Points off	1	2	3	4	5	6	7	Total off	Net Score

CS 305j – Midterm 1 – Fall 2007

Your Name_____

Your UTEID _____

Circle you TA's name: Priyanka Jacob

Instructions:

1. Please turn off your cell phones
2. There are 7 questions on this test.
3. You will 50 minutes to complete the test.
4. You may not use a calculator.
5. Please make your answers legible.
6. When code is required, write Java code.
7. The proctors will not answer questions.

1. Expressions. 3 points each, 18 points total. For each Java expression in the left hand column, indicate its value in the right hand column. Be sure to show a constant of the appropriate type. For example, 7.0 rather than 7 for a double and "7" instead of 7 for a String.

A. `3 + "ut" + 4` _____

B. `17 / 5 + 3 * 2` _____

C. `19 % 6 * 4` _____

D. `1.5 + 5 / 2 + 1.5` _____

E. `"cs" + (2 + 4) + "ie"` _____

F. `2.5 + 1.5 * 4.0` _____

2. Parameters Simulation. 15 points. Consider the following program.

```
public class ParameterQuestion{

      public static void main(String[] args){
            int x = 2;
            int y = 3;

            one(x);
            System.out.println( two(y) );
            x = three(4, 2);
            System.out.println( x );
            x = 2;
            y = 3;
            int z = four(x, y);
            System.out.println( z );
            System.out.println( x );
      }

      public static void one(int a){
            a++;
            System.out.println( a );
      }

      public static int two(int b){
            b = b * 2;
            return b;
      }

      public static int three(int a, int b){
            a = a / 2;
            b++;
            return a + b;
      }

      public static int four(int c, int d){
            c++;
            c = two(c);
            return c + d;
      }
}
```

List below the output produced by this program when it is run.

3. Loops Simulation. 10 points. Consider the following method:

```
public static int loop(int val){
     int result = 0;
     for(int i = 1; i <= val; i++){
          result = result + 2;
     }
     return result;
}
```

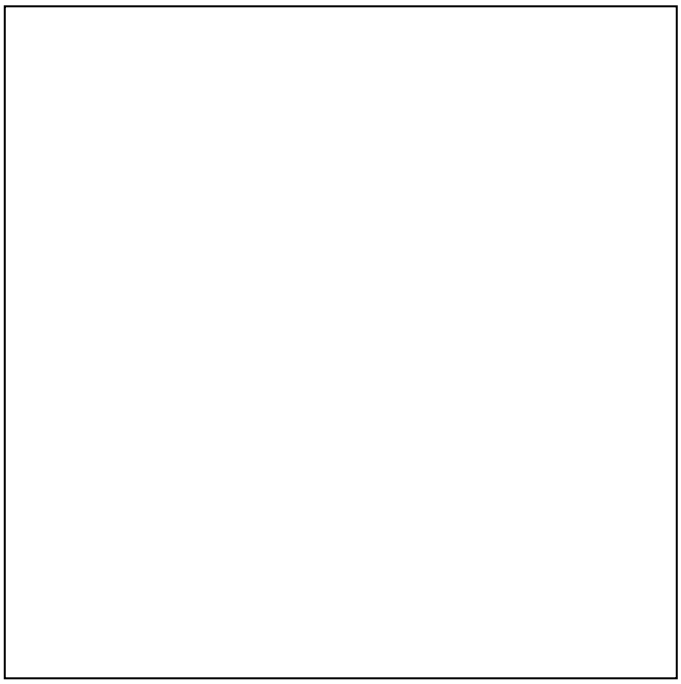
For each method call below what value is returned?

Method Call	Value Returned
`loop(-1);`	_____
`loop(1);`	_____
`loop(2);`	_____

4. Simulation. 10 points. Sketch the drawing panel window that is produced when the following program when is run. Do not worry about the title bar.

```
import java.awt.*;

public class Draw{

      public static final int SIZE = 400;

      public static void main(String[] args){
            DrawingPanel p = new DrawingPanel(SIZE, SIZE);
            Graphics g = p.getGraphics();
            int increment = SIZE / 10;
            int ovalSize = SIZE;
            int x = 0;
            int y = 0;

            // parameters on drawOval are x coordinate, y coordinate,
            // width, and height

            for(int i = 1; i <= 4; i++){
                  g.drawOval(x, y, ovalSize, ovalSize);
                  x = x + increment;
                  y = y + increment;
                  ovalSize = ovalSize - (increment * 2);
            }

            // parameters on drawLine are the x and y coordinates of the
            // two endpoints of the line: x1, y1, x2, y2

            g.drawLine( 0, SIZE / 2, SIZE, SIZE / 2 );
            g.drawLine( SIZE / 2, 0, SIZE / 2, SIZE );
      }
}
```

Sketch your DrawingPanel produced by the program in the box to the right. Recall the origin is at the top left corner and y increases as you go down.



5. Loops Simulation. 12 points. Consider the following program.

```
public class NestedLoops{

     public static final int SIZE = 4;

     public static void main(String[] args){
          String dash = "-";

          for(int i = 1; i <= SIZE; i++){

               for(int j = 1; j <= i; j++){
                    System.out.print(j);
                    System.out.print( dash );                }

               for(int j = i; j <= SIZE; j++){
                    System.out.print( i );
               }

               System.out.println();
          }
     }//end of main
}//end of program
```

List below the output produced by this program when it is run.

6. Programming. 15 points. One formula for predicting many games a baseball team should win is:

Expected wins = $NumbeOfGamesPlayed \times \left(\frac{RunsScored^2}{RunsScored^2 + RunsAllowed^2} \right)$

Write a method that given the number of games a team played, the number of runs the team scored, and the number of runs the team allowed returns the number of games the team is expected to win rounded to the nearest integer. The given values will all be `int`s.

Use the `Math.round` method to round to the nearest `int`.

7. Programming. 20 points. Write a method that given an `int` that represents a number of lines, prints out that number of lines. Each line contains a number of integers equal to the line number.

For example line 1 has 1 integer, line 2 has 2 integers, line 3 has 3 integers and so forth.

The integer values start at 1 and increase by 1 each time.

The integer values are separated by spaces.

So for example if the method is passed a parameter of 1 it produces this output:

```
1
```

If the method is given a passed a parameter of 2 it produces this output:

```
1
2 3
```

If the method is given a passed a parameter of 3 it produces this output:

```
1
2 3
4 5 6
```

If the method is given a passed a parameter of 4 it produces this output:

```
1
2 3
4 5 6
7 8 9 10
```

If the method is given a passed a parameter of 5 it produces this output:

```
1
2 3
4 5 6
7 8 9 10
11 12 13 14 15
```

... and so forth.

You may assume the value of the parameter is greater than or equal to 1.

Complete your method on the next page.

```
//complete your method to print lines on this page
```

Scratch Paper

Scratch Paper