Tutorial No:- 02

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Tutorial No:-2

Tutorial :- To understand State Space problems formulation.

Aim :- To understand State Space based problems Formulation of AI problems so that problems Solving Agent Can be applied.

Theory :- First we understand the problems Solving Agent. Algorithm shows in figure 3 shows agent programs for problems solving agent. Agent first formulates goal & problems. then determines or other searches an action sequence.

```
Function Simple-problems-Solving-Agent return action
Static :seq. an action sequence, initially empty
   state, some description of current world
State goal, a goal, initially null
   problems. a problems Formulation

State ← update-State (State, percept)
  if seq is empty then do
     goal ← Formulate-Goal (state)
     problems ← Formulate-Problems (State, goal)
     seq ← search (problems)
     action ← first (seq)
     Seq ← Rest (seq)
     return action.
```

Problem Solving Agent Architecture.

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defining the problems is referred to as problems Formulation, it involves defining following five things.

initial State : It is the starting state that the problem is in.

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

Transition model also known as successor function which define which states the system tend to move to when a particular action is executed by agent.

Goal Test this act as a stopping condition when the state passed to this function is goal state it will return true.

Path cost it is accumulated cost of performing certain sequence of actions. This can help identifying whether the action sequence under consideration is optimal.

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Working:- Based on understanding of problems Formulation Students need to formulate following problems.

1) Navigate to KLCE workshop from HODIT with minimum number of moves, moves can be climbing or alighting staircase.

2) 8 puzzle problems.

3) The Missionaries & cannibal problem. There are three Missionaries & three cannibals who must cross a river using boat which can carry at most two people under the constraint that for both banks. The boat cannot cross the river by itself with no people on board.

4) N Queens problems. Arrange N queens on a cross N cheers board where no two queens attack each other.

5) Two room Vacuum cleaner world

6) water Jug problem.