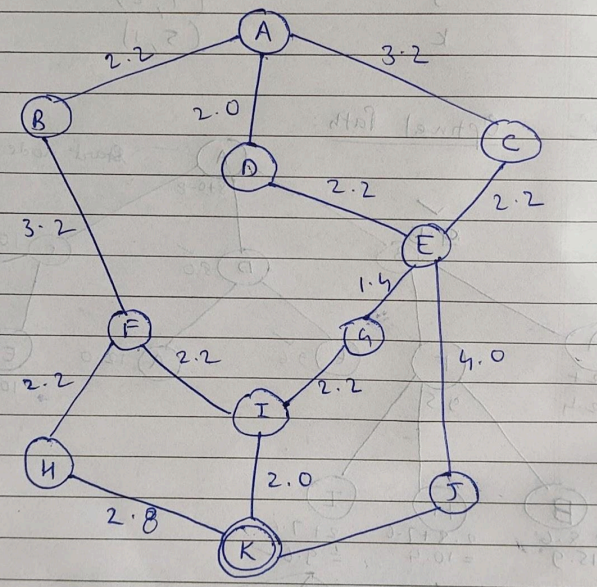
PAGE NO.
DATE:

FAI - Assignment 2

☆ A* Practice Assignment.

Course & Batch : PG-DAI & March 24
Roll no : 240340128012
Name : Kunal S. Kurve.
Date of Submission : 15/04/24

Q. find optimal path from 'A' to 'K'.



☆ Answer to include :

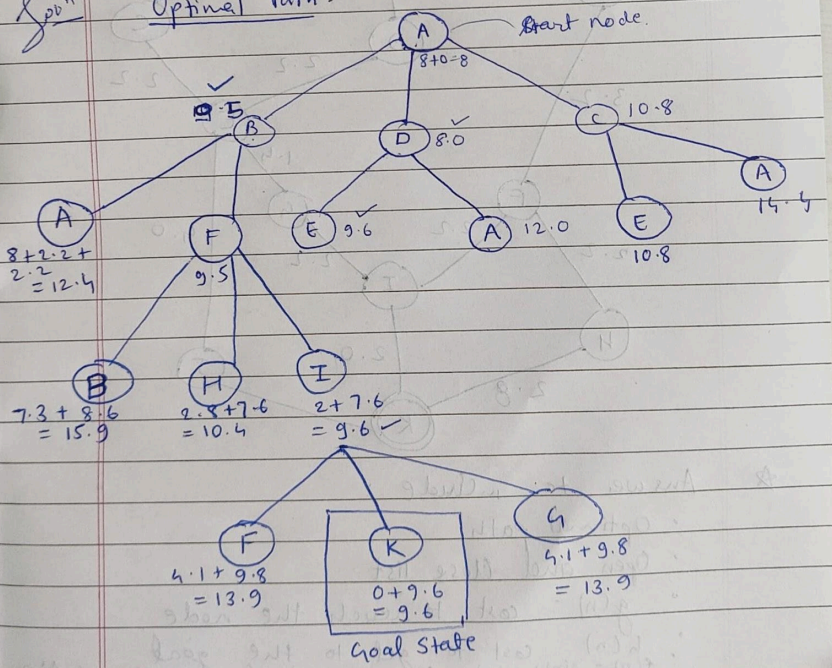
- Optimal path
- Open and Close list
- g(n) : cost to reach the node
- h(n) cost to get to the goal
- f(n) = g(n) + h(n) estimated cost of cheapest solution

PAGE NO.
DATE:

Node	Co-ordinates	SL distance to K
A	(5, 9)	8.0
B	(3, 8)	7.3
C	(8, 8)	7.6
D	(5, 7)	6.0
E	(7, 6)	5.4
F	(4, 5)	4.1
G	(6, 5)	4.1
H	(3, 3)	2.8
I	(5, 3)	2.0
J	(7, 2)	2.2
K	(5, 1)	0.0

Soln

Optimal Path:



PAGE NO.
DATE:

$f(N) = g(N) + h(N)$:

Heuristic :- ① A - B - K = 2.2 + 7.3 = 9.5

Set 1 ② A - D - K = 2.0 + 6.0 = 8.0 (lowest)

③ A - C - K = 3.2 + 7.6 = 10.8

set 2 :- ① A - D - A - K = 2.0 + 2.0 + 8.0 = 12.0

② A - D - E - K = 2.0 + 2.2 + 5.4 = 9.6

Set 3 :- ① A - B - A - K = 2.2 + 2.2 + 8.0 = 12.4

② A - B - F - K = 2.2 + 3.2 + 4.1 = 9.5

Set 4 :- ① A - C - A - K = 3.2 + 3.2 + 8.0 = 14.4

② A - C - E - K = 3.2 + 2.2 + 5.4 = 10.8

SRt 5 :- ① A - B - F - B = 2.2 + 3.2 + 3.2 = 8.6

② A - B - F - H = 2.2 + 3.2 + 2.2 = 7.6

③ A - B - F - I = 2.2 + 3.2 + 2.2 = 7.6

Set 6 :- ① A - B - F - I - K = 2.2 + 3.2 + 2.2 + 2.0 = 9.6

② A - B - F - H - K = 2.2 + 3.2 + 2.2 + 2.8 = 13.9

∴ Optimal Path is

A - B - F - I - K

A/c to Priority Queue :-

Open List	Close List
A	
ADBC	A
DBEA	AD
BFEA	ADB
FIEA	ADBF
KIEA	ADBFI