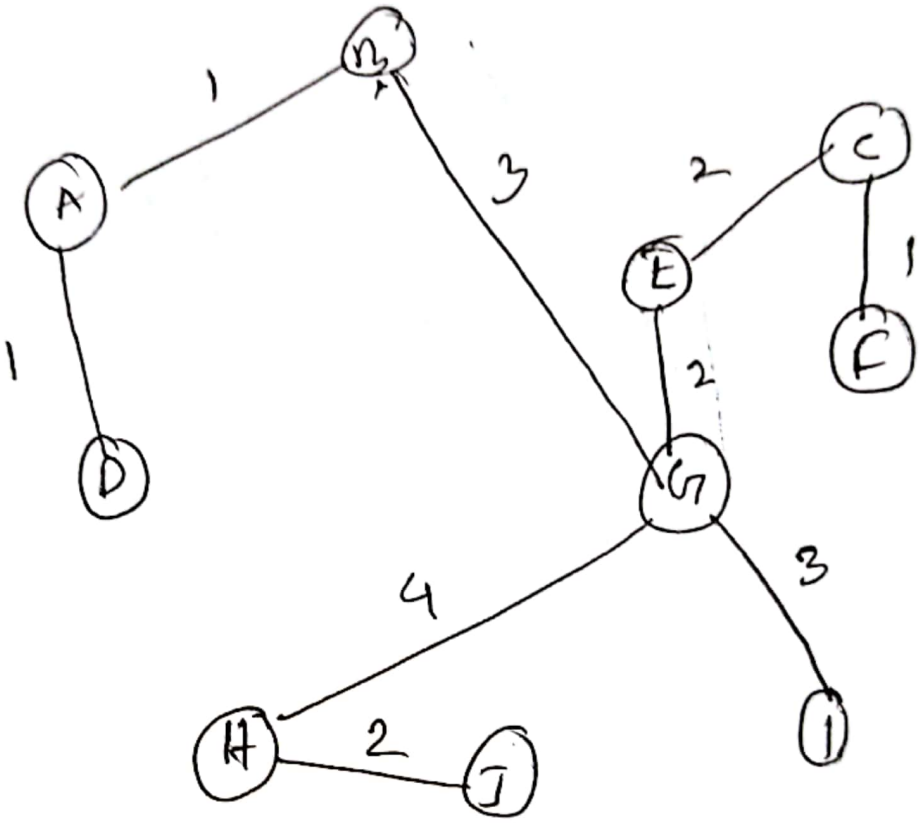
Question-3



$x = 8$

$y = 9$

	A	B	C	D	E	F	G	H	I	J
	0 ∅	∞ ∅	∞ ∅	∞ ∅	∞ ∅	∞ ∅	∞ ∅	∞ ∅	∞ ∅	∞ ∅
EXT A		1 A		1 A						
EXT B			3 B				3 B	7 B		
EXT C					2 C	1 C				
EXT D								8 D		
EXT E							2 G			
EXT F							9 F		4 F	
EXT G								4 G	3 G	8
EXT H										2 H
EXT I										8 I
EXT J										


B
1
A
3
2
C
E
1
F
1
2
D
G
4
3
H
2
J
I

1 b) If we are to detect any cycle in an undirected or directed graph we must first use DFS traversal for the given graph. If we find any adjacent vertex u while visiting visiting vertex v, such that u is already visited, and u is not the parent of v vertex. Then we can detect any existence of a vertex.

2)

2(ci) If we perform a Union-find operation on the connected ~~of~~ components ~~of the~~ in a graph. We can ~~also~~ determine whether the two nodes are in the same connected components or not in the graph.

2(cii) We can also perform ~~the~~ a ~~Union~~ Union-find operation to determine whether the 2 nodes of a connected component graph exist~~s~~ or leads to a cycle.