

1) Discuss in detail about different types of intelligent agents

ANSWER.

a) Simple reflex agents

These are agents with no memory of past events hence they take information of environment using their sensors and check their programmed rules to determine needed action to be performed.

Example is basic house thermostat doesn't make decisions by using past data.

b) Model-based agents

This agents not only has ability to respond to events based on programmed rules but also it has ability to store data and make use of them to make decisions, hence it can combine programmed rules and experience to make decisions.

Example is Robot vacuum that can work in environments that are not full observable.

c) Goal-based agents

These are agents which choose action or actions so that they can achieve their goal.

d) Utility-based agents

These agents act based on the best way to achieve the goal hence they are more advanced than goal-based. Hence these agents check the efficiency of each action that achieve the goal.

e) Learning-agents

These are agents which have learning capabilities, hence it starts with basic knowledge and then able to become more intelligent by learning from the environment.

It has components such as learning element, critic, performance element and problem generator.

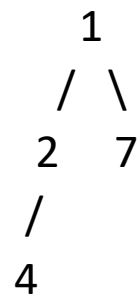
2) Illustrate the BFS And DFS algorithms

ANSWER.

a) Breadth First Search (BFS)

This is the vertex-based technique that is used to find the shortest path in the graph by using queue data structure. This one follows FIFO (first In First Out).

Example;

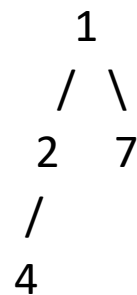


Output will be 1, 2, 7, 4.

b) Depth First Search (DFS)

This is aged-based technique which uses stack data structure, It involves pushing the vertices in the stack and popping the vertices.

Example;



Output will be 1, 2, 4, 7.

3) Discuss in detail about the alpha-beta pruning process

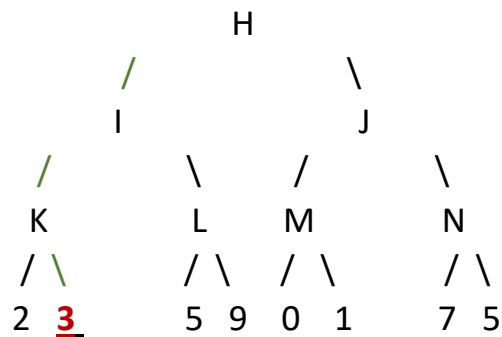
ANSWER.

Refers to the technique that is used for optimization in game theory and other domains that involves decision making by eliminating parts of the search tree that are irrelevant to final decision, hence it reduces time consuming for searching.

This is the modified vision of minimax search algorithm and it uses the parameters Alpha and Beta and its condition is:

$\alpha \geq \beta$

Example diagram for the algorithm:



Therefore the best value for the maximizer is **3**