CS1050 – Lab 3

Fall 2021

Concepts to Practice

- if, if/else
- while
- increment/decrement operators
- Extend Prelab 3

Submission Information

Submit this assignment by following the instructions given by your TA. SUBMIT ONLY the .c file (no a.out or executable file is required). All of the lab assignments must be submitted before the end of the lab using the lab code given by the TA.

Use the following submit command:

mucs submit <class> <assignment_name> <filename>

For example:

mucs submit 1050 lab3 lab3.c

Description

You are to write a program that goes through all even integers from 2 through 50 in order from the greatest integer down to the least integer. As you move through these integers, if the current integer is divisible by 5, print "X". If the current integer is divisible by 3, print "Y". If the current integer is divisible by both 5 and 3, print "XY". If the current integer is divisible by neither 5 nor 3, print the integer.

Honors Extension

No need to do this part if you are not in the honors section. If you are in the honors section of the course, please also print the following:

- At the end of each line that corresponds to a perfect square, print "SQUARE".

Note: You may **not** use the sqrt() function, nor may you use anything in the math.h header file (no worries if you don't know what I am talking about).

Hint: The largest root of a perfect square in this range is 6, and the smallest is 2. That is, 36 is the largest perfect square and 4 is the smallest perfect square. Use these facts.

Sample Output (non-honors)

```
jimr@JimRArea51:~/CS1050/FS2021/labs/lab3$ compile lab3.c
jimr@JimRArea51:~/CS1050/FS2021/labs/lab3$ ./a.out
X
Y
46
44
Y
X
38
Y
34
32
XY
28
26
Y
22
X
Y
16
14
Y
X
8
Y
4
2
```

Sample Output (honors)

```
jimr@JimRArea51:~/CS1050/FS2021/labs/lab3$ compile -DHONORS lab3.c
jimr@JimRArea51:~/CS1050/FS2021/labs/lab3$ ./a.out
X
Y
46
44
Y
X
38
YSQUARE
34
32
XY
28
26
Y
22
X
Y
16SQUARE
14
Y
X
8
Y
4SQUARE
2
```

Guidelines for Grading Lab 3
40 Points Possible

General

If your program does not compile or produce any input/output that is relevant to the lab then your lab will receive a grade of **zero points**. Your lab solution should iterate through the integers and output appropriately as shown in the sample output. Simply duplicating the sample output without implementing the logic necessary to loop and apply the appropriate tests will be worth a grade of **zero points**

You program is expected to have a comment header at the top that includes your name, pawprint, the course you are taking, and the lab that you are solved (e.g., "Lab 3"). Your code should be nicely indented. **You will lose up to 10 points if you do not meet these basic requirements**.

Non-Honors

10 points: Program counts down in order from the largest to smallest in the range specified.
10 points: Program prints only an X for integers divisible by 5 but not divisible by 3.
10 points: Program prints only a Y for integers divisible by 3 but not divisible by 5.
5 points: Program prints only an X and a Y for integers divisible by both 3 and 5.
5 points: Program prints only the integer for integers divisible by neither 3 nor 5.

Honors

5 points: Program counts down in order from the largest to smallest in the range specified.
10 points: Program prints only an X for integers divisible by 5 but not divisible by 3.
10 points: Program prints only a Y for integers divisible by 3 but not divisible by 5.
5 points: Program prints only an X and a Y for integers divisible by both 3 and 5.
5 points: Program prints only the integer for integers divisible by neither 3 nor 5.
5 points: In addition to the above, program prints SQUARE at the end of each line representing an integer that is a perfect square.