CS141

LARGE PROGRAMMING ASSIGNMENT 1

DAYS APART

OVERVIEW

This assignment will give you practice with methods, variables and conditional statements.

YOUR INSTUCTIONS

Your assignment is to write a program that will ask the user to type in the birthdays of two people (month and day) and the current day. The program should then determine the following data:

- The number of days until person 1's next birthday from today.
- The number of days until person 2's next birthday from today.
- The number of days between person 1's birthday and person 2's.
- The number of days between person 2's birthday and person 1's.

> *Assignment Hint: It is much easier to solve this problem if you convert each date into an "absolute day" of year from 1 to 365.*

BACKGROUND

The normal calendar is composed of 12 months of various days per month. *(30 days has September, April, June and November, plus February of 28 days).* So given two people birthdays, one can calculate the number of days between two given days, and the current day.

Important Note : For the sake of this activity, we are going to ignore the year, which means that we will not be worrying about the possibility of a 366th day or leap day in any of our calculations. This will allow February to always be 28 days, and a year to always be 365 days long.

SAMPLE CODE EXECUTION

Your programs' final output should look EXACTLY like the output below based upon the input data.

```
* Birthday Counting Program                    *
* Please type in the current date and the name  *
* and birthdays of two people.                  *
************************************************

Today's Month (1-12)      ? 5
Today's Day (1-31)        ? 25
Person 1's Name           ? Bob
Person 2's Name           ? Sue
Bob's Birth Month (1-12) ? 2
Bob's Birth Day (1-28)    ? 20
Sue's Birth Month (1-12) ? 12
Sue's Birth Day (1-31)    ? 15

*** Calculating  ***
It is 271 days until Bob's next birthday.
It is 204 days until Sue's next birthday.
There is a 298 day gap from Bob's to Sue's birthday.
There is a 67 day gap from Sue's to Bob's birthday.

************************************************
```

EXPECTATIONS

You should have a number of methods to help you solve this problem. Some useful and suggested methods include the following.

- `public static int getAbsoluteDate(int month, int day)`
- `public static int subtractAbsoluteDate(int day1, int day2)`
- `public static int getDaysInMonth(int month)`

PROGRAM NOTES

- Note in the sample code, that the number of days in the ( ) changes based upon the month.
  - For Bob it was 1 – 28 because of February.
  - For Sue it was 1 – 31 because of December.
  - For today it was 1 -31 because of May

- Note that the questions used the people's names
    - Bob and Sue respectively.
- You will need to use printf() to get the question marks() to line up correctly.
- All the times were positive, so if the day is already past, calculate to the next day.
- You should restrict yourself to the programming constructs included in chapters 1 through 5 of the textbook in solving this problem.
- You should only use concepts taught in this class, nothing from outside sources that we haven't covered.
- I will once again be expecting you to use good programming style and to include useful comments throughout your program.
- I am not specifying how to decompose this problem into methods, but I will be grading on the quality of your decomposition. That means you will have to decide how to decompose the program into methods. You should keep in mind the ideas I have been stressing all quarter.
- You don't want to have redundant code. You don't want to have any one method be overly long. You want to break the problem down into logical subproblems so that someone reading your code can see the sequence of steps it is performing.
- You want main to be a concise summary of the program.