ARTIFICIAL

CS565 INTELLIGENCE

HOME WORK - 1.

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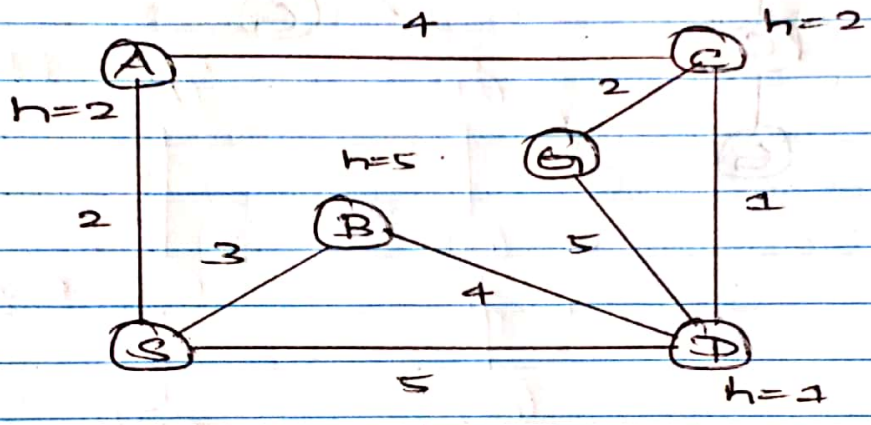
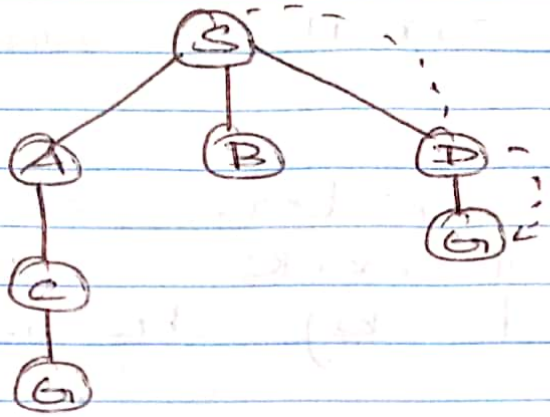
1> SEARCH:



2> BFS

It starts at the root node explores all the neighbour nodes prior to moving to depth node.

" shallowest node first".

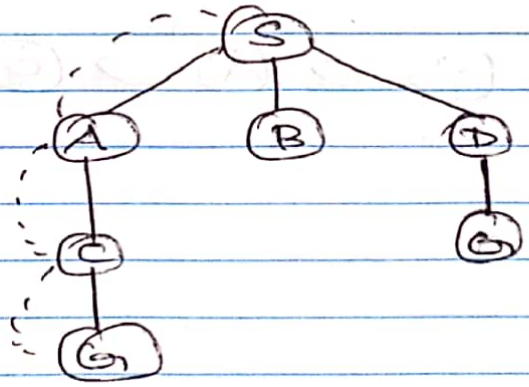


Path ⇒ S → D → G

DFS

It starts at root node and explores adjacents node to the maximum before back tracking.

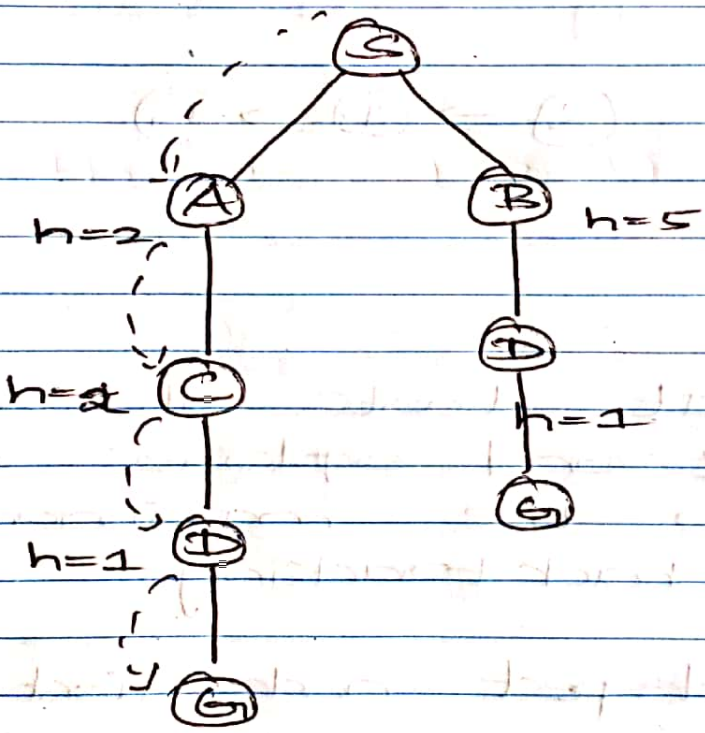
"deepest node first"



path ⇒ S → A → C → G

c) GREEDY SEARCH

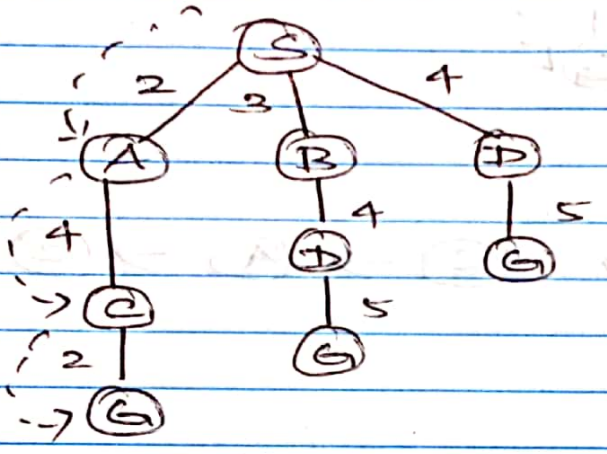
It considers closest to the goal node. "closeness" is estimated by heuristic (h).



path → S → A → C → I → G

D) UNIFORM COST SEARCH :

It considers the cumilative cost from root node.

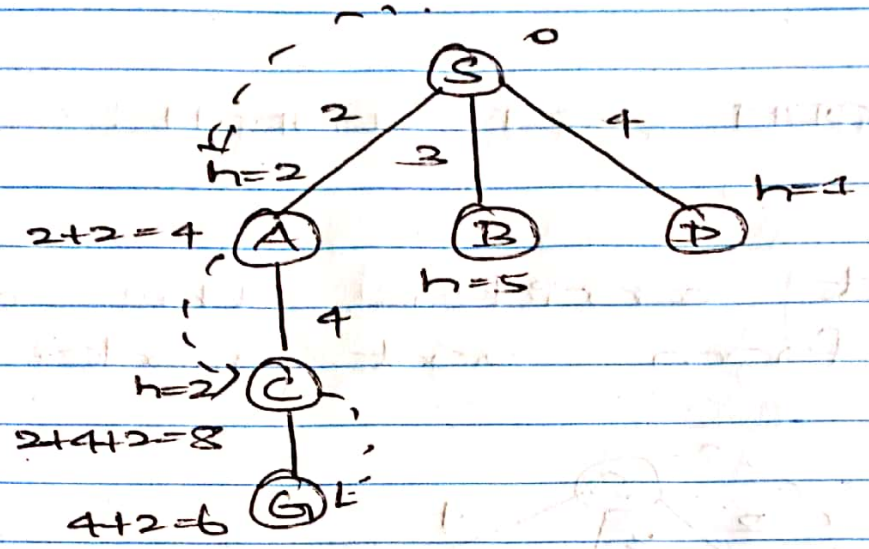


path ⇒ S → A → C → G

E) A* SEARCH :

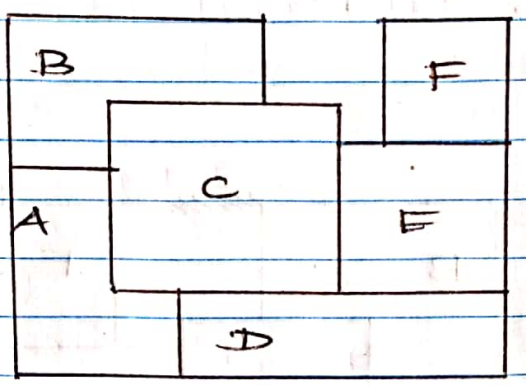
It is the combination of uniform cost search and Greedy search.

$$f(x) = cost + h(x)$$



path ⇒ S → A → C → G

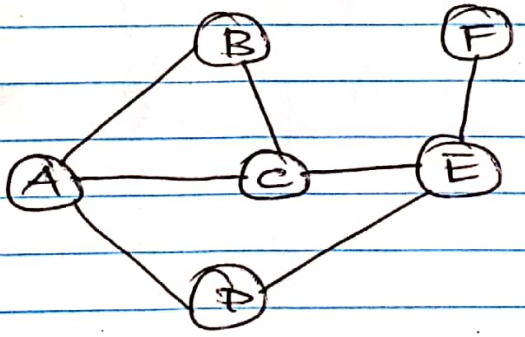
2> CSP



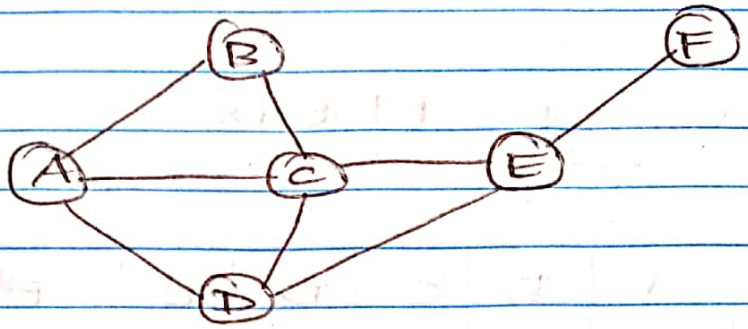
a> CONSTRAINT GRAPH :

→ Graph representation of above diagram.

→ To represention of specify the auto constraints for CSP.



b> CSP PROBLEM



Variable : A B C D E F

Domain D = { Blue, Green, Red }

constraints : avoid adjacent regions using same colour.

Implicit ⇒ $A \neq B$, $B \neq C$

$A \neq C$, $A \neq D$,

$C \neq E$, $D \neq E$

$C \neq D$, $E \neq F$

Explicit ⇒ $B = D$, $D = F$,

$B = F$, $A = E$

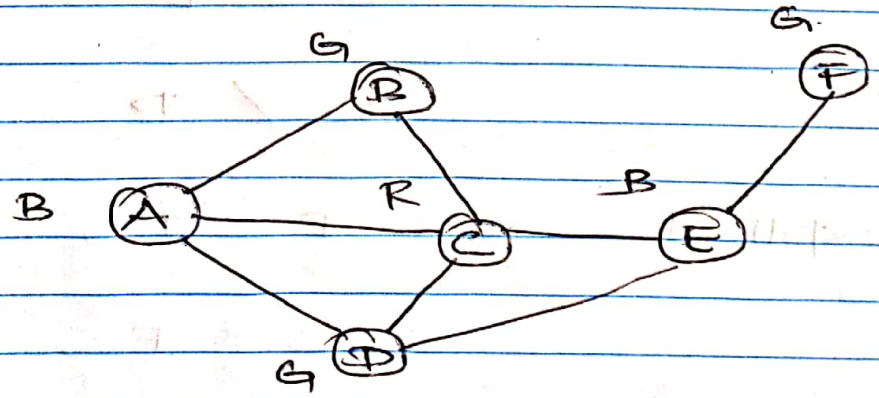
$A = F$

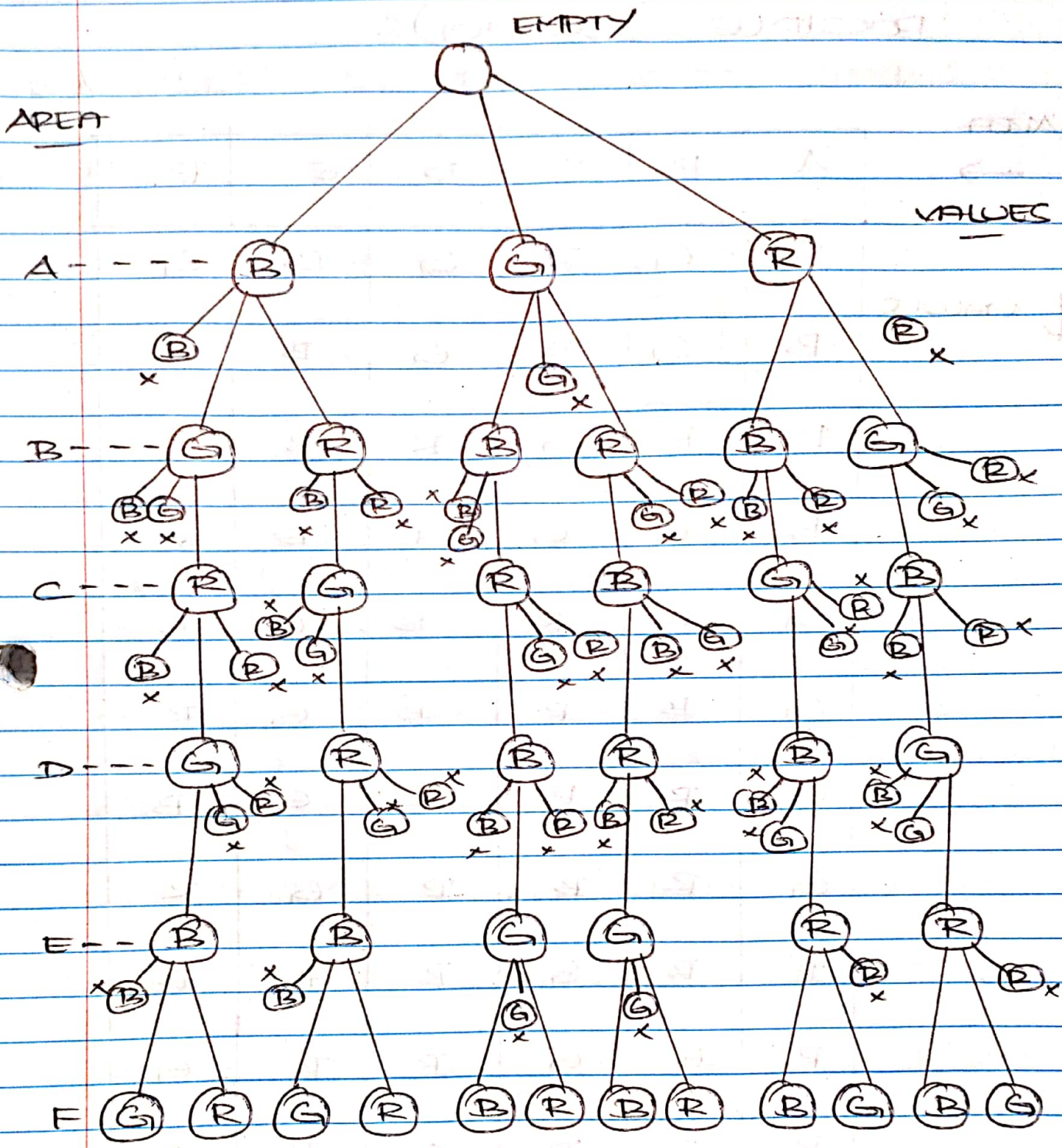
c> NAIVE BACKTRACKING SEARCH :

Adjacency Matrix

	A	B	C	D	E	F
A	1	1	1	1	0	0
B	1	1	1	0	0	0
C	1	1	1	1	1	0
D	1	0	1	1	1	0
E	0	0	1	1	1	1
F	0	0	0	0	1	1

REF





Total no of solutions = 12.

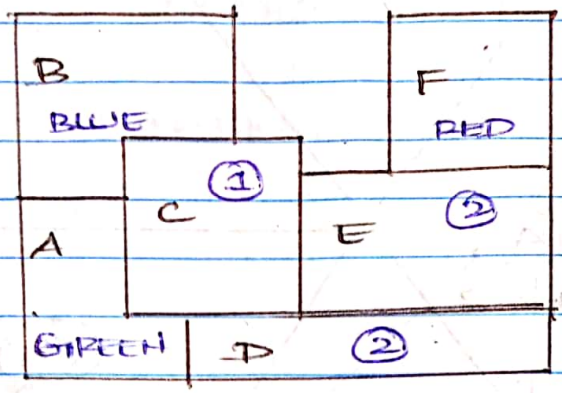
POSSIBLE SOLUTIONS

AREA →

↓ VALUES

A	B	C	D	E	F
B	G	R	G	B	G
B	G	R	G	B	R
B	R	G	R	B	G
B	R	G	R	B	R
G	B	R	B	G	B
G	B	R	B	G	R
G	R	B	R	G	B
G	R	B	R	G	R
R	B	G	B	R	B
R	B	G	B	R	G
R	G	B	G	R	B
R	G	B	G	R	G
x	x	x	x	x	x

D) MOST CONSTRAINED VARIABLE :



→ choose the variable with fewest legal left values in its domain.

→ To do minimum complexity at first, (or) reduce difficulty at beginning.

so MSV is (C) with 1 value.

E) LEAST CONSTRAINED VALUE :

→ choice of variable, choose the least constrained value,

As A & B has Blue & green value, then Area (C) is left with (Red).