K.G.C.E.
Karjat - Raigad

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Tutorial 2:- To understand state space problem Formulation

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Tutorial 2:- To understand State Space problem formulation

Aim:- To understand State Space based problem formulation of AI problem so that problem solving Agent can be applied.

Theory :-

First we understand the problem Solving Agent. Algorithm shown in figure 3 shows agent program for problem solving agent. Agent first formulates goal and problem, then determine or rather searches as action sequence, after which it returns the next action to be executed in a sequential manner.

Defining the problem is referred to as problem formulation. It involves defining following five things.

Initial state : It is the starting state that the problem is in.

Actions : It defines all possible actions available to the agent, given it is in some state s currently. It is a function Action (s) that returns list of all possible actions.

Transition Model also known as successor function which define which state is the system tend to move to when a particular action is executed by the agent. Successive application of transition

model give rise to what is known as state space

Goal Test This act as a stopping condition when the state passed to this function is goal state it will return true and searching would stop

Path cost It is accumulated cost of performing certain sequence of actions. This can help in determining weather the action sequence under consideration action is optimal.

Thus a problem can formally specified by identifying initial state, action (operators), transition model (successor function), goal test and path cost. In term of problem solving agent solution in path from initial state to a goal state, optimal solution is lowest path cost of all solutions. Process of finding a solution is called search.

- working :-

1. Navigate to KGCE workshop from HOD IT cabin with minimum no. of moves, moves can be climing or alighining staircase, turning left, walking through a corridor

2. 8 puzzle problem

3. Rahgeri-

4. N-Queen's problem, Arrange N queens on a N cross N chess board where no two queens attack each other.

5. Two room vaccum cleaner world

6. Water Jug Problem