COP 3223 Recitation: Loops 1

Problem A: Stolen Orange Juice Part 2

You have been charging your roommate every time she takes some of your orange juice, but this has become tedious, because she takes it so frequently. Plus, it feels a bit silly collecting 50 or 75 cents at a time from her. You've come up with a brilliant plan! Instead of charging her every time she takes your orange juice, you'll collect money from her after she's taken 10 dollars' worth of juice. Write a program that simulates this process. Ask the user to enter the size (in ounces) of the juice containers you buy, as well as the price of those containers (in dollars). Then prompt the user to enter how many times the roommate took juice. Finally, read the amount the roommate took each time. Every time the total value of the juice equals or exceeds $10, print out "You must pay $10." After all the numbers are entered, if the roommate owes any money, print out the value owed.

Sample Run (User input in bold and italics)

```
What is the weight (in oz.) of the original container of OJ?
64
What is the cost of the original container of OJ in dollars?
3.79
How many times did your roommate take your juice?
10
How much juice did your roommate take this time (in oz.)?
30
How much juice did your roommate take this time (in oz.)?
34
How much juice did your roommate take this time (in oz.)?
24
How much juice did your roommate take this time (in oz.)?
40
How much juice did your roommate take this time (in oz.)?
64
Your roommate owes you $10.00.
How much juice did your roommate take this time (in oz.)?
64
How much juice did your roommate take this time (in oz.)?
64
How much juice did your roommate take this time (in oz.)?
18
Your roommate owes you $10.00.
How much juice did your roommate take this time (in oz.)?
20
How much juice did your roommate take this time (in oz.)?
20
Your roommate owes you $2.38.
```

Problem B: Difficulty with the Registrar

The registrar's office won't allow you to attend your classes until you fully pay for them. Unfortunately, the registrar's office isn't terribly helpful. Whenever you ask them how much you owe, they don't answer you!

In fact, the only answers they give are yes or no. Thus, you must ask questions of the form,

"Do I owe more than X dollars?"

Eventually, through a series of these questions, you can ascertain how much you owe. Luckily, if you ask the question for X dollars and receive a yes answer and also ask the question for X+1 dollars and receive a no answer, then you can safely assume that you owe exactly X+1 dollars.

Write a program to mimic this process. Have your program randomly choose a dollar amount in between $500 and $5000, inclusive that you owe to the registrar. Then, prompt the user to enter the value of X in the question above. Your program should either print out

`Yes, you owe more than X dollars.`

or

`No, you do not owe more than X dollars.`

after the user enters their value for X. When the user has narrowed down the answer to exactly one value, your program should congratulate the user for figuring out how much they owe:

`Congratulations for figuring out you owe X dollars.`

You may assume the user will always enter numbers that "make sense". Namely, each guess will be a logically possible guess based on past answers the user received.

Sample Run (User input in bold and italics)

```
How much do you think you owe?
1000
Yes, you owe more than 1000 dollars.
How much do you think you owe?
1003
No, you do not owe more than 1003 dollars.
How much do you think you owe?
1001
No, you do not owe more than 1001 dollars.
Congratulations for figuring out you owe 1001 dollars.
```