Jinesh N
Roll No : 64
Batch C2

Topic :

Page No. :
Date. : / /

Study Assignment [AIES]

* Tittle :
Study space search representation for AI problem solving

* Aim :
Study state space representation

* Objective :
To study state space representation for AI problem solving.

* Theory :

(i) State Space Search
A method used in artificial intelligence and problem-solving where a problem is represented as a set of states and transition between them.

(ii) Features of State space search
- Space representation
- Transition function
- Initial state
- Goal state
- Search strategy

Topic : _____ Page No. : Date. : / /

(iii) Steps in State space search :
- Define the problem
- Generate successor states
- Select a search strategy
- Explore states
- Check for goal state

(iv) State space representation :
State space graph
State space tree

* Conclusion :
Understood and learnt state space search algorithms.

* FAQ's :

Q.1. State space representation of 8 puzzle problem.

→ - The 8 puzzle problem is represented by a 3×3 grid of tiles numbered 1 through 8.
- Transition function
- Initial state : Specific arrangement of tiles.
- Goal state
- State space graph : Nodes are the possible tile arrangement

Page No. :
Topic : Date. : / /

Q.2. Application of State Space Search.

→ - Pathfinding
- Game Playing
- Robotics
- Puzzle solving
- Decision Making

* Production Rules:
Production rules are a formal way of specifying state transitions in state space search. They consist of a set of values/rules or instructions that define how to move from one state to another.

Eg: Water jug problem in AI

let (x,y)
Now let $x<4 \rightarrow (4,y)$
filling the 4L jug
$y<3 \rightarrow (x,3)$
filling the 3L jug
$x>0 \rightarrow (x-d, d)$
pour all water out from 3L jug
$y>0 \rightarrow (x,0)$
pour all of 3L into 4L.