

lab03

```
$ gcc lab03.c
```

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

```
Input an integer between 1 and 3000: 888
```

```
DCCCLXXXVIII
```

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

```
Input an integer between 1 and 3000: 2022
```

```
MMXXII
```

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

```
Input an integer between 1 and 3000: 50
```

```
L
```

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

```
Input an integer between 1 and 3000: 1
```

```
I
```

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

```
Input an integer between 1 and 3000: 707
```

```
DCCVII
```

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

```
Input an integer between 1 and 3000: 2000
```

```
MM
```

score: 96.0

- o. [Output] Program output is correct, good.
- o. [Format] Program format can be improved.
- o. [Efficiency] can still be improved.

lab03.c

```
1 // EE231002 Lab03. Roman Numerals
2 // 111060023 黃柏霖
  // 111060023, 黃柏霖
3 // Date: 2022/10/3
4
5 #include <stdio.h> // I/O header
6
7 int main(void)
8 {
9     int num; // the int that key in
10    int digit; // digits of num
11
12    printf("Input an integer between 1 and 3000: ");
13 // prompt for the num
14    scanf("%d", &num); // get num
15    digit = num / 1000; // thousands digit
16    switch (digit) { // switch by the digit
17        case 3: printf("M"); // print M if it's 3
18        case 2: printf("M"); // print M if it's >= 2
19        case 1: printf("M"); // print M if it's >= 1
20    }
21    num %= 1000; // remove the thousands digit
22    digit = num / 100; // hundreds digit
23    switch (digit) { // switch by the digit
24        case 9: printf("CM"); // print CM if it's 9
25        break; // leave switch
26        case 8: printf("DCCC"); // print DCCC if it's 8
27        break; // leave switch
28        case 7: printf("DCC"); // print DCC if it's 7
29        break; // leave switch
30        case 6: printf("DC"); // print DC if it's 6
31        break; // leave switch
32        case 5: printf("D"); // print D if it's 5
33        break; // leave switch
34        case 4: printf("CD"); // print CD if it's 4
35        break; // leave switch
36        case 3: printf("C"); // print C if it's 3
37        case 2: printf("C"); // print C if it's >= 2
38        case 1: printf("C"); // print C if it's >= 1
39    }
```

```

40     num %= 100;                // remove the hundreds digit
41     digit = num / 10;         // tens digit
42     switch (digit) {         // switch by digit
43         case 9: printf("XC"); // print XC if it's 9
44             break;           // leave switch
45         case 8: printf("LXXX"); // print LXXX if it's 8
46             break;           // leave switch
47         case 7: printf("LXX"); // print LXX if it's 7
48             break;           // leave switch
49         case 6: printf("LX");  // print LX if it's 6
50             break;           // leave switch
51         case 5: printf("L");   // print L if it's 5
52             break;           // leave switch
53         case 4: printf("XL");  // print XL if it's 4
54             break;           // leave switch
55         case 3: printf("X");   // print X if it's 3
56         case 2: printf("X");   // print X if it's >= 2
57         case 1: printf("X");   // print X if it's >= 1
58     }
59     num %= 10;                // remove the tens digit
60     switch (num) {           // switch by digit
61         case 9: printf("IX");  // print IX if it's 9
62             break;           // leave switch
63         case 8: printf("VIII"); // print VIII if it's 8
64             break;           // leave switch
65         case 7: printf("VII"); // print VII if it's 7
66             break;           // leave switch
67         case 6: printf("VI");  // print VI if its' 6
68             break;           // leave switch
69         case 5: printf("V");   // print V if it's 5
70             break;           // leave switch
71         case 4: printf("IV");  // print IV if it's 4
72             break;           // leave switch
73         case 3: printf("I");   // print I if it's 3
74         case 2: printf("I");   // print I if it's >= 2
75         case 1: printf("I");   // print I if it's >= 1
76     }
77     printf("\n");            // print enter after all chars
78     return 0;
79 }

```