**CIS 21JA - Lab 4**

**There are 2 parts to this lab assignment:**

**- Part 1: Start with the file lab4.asm. In the place labeled Part 1, write the program as described below.**

**- Part 2: At the end of lab4.asm is a comment block labeled Part 2. There is no coding needed for part 2, simply type in your answers next to the questions about status flags.**

**Part 1 (10pts)**Write a program to help an alarm clock set the alarm time, after the user gives the snooze time and ‘get out of bed’ time.

**Background**  
Many of us hit the snooze button on our alarm clock so that we can a few extra minutes to wake up before having to get out of bed. Suppose you’re working for the Clocky company, which has an alarm clock that lets the user set a ‘get out of bed’ time and a snooze time. The clock will calculate the alarm time, which is the ‘get out of bed time’ – snooze time.

At the alarm time, the alarm goes off and the user can hit the snooze button. But after the snooze time is over, the clock alarm will turn on again *and the clock will move* so that the user must get out of bed and chase after it to turn it off. (<https://clocky.com/> - Disclaimer: I have no association with Clocky, nor do I own one, but it’s an amusing idea for a lab assignment)

**Lab requirements**

1. Prompt the user for the ‘get out of bed’ hour, then prompt the user for the ‘get out of bed’ minute, then prompt the user for the snooze time.

* Each prompt should explain clearly what you expect from the user. See sample output below.
* You can expect that the user will give a valid time: 0-23 for hour, 0-59 for minute, 0-59 for the snooze time.
* Given these valid ranges, use the appropriate data type and the register size that can store the maximum output value, but *do not use the largest possible data size*.
* 2pts of the lab is for using the correct data type / size.

2. Calculate the time the alarm needs to go off the first time.

- Be efficient with your code for the calculation (Refer to the class notes for suggestions).

- 1pt of the lab is for coding efficiency.

3. Print the alarm time as hour and minutes. See sample output.  
The printed output should be a separate line, so don't forget the newline character at the end of the line.  
  
4. Do not declare and use any memory variable, except for text strings.

- The text strings for the prompts and the output text can be defined in the .data section, but all user input and calculation results should be in registers.

- 2 pts of the lab is for not using memory variables to store numeric data.

5. Documentation

* To get credit for the lab, don't forget your name at the top.
* Use comments to explain logical blocks of code, and It is also visually helpful to add a blank line between logical blocks.

**Test**

Sample program output 1:  
Enter hour of get up time: 11

Enter minute of get up time: 0

Enter number of minutes of snooze: 12

Alarm set for 10 hour and 48 minute

Sample program output 2:  
Enter hour of get up time: 7

Enter minute of get up time: 30

Enter number of minutes of snooze: 25

Alarm set for 7 hour and 5 minute

Don't forget to do part 2 (5pts), which is in the second half of the lab4.asm file.