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CSE → 422

section → 17

Assignment 1

1	2	3
4	5	6
7	8	9

1	2	3
4	5	6
7	8	9

1	2	3
4	5	6
7	8	9

$$8+4=12$$

Ans = 12

$$8+5=13$$

Ans = 13

$$8+6=14$$

Ans = 14

1	2	3
4	5	6
7	8	9

$$8+8=16$$

Ans = 16

1	2	3
4	5	6
7	8	9

$$8+9=17$$

Ans = 17

1	2	3
4	5	6
7	8	9

$$8+10=18$$

(Ans)

1	2	3
4	5	6
7	8	9

$$8+11=19$$

(Ans)

Ans of 1

Q1

2	7	1
8		3
1	6	4

$$f(n) = 0 + 4$$

$$f(n) = 4$$

2	8	3
1	6	4
7	5	

2	8	3
1		4
7	6	5

2	8	3
1	6	4
7	5	

$$f(n) = 1 + 5 = 6$$

$$f(n) = 1 + 3$$

$$= 4$$

$$f(n) = 1 + 5$$

$$= 6$$

2	8	3
1		4
7	6	5

$$f(n) = 2 + 3$$

$$= 5$$

2	8	3
1	4	
7	6	5

$$f(n) = 2 + 5$$

$$= 7$$

2		3
1	8	4
7	6	5

$$f(n) = 2 + 3$$

$$= 5$$

	2	3
1	8	4
7	6	5

$$f(n) = 3 + 2$$

$$= 5$$

2	3	
1	8	4
7	6	5

$$f(n) = 3 + 3$$

$$= 6$$

1	2	3
8	4	
7	6	5

$$f(n) = 4 + 1$$

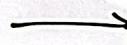
$$= 5$$

1	2	3
8		4
7	6	5

$$f(n) = 5 + 0$$

(Goal)

x



Answers to the ques 2

a)

Let start Node
good, $(N-1, N-2)$

$$h_2(n) = |(N - N+1)| + |(N - N+2)| \\ = 3$$

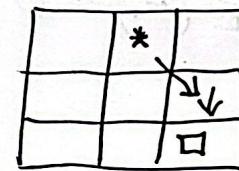
But Actual Cost,

Assume $N=3$

$$\sqrt{2} + 1 \\ \approx 2.414$$

which is lower than $h_2(n)$

hence Not Admissible.



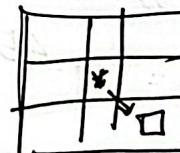
b)

Let start Node $(N-1, N-1)$

$N=3$

$$\text{True Cost} = \sqrt{2}$$

$$h_1(n) \times 1.2 = 1.2 \times \sqrt{(N-N+1)^2 + (N-N+1)^2}$$



$$= 1.2 \times \sqrt{2}$$

$$\therefore \text{True cost} < h_1(n)$$

hence proved, $1.2 h_1$ is not admissible.

Answer to the Q3

$$E(\theta) = \theta \sin(\theta) \cos(\theta^2)$$

$$\theta_0 = 0.7$$

$$\textcircled{1} \quad E(\theta_0) = 0.3978$$

$$\textcircled{II} \quad E(\theta_{-1}) = 0.01706 \quad \theta_{-1} = 0.6$$

$$\textcircled{III} \quad E(\theta_1) = 0.4603 \text{ (Best)} \quad \theta_1 = 0.8$$

$$\textcircled{IV} \quad E(0.8) = 0.4603$$

$$E(0.9) = 0.486 \text{ (Best)}$$

$$E(0.7) = 0.397$$

$$\textcircled{V} \quad E(0.9) = 0.486 \text{ (current best)}$$

$$E(1) = 0.454$$

$$E(0.8) = 0.4603$$

As going higher didn't improve

Also $\theta = 0.9$ is higher than both

Neighbours.

So Local Maxima = $E(0.9) = 0.486$ (Ans)