TP 16: Linked List 2

- The objective of this Lab is
  - To practice creating and using linked list data structure in C++ language
- Individual work
- Submit to MS Team
  - *Source codes (No need to zip. Each file name is: YourNameTP16_problem##)*

Write a C++ program to solve each problem below.

1. Create an element structure and a list structure that can store a list of integer numbers. Create 4 functions to i) Create an empty list, ii) Add a number to begin of list, iii) Add a number to end of list, iv) Add a number to specific position in the list, and v) display list. Put all of these structures and functions into a header file named: **yourName-SingleLinkList.h**

   Hint: Following are sample function prototypes:

```
List* createAnEmptyList( )                    void addToBeginOfList(List *ls,  int data)
void displayList(List *ls)                    void addToEndOfList(List *ls,  int data)
void addSpecificPositionInList(List *ls,  int data,  int position)
```

2. Get a number n from a user. Include the user-defined header, **yourName-SingleLinkList.h,** created from problem #1**.** Build a singly linked list to store all numbers from 1 to n. Display all data in the list.

3. Get a number n from a user. Generate n random numbers and store in the list. Display the list. Compute summation and average of all numbers in the list then display the result on screen.

4. Given the same instruction to problem #2 and problem #3 above but we want to …
   a. Display the list
   b. Show the top 5 numbers in the list
   c. Give the minimum number in the list,
   d. Give the maximum number in the list.

5. We would like to have the same functionalities given in problem #3 and problem #4. Store all output data into a file named **yourName-OUTPUT5.txt**