

## **Lab Assignment 07**

**(Evaluation in next week)**

**Task 1:** Implement and analyze the performance of Dijkstra's algorithm Belman-Ford algorithm. Make and use a function to generate graph dynamically and randomly for the given Tasks.

**Task 2:** Consider the N queens problem. The problem of placing N chess queens on an  $N \times N$  chessboard so that no two queens attack each other i.e Queens are on the same row, column or diagonal. Using backtracking strategy find out the solution of n-Queens problem for different values of  $N \times N$  chessboard. Display all possible solutions of N-Queen problem(for the given N).

**Task 3:**

Let assume that there be N workers and N jobs. Any worker can be assigned to perform any job, incurring some cost that may vary depending on the work-job assignment. It is required to perform all jobs by assigning exactly one worker to each job and exactly one job to each worker in such a way that the total cost of the assignment is minimized. Determine an optimal solution using i) Brute force (exhaustive) strategy ii) Branch and Bound strategy. Using gprof analyze the comparative performance.

**Sample Input:**

Agents /Task	P	Q	R	S
A	11	12	18	40
B	14	15	13	22
C	11	17	19	23
D	17	14	20	28