

## Assignment 3

1. Write a program to implement a Singly Linked List as well as the routines.
2. Write a program to implement a Circular Array Queue as well as the routines.
3. Write a program to solve the shortest path in a maze based on a queue. The program should contain the following functions:
  - a) Provide an interface for user to initial the maze array by input from keyboard or scanning from file.
  - b) Write the normal routines of array queue, i.e., Enqueue(), Dequeue(), Front(), etc.
  - c) Write a Solution() routine which solves the shortest path problem by calling the normal routines.
  - d) Output the maze in form of matrix on screen.
  - e) Output the shortest path, e.g., (6, 8)←(5, 6)←, ..., on screen.
4. Write a program to solve a path in a maze based on a stack. The program should contain the following functions:
  - a) Provide an interface for user to initial the maze array by input from keyboard or scanning from file.
  - b) Write the normal routines of array stack, i.e., Push(), Pop(), Top(), etc.
  - c) Write a Soluation() routine which solves the path problem by calling the normal routines.
  - d) Output the maze in form of matrix on screen.
  - e) Output the path, e.g., (6,8)←(3, 4)←, ..., on screen.

Notes:

- Due date: Nov. 14<sup>th</sup>.