COSC 1435 Introduction to Problem Solving with Computers I

Homework Assignment 1

*Name: Kevin White*

Algorithms

1. Define each of the following terms:

a. Algorithm : A set of steps an object can follow to complete a problem

b. Program : An algorithm set up in a way a computer can understand, usually through a programming language

1. What is the difference between a programming language and a pseudocode?
   1. A programing Language is very conventional and needs to be set up in a specific way, pseudocode in unconventional and made easier to read for humans.
2. Examine the algorithm below for calculating the *cost* of building a cement driveway, given its *length* and *width* in feet, at $2 per square foot and including a sales tax of 5%.

area 🡨 length x width

cost 🡨 1.05 x 2 x area

Print cost

Change this algorithm so that an extra charge of $1 per square foot is made for any driveway that has more than 1000 square feet.

area 🡨 length x width

cost 🡨 1.05 x 2 x area

if(area > 1000)

area 🡨 area – 1000

cost 🡨 cost + 1.05\*area

End If

Print cost

1. Write an algorithm in pseudocode that gets an input from the user to convert the length in feet to centimeters and print out the result.

Print “Give ne a number in Feet”

Get Feet

Centimeters 🡨 feet \* 30.48

Print “that is equal to” centimeters “centimeters.”

1. Write an algorithm in pseudocode to add the prices of an order of fries, a burger and a drink. Calculate the tax, at 8% rate, and print the total.

Get friesPrice, burgerPrice, drinkPrice

preTax 🡨 friesPrice + burgerPrice + drinkPrice

totalCost 🡨 preTax \* 1.08

Print totalCost

1. Write an algorithm in pseudocode to change a numeric grade to a letter grade based on the grade ranges in this course syllabus.

Get grade

if(grade > 89)

Print “A”

Else if(grade > 79)

Print “ B”

Else if(grade > 69)

Print “C”

Else if(grade > 59)

Print “D”

Else

Print “F”

End if

end

1. Write an algorithm in pseudocode to compute the distance traveled and the average miles per gallon on a trip when the user is asked to enter the number of gallons used and the starting and ending mileage readings on the odometer.

Print “Give Starting and Ending mileage on odometer”

Get startMile, endMile

Print “Give the number of gallons used”

Get gallons

drivenMile 🡨 endMile – start Mile

milePerGal 🡨Mile / gallons

Print “You used ” milePerGal “ miles per gallon and drove a total of ” drivenMile “ miles”

1. What would be printed following this pseudocode? Write output(s) on separate lines.

X ← 3

Print the value of X

Y ← 5

if (X < Y)

Print “6”

else

Print “7”

end if

OUTPUTS:

3

6

**What to submit?**

* Please use this document to submit your answers (Save As). Write your answers under the respective questions. Make sure you write your name in the designated space.
* The name of the file must be **firstInitialLastNameAssign1.docx.** Example, for the name Joe Smith, the file name should be **jSmithAssign1.docx**
* Submit the file to Blackboard by the due date