**CS 361 Artificial Intelligence Lab**

**Course Objectives**

1. Develop various applications in AI
2. Formulate and implement real-world problems as state space problems, optimization problems or constraint satisfaction problems
3. Select and apply AI techniques to solve complex problems.
4. To learn about various Python packages that are used for solving AI problems

**Course Outcomes**

1. Analyze artificial intelligence techniques
2. Solve problems using different uninformed search techniques
3. Solve problems using different heuristic search techniques
4. Implement the algorithms for game playing
5. Solve the given problems using logic.

**List of Programs**

1. Implement the following uninformed search techniques
2. BFS
3. DFS
4. Finding Maximum depth of the Binary tree using BFS and DFS.
5. Implement the following uninformed search techniques
   1. Uniform Cost Search
   2. Depth-First Iterative Deepening
   3. Bidirectional

1. You are given two jugs with capacities x liters and y liters. You have an infinite water supply. Return whether the total amount of water in both jugs may reach target using the following operations:
2. Fill either jug completely with water.
3. Completely empty either jug.
4. Pour water from one jug into another until the receiving jug is full, or the transferring jug is empty

Implement above problem using

1. BFS b. DFS
2. Implement Missionaries and Cannibals problem with Search tree generation using
3. BFS b. DFS
4. Implement Vacuum World problem with Search tree generation using
   1. BFS b. DFS
5. Implement the following
6. Greedy Best First Search
7. A\* algorithm
8. Implement 8-puzzle problem using A\* algorithm
9. Implement AO\* algorithm for General graph problem
10. Implement Game trees using
11. MINIMAX algorithm
12. Alpha-Beta pruning
13. Implement Crypt arithmetic problems.
14. Program to implement Logic.

**Additional Programs:**

1. Implementation of Tic-Tac-Toe Problem
2. Implementation of 8- Queens problem