### **Lab 1:** **Variable, Data Types and Conversion in Swift**

Here's a lab exercise focused on variables and data types in Swift. This exercise includes declaring and initializing different data types, performing basic operations, and converting between types.

**Part 1: Basic Data Types**

1. **Integers and Doubles:**

* Declare an integer variable age and initialize it with your age.
* Declare a double variable height and initialize it with your height in meters.
* Print both values.

var age: Int = 25

var height: Double = 1.75

print("Age: \(age)")

print("Height: \(height)")

1. **Strings:**

* Declare a string variable firstName and initialize it with your first name.
* Declare another string variable lastName and initialize it with your last name.
* Concatenate these strings to form your full name and print it.

var firstName: String = "John"

var lastName: String = "Doe"

var fullName: String = firstName + " " + lastName

print("Full Name: \(fullName)")

1. **Booleans:**

* Declare a boolean variable isStudent and initialize it with a value indicating whether you are a student.
* Print the value of isStudent.

var isStudent: Bool = true

print("Is Student: \(isStudent)")

**Part 2: Type Conversion**

1. **String to Integer:**

* Declare a string variable numberString with a numeric value.
* Convert numberString to an integer and print the result.

let numberString: String = "123"

if let number = Int(numberString) {

print("The integer value is \(number).")

} else {

print("Conversion failed.")

}

1. **Integer to String:**

* Convert the integer age to a string and concatenate it with another string to form a sentence.
* Print the sentence.

let ageString = String(age)

let message = "I am " + ageString + " years old."

print(message)

1. **Double to String:**

* Convert the double height to a string and concatenate it with another string to form a sentence.
* Print the sentence.

let heightString = String(height)

let heightMessage = "My height is " + heightString + " meters."

print(heightMessage)

1. **String to Double:**

* Declare a string variable weightString with a numeric value.
* Convert weightString to a double and print the result.

let weightString: String = "70.5"

if let weight = Double(weightString) {

print("The double value is \(weight).")

} else {

print("Conversion failed.")

}

**Part 3: Arithmetic Operations**

1. **Basic Arithmetic:**

* Declare two integer variables a and b, and initialize them with values.
* Perform addition, subtraction, multiplication, and division operations on these variables and print the results.

var a: Int = 10

var b: Int = 5

let sum = a + b

let difference = a - b

let product = a \* b

let quotient = a / b

print("Sum: \(sum)")

print("Difference: \(difference)")

print("Product: \(product)")

print("Quotient: \(quotient)")

1. **Compound Assignment:**

* Declare an integer variable counter and initialize it with a value.
* Use compound assignment operators (+=, -=, \*=, /=, %=) to modify the value of counter and print the results after each operation.

var counter: Int = 10

counter += 5

print("After += 5: \(counter)")

counter -= 3

print("After -= 3: \(counter)")

counter \*= 2

print("After \*= 2: \(counter)")

counter /= 4

print("After /= 4: \(counter)")

counter %= 3

print("After %= 3: \(counter)")

**Part 4: String Manipulation**

1. **String Interpolation:**

* Use string interpolation to create a sentence that includes your firstName, lastName, age, and height.
* Print the sentence.

let introduction = "My name is \(firstName) \(lastName), I am \(age) years old, and my height is \(height) meters."

print(introduction)

1. **String Length:**

* Declare a string variable quote with a quote of your choice.
* Print the length of the quote string.

let quote: String = "The only limit to our realization of tomorrow is our doubts of today."

let quoteLength = quote.count

print("The length of the quote is \(quoteLength) characters.")

1. **Uppercase and Lowercase:**

* Convert the quote string to uppercase and lowercase, then print both results.

let uppercaseQuote = quote.uppercased()

let lowercaseQuote = quote.lowercased()

print("Uppercase: \(uppercaseQuote)")

print("Lowercase: \(lowercaseQuote)")

**Summary**

This exercise covers basic data types, type conversions, arithmetic operations, and string manipulation in Swift without using optionals or collections. By completing these tasks, you will become familiar with declaring and using different types of data, performing basic operations, and manipulating strings in Swift. Experiment with additional operations and modifications to further enhance your understanding of Swift variables and data types.