Artificial Intelligence

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Assigment

1) Diff approaches of artificial Intelligence :-
   - ⇒ Reactive Machine
   - ⇒ Limited Memory
   - ⇒ Theory of Mind
   - ⇒ Self awarness

2) Properties of Enviroinment :-
   - ⇒ Fully observable Vs Partially observable
   - ⇒ Static Vs Dynamic
   - ⇒ Discrete Vs Continous.
   - ⇒ Single Agent Vs multiagent

3) Component a problem :
   - ⇒ Initial state
   - ⇒ Successor function
   - ⇒ Goal test
   - ⇒ Path cost
   - ⇒ operator

4) Alpha - Beta Pruning :-
   → Alpha Beta pruning is a search algorithm that seeks to decrease the number of nodes that are evaluated by the main max algorithm in its search tree
   ⇒ Alpha Beta pruning is the pruning of useless franchise in decision tree. The condition to process to Pruno a node is when alpha becomes greater than or Equal to beta.

5) characteristics of Artificial Intelligence :-
   - ⇒ Deep learning.
   - ⇒ Facial Recognition.
   - ⇒ Automate Simple and Repetive tasks.
   - → chatbots.
   - ⇒ Cloud computing.

1.) Water Jug problem :-

The state space for this problem can be described as the set of Ordered pails of Integers (x, y)

where

x represent the quantity of a water in the 4-galloon jug $x = 1, 2, 3, 4 ..$

y represent the quantity of a water in 3-gallon Jug $y = 0, 1, 2, 3$

Start state (0, 0)

Goal state (2, 0)

Generate production rules for the water jug problem we basically perform three operation to achieve The goal

Fill water jug.

Empty water jug. and transfer water jug.

Rule	State	Process
1,	$(x, y / x < 4)$	(4, y) {fill 4-gallon jug}
2.	$(x, y / y < 3)$	(x, 3) {fill 3-gallon jug}
3.	$(x, y / x > 0)$	(0, x) {Empty 4-gallon jug}
4.)	$(x, y / y > 0)$	(x, 0) {Empty 3-gallon jug}
5	$(x, y / x+y >= 4 \text{ n } y > 0)$	(4, y-(4-x) {pass water from 3-gallon jug into 4-gallon jug until 4-gallon jug is full}

6) (x,y / x + y > 3 n x > 0) (x - (3 - y), 3)

Pair water from 4-gallon jug into 3-gallon jug untill 3-gallon jug is fill;

7.) (x,y / x + y <= 4 A > 0) (x + y, 0)

Pour all waters from 3-gallon jug into 4-gallon jug 3.

8.) (x,y / x+y <= 3 n x > 0) (0, x + y)

Pour all water from 4-gallon jug into 3-gallon jug;

9.) (0,2.) (2,0)

Pour 2 gallon water 3 gallon jug into 4 gallon jug;

Initiallization;

Start state (0,0)

Apply Rule 2;

fill 3-gallon jug.

Now the State is (x,3)

Iteration 1;

Current state ; (x,3)

Apply Rule 7:

Pour all water from 3-gallon jug in 4-gallon jug.

Now the state is (3,0)

Iteration 2:

Current Base : (3,0)

Apply Rule 2 :
Fill 3-gallon jug.
Now The State is (3,3)
Iteration 3:
Current State (3,3)
Apply Rule 5:
Pour Water from 3-gallon jug into 4-gallon jug until 4-gallon jug is Full.
Now the state is (4,2)
Iteration 4;
current State: (4,2)
Apply Rule 3:
Empty 4-gallon jug
New State is (0,2)
Iteration 5:
Current state : (0,2)
Apply Rule 9:
Pour 2 gallon water from 3 gallon jug into 4 gallon jug now the state is (2,0) - Goal achieved