**CSS 225 Module 2 Lab Activity – Good Programming Habits**

**Deliverables:**

* Within this document add pseudocode and flowcharts for problems 1, 2, and 3.
* Give naming scheme examples for problems 4, 5, and 6.
* Give found resources for problem 7

**Practice Pseudocode and Flowcharts:**

For the flowcharts we will be using a web app for drawing: [draw.io](file:///C:\Users\vp431\Downloads\draw.io)

Write Pseudocode and draw flowcharts for the following programs:

1 – A program that prints “Hello World” to the screen.

A white rectangle with black text

AI-generated content may be incorrect.

BEGIN

PRINT "Hello World"

END

2 – A program that asks the user for their name and greets them with their name.

A screenshot of a phone

AI-generated content may be incorrect.

BEGIN

PROMPT "Enter your name: "

READ name

PRINT "Hello, " + name

END

3 – A program that asks the user for two numbers and gives the user the possibility to choose between computing the sum and computing the product

A black and white screen shot of a diamond

AI-generated content may be incorrect.

BEGIN

PROMPT "Enter first number: "

READ num1

PROMPT "Enter second number: "

READ num2

PROMPT "Type 'sum' to add or 'product' to multiply: "

READ choice

IF choice = "sum" THEN

result = num1 + num2

PRINT "Result: " + result

ELSE IF choice = "product" THEN

result = num1 \* num2

PRINT "Result: " + result

ELSE

PRINT "Invalid choice"

END IF

END

**Naming Schemes**

You are writing a new program and want to use an obvious and consistent naming scheme for each variable you will create.

4 – A program that calculates the users BMI (Body Mass Index). You will need to collect their height and weight. What would you name these input variables? What would you name the output variable?

BEGIN

PROMPT "Enter height in meters: "

READ height

PROMPT "Enter weight in kilograms: "

READ weight

bmi = weight / (height \* height)

PRINT "Your BMI is: " + bmi

END

height = float(input("Enter your height in meters: "))

weight = float(input("Enter your weight in kilograms: "))

bmi = weight / (height \* height)

print("Your BMI is:", bmi)

5 – A program that checks if the user for their login and password and checks it against a database. What names would you give these variables?

BEGIN

PROMPT "Enter username: "

READ username

PROMPT "Enter password: "

READ password

SET savedUsername = "admin"

SET savedPassword = "1234"

IF username = savedUsername AND password = savedPassword THEN

PRINT "Login successful"

ELSE

PRINT "Login failed"

END IF

END

username = input("Enter username: ")

password = input("Enter password: ")

# pretend we have saved values

saved\_username = "admin"

saved\_password = "1234"

if username == saved\_username and password == saved\_password:

print("Login successful")

else:

print("Login failed")

6 – A program that automatically converts English text to Morse code and vice versa. What names would you give the variables in this program?

BEGIN

CREATE dictionary with letters A–Z mapped to Morse code

PROMPT "Enter text: "

READ text

SET morse = ""

FOR each letter in text DO

IF letter exists in dictionary THEN

morse = morse + dictionary[letter] + " "

ELSE

morse = morse + " "

END IF

END FOR

PRINT "Morse code: " + morse

END

morse\_dict = {

"A": ".-", "B": "-...", "C": "-.-.", "D": "-..", "E": ".",

"F": "..-.", "G": "--.", "H": "....", "I": "..", "J": ".---",

"K": "-.-", "L": ".-..", "M": "--", "N": "-.", "O": "---",

"P": ".--.", "Q": "--.-", "R": ".-.", "S": "...", "T": "-",

"U": "..-", "V": "...-", "W": ".--", "X": "-..-", "Y": "-.--",

"Z": "--.."

}

text = input("Enter text (letters only): ").upper()

morse = ""

for letter in text:

if letter in morse\_dict:

morse += morse\_dict[letter] + " "

else:

morse += " " # space for unknown characters

print("Morse code:", morse)

**Resources**

It is important to develop a list of resources you can use to help you solve problems. Do a web search and find three sources that have not been mentioned in the slides or books.

7– Stack Overflow

8 – W3Schools

9 – GeeksforGeeks