

EE231002 Introduction to Programming

Lab04. Roman Numerals

Due: Nov. 6, 2021

Roman Numerals are used by ancient Rome to represent integer numbers. In this system, seven letters are used. The letters and their values are shown in the following table.

Letter	I	V	X	L	C	D	M
Value	1	5	10	50	100	500	1000

Note that there is no zero in the table since ancient Roman do not have the concept of zero. An integer represented in Roman numerals usually take more than one letter. In this case, the value is usually additive from left to right unless the letter on the immediate right has a larger value. In the latter case, the smaller value of the left letter is subtracted from the larger value of the right letter. Using this simple rule, some typical numbers are shown in the table below.

Roman numerals	I	II	III	IV	V	VI	VII	VIII	IX
Decimal values	1	2	3	4	5	6	7	8	9
Roman numerals	X	XX	XXX	XL	L	LX	LXX	LXXX	XC
Decimal values	10	20	30	40	50	60	70	80	90
Roman numerals	C	CC	CCC	CD	D	DC	DCC	DCCC	CM
Decimal values	100	200	300	400	500	600	700	800	900

Please write a C program to read a Roman Numeral and print out its integer value. Examples of program execution are shown below.

```
$ ./a.out
Input Roman Numeral: MMXXI
Integer value: 2021
$ ./a.out
Input Roman Numeral: CMXLIX
Integer value: 949
$ ./a.out
Input Roman Numeral: DCCCLXXVI
Integer value: 876
```

Notes.

1. Create a directory **lab04** and use it as the working directory.
2. Name your program source file as **lab04.c**.
3. The first few lines of your program should be comments as the following.

```
// EE231004 Lab04. Roman Numerals  
// ID, Name  
// Date:
```

4. After finishing editing your source file, you can execute the following command to compile it,

```
$ gcc lab04.c
```

If no compilation errors, the executable file, **a.out**, should be generated, and you can execute it by typing

```
$ ./a.out
```

5. After you finish verifying your program, you can submit your source code by

```
$ ~ee2310/bin/submit lab04 lab04.c
```

If you see a "submitted successfully" message, then you are done. In case you want to check which file and at what time you submitted your labs, you can type in the following command:

```
$ ~ee2310/bin/subrec lab04
```

It will show the last few submission records.

6. For this lab, **arrays** should not be used.