Midterm Examination 1
CS170: Introduction to Computer Science

Name (print): ___________________________

Observe the Emory College Honor Code while taking this test.

INSTRUCTIONS:
1. Do NOT communicate with anyone other than the professor / proctor for ANY reason in ANY language in ANY manner.
2. This exam is closed notes, closed books, and no calculator.
3. Turn all mobile devices off and put them away now. You cannot have them on your desk.

TIME:
This exam has 5 questions on 7 pages including the title page. Please check to make sure all pages are included. You will have 50 minutes to complete this exam.
**Question 1. (30 pts)**

1. Write the values that will be printed to the console by the statements below. If the expression is incorrect, write “error”:

   double a = 5.0, b = 2.0;
   int x = 2, y = 6, z = 8;
   char c1 = ‘a’, c2 = ‘b’;
   String s1 = “Computer”, s2 = “Science”;

   a. System.out.println(x % y);

   b. System.out.println( 1 + a / b);

   c. System.out.println(s1.length() + x / y);

   d. System.out.println(z = x + y);

   e. System.out.println( (char) (c1 + y) );
f. System.out.println( ('b' <= c1 || 'a' <= c2 ) && x == y);

g. System.out.println( c1 = x);

h. System.out.println("Hello" + "\n" + s1);

i. System.out.println( x + y + s1 );

j. System.out.println( s1 + x + y);
Question 2. (15 pts)
Read the following programs, write the values that will be printed to the console:

```java
public class Test1 {
    public static void main(String[] args) {
        int x = 6;
        int y = 8;
        int z = x * y;

        System.out.println("output 1 = " + z);

        if (z >= 50) {
            System.out.println("output 2 = " + x);
            if (x % 2 == 0) {
                System.out.println("output 3 = " + x * y);
            } else {
                System.out.println("output 3 = " + x / y);
            }
        } else {
            System.out.println("output 2 = " + y);
            if (y % 2 == 0) {
                System.out.println("output 3 = " + (x + y));
            } else {
                System.out.println("output 3 = " + (x - y));
            }
        }
    }
}
```
**Question 3.** (15 pts)
Read the following programs, write the values that will be printed to the console:

```java
public class Test2 {
    public static void main(String[] args) {
        int sum = 0;

        for (int i = 3; i < 10; i++) {
            if (i % 2 == 1) {
                sum = sum + i;
                continue;
            }
            System.out.println("index = "+ i);
        }

        System.out.println("sum = "+ sum);
    }
}
```
Question 4. (20 pts)
Complete the following program so that it reads two strings, if the lengths of them are equal, outputs the value of length; Otherwise, sorts lengths in descending order and then outputs.

For example:
Input1 = hello
Input2 = world
output = 5

Input1 = hello
Input2 = computer
output = 8 5

import java.util.Scanner;
public class Test3
{
   public static void main(String[] args)
   {
      Scanner in = new Scanner(System.in);
      String s1, s2;
      s1 = in.next();
      s2 = in.next();
      
      if (s1.length() == s2.length())
      {
         System.out.println(s1.length());
      }
      else
      {
         int len1 = s1.length();
         int len2 = s2.length();
         int[] lengths = {len1, len2};
         Arrays.sort(lengths);
         System.out.println(lengths[0] + ' ' + lengths[1]);
      }
   }
}
Question 5. (20 pts)
Complete the following program so that it:
1. reads a string
2. checks if its first character is a lowercase English character (a - z) or not.
3. if the first character of the string is a lowercase English character, capitalizes the first character, and then outputs the revised string. Otherwise, outputs the original string directly.

For example:
Input = "hello" output = "Hello"
Input = "World" output = "World"
Input = "+aaa" output = "+aaa"

```java
import java.util.Scanner;
public class Test4 {
    public static void main(String[] args) {
        Scanner in = new Scanner(System.in);
        String a;
        a = in.next();
```
```