PART B – JAVA BASICS

1. What are the syntax and semantics of a programming language? Give at least one example each.

Syntax of programming language refers the arrangement of words and punctuation that are legal in the language. is it writing code in with a combination of symbols and set of words in the allowed arrangement of words and punctuations that can be passed as instructions for a computer to understand.

In java a method “max” would defined as - public int max(int x, int z). however in python the method would defined as - def max(self).

Semantics of a programming language refers to the meaning behind the written code following the syntax rules of that language. Simply it describes what s describes what happens when you run the program.

Int a = 1000; would mean assign the integer variable a to the value of 1000.

1. What steps must a programmer’s code go through to create an executable Java program?

The code starts off a java program, this is the source code. The source code file ending with a .java extension is passed on to a compiler then is converted into a java bytecode assuming there are no error in the code. Once the bytecode is created with the .class extension it can be read by a java virtual machine which coverts it to machine code readable by the processing unit of a computer and outputted for the user, the output is then recognized as an executable Java program

1. List three primitive data types Java supports. Indicate the kind of values (i.e. bit capacity) each type can store.

Int – 32bit

byte – 8 bit

Float – 32 bit

1. What is the value of the variable c in the statements that follow?

String phrase = "Make hay while the sun is shining.";

char c = phrase.charAt(10);

Answer: c = “h”

1. What is the output of the following Java statements?

String str = "Java Programming!";

1. System.out.println(str.equals("Java Programming!"));

Ans: True

ii. System.out.print(str.toLowerCase());

Ans java programming!

iii. System.out.print(str.toUpperCase());

Ans JAVA PROGRAMMING!

iv. System.out.print(str.substring(5,8));

Ans Prog

v. System.out.println(str.lastIndexOf("m"));

Ans 12

PART C – JAVA CHALLENGE [20 Points]

Create a java program in a file named Tester.java (using any editor of your

choice) such that:

a. when user calls a method, multiplicationTable(), with parameter n,

where n is a number, it displays the multiplication table for that number up to n\*12.

b. when user calls a method, factorial(), and passes a parameter, fact,

then the factorial should be computed e.g., fact=4 should compute the factorial of 4

(which is 4 x 3 x 2 x 1)

// importing libraries  
package com.company;  
import java.util.Arrays;  
  
//main class  
public class Tester {  
  
 */\*\*  
 \* displays the multiplication table for that number up to n\*12.  
 \** ***@param*** *n the multipling factor  
 \** ***@return*** *returns an array of n up to n\*12.  
 \*/* public static int[] multiplicationTable(int n){  
 // declares an Array of integers.  
  
 int[] results = new int[12];  
  
 for (int i = 0; i < results.length ; i++){  
 results[i] = n \* (i + 1);  
 }  
 return results;  
 }  
  
 */\*\*  
 \* calculates the factorial of a given number  
 \** ***@param*** *fact the number for the factorial  
 \** ***@return*** *returns the value of the factorial  
 \*/* public static int factorial(int fact){  
 if (fact == 0)  
 return 1;  
 else  
 return(fact \* factorial(fact-1));  
 }  
  
  
 public static void main(String[] args) {  
 System.out.println(Arrays.toString(multiplicationTable(7)));  
 System.out.println(factorial(4));  
 }  
}