Online Assignment on Bitwise Operation (B2)

TIME: **20** Minutes Total Marks: **10** **CSE 102**

Solve the problem below. After you are done, rename the file containing your source code as your *StudentId.c* (For example, if your student ID is *2005001*, the name of your file should be *2005001.c*). Then submit that file to Moodle. Make sure you submit a file containing your source code.

***Failure to follow these instructions will result in penalties.**

Problem Description

Suppose, for **efficiency of storage**, a *date* ***YYYY/MM/DD*** has been **encoded** into an *unsigned integer* number ***N*** according to the following:

- The **rightmost** (**LSB**) bits in ***N*** are used to store the day ***DD***. Note that the *first day* of any month is encoded as day ***0***.
- The **bits on the left** (**MSB**) of ***DD*** in ***N*** are used to store the *month* ***MM***. Note that *January* is encoded as month ***0***, not month ***1***.
- The **bits on the left** (**MSB**) of ***MM*** in ***N*** are used to store the *year* ***YYYY***.

In this encoding scheme, it is **mandatory** that the representation is **as efficient as possible** (i.e. the *unsigned integer* requires **as few bits as possible**). The unused bits are kept set to ***0***.

Your tasks in this assignment are the following:

1. Implement a ***C*** function ***int get_day(unsigned int N)*** that takes an ***unsigned int*** as input and then returns the day (***DD***) encoded into it.. [2]
2. Implement a ***C*** function ***int get_month(unsigned int N)*** that takes an ***unsigned int*** as input and then returns the month (***MM***) encoded into it. [3]
3. Implement a ***C*** function ***int get_year(unsigned int N)*** that takes an ***unsigned int*** as input and then returns the year (***YYYY***) encoded into it. [3]
4. Now, Write a ***C*** program that takes an *unsigned integer* number ***N*** as input, then using the above functions, computes the *day*, *month* and *year* from it and finally prints the date in the desired ***YYYY/MM/DD*** format. [2]

Sample Input	***Sample Output***
1035264 978750	2022/01/01 1911/10/31

N.B.:

- ★ You ***must*** use **bitwise operations** to complete this task.
- ★ You ***can not*** use any **global** or **static** variables while solving this problem.
- ★ You ***can not*** use any library function for this task (other than **I/O**).
- ★ Do ***not*** assume the length of any ***data type***.
- ★ You ***can*** assume that the provided input will ***always*** be valid.