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AI

Control Strategies

→ Forward, Backward
Systematic, Heuristic

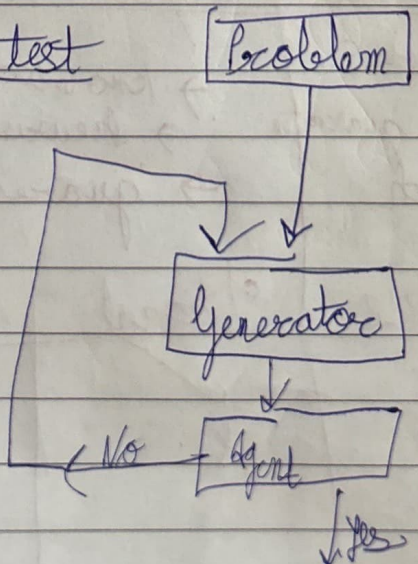
Informed Search - Generate & List Search
- Best First Search $f(n) = h(n)$
- A* Search $\Rightarrow f(n) = g(n) + h(n)$
→ O* Search, Decomposition, $f(n) = g(n) = h(n)$

Additional Search:
- Min Max Algorithm
- Alpha beta pruning

→ Informed Search
→ Heuristic Search
→ Knowledge or Information
→ Heuristic - $h(n)$

Unit II
Uninformed
BFS
DFS
IDDFS
IDDLS
IDS
Uniform cost
Bto return

Generate & test



Best first Search

- heuristic volume
- Evaluation function.

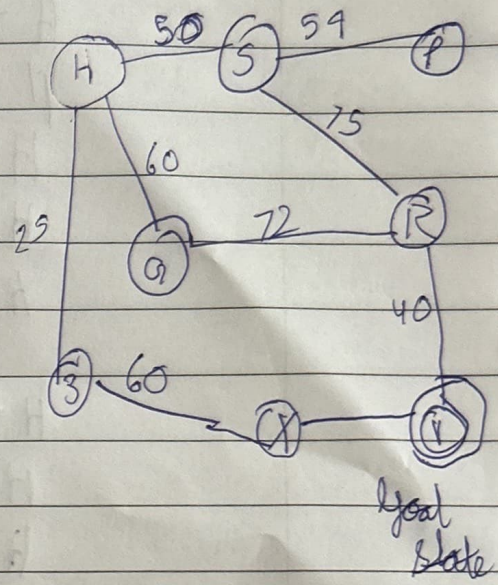
$$f(n) = h(n)$$

Priority Queue

Algorithm

OPEN, CLOSED

→ Enqueue OPEN
→ re-order the queue
→ Dequeue (OPEN)
→ enqueue (CLOSE)



OPEN — heuristic volume

Node	h(n)
H	H2O
B	80
Cn	100
S	70
R	20
B	80
Cn	100
P	110

close D

Node	Parent
H	—
S	H

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H ⇒ $f(n) = g(n) + h(n)$

$= 0 + 120$

$= 120$

H → S = 50 + 70 = 120

H → A = 40 + 100 = 140

H → B = 45 + 80 = 125

H → S → P ⇒ 50 + 50 + 110 = 210

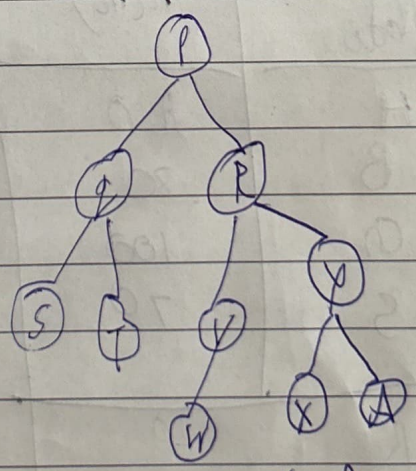
H → S → R ⇒ 50 + 75 + 20 = 145

H → B → X = 45 + 60 + 20 = 125

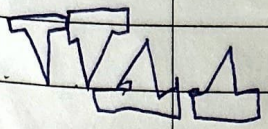
H → B → X → U = 45 + 60 + 28 + 0 = 133

H → A → R = 40 + 72 + 20 = 132

H → A → R → U = 40 + 72 + 40 + 0 = 152



Best First Search



Node	h(n)
P	12
Q	4
R	7
S	3
T	8
U	2
W	9
A	13

node	h(n)
V	4

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a) Find the shortest path using A* Algorithm & list the order of the obstacles from the initial state (dog) to the goal state. Traverse can be through adjacent row, column, diagonal.