Fr. Conceicao Rodrigues College of Engineering Fr. Agnel Ashram, Bandstand, Bandra (W), Mumbai - 400050
Department of Computer Engineering
Academic Term II: 23-24

Class: B.E (Computer), Sem – VI Subject Name: Artificial Intelligence Student

Name: Sumit Sanjay Rai **Roll No: 9570**

Practical No:	**8**
Title:	Programming in PROLOG
Date of Performance:	**25/03/2024**
Date of Submission:	**01/04/2024**

Rubrics for Evaluation:

Sr. No	Performance Indicator	Excellent	Good	Below Average	Marks
1	On time Completion & Submission (01)	01 (On Time)	NA	00 (Not on Time)	
2	Logic/Algorithm Complexity analysis (03)	03(Correct)	02(Partial)	01 (Tried)	
3	Coding Standards (03): Comments/indention/Naming conventions Test Cases /Output	03(All used)	02 (Partial)	01 (rarely followed)	
4	Post Lab Assignment (03)	03(done well)	2 (Partially Correct)	1(submitted)	
Total					

Signature of the Teacher:

Post Lab Questions:

1. List all the methods which could be used to solve the tower of Hanoi problem.

2. Which is the best approach and why?
3. What are the applications of the Tower of Hanoi?

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Q.1. List all the methods which could be used to solve the tower of Hanoi problem.

Ans: 1-Recursion: Divides the problem into smaller subproblems until a base case is reached.

2. Iterative approach: Simulates the recursive process using loops and stacks or queues.

3. Binary representation: Represents the problem using binary numbers and manipulates them to determine moves.

4. Mathematical formula: Uses formulas to calculate the minimum number of moves without solving recursively.

5. Dynamic programming: Stores and reuses intermediate results to avoid redundant calculations.

6. Graph theory: Models the problem as a graph and uses traversal algorithms to find the shortest path.

Q.2. Which is the best approach and why?

Ans. The recursive approach is favored for solving the Tower of Hanoi problem because it naturally aligns with the problem's recursive nature. It elegantly breaks down the problem into smaller subproblems, which simplifies the solution process. Additionally, it typically results in cleaner and more readable code compared to other methods, making it easier to maintain and understand. Overall, the recursive approach offers a straightforward and efficient solution strategy for the Tower of Hanoi problem.

Q.3. What are the applications of the Tower of Hanoi?

Ans. 1. Computer Science: It serves as a classic problem for teaching recursion and algorithmic design.

2. Operations research: It can model logistical and scheduling problems where the objective is to minimize the number of

moves or time required to complete a task.

3. Mathematical theory: It provides an example for exploring the properties of recursive algorithms, combinatorial mathematics and graph theory.

4. Psychology: It has been used in cognitive psychology research to study problem-solving strategies and decision-making processes.

5. Education: It is used as a puzzle or brain-teaser in educational settings to develop critical thinking and problem-solving skills.