



## Lab 03: Sentinels

In this lab you will be creating sentinel controlled loops.

### Exercises

- 1) At the top is an `int` called `pin`, set it to any 4 digit number (hardcode it). Then under `problem01()` ask the user to enter the pin. If it's correct, print out "Access Granted". If they're wrong print out "Incorrect Pin" and ask for the pin again. After 3 incorrect attempts, tell them "Account Locked" and something bad has happened to them (your discretion).

```
Enter Pin: 3752
Incorrect Pin
Enter Pin: 1234
Access Granted
```

- 2) Keep asking the user for a number (decimals are fine) until they enter a 0. At this point tell them the sum of all the numbers they entered, and how many they entered (not including the 0).

```
You entered <count> numbers that add up to <total>.
```

- 3) Users don't always follow instructions. You say enter a "yes" or "no" and they enter whatever they want. Let's keep asking the same question until we get a valid response. Ask the user:

```
Is it 1st period? (Enter yes or no)
```

If the 1<sup>st</sup> letter they enter is "y" or "n" regardless of capitalization say:

```
Thank you!
```

Otherwise say:

```
Invalid Response
```

Then keep repeating the process till you get a valid response.

Hint: This grabs the 1<sup>st</sup> letter of whatever you put for `<String>`  
`<String>.substring(0,1)`

Continue...



## Exercises

- 4) As a new chemistry doctoral candidate, you have been given the time-honored role as lab monkey. Basically, you have to hang out in the lab all the time and keep the professors experiments running. Several of them use items that deteriorate a little during every experimental cycle. Once they deteriorate beneath a certain threshold, you need to replace them. So, you're writing a program to keep track of this.

You need to ask for two pieces of information: the percent deterioration for each cycle, and the threshold at which you are supposed to replace the item. Then you need to print out the percent remaining after each cycle and state the total number of cycles the element can handle. The thousandths place is accurate enough. (only round when printing, don't change the stored value)

Example run: (your formatting may vary)

```
Please enter the % deterioration per cycle: <10>
Please enter the lower threshold for this substance: <50>
Cycle #      % Remaining
-----
1            90.000
2            81.000
3            72.900
4            65.610
5            59.049
6            53.144
7            47.830
Replace after 7 cycles
```

