Computer Science 1-2
Lab #1

Welcome to the first problem set! In general we will talk about extra things in class, but the problem sets will attempt to fill in the holes since a modern programming language is huge and impossible to cover verbally. We have only looked at a few simple Java commands so far, but even with just a few commands you can do a lot. Below is the program we went through in class. There were many things in this program that right now you are just using on faith without an explanation as to why. This is the downside of Java. It requires a lot of overhead just to do something really simple. Time will heal this wound.

```
import java.io.*;
import java.util.Random;
import java.util.Scanner;

class num {

 public static void main(String args[]) {

  int firstnumber = 5;
  int secondnumber = 17;
  int usernumber = 0;
  int sum = 0;

  Scanner in = new Scanner(System.in);

  System.out.println("Welcome to my number adding machine");

  sum = firstnumber + secondnumber;

  System.out.println("The sum of " + firstnumber + " and " + secondnumber + " is " + sum);

  System.out.println("Please enter a number");

  usernumber = in.nextInt();
  sum+= usernumber;

  System.out.println("The sum of the numbers is " + sum);

 } //main

 }//num
```

Escape Character	What it does	Arithmetic Symbol	What it Does
\n	new line	+	addition
\t	tab	-	subtraction
\a	beep	*	multiplication
\\ or \?	\ or ?	/	division
\’ or \”	’ or “	%	modulus

Here are this week’s problems:

1. Write a program which uses the println command to print a small box, small oval (roughly), an arrow pointing upwards, and a diamond to the screen.
2. Write a program that asks the user to enter two numbers, stores the two numbers in variables and then prints out the sum, difference, product and quotient. Test your division with 9 divided by 5. **DOES THIS MAKE SENSE? TALK TO ME!!**
3. In the lecture all of our variables were declared *int* which means they are integer values only and cannot contain *decimal* numbers. But, it seems reasonable to want to have decimal numbers. There are two kinds in Java: *float* and *double*. *float* holds a really big number with lots of decimal values. *double* holds a much bigger number. These two words are “type” words just like *int* is a “type”.

   For this problem, write a program which reads a *float* or *double* into a variable that represents the radius of a circle. Compute the circumference of the circle using a variable (*float or double)* set to the value 3.14159. Print the circumference out with an appropriate print statement.
4. Write a program which computes the gas consumption of a car. Have the user input the odometer reading for the start and end of the journey, the amount of fuel in the tank at the start of the journey and the amount at the end (in gallons). Calculate the fuel consumption in miles-per-gallon. Print these values accompanied by appropriate messages.