ITCS 2214 – Data Structures

**Java Pretest and Self Assessment**

**Fill In the Blank (2 pts each)**

1. The collection of prewritten programs that define how we can use the language and are available for our use is known as the Java \_\_\_\_\_\_\_\_\_\_.
2. A developmental interface where we write, compile, and execute our programs is known as a(n) \_\_\_\_\_\_\_\_\_\_.
3. A variable’s \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ specifies what type of information it will hold.
4. A \_\_\_\_\_\_\_\_\_\_\_\_ is a location in memory or a container for a value.
5. The following loop will iterate \_\_\_\_\_\_ times?

for(int counter = 1; counter <= 10; counter ++)

1. The following method will return a value of \_\_\_\_\_\_\_\_\_ data type.

public static double divideNums(int num1, int num2)

1. The following method accepts \_\_\_\_\_(number) arguments.

public static int addNums(int height, int weight)

1. The statement that tells a program to go to a specified method and execute it is called a \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_.
2. The following code passes \_\_\_\_\_\_\_\_(number) arguments to the getAverage method.

average = getAverage(high, low, middle);

1. The \_\_\_\_\_\_\_\_\_ keyword tells us that the method returns no value.

**Interpret the Code (3 pts each)**

Analyze each of the following code snippets and determine the output for each.

1. int numOfBooks = 20;

int numOfStudents = 22;

if(numOfBooks > numOfStudents)

System.out.print(“We have enough books.”);

else

System.out.print(“We are short on books.”);

1. double distTilEmpty = 28.32;

double distTilHome = 21.53;

double distToGasStation = 18.2;

if(distTilEmpty < disTilHome)

if(distTilEmpty < distToGasStation)

System.out.print(“We will run out of gas.”);

else

System.out.print(“We can make it to a gas station.”);

else

System.out.print(“We will make it home.”);

1. int counter = 3;

for(int outer = 1; outer <= 3; outer ++){

for(int inner = 1; inner <=3; inner++){

counter++;

}

}

System.out.print(counter);

1. int counter = 1;

double length = 1.5;

while (counter <= 10){

length += 1.5;

counter += 2;

}

System.out.print(length);

**Boolean Algebra (4 pts each)**

1. The Boolean Expression: **!(A || B)** is equivalent to which of the following?
   1. A != B
   2. !A || B
   3. A && B
   4. !A || !B
   5. !A && !B
2. The Boolean Expression: **!((A < B) && (C > D))** is equivalent to which of the following?

* 1. (A < B) || (C > D)
  2. (A >= B) && (C <= D)
  3. (A >= B) || (C <= D)
  4. (A > B) && (C < D)
  5. (A > B) || (C < D)

**Programming (6 pts each)**

1. Write the code that creates an object of the Scanner class. Use that object to take a String variable name, and set it equal to what the user types into the keyboard.
2. Write an if statement that outputs the message “Passed!” if the variable grade is greater than 69, and “Failed!” if it is not.
3. Write an if statement that assigns 50 to the variable x when the variable y is between 10 and 20.
4. Write a while loop that asks the user for a number while the user does not enter -1. You need to create an object of the Scanner class, and use it to store the number they enter into the number variable.
5. Write a for loop that displays the numbers 1 – 9, each on a separate line.
6. Write a method call to the sayHello method. Pass it no arguments. The sayHello method does not return a value.
7. Write a method call to the addNumbers method. Pass it two integer variables that you create and initialize. The addNumbers method does not return a value.
8. Write a method call to the getAverage method. Pass it three double variables that you create and initialize. Use a fourth variable called average (double), and set it equal to whatever getAverage returns.
9. Write a method header for the calculateGrade method. It should accept two integer variables, and return a value of double data type.
10. Write a method header for the sayHello method. It should accept no arguments, and return nothing.

**Bonus Question (2 points)**

Base on the following code, what data type does the determineHeight method return?

double armLength = 18.3;

double legLength = 20.5;

int bodyLength = 13;

int age = 15;

double height = determineHeight(armLength, legLength, bodyLength, age);