ASSIGNEMNT-20

1. Closure-based Calculator

Write a Groovy program that defines a method calculate(a, b, operation) that takes two numbers and a closure. Use this to:

- **Add two numbers**
- **Subtract two numbers**
- **Multiply two numbers**

Program:

```
def calculate(a, b, operation) {
   operation(a, b)
}
def add = { x, y -> x + y }
def subtract = { x, y -> x - y }
def multiply = { x, y -> x * y }
println "Addition: " + calculate(10, 5, add)
println "Subtraction: " + calculate(10, 5, subtract)
println "Multiplication: " + calculate(10, 5, multiply)
```

2. Word Frequency Counter Ask the user for a sentence and count how many times each word appears using a map.

Input: "hello world hello"

Output: hello → 2 world → 1

Program:

```
println "Enter a sentence:"
def input = System.console()?.readLine() ?: "hello world hello"
def words = input.split(" ")
def wordCount = [:]
```

```
words.each { word ->
    wordCount[word] = wordCount.get(word, 0) + 1
}
println "Word Frequencies:"
wordCount.each { k, v ->
    println "$k → $v"
}
```

3. Group Strings by Length Given a list of words, group them into a map where the key is the word length and the value is a list of words with that length.

Input: ["hi", "hello", "bye", "good", "sun"]

Output:

2 → ["hi"]

3 → ["bye", "sun"]

4 → ["good"]

5 → ["hello"]

Program:

```
def words = ["hi", "hello", "bye", "good", "sun"]
def grouped = [:]
words.each { word ->
    def length = word.length()
    grouped[length] = grouped.get(length, []) + word
}
println "Grouped by Length:"
grouped.each { k, v ->
    println "$k → $v"
}
```