

Indian Institute of Technology Mandi  
February-June 2017 Semester  
**CS515: Advanced Computer Science Practicum**  
**Lab3 - Programming Assignment Problem Statements**

**Implement the following problems using C++ programming language.**

**Note:**

1. Implement the linked list data structure using the [list.hpp](#)
2. Implement stack and queue data structures using [stack.hpp](#) and [queue.hpp](#). Most important is, *use the abstraction of linked lists to implement the functionality of stack and queue.*
3. Use Stack or Queue data structure as per the need of the problem given to you.
4. Write a separate main program to evaluate each of the problems.

**Problems:**

1. You have been given a lot of numbers in a file named "input.txt". You are required to read this file and store the first number in an integer B and rest of the numbers in a queue named Que. Then rotate this queue by B positions forward in the queue itself. Then print the status of Que in the file named "output.txt".

**Example:-**

////////// input.txt //////////

1

1 2 3 4 5 6

////////// output.txt //////////

2 3 4 5 6 1

2. Given an array, print the Next Greater Element (NGE) for every element. The NGE for an element  $x$  is the first greater element on the right side of  $x$  in array. Elements for which no greater element exist, consider next greater element as -1.

**Note:** Use stack as data structure.

Sample input:

4

4 5 2 25

Output

5 25 25 -1