CS 31 Worksheet Week 2

This worksheet is entirely optional, and meant for extra practice. Some problems will be more challenging than others and are designed to have you apply your knowledge beyond the examples presented in lecture, discussion or projects. All exams will be done on paper, so it is in your best interest to practice these problems by hand and not rely on a compiler.

Concepts

If Statements, Cin, Variables, Doubles, Ints

Reading Problems

1. Assume that the following lines of code are inside the main function, with #include <iostream> and using namespace std, and all the string variables used have been previously declared.
   (a) Circle where the bug occurs.
   (b) Explain what you think will happen when running the program.
   (c) Is this a logic error or a compilation error? Why?
   (d) Add a fix to the problem you found in part (a).

   ```cpp
   string name;
   cout << "Enter your name: ";
   getline(cin, name);

   cout << "\nEnter your UID: ";
   int UID;
   cin >> UID ;

   cout << "\nEnter your Major: ";
   getline(cin, major);

   cout << "\nEnter your residence hall: "
   getline(cin, hall);

   cout << "\n" << UID << " is the ID of " << name 
      <<", a " << major << " student who lives in " << hall << endl;
   
Time: 10 min
```

2. What is the output of the following code?
int cookies = 12;
int mms = 120;
if (mms % cookies != 0) {
    cout << "Can’t evenly split M&Ms for each cookie!" << endl;
} else {
    cout << "We have " << mms/cookies << " M&Ms per cookie." << endl;
}
cout << rainbow << endl;

eresting = elligent/2.5;
stuf = rainbow/3;
cout << rainbow/3 << endl;
cout << stuf << endl;
cout << elligent/2.5 << endl;
cout << eresting << endl;
}

Time: 5 min
Programming Problems

1. Write a program that asks for a number between 0 and 100 (exclusive), and takes an integer input. If you input a number greater than or equal to 100, it will print “Liar, liar, plants for hire” and stop. If you input a number less than or equal to 0, it will print “Liar, liar, plants for hire” and stop. If your number has a “tens” digit that would round up to 100, meaning the number is at least 50, and will print “Almost to 100!” Otherwise, it will print “Still a-ways to go!”

**Example Output:**

**Case one:**
Please give me a number between 0 and 100
0
Liar, liar, plants for hire.

**Case two:**
Please give me a number between 0 and 100
95
Almost to 100!

**Case three:**
Please give me a number between 0 and 100
45
Still a-ways to go!

Time: 10 min

2. Write a program that takes in two numbers and a command of type string (“Add”, “Subtract”, “Multiply”, “Divide”). Inputting an invalid command should cause the program to print out “Invalid command!” and stop.

**Sample output:**
Enter your first number: 3
Enter your second number: 7
Enter your command: Multiply
Result: 21
Time: 10 min

3. (This may be out of scope for this week, but you can try it as a challenge question!)
Write a program that takes in a number as an int and outputs the sum of all of the digits in that number

**Sample Output:**
Enter a number: 184
The sum of the digits in your number is 13!
Time: 10 min (if you know how to use a loop)