

Name _____ Date _____

COMP 110 Midterm Practice Test

UNC Honor Pledge: I certify that no unauthorized assistance has been received or given in the completion of this work

Signature _____

You may NOT use any course materials in completing this test.

The test consists of three sections: first, a section of short answer questions; second, a section requiring you to trace a short piece of code and write the output produced by the code; finally, a section requiring you to write code. The second and third sections each provide four questions of different point values. You can choose THREE questions from section two, and TWO questions from section three to be graded. It is possible to attempt greater than or fewer than 100 points, however your final grade will be calculated out of 100 points. Point values are given for each question.

Illegible answers will not receive credit.

Part 1. (40 points) Answer ALL questions

1.) (2 points) What is the value of *var*?

```
double var = (3 / 2) * 2.0;
```

2.) (4 points) List 4 primitive types.

3.) (3 points) Declare a variable to hold the amount of money you have saved for spring break and initialize it to 150.75. Name your Java variable so any programmer would know what value it holds. Your variable name should be at least two words.

4.) (3 points) Declare and calculate a double, averageAge, if you have (as integers) sumAges and totalPeople.

5.) (2 points) Give me two *good* reasons why you should always comment your code.

6.) (2 points) Circle the expression you would use? Why?

```
if (myVar == 15)           if(15 == myVar)
```

7.) (2 points) Why is *information hiding* a good thing?

8.) (2 point) The two values of a bit are ____ and ____ .

9.) (3 points) Explain how and when to use each of the following?

a.) =

b.) ==

c.) equals()

10.) (2) Suppose you have the variable *s* of type String that has been initialized to “Spring break! Woo!” Write the data stored in *s* and place the index of each character below the string.

11.) (5) Give the return *type* and *value* for the following method calls on *s* as defined in problem 10.

a.) `s.length();`

b.) `s.charAt(8);`

c.) `s.indexOf("!");`

d.) `s.lastIndexOf("r");`

e.) `s.substring(14);`

12.) (10 points) In the code that follows, underline all Classes, circle all objects, draw boxes around all methods, and draw a line through all arguments.

```
Scanner sc = new Scanner(System.in);

System.out.println("Do you think exams are fun?");

String s = sc.nextLine();

if(s.equals("yes"))
{
    System.out.print("Really?");
}
else if(s.equals("no"))
{
    String s2 = new String("me neither");

    System.out.print(s2);
}
```

Part 2. (30 points) Choose any THREE questions.

For questions 13-16, write the output for the piece of code if it compiles. If it does not compile, tell me what error I made.

13.) (8 points)

```
int i = 4;
int total = 0;
while (i < 7)
{
    int j = i;
    j = (j * 4) % 15;
    total += j;
    System.out.print(j + " + ");
    i++;
}
total += j;
System.out.print( j + "= " + total);
```

14.) (10 points)

```
for(int i = 1; i < 8; i += 3)
    for(int j = 8; j > i; j -= 2)
        System.out.print(j + " ");
```

15.) (12 points) Given the input order:
4 10 17 1 2 7 20 100

```
Scanner sc = new Scanner(System.in);
int sum = 0;
int a = sc.nextInt();
do
{
    if (a % 3 == 1)
    {
        sum += a;
        System.out.print(a + " ");
    }
    else
    {
        sum += 2*a;
        System.out.print(2*a + " ");
    }
    System.out.print("+ ");
    a = sc.nextInt();
}while (!(sum > 50));

System.out.println("= " + sum);
```

16.) (15 points) Note: methodFun can be called from main without an object because the method is in the same class as main.

```
public static void methodFun(int x, int y)
{
    String s = null;
    switch ((x + y) % 5)
    {
        case 4: s = " compile again";
                break;
        case 3: s = " big bugs";
                break;
        case 1: s = "fix one bug,";
                break;
        case 2: s = " little bugs";
                break;
        case 0: s = "fix a bug";
                break;
        default:
                break;
    }
    System.out.print(s);
}

public static void main(String[] args)
{
    int x = 3, y = 4, z = 4;

    if ( (z < x) && (y < z) ) System.out.print("Go Heels");
    else System.out.print((x * y * z + 52));

    while (z != 0)
    {
        if ((x - y) >= 0)
        {
            if (x < 9)
            {
                System.out.print(" in the code\n" + (25*x-25));
                methodFun(z-1, x);
                System.out.println("\n");
            }
            else
                methodFun(x,z);
            x += 4;
        }
        else
        {
            methodFun(z,x);
            x += 2;
        }
        z --;
    }
    System.out.print("\n" + ((y * 25) + (z + 1)));
    methodFun(z,x);
    System.out.print(" in the code...");
}
}
```

Part 3. (30 points) Choose any TWO questions

17.) (10 points) Complete the method *pow2* (using a loop) to calculate and return the value 2^n . Assume *n* is a non-negative number.

```
public int pow2(int n)
{
```

```
}
```

18.) (15 points) Write the code for removing the first and last word of any string. (Example: “Spring break! Woo! Hoo!” would return “break! Woo!”) Do not worry about error checking. I will not take off for simple syntax or off-by-one errors. You should only need methods from problem 11.

19.) (20 points) The Fibonacci sequence is defined such that a number in the sequence is the sum of the previous two number in the sequence such that the first two numbers are 0, 1.

The Fibonacci sequence: 0, 1, 1, 2, 3, 5, 8, 13, 21, ...

Write a function, `fib` that takes an integer as input and displays the Fibonacci sequence to the first value greater than the input.

Example: `fib(6)` would display 0, 1, 1, 2, 3, 5, 8