

# CSCI 2990 TEST 3 STUDY GUIDE SPRING 2009

## Chapter 6 (continued):

1. Write the code to draw a yawning smiley with head having ULH corner (10,10) and diameter 200, eyes at (55,65) and (135,65) with diameter 30, and an oval mouth at (90,110) with width 40 and height 80.

## Chapter 7: Arrays

1. Define: array.
2. Consider the following program that attempts to compute the average of some numbers followed by the difference between each number and the average. Does it work properly? Why or why not? If incorrect, change it so that it does work.

```
import java.util.Scanner;
public class arrayex
{
    public static void main (String args[])
    {
        int n,i;
        double average, diff,sum;
        double x=0;
        Scanner s=new Scanner(System.in);
        System.out.println( "How many numbers do you want to average?");
        n=s.nextInt();
        sum = 0;
        for (i=0; i<n; i++)
        {
            System.out.println ("Enter a number:");
            x=s.nextDouble();
            sum = sum + x;
        }
        average =sum/n;
        System.out.println ("Average is " + average);
        // This part doesn't work because "x" only holds the last value input,
        // not all of them
        System.out.println ("Difference between each number and the average is:");
        for (i=0; i<n; i++)
        {
            diff = x - average;
            System.out.println (diff);
        }
    }
}
```

3. Write the Java statements to compute and output the first 90 Fibonacci numbers where fibonacci[1]=1, fibonacci[2]=1, and for  $n \geq 3$  fibonacci[n]=fibonacci[n-1]+fibonacci[n-2].
4. Write Java statements to output the elements of a hard-coded magic square.
5. Write Java statements to demonstrate that the square above is actually a magic square.

```
System.out.println("The sum of col "+col+" is "+sum);
}
int diag1, diag2;
diag1=magicSquare[1][1]+magicSquare[2][2]+magicSquare[3][3];
diag2=magicSquare[3][1]+magicSquare[2][2]+magicSquare[1][3];
System.out.println("The sum of the main diagonal is "+diag1);
System.out.println("The sum of the minor diagonal is "+diag2);
```