

UNIVERSITY OF ASIA PACIFIC

Department of Computer Science & Engineering



Artificial Intelligence
Course Code: CSE 403

Assignment -1

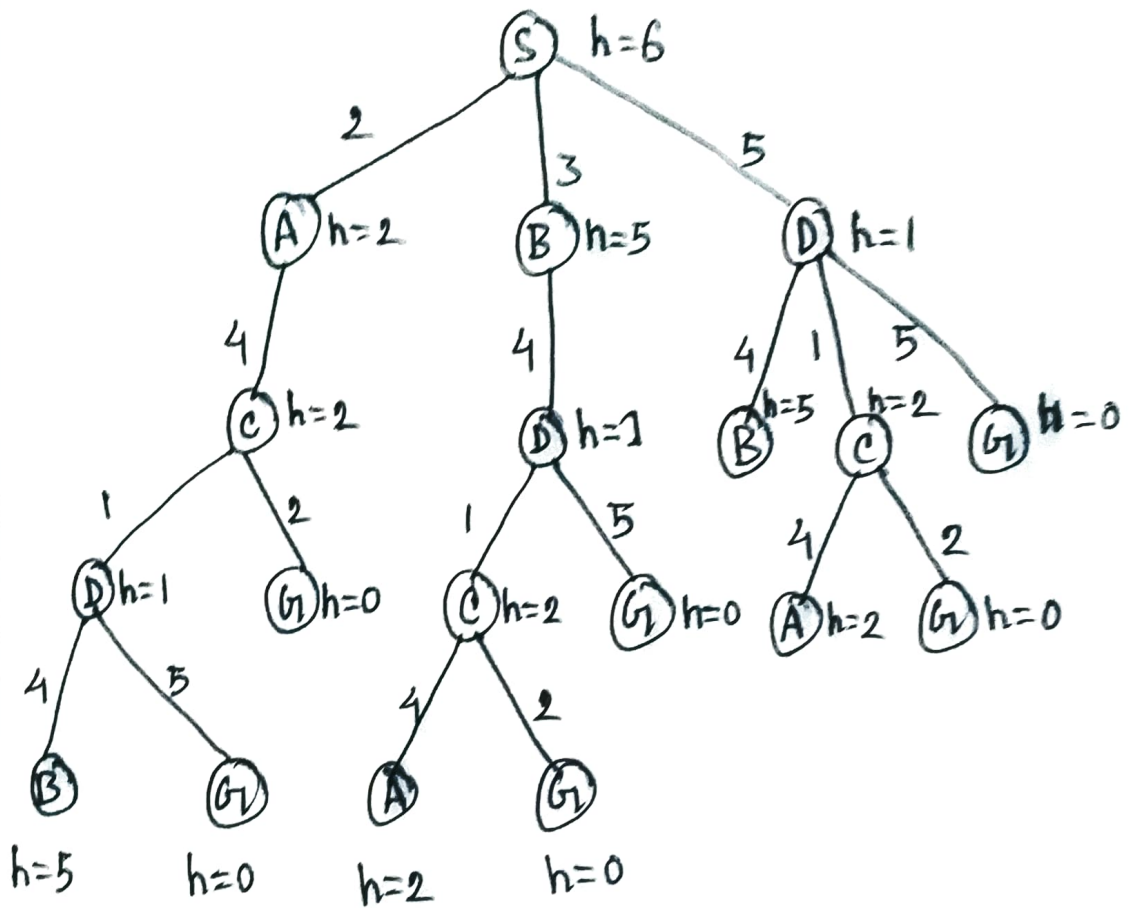
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Section : B

Date of Submission : 31.08.2021

Problem : 1



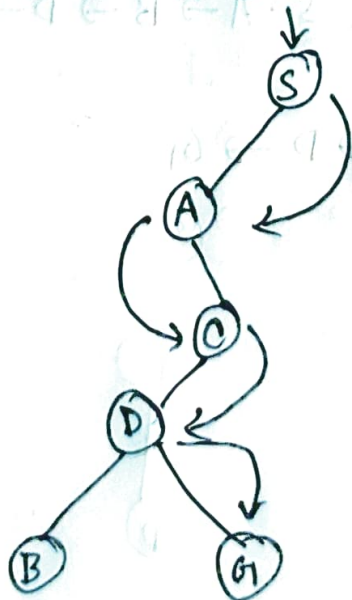
② Depth first Search:

Implementation: Fringe is LIFO stack

C-F	O-F
S	A, B, D
S, A	C, B, D
S, A, C	D, G, B, D
S, A, C, D	B, G, G, B, D
S, A, C, D, B	G, G, B, D
S, A, C, D, B, G	G, B, D

State Expanded: $S \rightarrow A \rightarrow C \rightarrow D \rightarrow B \rightarrow G$

path Return: $S \rightarrow A \rightarrow C \rightarrow D \rightarrow G$



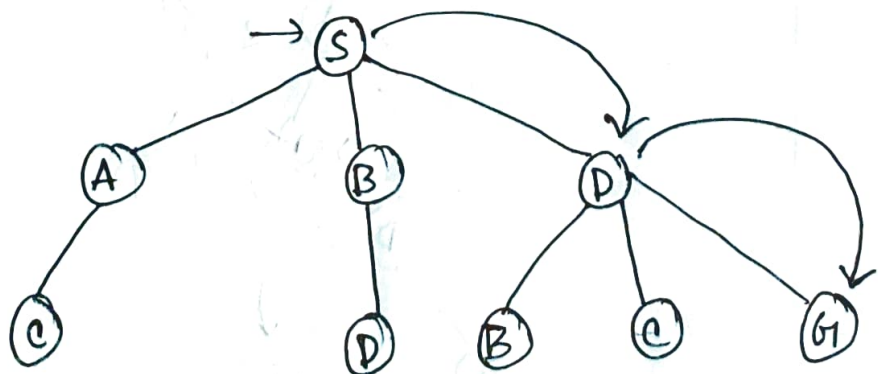
⑥ Breadth First Search:

Implementation: Fringe is FIFO Queue.

C-F	D-F
S	A, B, D
S, A	B, D, C
S, A, B	D, C, D
S, A, B, D	C, D, B, C, G
S, A, B, D, C	D, B, C, G, D, G
S, A, B, D, C, D	B, C, G, D, G, C, G
S, A, B, D, C, D, B	C, G, D, G, C, G
S, A, B, D, C, D, B, C	G, D, G, C, G, A, G
S, A, B, D, C, D, B, C, G	D, G, C, G, A, G

State-Expanded: $S \rightarrow A \rightarrow B \rightarrow D \rightarrow C \rightarrow D \rightarrow B \rightarrow C \rightarrow G$

path Return: $S \rightarrow D \rightarrow G$

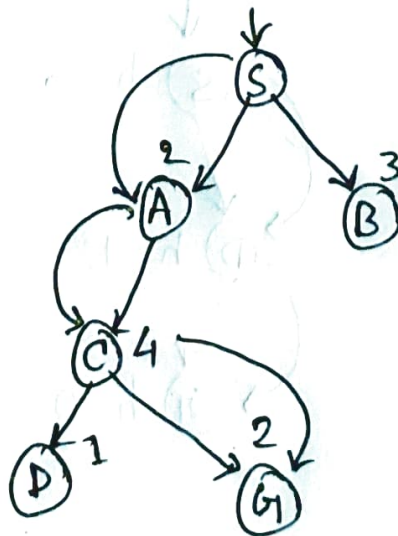


© Uniform Cost Search:

C-F	O-F
S	A, B, D 2 3 5
S, A	B, D, C 3 5 4
S, A, B	D, C, D 5 4 4
S, A, B, C	D, D, D, G 5 4 1 2
S, A, B, C, D	D, D, G, B, G 5 4 2 4 5
S, A, B, C, D, G	D, D, B, G 5 4 4 5

State- Expanded: $S \rightarrow A \rightarrow B \rightarrow C \rightarrow D \rightarrow G$

path Return: $S \rightarrow A \rightarrow C \rightarrow G$

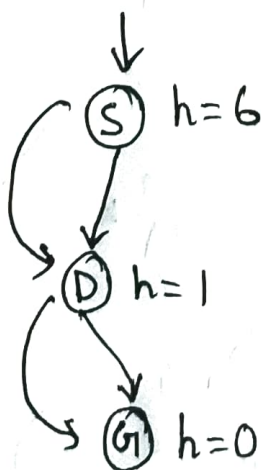


① Greedy Search with Heuristic h shown in the tree:

C-F	O-F
S	A, B, D 2 5 1
S, D	A, B, B, C, G 2, 5, 5, 2, 0
S, D, G	A, B, B, C 2 5 5 2

State Expanded : $S \rightarrow D \rightarrow G$

path Return : $S \rightarrow D \rightarrow G$



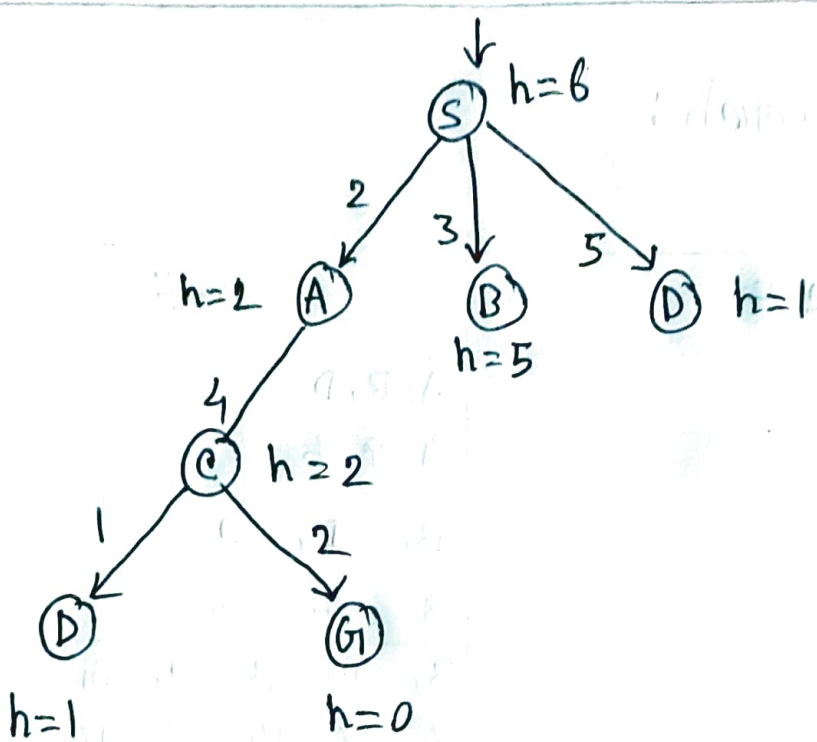
② A* Search :

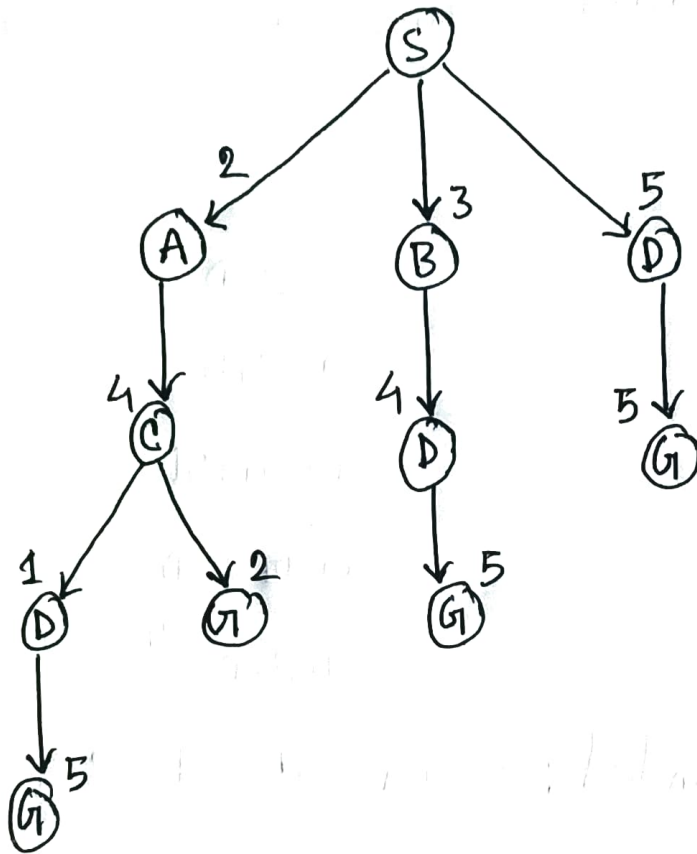
C-F	O-F
S	A, B, D 4 8 6
S, A	B, D, C 8 6 8
S, A, D	B, C, B, C, G 8 8 14 8 10
S, A, D, B	C, B, C, G, D 8 14 8 10 8
S, A, D, B, C	B, C, G, D, D, G 14 8 10 8 8 8
S, A, D, B, C, C	B, G, D, D, G, A, G 14 10 8 8 8 12 8
S, A, D, B, C, C, D	B, G, D, G, A, G, C, G 14 10 8 8 12 8 10 11
S, A, D, B, C, C, D, D	B, G, G, A, G, C, G, B, G 16 10 8 12 8 10 11 16 12
S, A, D, B, C, C, D, D, G	B, G, A, G, C, G, B, G 16 16 12 8 10 11 16 12

State - Expanded : $S \rightarrow A \rightarrow D \rightarrow B \rightarrow C \rightarrow D \rightarrow G$

path Return : $S \rightarrow A \rightarrow C \rightarrow G$

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Problem-2

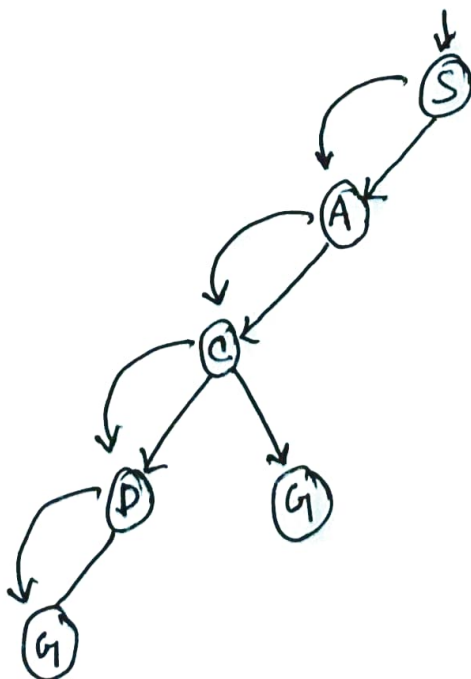
② Depth - First - Search :

Implementation: Fringe is LIFO stack

C-F	O-F
S	A, B, D
S, A	C, B, D
S, A, C	D, G, B, D
S, A, C, D	G, G, B, D
S, A, C, D, G	G, B, D

state Expanded: $S \rightarrow A \rightarrow C \rightarrow D \rightarrow G$

path Return: $S \rightarrow A \rightarrow C \rightarrow D \rightarrow G$

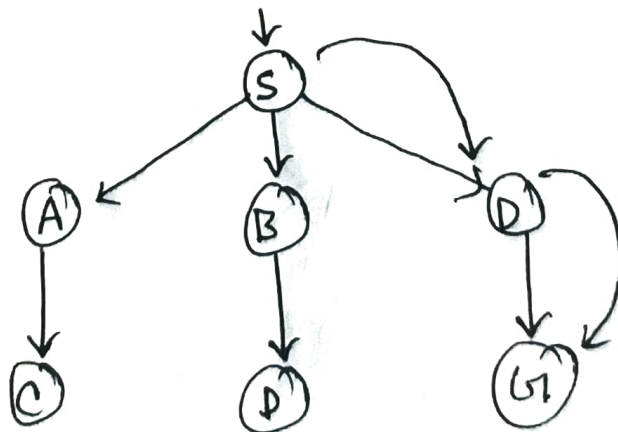


⑥ Breadth First Search :

C-F	O-F
S	A, B, D
S, A	B, D, C
S, A, B	D, C, D
S, A, B, D	C, D, G
S, A, B, D, C	D, G, D, G
S, A, B, D, C, D	G, D, G, G
S, A, B, D, C, D, G	D, G, G

State - Expanded : $S \rightarrow A \rightarrow B \rightarrow D \rightarrow C \rightarrow D \rightarrow G$

path Return : $S \rightarrow D \rightarrow G$



① Uniform - Cost - Search :

C-F	O-F
S	A, B, D 2 3 5
S, A	B, D, C 3 5 4
S, A, B	D, C, D 5 4 4
S, A, B, C	D, D, D, G 5 4 1 2
S, A, B, C, D	D, D, G, G 5 4 2 5
S, A, B, C, D, G	D, D, G 5 4 5

state - Expanded : $S \rightarrow A \rightarrow B \rightarrow C \rightarrow D \rightarrow G$

path Return : $S \rightarrow A \rightarrow C \rightarrow G$

