Introduction to Loops

The material from today is covered in Gaddis – 4.2-4.6

Part 1 – Reading Loops

```
public class BadInputV3
{
   public static void main (String loopy [])
   {
      Scanner keyboard;
      String badVal;
      int count;

      keyboard = new Scanner(System.in);

      System.out.print("Enter a number: ");
      while (!keyboard.hasNextInt())
      {
         badVal = keyboard.nextLine();
         System.out.print("\nYou entered %s. Try again.");
      }

      count = keyboard.nextInt();

      System.out.println("You entered %d.", count);
   }
}
```

1. What will print if the user enters “5”?

2. What will print if the user enters “a” and then “5”;

3. Describe the conditions under which we skip the loop body (we do not execute the loop body).

4. Describe the conditions under which we execute the loop body at least once.

5. What condition will cause us to exit the loop if we have executed the loop body at least once?

6. **BOARD** - Do the checkpoint 4.2 and 4.3 that you find on page 190(puzzle) 204(Watermelon) of the Gaddis text.

Part 2 - Design a solution

We are asking the user to enter characters only between 'a' and 'z'. If anything else is entered, we ask the user to reenter. Assume all variables have been declared. Here is the pseudo code for this solution. (SOP is abbreviation for System.out.print.

```
SOP("Enter a character between 'a' and 'z' ");
myChar = kb.nextLine().charAt(0);
if (myChar < 'a' || myChar > 'z')
        SOP(myChar + "  is not between 'a' and 'z'.  Try again.");
SOP("Enter a character between 'a' and 'z' ");
myChar = kb.nextLine().charAt(0);
if (myChar < 'a' || myChar > 'z')
        SOP(myChar + "  is not between 'a' and 'z'.  Try again.");
SOP("Enter a character between 'a' and 'z' ");
myChar = kb.nextLine().charAt(0);
if (myChar < 'a' || myChar > 'z')
        SOP(myChar + "  is not between 'a' and 'z'.  Try again.");

….
SOP("Enter a character between 'a' and 'z' ");
myChar = kb.nextLine().charAt(0);
if (myChar < 'a' || myChar > 'z')
        SOP(myChar + "  is not between 'a' and 'z'.  Try again.");
```

Obviously, there is a flaw in the design, since we don't know how many times the user will fail to enter the code correctly. So you need to take this pseudo code and determine how to best build a loop to take care of this problem.

Design a loop structure to prompt for and check to see if what the user entered is in the range 'a' – 'z'.

7. What kind of loop will you use? Why?
8. What initialization will you do? (Initialization sets up the loop operation)
9. What condition will you use? (The condition determines if we execute the loop body again)
10. What goes in the body? (The body contains the steps we want to repeat)
11. What is your update? (The update helps us to approach the termination condition).

BOARD - Write your team name on the board. Underneath that, list your solution to this problem.

More practice – Homework to turn in on Wednesday.

In Gaddis, do Algorithm workbench exercise 1 and 12.

More advanced - Optional

Take the loop from the 'a' – 'z' example and change it so that it is a post condition loop. (A do while loop).