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CPS 150 02 – Algorithms and Programming 1

Lab 7

9/24/2020

**Problem 1**

A screenshot of text

Description automatically generated

When the code above is run, it will result in a compile-time error. More specifically, it says that the line System.out.println(“Finished adding…”); is an unreachable statement. This occurs because there is a return statement directly above this line in the method sum. When a method executes a return statement, the method will terminate and go back to the main method without running what is below the return statement. As a result, when the method sum is called in the main method, the sum method only returns a + b (or x + y in this case), and it does not execute the print statement on the last line of the sum method. This is what yields an error when running. If you wanted to fix this issue, you could either completely delete the print statement at the end of the sum method or you could simply move it to the end of the main method.

**Problem 2**

A screenshot of a cell phone

Description automatically generated  
As mentioned, this program violates a basic design principle by assigning 5 to a and 6 to b. The program will still run, but due to these assignments, the program is quite bad and does not work as it should. Because the method sum is always returning a + b, it will always return 11 unless a and b are reassigned new values inside of the method. So, when the sum method is called in the print statement in the main method, it will end up printing 11 as the sum regardless of what x and y are assigned to in the main method. So, x and y can be changed in the main method and the output will not be affected as long as a and b are not assigned new values in the sum method. In the end, the assignments for a and b have major side effects on the main method as they make the variables x and y insignificant, and therefore they make the program ineffective.

**Problem 3 Algorithm**

1. Start the program
2. Import scanner
3. Prompt the user to input a value for the temperature in degrees Celsius
4. Declare a double variable to store the value of degrees Celsius input by user
5. Create a separate method that will be used to convert the temperature to degrees Fahrenheit – will take in a double x and be called in main method
6. Declare a double variable for Fahrenheit that calculates the temperature – it should be equal to (9 \* x) / 5 + 32
7. Print the converted temperature in degrees Fahrenheit
8. End the converter method
9. Call the converter method in the main method using the double variable for degrees Celsius
10. End the main method
11. End the program

**Problem 3 Running Screenshot**

**A screenshot of a cell phone

Description automatically generated**

**Problem 3 Code**

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CelsiusToFahrenheit: number; number

program takes in the temperature in degrees Celsius from the user and

calculates and outputs the temperature in degrees Fahrenheit

Fahrenheit = (9/5)(Celsius)+32

ex1: user inputs 0 - program outputs 32

ex2: user inputs 8.2 - program outputs 46.76

ex3: user inputs -12 - program outputs 10.4

ex4: user inputs x - program outputs error

ex5: user inputs -22 - program outputs -7.6

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import java.util.Scanner;

public class CelsiusToFahrenheit {

public static void main(String [] args){

//Import scanner

Scanner input = new Scanner(System.in);

//prompt the user to input a value for the temperature in degrees Celsius

System.out.print("Enter the temperature (in degrees Celsius): ");

//declare double variable to store the degrees Celsius input by user

double celsius = input.nextDouble();

//call converter method and use user input

converter(celsius);

} //end main method

//create separate method that takes in a double for converting temperature to Fahrenheit

public static void converter(double x){

//declare double variable for Fahrenheit that calculates temperature using the correct equation

double fahrenheit = (9 \* x) / 5 + 32;

//print the new converted temperature in degrees Fahrenheit

System.out.println("The temperature is " + fahrenheit + " degrees Fahrenheit");

} //end converter method

} //end program