Artificial Intelligence

Assignment 02

SE - A

K191048
Amman Soomro

March
2022

QUESTION NO 01 - PEAS

A SEARCH AND RESCUE ROBOT FOR EXPLORING A COLLAPSED MINE

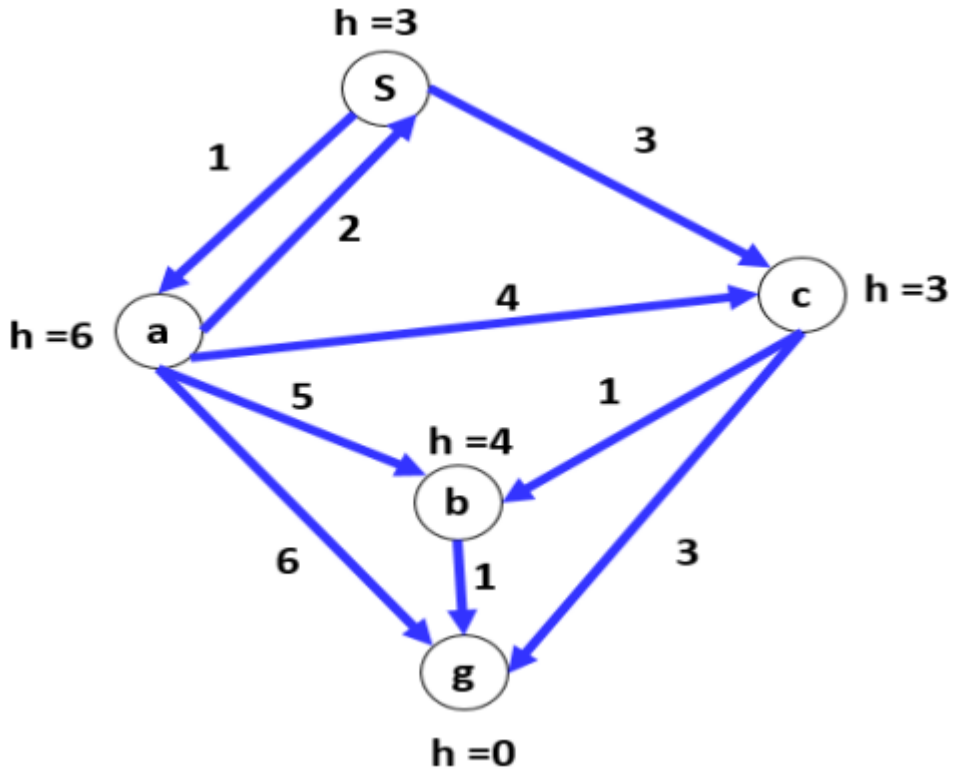
Performance	Damage Detection, Detection of Valuable, Detection of Life, Explosion and Waterproof, Safety.
Environment	Construction Site, Mines, Underground.
Actuators	Movement actuators to move around the and send out signals and details of inside the mine to the people monitoring from outside if something is detected.
Sensors	Camera, Thermal Sensor, GPS, Motion Sensor, Heartbeat sensor, Audio Sensors.

FACE DETECTION AGENT

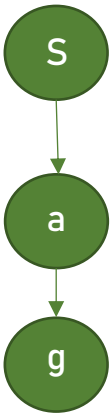
Performance	Crop face frames correctly, detect each unique individual, Track Faces, Prevent unauthorized access in Applications.
Environment	Police, Students, Banks, Mobile Phones, Security Systems.
Actuators	Face Detection Hardware and Software
Sensors	RGB Face Detection, Thermal Sensors, and EEG Sensors

QUESTION NO 02

QUESTION



DEPTH FIRST SEARCH

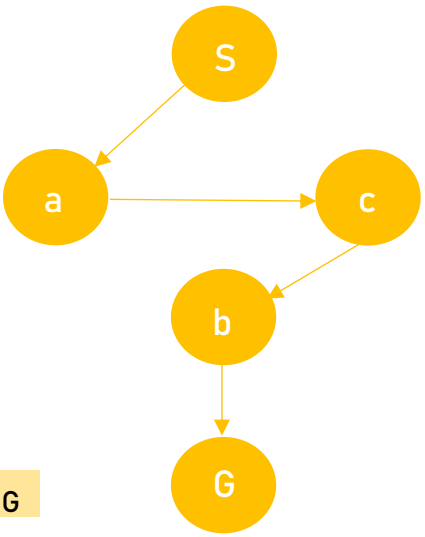


STACK TOP
G
a
S

Path:

S → a → G

BREADTH FIRST SEARCH

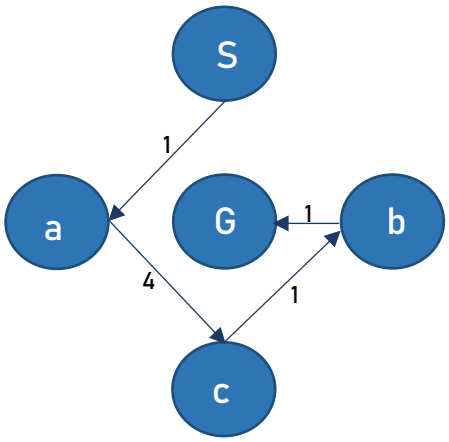


Queue	~~S~~	~~a~~	~~c~~	~~b~~	G

Path:

S → a → c → b → G

UNIFORM COST SEARCH



Path:

S → a → c → b → G

Cost:

01 + 04 + 01 + 01 = 07

A* SEARCH

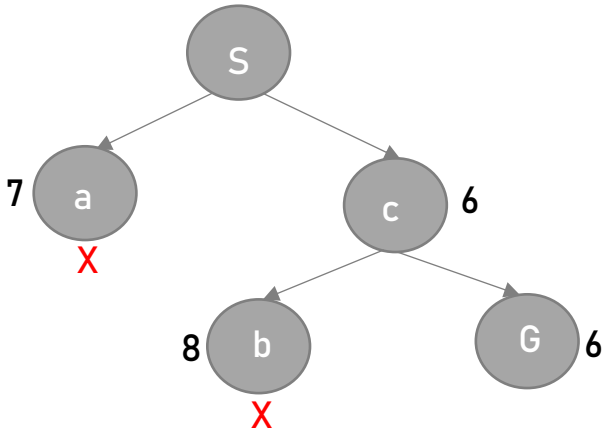
S → A = 1 + 6 = 7	S → C = 3 + 3 = 6
SC → B = 3 + 1 + 4 = 8	SC → G = 3 + 3 + 0 = 6

Path:

S → c → G

Cost:

3 + 3 + 0 = 6

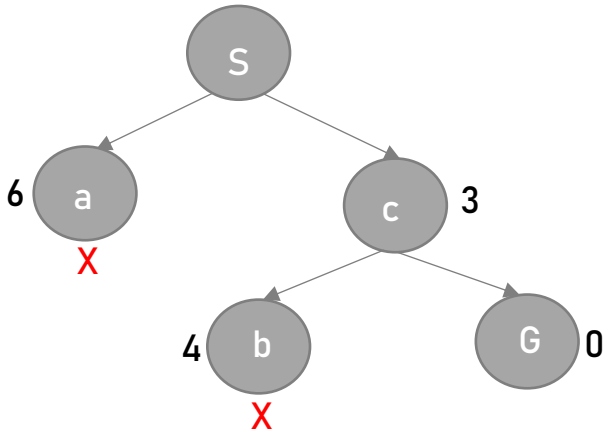


BEST FIRST SEARCH

S → A = 6	S → C = 3
SC → B = 4	SC → G = 0

Path: S → c → G

Cost: 3



QUESTION NO 03

BREADTH-FIRST SEARCH IS A SPECIAL CASE OF UNIFORM-COST SEARCH

- When all the step costs are same/equal, Uniform cost search will produce Breadth First Search.

DEPTH-FIRST SEARCH IS A SPECIAL CASE OF BEST-FIRST TREE SEARCH

- With f(n) = -depth(n), Depth-First Search is special case of Best-First Search.

UNIFORM-COST SEARCH IS A SPECIAL CASE OF A* SEARCH

- When h(n) = 0, Uniform-Cost Search = A*