CS1050 – Lab 4
Fall 2021

Concepts to Practice
- For loops
- The conditional (ternary) operator and the switch statement
- Extend Prelab 4

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 lab4 lab4.c

Description
For the lab assignment, you may use any C statements you wish. However, you will get bonus points if you correctly solve the problem without using the **if** statement, the **if/else** statement, the **while** statement, or the **do/while** statement. You may find the problem a lot easier if you just go ahead and forget about the bonus, unless you have extra time at the end of lab.

You are to write a program that prompts the user for two positive integers that are less than or equal to 150. If the user enters an integer that is less than 1 or greater than 150, you must prompt the user again. You must continue checking and prompting the user, until the user enters two positive integers that are less than or equal to 150. Call the integers you get from the user Start and Limit respectively.

Finally, print all integers starting with Start and ending with Limit (inclusive) and stepping by 3. Check out the sample output if you aren't clear on these requirements.

Honors Extension
For those in the honors section, you must prompt for the increment instead of hard-coding the increment to 3. The increment value must not be zero. The increment value may be negative when Start > Limit and it may be positive when Start <= Limit. If a user violates these rules by entering an illegal value for increment, you must continue to prompt the user until a legal value is entered.

Suggestions
- Start by writing the program **without error-checking** and come back and add that later if you have time.
- Try writing the program so it will work with the simplest case. For example, make it work if Start is 1 and Limit is 10.
- Don't attempt the bonus until you have it working without the bonus.

Sample Output (highlight shows user input)

Example Non-honors Runs

```
jimr@JimRXPS13:~/CS1050/FS2021/labs/lab4$ compile lab4.c
jimr@JimRXPS13:~/CS1050/FS2021/labs/lab4$ ./a.out
Enter Start: 5
Enter Limit: 10
5 8
jimr@JimRXPS13:~/CS1050/FS2021/labs/lab4$ ./a.out
Enter Start: 7
Enter Limit: 20
7 10 13 16 19
jimr@JimRXPS13:~/CS1050/FS2021/labs/lab4$ ./a.out
Enter Start: 999
Enter Start: -1
Enter Start: 0
Enter Start: 100
Enter Limit: 200
Enter Limit: -1
Enter Limit: 0
Enter Limit: 1

jimr@JimRXPS13:~/CS1050/FS2021/labs/lab4$ ./a.out
Enter Start: 3
Enter Limit: 27
3 6 9 12 15 18 21 24 27
```

Example Honors Runs

```
jimr@JimRXPS13:~/CS1050/FS2021/labs/lab4$ compile -DHONORS lab4.c
jimr@JimRXPS13:~/CS1050/FS2021/labs/lab4$ ./a.out
Enter Start: 5
Enter Limit: 10
Enter Increment: 2
5 7 9
jimr@JimRXPS13:~/CS1050/FS2021/labs/lab4$ ./a.out
Enter Start: 7
Enter Limit: 20
Enter Increment: -1
Enter Increment: 1
7 8 9 10 11 12 13 14 15 16 17 18 19 20
jimr@JimRXPS13:~/CS1050/FS2021/labs/lab4$ ./a.out
Enter Start: 999
Enter Start: -1
Enter Start: 0
Enter Start: 100
Enter Limit: 200
Enter Limit: -10
Enter Limit: 1
Enter Increment: 10
Enter Increment: 1
Enter Increment: -10
100 90 80 70 60 50 40 30 20 10
```

Guidelines for Grading Lab 4
40 Points Possible (+5 Bonus)

General

If your program does not compile, or produce any input/output then your lab will receive a grade of **zero points**. You will receive **zero points** if your program merely simulates functioning correctly (for example, if you just use printf to make the output match a sample run, you get **zero**).

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 4"). Your code should be nicely indented. **You will lose up to 10 points if you do not meet these basic requirements**.

Non-honors Rubric

10 points: Program gives correct output for the case where Start < Limit
5 points: Program gives correct output for the case where Start == Limit
5 points: Program gives correct output for the case where Start > Limit
10 points: Program correctly error-checks that Start is in the range 1 to 150 inclusive and continues to prompt until this condition is met.
10 points: Program correctly error-checks that Limit is in the range 1 to 150 inclusive and continues to prompt until this condition is met.
5 bonus points: Program works correctly, and it does not contain a while, do/while, if, or if/else statement.

Honors Rubric

4 points: Program works for the case where Start < Limit
4 points: Program works for the case where Start == Limit
4 points: Program works for the case where Start > Limit
4 points: Program correctly error-checks Increment input where Start<=Limit
4 points: Program correctly error-checks Increment input where Start>Limit
4 points: Program correctly error-checks that Start is in the range 1 to 150 inclusive and continues to prompt until this condition is met.
4 points: Program correctly error-checks that Limit is in the range 1 to 150 inclusive and continues to prompt until this condition is met.
4 points: Program correctly error-checks Increment input where Start<=Limit
4 points: Program correctly error-checks Increment input where Start>Limit
4 points: Program correctly error-checks that Increment cannot be zero.
5 bonus points: Program works correctly, and it does not contain a while, do/while, if, or if/else statement.