CS 101 Fall 2006 Midterm 1 Name: _____ Email ID: _____

You only need to write your name and e-mail ID on the first page.

This exam is CLOSED text book, closed-notes, closed-calculator, closed-neighbor, etc. Questions are worth different amounts, so be sure to look over all the questions and plan your time accordingly. Please sign the honor pledge here:

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Note: When an integer type is required use `int`*, when a floating-point type is required use* `double`*. If we don't specify an aspect of the problem, you can choose it.*

Note: If you are still writing on the exam after "pens down" is called – even if it is just to write your name – then you will receive a zero on this exam. No exceptions!

1. [3 points] What lab section are you in?

____ CS 101-E

____ CS 101-2 (lab 7:00–8:30 p.m. Thu)

____ CS 101-3 (lab noon–1:30 p.m. Fri)

____ CS 101-4 (lab 2:00–3:30 p.m. Fri)

____ CS 101-5 (lab 10:00–11:30 a.m. Fri)

____ CS 101-6 (lab 2:00–3:30 p.m. Thu)

2. [8 points] Consider the following now familiar statement in the Java language: *Scanner stdin = new Scanner(System.in);* Answer the following as true or false (don't answer T or F – you need to write the FULL word to get credit).

   a. Scanner is the name of an object, not a class. Answer: _____

   b. The word *stdin* is a Java reserved word. Answer: _____

   c. The word *new* can be the name of a variable. Answer: _____

   d. The word *New* can be the name of a variable (notice the capitalization) Answer: _____

3. [8 points] Consider the following statement: *double x = 3 / 2;*

   a. What does the '=' sign do in this statement?

   b. What value and *type* of value does the expression to the right of the '=' sign evaluate to?

   c. What value ends up being stored in *x*?

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4. [10 points] Consider each of the following Java statements. For each one, state the value that will be stored in the variable AND state it's type. If the statement will cause an error, state so.

   a. char a = "a";

   b. String s = 's';

   c. int i =1 + "zero";

   d. String t =1 + "zero";

   e. int j = 1 + 2 + 3 + 4 + 5;

   f. String grok = "Fred" + (21 + 6 % 2);

5. [15 points] What is the value AND TYPE of each of the following Java *expressions?*

   a. 2 / 3

   b. 2.0 / 3

   c. 2.0 / 3.0

   d. 2 / 3 * 4.0

   e. 21 % 8 % 5

   f. (21 % 8) % 5

   g. !true && false

   h. !true || true

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6. [8 points] Consider each of the following names.

a. int
b. String
c. InputStream
d. Scanner
e. boolean
f. real character
g. floater
h. longish
i. zero
j. shorty
k. double
l. bite
m. vector
n. logical
o. physical

Which of the above types are Java *primitive types* (also sometimes called *built-in types*)? Be careful of the spelling! You can circle your answers or write them out.

7. [5 points] Consider the following code sequence. What are the values of the variables *x*, *y* and *z* *after* this code runs?

```
int x;
x = 7;
int y;
y = 3;
int z;
z = 5;
y = z;
z = 4;
```

x's value: _____

y's value: _____

z's value: _____

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8. [5 points] Consider the following code sequence. At the end of this sequence, can the String object referenced by the variable *s* at the beginning of the code segment be garbage-collected? Explain in one brief sentence why or why not.

```
String s = new String("Hello, I'm a string.");
String t = s;
s = null;
```

9. [3 points] A *type* in Java (and in other similar programming languages, by the way) defines a range of possible *values* and a set of *operations* that can be performed on values of that type. For each of the following types, give an example of a possible value of the type and an example of a possible operation on such a value:

   a. int

   b. String

   c. boolean

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10. [15 points] Given the following String declaration, which lists each character in the alphabet:

    String alphabet = “abcdefghijklmnopqrstuvwxyz”;

    What value does each of the following code segments evaluate to? If they result in an error, then state so. Don’t worry about the lack of semi-colons, however.

    a. alphabet.substring (3,4)

    b. alphabet.substring (6)

    c. alphabet.substring (30)

    d. alphabet.indexOf (“c”)

    e. alphabet.indexOf (“6”)

    f. alphabet.trim()

    g. alphabet.charAt(3)

    h. alphabet.length()

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11. [20 points] Write a *complete* Java program in the space below that performs ALL of the following steps:

    a. Read in a String from the keyboard (you can use any of Scanner's methods that will obtain a String)
    b. Read in TWO integers from the keyboard
    c. Compute the product of those two integers. You can assume that the first integer read in will be less than or equal to the second (i.e. they will be entered in sorted order)
    d. Compute the substring from the first entered integer to the second entered integer (you can assume that the values entered will be valid values)
    e. Print out both computed results: the product and the substring

    You don't have to worry about any of the "good programming practices" that are normally done in the homeworks. This means you don't have to comment your code.

    There is skeleton code on the back of this page, and you should write your program there. You only need to write the code that goes inside the main() method.

Write your answer on the back of this page.

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```
import java.util.*;
public class Midterm1 {
     public static void main (String[] args) {









     }
}
```


XX / XX