Types of Agents:

A Agents can be grouped into five classes based on their degree of perceived intelligence & capacity.

1. Simple Reflex Agent
2. Model - Based Reflex Agent
3. Goal - Based Agent
4. Utility - Based Agent
5. Learning Agent.

PRAVEEN

1. Simple Reflex Agent:

> They choose actions only based on the current situation ignoring the history of perceptions.

> Perform actions only on simple situation.

> They will work only if the environment is fully observable.

> The agent function is based on the condition - action rule: "if condition, then action"

> This can only be done based on the pre-determined rules that are present

in the knowledge base.

Eg: if car-in-front-brakes.

2. Model-Based Reflex Agent:

> A model-based reflex agent is an intelligent agent that uses percept history and internal memory to make decisions about the "model" of the world around it.

> The Model-based agent can work in a partially observable environment and Track the situation.

> Model - Knowledge about "how the things happen in the world".

> Internal state - It is a representation of unobserved aspects of current state depending on percept history.

> Updating the state requires the information about.

- How the world evolves
- How the agent's actions affect the world.

3. Goal - Based Agent:

> They choose their actions in order to achieve goals.

> This allows the agent a way to choose among multiple possibilities, selecting the one which reaches a goal state.

> They usually require search and planning.

Eg: A GPS system finding a path to certain destination.

4. Utility - Based Agent:

> A utility - based agent is an agent that acts based not only on what the goal is, but the best way to reach that goal.

> They choose actions based on a preference (utility) for each state.

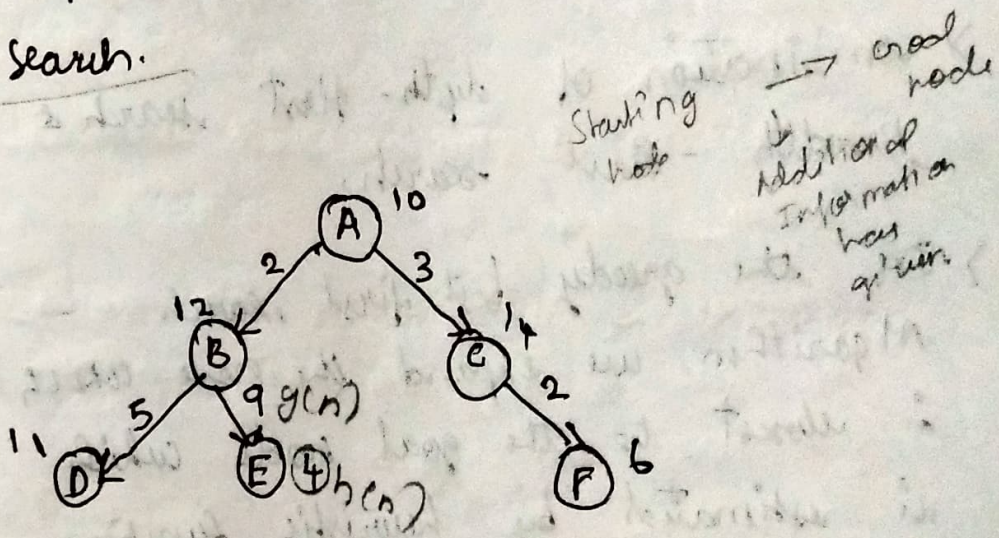
> Eg: A GPS system finding a shortest / fastest / safer to certain destination.

Informed Search:

> Informed search Algorithm contains an additional knowledge about the problem that helps direct search to more promising paths.

> This knowledge helps in more efficient searching.

> Informed search is also called Heuristic search.



Best First Search:

> Best-First search Algorithm always selects the path which appears best at that moment.

> The aim is to reach the goal from the initial state via the shortest path.

Heuristic:

> A heuristic is an approximate measure of how close you are to the Target.

> Must be zero if node represents a goal state.

Greedy BFS:

> Combination of depth-first search & Breadth-first search.

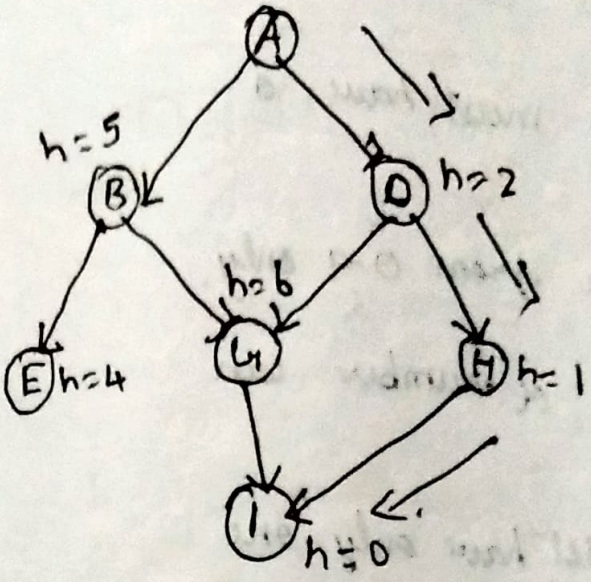
> In the greedy best first search Algorithm, we expand the node which is closest to the goal node which is estimated by heuristic function h(n).

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

where,

h(n) = estimated cost from node n to the goal

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



1) A → B = 5

A → D = 2 ✓

2) A → D = 5

A → D → G = 6

A → D → H = 1 ✓

3) A → B = 5

A → D → G = 6

A → D → H → I = 0 ✓

Open	closed.
[A]	[ ]
[B, D]	[A]
[B, G, H]	[A, D]
[B, G, I]	[A, D, H]
[B G]	[A, D, H, I]