University of Asia Pacific

Department of CSE

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Year: 4th

Semester: 1st

Course Code: CSE 403

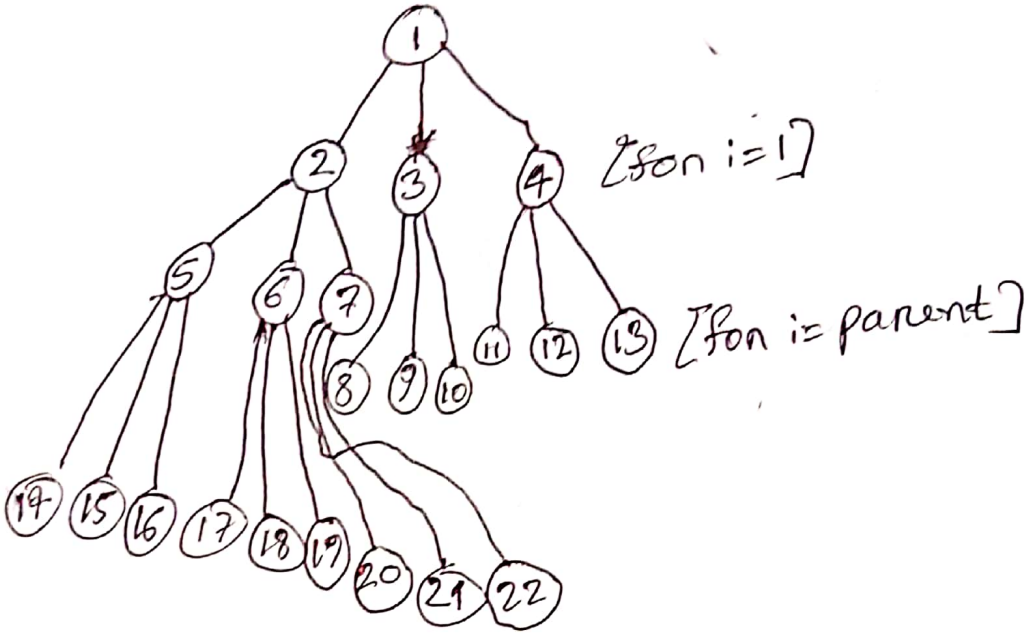
Course Title: Artificial Intelligence

Date: 14.02.2021

"During Examination and upload time I will not take any help from anyone. I will give my exam all by myself."

Answer to the Q.NO.2

(a)



(b)

(i) Considering ~~graph~~ fig of (a).

Parent → child

1 = {2, 3, 4} → ~~child~~

2 = {5, 6, 7}

3 = {7, 8, 9}

4 = {10, 11, 12}

5 = {13, 14, 15}

6 = {16, 17, 18}

[1]

[1, 2, 3, 4]

[1, 2, 3, 4, 5, 6, 7]

[1, 2, 3, 4, 5, 6, 7, 8, 9, 10]

[1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14]

[1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16]

[1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19]

[1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22]

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[8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22]

[17] → Goal found.

Now back track from parent-child list.

17 → 6 → 2 → 1

So the list of visited nodes will be

1 1 → 2 → 6 → 17.

(ii) Considering fig of (a)

When depth = 1

list order,

1 → 2
1 → 3
1 → 4

} goal not found

when depth = 2

list order.

1 → 2 → 5
1 → 2 → 6
1 → 2 → 7
1 → 3 → 8
1 → 3 → 9
1 → 3 → 10
1 → 4 → 11
1 → 4 → 12
1 → 4 → 13

} goal not found

when depth = 3

list order,

1 → 2 → 5 → 14
1 → 2 → 5 → 15
1 → 2 → 5 → 16
1 → 2 → 6 → 17 → goal state found.

∴ The final visit order would be 1 → 2 → 6 → 17

Answer to the Q.No.1

h(start) = 12Y.4 + 4 = 4
h(A) = 12Y.7 + 3 = 5 + 3 = 8
h(B) = 12Y.5 + 2 = 2 + 2 = 4
h(C) = 12Y.3 + 1 = 0 + 1 = 1
h(D) = 12Y.6 + 2 = 0 + 2 = 2

h(goal) = 0

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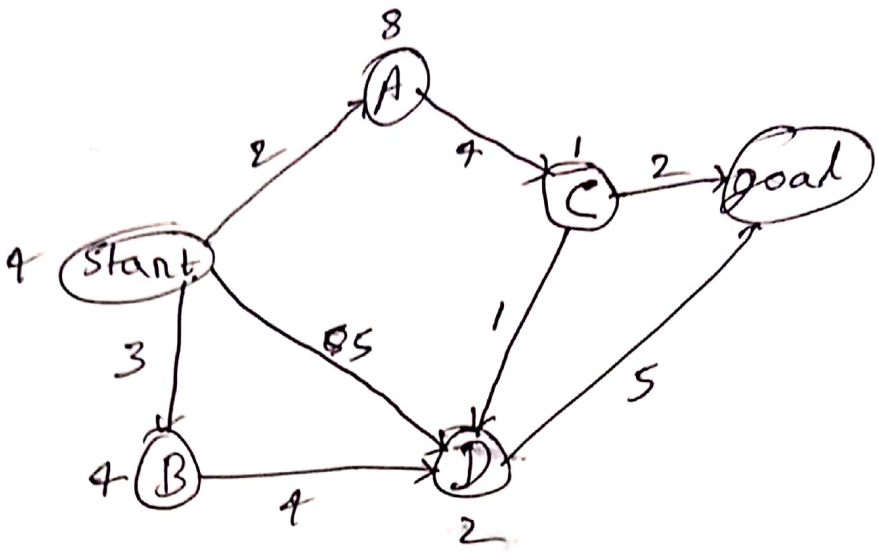
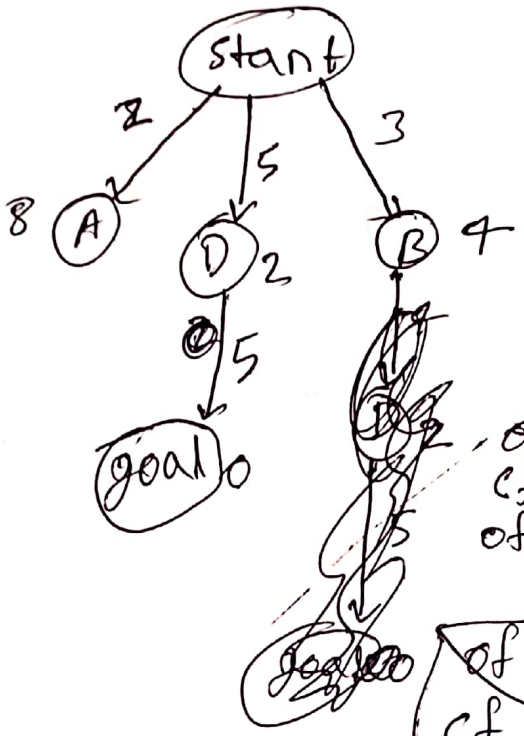


Solve:

A star tree traverse simulation

$f_n = g_n + h_n$

↓ path cost ↓ heuristic cost



of = {A, B, D} $f_n(B) = 3+4 = 7$

cf = {start} $f_n(B) < f_n(A)$

$f_n(B) = f_n(D)$

cf = {start, D}

of = {goal}

of = {goal}

cf = {start, B, D}

∴ Total path: start → D → goal

path cost = 5 + 5 = 10