152112011 Computer Programming LAB – A/B

HOMEWORK 2

Due to: 31 March 2022, 23:59

Objectives:

- C++ Programming Pointers
- In this homework, the use of pointers will be realized by using the C++ programming language.

➢ C++ File name is **StudentID_HW2_qNO.cpp**

➢ Note: Write comments in your code for explaining steps.

➢ Note: Pay attention to the indentations in your code.

➢ Everyone should do it **alone**.

➢ Please do not cheat.

Question 1: Let's say you're climbing a ladder and you have multiple choices that determine how many stairs you can climb at the same time. Write a program that finds the minimum number of steps you need to take to reach the top of the ladder. Follow the given restrictions:

- Suppose N (integer) is the number of steps the ladder has, and it has an initial value that you will give.
- You can move up 1, 2 or 5 steps at a time.
- You must define a function called *numberOfRemainingStairs* that calculates the number of remaining stairs to the top of the ladder.
  - The function takes two integer pointers:
    - r*emainStair :* indicates the remaining number of stairs to climb
    - *count:* indicates the number of steps you have taken
  - The function DOES NOT return anything.
- You have to call this function each time and find the remaining number of stairs. Keep doing this until you reach the top of the ladder.
- You must print some information at each step as given below.
  - In numberOfRemainingStairs: "*Step-X => Move X stairs up. Remaining: X*"
  - In main: "*You reached the top of the ladder in X steps."*

Sample output:

✓ For N=9;
  - Step-1 => Move 5 stairs up Remaining: 4
  - Step-2 => Move 2 stairs up Remaining: 2
  - Step-3 => Move 2 stairs up Remaining: 0
  - You reached the top of the ladder in 3 steps.

✓ For N=18
  - Step-1 => Move 5 stairs up Remaining: 13
  - Step-2 => Move 5 stairs up Remaining: 8
  - Step-3 => Move 5 stairs up Remaining: 3
  - Step-4 => Move 2 stairs up Remaining: 1
  - Step-5 => Move 1 stairs up Remaining: 0
  - You reached the top of the ladder in 5 steps.

Question 2: There are three variables which are can be integer pointer or just integer. Their names are A, B, and C. These variables dependent each other. So, to the write code about this relation some information are given such as:

- A's value is 100 and it can be reached directly,
- B, contains the address of A variable
- C, contains the address of B.

Sample output:

Note: `XXX must be written in your code.`

```
Address of A is XXX
Address of B is XXX
Value of A is XXX
Value of B is XXX
B reference to XXX
C reference to XXX
```