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Subject

Algo - Des - Ana

Assignment Final paper

Date

24/6/2020

①

Q: NO: 01

Ans:

- (1) Vertex
- (2) Multiple / parallel Edge
- (3) Adjacent edges.
- (4) Simple path
- (5) Cycle
- (6) Source Node
- (7) Sink
- (8) Isolated or Null graph
- (9) Regular Graph
- (10) Labeled Graph

Q: NO: 02

(1)

$D = 7 \times (E/G)$

(2)

Pre fix:

$$\underline{D} - \underline{f} \times \underline{(F/G)}$$

$$- \underline{D} \quad \underline{f} \times \underline{(F/G)}$$

$$- \underline{D} \times \underline{f} \quad \underline{(F/G)}$$

$$- \underline{D} \times \underline{f} \quad \underline{(FG)}$$

Post fix:

$$\underline{D} - \underline{f} \times \underline{(F/G)}$$

$$\underline{D} \quad \underline{f} \times \underline{(F/G)} -$$

$$\underline{D} \quad \underline{f} \quad \underline{(F/G)} \times -$$

$$\underline{D} \quad \underline{f} \quad \underline{(FG)} \times -$$

(3)

(ii) Pre fix:

$$\underline{T/W^R} + \underline{S \times M} - \underline{J^R K}$$

$$+ \underline{T/W^R} \quad \underline{S \times M} - \underline{J^R K}$$

$$+ \underline{T/W^R} - \underline{S \times M} \quad \underline{J^R K}$$

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$$+ \underline{T/W^R} - \underline{S \times M} \quad \underline{J^R K}$$

Post fix:

$$\underline{T/W^R} + \underline{S \times M} - \underline{J^R K}$$

$$\underline{T/W^R} \quad \underline{S \times M} - \underline{J^R K} +$$

$$\underline{T/W^R} \quad \underline{S \times M} \quad \underline{J^R K} - +$$

(4)

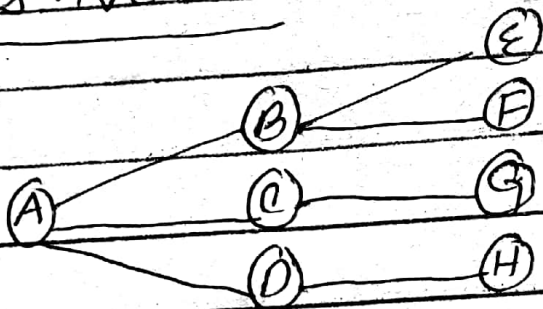
T WR / SxM J<sup>1</sup>K - +

T WR / SMx J<sup>1</sup>K - +

T WR<sup>1</sup> / SMx J<sup>1</sup>K - +

T WR<sup>1</sup> / SMx J<sup>1</sup>K<sup>1</sup> - +

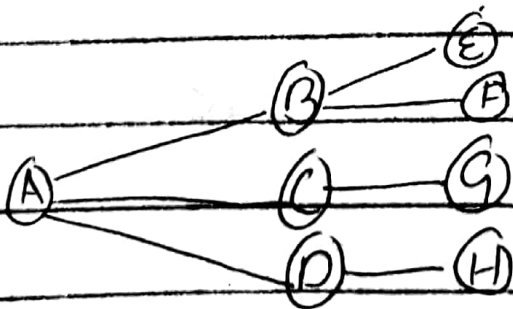
Q: NO: 03:



① Add Root A.

\* Mark A

\* A is CWN



Output Sequence

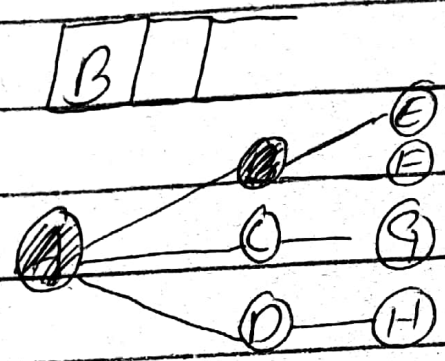
A

(5)

(2) A is adjacent to B, C, D

\* push B into sequence

\* Mark B visited

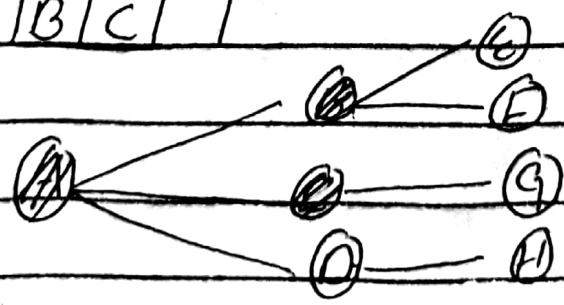


(3) The adjacent node is now C

\* C is pushed into the queue

\* Mark C as visited

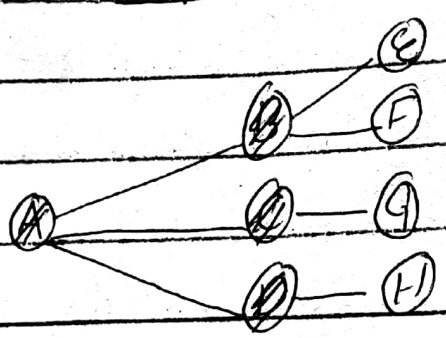
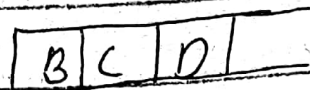
\* C is added to output sequence



Output Sequence  
A, B, C

(6)  
(4) Now  $d(0)$  is adjacent to A

- \* Push D into Queue
- \* Mark D visited
- \* Add D to output Sequence



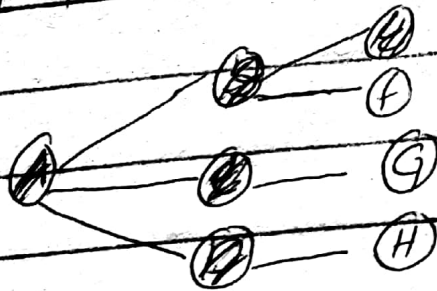
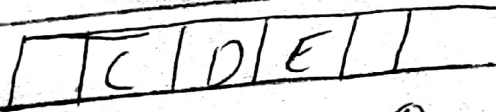
output Sequence  
A, B, C, D

- Now CWN is updated
- Now B is new CWN
- POP B from Queue

(5) B is adjacent to E, f

(7)

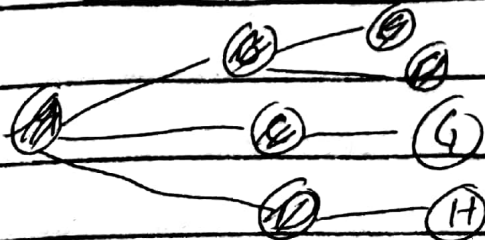
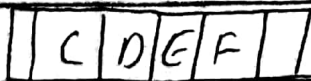
- \* Push E into Queue
- \* Mark E as visited
- \* Add E to output Sequence.



Output Sequence  
A, B, C, D, E

(8) Select the adjacent node f;

- \* Push f into Queue
- \* Mark f as visited.
- \* Add f to output Sequence





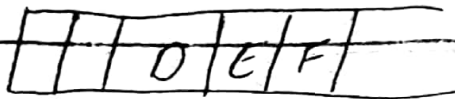
(8)

Output Sequence:

A, B, C, D, E, F

Update CWN to 'C'

POP C from Queue

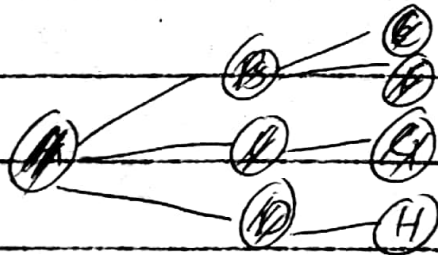


(7) Adjacent node is 'G' Now

\* G is pushed in Queue

\* Mark 'G' as visited

\* Add G in output Sequence



Output Sequence:

A, B, C, D, E, F, G

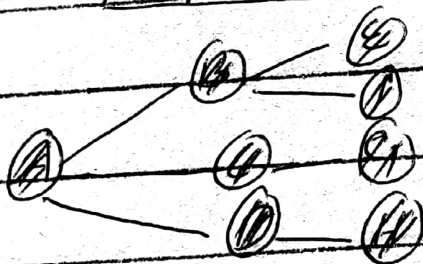
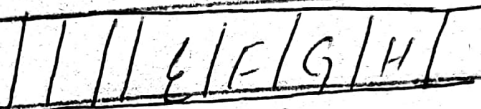
→ Now CWN is updated to 'D'

→ POP D from Queue

(9)

⑧ 'H' is adjacent to 'D'

- \* Push H into Queue
- \* Mark H as visited
- \* Add H to output Sequence

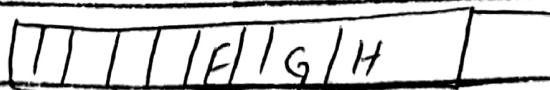


Output Sequence:

A, B, C, D, E, F, G, H

→ Now updated CWN is E

→ pop E from Queue



→ No adjacent to E

→ update CWN to F

→ pop 'f'



→ No adjacent to f

→ updated CWN 'G'

→ pop G from queue



→ No adjacent to G

→ updated CWN 'H'

→ pop H from queue



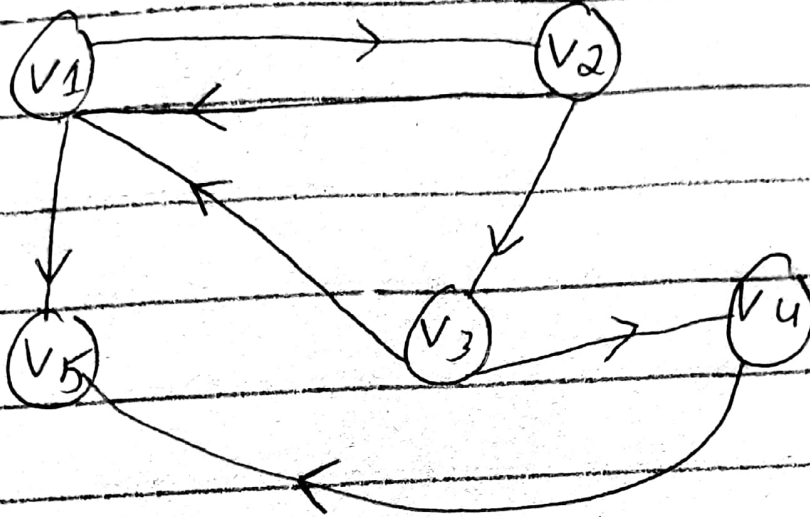
→ No adjacent to H

→ Queue is empty,

BFS stops.

(11)

Q: NO: 04:



Number of nodes =  $m = 5$   
Order of  $A = m \times m$   
 $= 5 \times 5$

	$v_1$	$v_2$	$v_3$	$v_4$	$v_5$	
$v_1$	0	1	0	0	1	2
$v_2$	1	0	1	0	0	2
$A = v_3$	1	0	0	1	0	2
$v_4$	0	0	0	0	1	1
$v_5$	0	0	0	0	0	0

In degree: 2    1    1    1    2    Out degree

(7)

(12)

Q: NO: 05:

$$A = \begin{bmatrix} 0 & 1 & 0 & 1 & 1 \\ 1 & 1 & 1 & 0 & 0 \\ 0 & 0 & 1 & 1 & 0 \\ 1 & 1 & 0 & 1 & 0 \\ 0 & 0 & 0 & 0 & 1 \end{bmatrix}$$

$$\begin{aligned} \text{Order of } A &= m \times m \\ &= 5 \times 5 \\ &= 25 \end{aligned}$$

Number of Nodes = 5

Let Nodes be  $V_1, V_2, V_3, V_4, V_5$

