ECE 175: Computer Programming for Engineering Applications

Lab Assignment #2

Relevant Programming Concepts:

- Conditional branching structures (if-then-else statements)
- Loop structures

Problem 1: Develop a C program that computes the alternating sum of all positive integer numbers from 1 to *n* that are divisible by 9 in the following way. If the number is odd it is added to the sum, else it is subtracted from the sum.

Sample Output:

Enter the value of n: 100

The alternating sum of all positive numbers less than 100 divisible by 9 is: 54

Problem 2: In a certain building at a research lab, some yttrium-90 has leaked into the computer analysts' coffee room. The **half-life of the substance is about 2 days** i.e. that is, the radiation level is only half of what it was 2 days ago. **The safe level of the radiation is <u>at most</u> 0.9 millirem a day.**

Your program should ask the user to enter 1) the initial amount of radiation and 2) the total number of days that the user wants to display the radiation level. It then displays the table showing the radiation level every 2 days for the total number of days that the user just entered with the message **Unsafe** or **Safe** right next to the radiation level. See sample execution #1 and #2 below.

Sample execution #1

```
Enter an initial amount of radiation (millirems): 150
Enter total days to display: 20
Day   Radiation(Status)
0     150.0000(Unsafe)
2     75.0000(Unsafe)
4     37.5000(Unsafe)
6     18.7500(Unsafe)
8     9.3750(Unsafe)
10    4.6875(Unsafe)
12    2.3438(Unsafe)
14    1.1719(Unsafe)
16    0.5859(Safe)
18    0.2930(Safe)
20    0.1465(Safe)
```

Sample execution #2

```
Enter an initial amount of radiation (millirems): 28.5
Enter total days to display: 10
Day   Radiation(Status)
0     28.5000(Unsafe)
2     14.2500(Unsafe)
4     7.1250(Unsafe)
6     3.5625(Unsafe)
8     1.7813(Unsafe)
10    0.8906(Safe)
```