CS111 Introduction to Computer Science
Recitation 4

Exercise 1: Find the Bug(s)

Warmup:

Declaration/Assignment	*Boolean expressions*

int x = 5
double = a;
char 'f' = g;
boolean b = "true";
	if (boolean == true) …
	if (var = true) …
	if (boolean == "false") …
	if (var == 5 & x = 3) …

Write your own code:
 	
Break into groups or partners and write code to solve one of the following problems, then introduce a bug or two (either intentionally or unintentionally). Switch code and debug the other team's code.
 	
a. Simple calculator – ask user if (s)he wishes to add or subtract 2 numbers, ask for 2 numbers, then do the appropriate operation, and output the answer
b. Odd or Even – ask the user for a number. Determine if said number is odd or even. Output the result.
	Subroutine Usage
	
	double z = math.sqrt(math.pi) ;
	IO.readDouble(19) ;
	IO.readBoolean() ;
	char q = Math.pow();
	int double = IO.readBoolean();

Exercise 2: Weighing coins (the conditional statement)

In a previous recitation, you constructed algorithms (as flowcharts) to solve the following problems.

> **a.** Assume that you have 8 coins, and you know that 7 are 'okay' but one is 'bad'. You know that the bad coin has a different weight than the good coins, but you don't know whether it is heavier or lighter.
>
> Construct an algorithm to find out which is the bad coin using just 3 weighings on a balance scale. (Hint: Find a way to determine that half of the coins are 'okay' with just 1 weighing.)
>
> **b.** Now do the same thing assuming that you have 9 coins, one of which is bad. (Still use just 3 weightings to find the bad coin.)
>
> **c.** And now for a real challenge, do the same thing assuming that you have 13 coins.

Now, code these in Java. The user will know which coin is 'bad', and it is the job of the program to figure this out. The program may ask the user for the outcome of any weighing on the balance scale (use IO.readBoolean()).