# Homework 1 Programming Basics Answers

# 1. Use Google to find the formula for converting pounds to kilos and kilos to pounds. Write a pseudocode algorithm that prompts the user to enter a kilo value and a pound value. The program will then convert the kilos to pounds and the pounds to kilos. It will then output both values. [4]

OUTPUT “Enter a value in kilos”

kiloValue 🡨USERINPUT

OUTPUT “Enter a value in pounds”

poundValue 🡨USERINPUT

kiloToPounds 🡨 kiloValue \* 2.20462

poundsToKilos 🡨 poundValue \* 0.453592

#alternative calculation

kiloToPounds 🡨 kiloValue / 0.453592

poundsToKilos 🡨 poundValue / 2.20462

OUTPUT “The weight in pounds is: “ + kiloToPounds

OUTPUT “The weight in kilos is: “ + poundsToKilos

# 2. Write a pseudocode algorithm that prompts the user to enter a three-digit number and outputs the hundreds, tens and units. Example 523 will output 5 hundreds, 2 tens and 3 units. Use what you learned about division. [6]

OUTPUT “Enter a three digit number”

threeDigitNumber 🡨USERINPUT

hundreds 🡨threeDigitNumber DIV 100 #NOTE integer division

tens 🡨(threeDigitNumber MOD 100) DIV 10

units 🡨(threeDigitNumber MOD 100) MOD 10

OUTPUT hundreds + “ hundreds”

OUTPUT tens + “ tens”

OUTPUT “ and ” + units + “ units”

# 3. When validating a new password on a website the programmer might use a string function to determine its length.

#  (a) Why? [2]

 To check that the length is greater than or equal to the minimum allowed and less than or equal to the maximum allowed.

 (b) Write a pseudocode statement to do this, using an appropriate function. [1]

 passwordLength 🡨 len(password)

# 4. When would you use a variable and when might you use a constant? [2]

A variable would be used when the value might need to change while the program is running. A constant would be used when the data wouldn’t be changed while the programming is running.

[Total 15 marks]