1. What is state space in chess game?
   1. Each state corresponds to legal position of the board
   2. Number of components of the game
   3. Legal action taken by the player to move
   4. none
2. What is operators in the water jug problem ?
   1. Application to change current state (LHS) into new state(RHS).
   2. Initial state
   3. Finale state
   4. Mathematical operator
3. What are the good control strategies?
   1. Having motion and systematic approach
   2. Having faster execution
   3. Random selection of rules
   4. Fixed selection of rules
4. The level by level state investigation in the tree is the strategy of
   1. BFS
   2. DFS
   3. Best First Strategy
   4. heuristic
5. Which task is not mundane?
   1. Games
   2. Perception
   3. Natural Language
   4. Robot Control
6. Speech is an example of
   1. Mundane tasks
   2. Formal tasks
   3. Expert tasks
   4. None
7. Translation is an example of
   1. Natural Language Processing
   2. Perception
   3. Commonsense reasoning
   4. Mathematics
8. Which task is belong to expert tasks
   1. Fault finding
   2. Logic
   3. Chess
   4. Robot control
9. Common sense belongs to
   1. Mundane task
   2. Formal task
   3. Expert task
   4. None
10. Which application is not the part of the mathematics formal task
    1. Translation
    2. Logic
    3. Integral calculus
    4. Proving properties of program
11. When did AI originate?
    1. 1956
    2. 1958
    3. 1960
    4. 1954
12. The invention of technology in the year 1957
    1. General Problem solver
    2. The Logic theorist
    3. LISP Language
    4. PROLOGUE
13. In the problem of water jug, you have two jugs, a 4-gallon one and a 3-gallon one. Neither has any measuring markers on it. There is a pump that can be used to fill the jugs with water. How can you get exactly 2 gallons of water into the 4-gallon jug? Select correct productions steps
    1. (0,0)->(0,3) ->(3,0) ->(3,3) ->(4,2) ->(0,2) ->(2,0)
    2. (0,0)->(4,0) ->(4,3) ->(0,3) ->(3,0) ->(0,2) ->(2,0)
    3. (0,0)->(4,3) ->(3,0) ->(3,3) ->(4,2) ->(0,2) ->(2,0)
    4. (0,0)->(0,3) ->(3,4) ->(3,3) ->(4,2) ->(0,2) ->(2,0)
14. In the problem of water jug, you have two jugs, a 4-gallon one and a 3-gallon one. Neither has any measuring markers on it. There is a pump that can be used to fill the jugs with water. How can you get exactly 2 gallons of water into the 4-gallon jug? Select correct productions steps
    1. (4,0)->(1,3) ->(1,0) ->(0,1) ->(4,1) ->(2,3) ->(2,0)
    2. (0,0)->(4,0) ->(4,3) ->(0,3) ->(3,0) ->(0,2) ->(2,0)
    3. (0,0)->(4,3) ->(3,0) ->(3,3) ->(4,2) ->(0,2) ->(2,0)
    4. (0,0)->(0,3) ->(3,4) ->(3,3) ->(4,2) ->(0,2) ->(2,0)
15. In the problem of water jug, you have two jugs, a 4-gallon one and a 3-gallon one. Neither has any measuring markers on it. There is a pump that can be used to fill the jugs with water. How can you get exactly 2 gallons of water into the 4-gallon jug? Select correct production steps
    1. (0,0)->(0,3) ->(3,0) ->(4,3) ->(4,0) ->(1,3) ->(1,0) ->(0,1) ->(4,1) ->(2,3) ->(2,3)
    2. (0,0)->(4,0) ->(4,3) ->(0,3) ->(3,0) ->(0,2) ->(2,0)
    3. (0,0)->(4,3) ->(3,0) ->(3,3) ->(4,2) ->(0,2) ->(2,0)
    4. (0,0)->(0,3) ->(3,4) ->(3,3) ->(4,2) ->(0,2) ->(2,0)
16. See the figure given below and find out correct sequence of Depth first search for the solution(having (2,0) in last step) of water jug problem with a 4-gallon one and a 3-gallon one.
    1. (0,0)->(0,3) ->(3,0) ->(3,3) ->(4,2) ->(0,2) ->(2,0)
    2. (0,0)->(4,0) ->(4,3) ->(0,3) ->(3,0) ->(0,2) ->(2,0)
    3. (0,0)->(4,3) ->(3,0) ->(3,3) ->(4,2) ->(0,2) ->(2,0)
    4. (0,0)->(0,3) ->(3,4) ->(3,3) ->(4,2) ->(0,2) ->(2,0)
17. See the figure given below and find out correct sequence partial steps of Breadth first search for the solution (having (2,0) in last step) of water jug problem with a 4-gallon one and a 3-gallon one.
    1. (0,0)->(4,0) ->(0,3) ->(1,3) ->(0,0) ->(4,3) ->(3,0) ->(3,3) ->(2,3) ->(2,0)
    2. (0,0)->(4,0) ->(4,3) ->(0,3) ->(3,0) ->(0,2) ->(2,0)
    3. (0,0)->(4,3) ->(3,0) ->(3,3) ->(4,2) ->(0,2) ->(2,0)
    4. (0,0)->(0,3) ->(3,4) ->(3,3) ->(4,2) ->(0,2) ->(2,0)
18. The requirements of control strategies are :
    1. Motion and systematic
    2. Motion only
    3. Systematic only
    4. None
19. Problem of answering a question when facts are given comes under
    1. Is good solution absolute or relative
    2. Is the universe predictable
    3. Is the solution a state or a path
    4. Is the problem decomposable
20. Can solution steps be ignored or undone? Example is.
    1. Theorem proving
    2. Chess
    3. Travelling sales man problem
    4. Block world problem
21. The application chemical synthesis will come into production system
    1. Non Partially commutative and monotonic
    2. Partially commutative and monotonic
    3. Partially commutative and non monotonic
    4. Non Partially commutative and non monotonic
22. The algorithm which gives optimal solution
    1. BREADTH FIRST SEARCH
    2. DFS
    3. Random search
    4. None
23. The application ROBOT NAVIGATION is type of production system
    1. Partially commutative and Non monotonic
    2. Partially commutative and monotonic
    3. Non Partially commutative and Non monotonic
       1. Non Partially commutative and monotonic
24. In the given table of distance between cities which are connected to each other Find the shortest Hamiltonian (from source to source covering all the cities )path for Boston using DFS algorithm.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name of city | Boston | New York | Miami | Dalas |
| Boston |  | 250 | 1450 | 1700 |
| NewYork | 250 |  | 1200 | 1500 |
| Miami | 1450 | 1200 |  | 1600 |
| Dalas | 1700 | 1500 | 1600 |  |

1. s
2. In the problem of water jug, you have two jugs, a 4-gallon one and a 3-gallon one. Neither has any measuring markers on it. There is a pump that can be used to fill the jugs with water. How can you get exactly 2 gallons of water into the 4-gallon jug? Select correct steps if you using low value of heuristic WATER JUG= (XC-XG)+(YC-YG), WHERE (XC,YC) REPRESENT CURRENT STATE AND (XG,YG) REPRESENT GOAL STATE.
   1. (0,0)->(0,3) ->(3,0) ->(3,3) ->(4,2) ->(0,2) ->(2,0)
   2. (0,0)->(0,3) ->(3,0) ->(3,3) ->(4,2) ->(4,3) ->(0,3)
   3. (0,0)->(4,0) ->(4,3) ->(0,3) ->(3,0) ->(0,2) ->(2,0)
   4. (0,0)->(4,3) ->(3,0) ->(3,3) ->(4,2) ->(0,2) ->(2,0)
3. Which data structure is used in BREADTH FIRST SEARCH algorithm
   1. Queue
   2. Stack
   3. Both
   4. None
4. According to DFS algorithm, the states are selected to for exploration is done by
   1. Last in first out
   2. First in first out
   3. Random
   4. None
5. The strategy used in generate and test is to
   1. Perform complete depth-first search and test
   2. Perform complete breadth-first search and test
   3. Perform test and complete depth-first search
   4. Perform test and complete breadth-first search
6. British Museum algorithm is of type
   1. Random generation of solution
   2. Systematic approach to generate and test procedure
   3. Based on DFS
   4. Based on BREADTH FIRST SEARCH
7. Hill Climbing is an approach to
   1. Generate and test with Heuristic
   2. Random generate and test
   3. Generate and test with feedback yes and no only
   4. None
8. The new better state is selected than the current state in
   1. Simple Hill Climbing
   2. Steepest Hill Climbing
   3. Best first search
   4. A\* algorithm
9. The application of priority queue is in
   1. Best first Search
   2. Simple Hill Climbing
   3. DFS
   4. BFS

In the given figure problem of 8 Puzzle, if we take heuristic (-1) marks for each wrongly placed number in initial state with respect to goal state, then how many steps are required to get the solution.



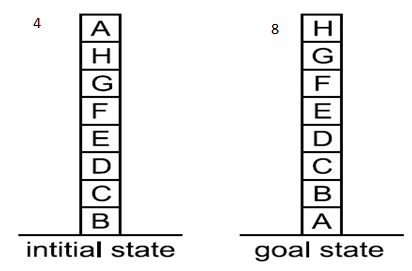
* 1. 5
  2. 6
  3. 4
  4. 7

1. In the problem of three missionaries and three cannibals find themselves on one side of the river ,but there is danger from cannibals to missionaries that they are eaten by cannibals when the numer of cannibals are larger than missionaries in any side of the river. Only one boat is with them and two people can go at a time. Boat is required for transportation and hence one should be required to sail it. How many steps are required to find solution if DFS algorithm is used.
   1. 11
   2. 10
   3. 12
   4. 9
2. In the problem of water jug, you have two jugs, a 5-gallon one and a 3-gallon one. Neither has any measuring markers on it. There is a pump that can be used to fill the jugs with water. How can you get exactly 4 gallons of water into the 5-gallon jug? List the states in CLOSED list at the end of DFS algorithm.
   1. CLOSED[]=[(4,0),(1,3) ,(1,0) ,(0,1) ,(5,1) ,(3,3) ,(3,0) ,(0,3) ,(5,3) ,(5,0) ,(0,0)]
   2. CLOSED[]=[(4,0),(1,3) ,(1,0) ,(0,1) ,(5,1) ,(3,3) ,(2,5) ,(5,0) ,(5,3) ,(0,3) ,(0,0)]
   3. CLOSED[]=[(4,0),(1,3) ,(1,0) ,(0,1) ,(5,1) ,(5,3) ,(3,0) ,(0,3) ,(5,3) ,(5,0) ,(0,0)]
   4. CLOSED[]=[(4,0),(1,3) ,(1,0) ,(0,1) ,(5,3) ,(3,3) ,(3,0) ,(0,3) ,(5,3) ,(5,0) ,(0,0)]
3. In the problem of water jug, you have two jugs, a 5-gallon one and a 3-gallon one. Neither has any measuring markers on it. There is a pump that can be used to fill the jugs with water. How can you get exactly 4 gallons of water into the 5-gallon jug? Select number of steps required to solve by DFS algorithm including initial step.
   1. 11
   2. 12
   3. 13
   4. 9
4. In the problem of water jug, you have two jugs, a 5-gallon one and a 3-gallon one. Neither has any measuring markers on it. There is a pump that can be used to fill the jugs with water. How can you get exactly 4 gallons of water into the 5-gallon jug? What are the possible states at level 2 since starting from 0 level at root with respect to Breadth First Search algorithm without duplication of states.
   1. 3
   2. 5
   3. 4
   4. 2

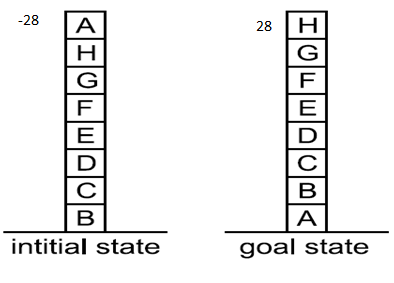
In the problem of three missionaries and three cannibals find themselves on one side of the river ,but there is danger from cannibals to missionaries that they are eaten by cannibals when the number of cannibals are larger than missionaries in any side of the river. Only one boat is with them and two people can go at a time. Boat is required for transportation and hence one should be required to sail it. What are the states values possible [L(M, C, B):R (M,C ,B)] where M is missionaries, C is cannibal, B is boat , L is left and R is right bank of the river if DFS algorithm is used at the level 3 starting from level o as (331:000).

* 1. (220:111) (321:010) (300:031)
  2. (321:010) (321:021) (320:011)
  3. (300:031) (310:021) (311:021)
  4. (311:031) (310:021) (320:011)

In the given figure of block world problem initial state and finale state is given, it is required to arrange the blocks with respect to goal state, condition is that only one block can be picked at a time and placed either on the floor or on any of the block. The 1 mark is given to those blocks which are supposed to rest on the correct block according to goal state. Hence the initially 4 marks are given shown in the figure and finally we need 8 marks. What are the next possible sates heuristic values at level two from the initial state according to Hill climbing algorithm.

* 1. 4,4,4
  2. 4,5,3
  3. 3,5,4
  4. 3,3,3

In the given figure of block world problem initial state and finale state is given, it is required to arrange the blocks with respect to goal state, condition is that only one block can be picked at a time and placed either on the floor or on any of the block. The 1 mark is given to those blocks which are supposed to rest on the correct blocks structure according to goal state. Hence the initially -28 marks are given shown in the figure and finally we need 28 marks. What are the next possible sates heuristic values at level two from the initial state according to steepest Hill climbing algorithm.



* 1. -28,-16,-15
  2. -27, -14, 17
  3. -26, -13, -14
  4. -25, -14, -13

In the given figure below there are heuristic values shown with each state, find out proper sequence of states exploration with respect to best first algorithm.

3

5

1

6

5

4

6

2

1

* 1. A->D->B->G->J
  2. A->D->G->J
  3. A->D->B->G->I
  4. None

In the given figure there is cost of link is shown for each nodes and heuristic table is mentioned with it, find shortest path from source to destination using A\* Algorithm.

|  |  |
| --- | --- |
| Path | Heuristic |
| A | 5 |
| B | 4 |
| C | 2 |
| D | 3 |
| E | 2 |
| F | 1 |
| G | 4 |
| H | 4 |
| I | 0 |
| J | 4 |

3

5

1

6

5

4

6

2

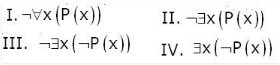
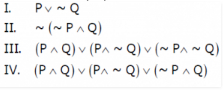
1

Source

Destination

2

* 1. A->D->G->I
  2. A->D->B->F->I
  3. A->B->F->I
  4. None

1. Heuristic is termed as
   1. Experience
   2. Facts
   3. Statements
   4. All
2. Hypothesis is
   1. Justified belief
   2. Belief
   3. Knowledge about knowledge
   4. Meaning and coherent expression
3. Reasoning program is part of
   1. Internal representations
   2. Facts
   3. Natural language
   4. All
4. Forward representation mapping is
   1. Initial facts to internal representation
   2. internal representation to initial facts
   3. final facts to internal representation
   4. internal representation to final facts
5. Incorporating additional information is known as
   1. Inferential Efficiency
   2. Representational adequacy
   3. Inferential adequacy
   4. Acquisitional Efficiency
6. Select proper predicate for the sentence given below
   1. For every student there is someone who teach
   2. ∀ x: ∃y:student(x)->teach(y , x)
   3. ∀ x: ∀y: student(x)->teach(y , x)
   4. ∃ x: ∀y: student(x)->teach(y , x)
   5. ∃ x: ∃y: student(x)->teach(y , x)
7. People chooses the leader they love to
   1. ∀ x: ∀y: people(x) ∧leader(y) ∧love(x,y)->chooses(x,y)
   2. ∀ x: ∃y: people(x) ∧leader(y) ∧love(x,y)->chooses(x,y)
   3. ∃ x: ∃y: people(x) ∧leader(y) ∧love(x,y)->chooses(x,y)
   4. ∃ x: ∀y: people(x) ∧leader(y) ∧love(x,y)->chooses(x,y)
8. The ways of representing class membership.
   * 1. 
9. 2
10. 3 
    1. I
    2. I & II
    3. I, II and III
    4. II & III
11. What is the logical translation of the following sentences:
12. “None of my classmates are unintelligent”
    1. ¬ ∃ x: (F(x) ∧¬P(x) )
    2. ∃ x: (F(x) ∧¬P(x) )
    3. ¬ ∃ x: (¬ F(x) ∧¬P(x) )
    4. ∃ x: (¬ F(x) ∧¬P(x) )
13. What is the logical translation of the following sentences:
    1. “ Some of my neighbors wearing glasses of any type ”
    2. ∃ x: ∃ y: (neighbors(x) ∧glasses(y) )->wearing(x, y)
    3. ∀ x: ∃ y: (neighbors(x) ∧glasses(y) )->wearing(x, y)
    4. ∀ x: ∀ y: (neighbors(x) ∧glasses(y) )->wearing(x, y)
    5. ∃ x: ∀ y: (neighbors(x) ∧glasses(y) )->wearing(x, y)
14. What is the logical translation of the following sentences:
15. “ All my neighbors either like new construction or dislike it ”
    1. ∀ x:neighbours(x)-> like(x, new construction) ∨ dislike(x, new construction)
    2. ∃ x:neighbours(x)-> like(x, new construction) ∨ dislike(x, new construction)
    3. ∃ x:neighbours(x)-> dislike(x, new construction) ∨ dislike(x, new construction)
    4. ∀ x:neighbours(x)-> dislike(x, new construction) ∨ dislike(x, new construction)
16. The binary operation O is defined as:
    * + 1. **P Q O**
        2. F F F
        3. F T T
        4. T F T
        5. T T T
    1. OR
    2. AND
    3. XOR
    4. XNOR
17. The binary operation O is defined as:
    * + 1. **P Q O**
        2. F F F
        3. F T F
        4. T F F
        5. T T T
    1. AND
    2. OR
    3. XOR
    4. XNOR
18. The binary operation O is defined as:
    * + 1. **P Q O**
        2. F F F
        3. F T T
        4. T F T
        5. T T F
    1. XOR
    2. OR
    3. AND
    4. XNOR
19. The binary operation O is defined as:
    * + 1. **P Q O**
        2. F F T
        3. F T F
        4. T F F
        5. T T T
    1. XNOR
    2. OR
    3. XOR
    4. XNOR
20. Which one of the first order predicate calculus statements given below correctly express the following English statement?
21. “Cat and rat hide if they are exposed or threatened.”
    1. ∀ x: (cat(x) ∨ rat(x) )->exposed(x) ∨ threatened(x)->hide(x)
    2. ∀ x: (cat(x) ∧ rat(x) )->exposed(x) ∨ threatened(x)->hide(x)
    3. ∀ x: (cat(x) ∨ rat(x) )->exposed(x) ∧ threatened(x)->hide(x)
    4. ∀ x: (cat(x) ∧ rat(x) )->exposed(x) ∧ threatened(x)->hide(x)x
22. Which of the below two are equivalent
23. 
    1. I and III
    2. **I and IV**
    3. II and III
    4. II and IV
24. P and Q are two propositions. Which of the following logical expressions are equivalent?
25. 
    1. Only I and II
    2. Only I, II and IV
    3. Only I, II and III
    4. ALL
26. First order logic known as
    1. First order Predicate Calculus
    2. Quantification Theory
    3. Lower Order Calculus
    4. All the above
27. Which is created by using single propositional symbol?
    1. Complex sentences  
       b) Atomic sentencesc) Composition sentences  
       d) None of the mentioned