Ans of Q2

~~g(n)~~ = we know,

$$f(n) = g(n) + h(n)$$

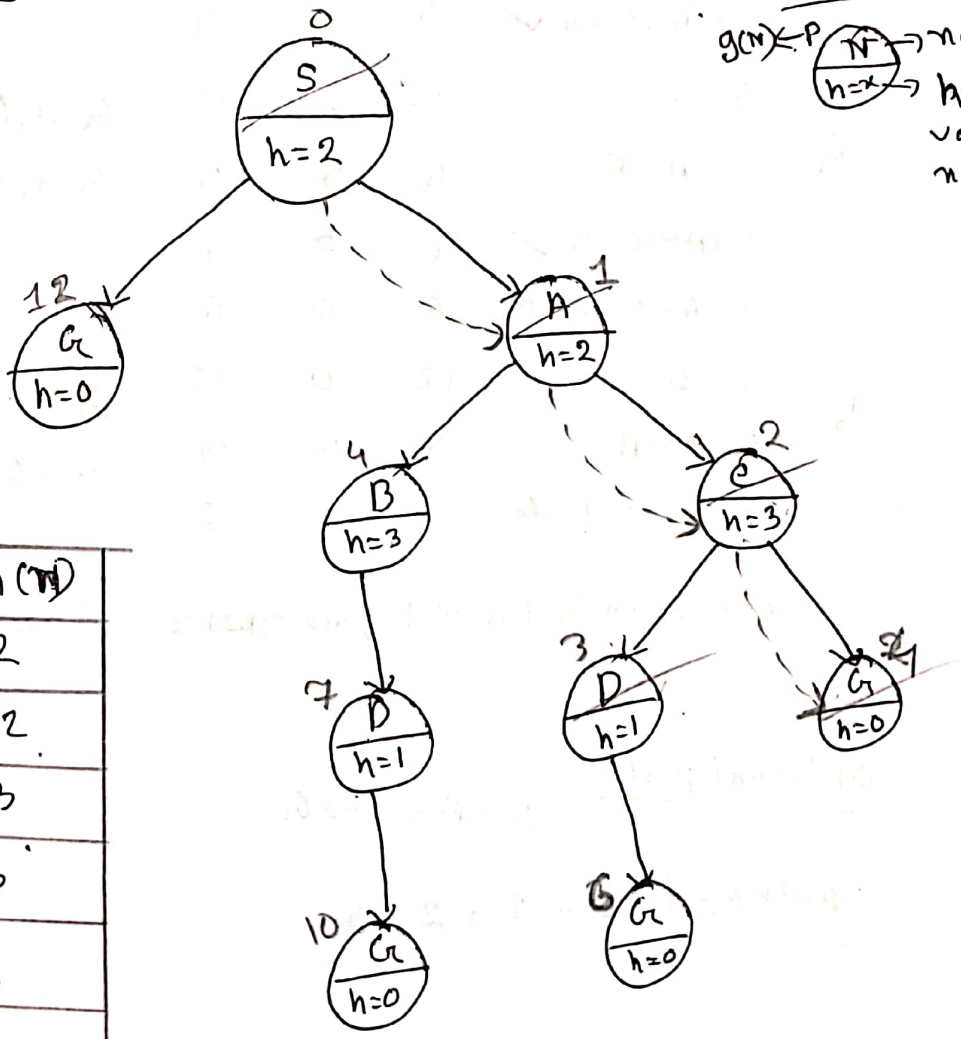
where $g(n)$ → path cost from start node to node-n

$h(n)$ → heuristic value of node-n

OF → Open bringe (contain opened but not visited node)

CF → ~~Contain~~ Close bringe (Contain visited node)

Search tree:



Consider

Node	h(n)
S	2
A	2
C	3
B	3
D	1
G	0

Init	path	g(n)	h(n)	f(n)	QF	CF
0	S	0	2	2	S-2	--
1	S→A ✓	1	2	3	A3, G12	S-2
	S→G	12	0	12		
2	S→G	12	0	12	G-12, B-7,	S-2, A-3,
	S→A→B	4	3	7	e-5.	
	S→A→C ✓	2	3	5		
3	S→G	12	0	12	G-12, B-7	S-2, A-3, C-5
	S→A→B	4	3	7	D-4, G-4	
	S→A→C→D ✓	3	1	4		
	S→A→C→G	4	0	4		
4	S→G	12	0	12	G-12, B-7,	S→2, A-3, C-5
	S→A→B	4	3	7	G-4, G-6	D-4
	S→A→C→G ✓	4	0	4		
	S→A→C→D→G	6	0	6		
5	S→G	12	0	12	G-12, B-7,	S-2, A-3, C-5
	S→A→B	4	3	7	G-6	D-4, G-4
	S→A→C→D→G	6	0	6		

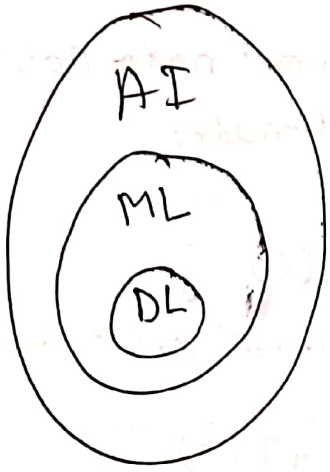
As G-4 is in CF, no more iteration needed.

Optimal path: S→A→C→G

path cost: 1 + 1 + 2 = 4 ✓

Ans of Q4: (A)

No, AI is not different from ML and DL. However ML and DL are kind a subpart or we can say more specific sector of AI. If we draw the relationship among them,



AI works with machins. that can act like and train like human.

ML is train a machine with a bunch of data.

and DL is more specified sector of ML.

Ans of Q4: (b)

i) Determine admissibility:-

we know,
graph will be admissible if

$$0 \leq h(n) \leq h^*(n)$$

where
$h(n) \rightarrow$ huristic value for node $-n$
$h^*(n) \rightarrow$ optimal path cost from nod-n to goal node.

so, $0 \leq h_2(c) \leq h^*_2(c)$

or $0 \leq h_2(c) \leq$ path cost of $(c \rightarrow D \rightarrow F \rightarrow G)$

or $0 \leq h_2(c) \leq (4+3+4)$

or $0 \leq h_2(c) \leq 11$

so $h_2(c)$ will be admissible at

$0 < h_2(c) \leq 11$ [as ~~$h_2(c)$~~ c - is not goal state, it can't be "0"]

Fig?

(ii) Determine consistency:-

We know,

$$\forall (S, G): \quad 0 \leq h(S) - h(G) \leq cost(S, G)$$

where,

$h(S) \rightarrow$ heuristic value for node-S

$h(G) \rightarrow$ heuristic value for node-G

$cost(S, G) \rightarrow$ path cost from node-S to node-

So, now,

good

$$\forall (C, A): \quad 0 \leq h_2(C) - h(A) \leq cost(C, A)$$

or, $0 \leq h_2(C) - 9 \leq 3$

or, $9 \leq h_2(C) \leq 12 \quad$ —— (i)

$$\forall (C, D): \quad 0 \leq h_2(C) - h(D) \leq cost(C, D)$$

or, $0 \leq h_2(C) - 5 \leq 4$

or, $5 \leq h_2(C) \leq 9 \quad$ —— (ii)

considering (i) and (ii) I can state that,

$h_2(C) = 9$ makes h_2 more consistant.

and overall, $h_2(C) = 9$ will make h_2 more admissible and consistent.

Ans of Q1 (a)

PEAS → P → performance measure
→ E → Environment
→ Actuators
→ Sensor.

performance measure:

(1) Find best decision
(2) optimal cost
(3) minimize steps.
(4) understand opponent's steps.

~~Condition~~

Environment: (1) Chess Board.
(2) checkmate position
(3) save the king
(4) eliminate ~~oppo~~ opponents
(5)

Actuators: (1) Make decision
(2) check opponent's movement
(3) Eleminate opponent's king
(4) Eleminate other players.
(5) Find best decision for movement.

sensors:
(i) camera (see movements)
(2)

Ans ob-01: (b)

(i) Fully observable:- As Deep-blue is playing chess, it have to work withe change of ~~env~~ environment which depends on opponent's movement So it have to be Fully observable.

(ii) stochastic: As the environment can't be ~~determ~~ determine., ~~as~~ because, its completely depends on opponent's movement. ~~sot~~ SO it will be stochastic.

(iii) Episodic:- As the agents have to work in group and previsian decision will effect next move; so it will be episodic.

(iv) Multi-agent: Deep-Blue ~~as~~ need multiple agents for say agent for observe movement.

kind · ~~of~~ best · decision., keep tracks of movements.

In multi-agent, more than one agent workes together to achive ~~the~~ a certain goal.

Deep-Blue is multi-agent.