**R Programming Assignment: Basic Calculations, Variables, Vectors, and Data Management Instructions**:

1. Write the R code for each question in your R environment and run the code to see the results. 2. Submit both your R code and the output in a document.

**1. Basic Calculations**

a. Perform the following calculations in R:

∙ 1+2

∙ (100+30)/13

∙ 3^4+2^4

∙ (2^2 -1)\*4/3

b. Evaluate the following step-by-step:

∙ 1+2×3

**2. Working with Variables**

a. Assign the result of 1+3 to a variable x and then perform the following operations: ∙ Display the value of x.

∙ Calculate x2

∙ Multiply x by 2.

b. Overwrite the variable x with 2, and create another variable y as 3. Perform the following operations: ∙ Display the values of x and y.

∙ Calculate x+y

∙ Calculate x\*y

∙ Calculate x−y

**3. Vectors and Calculations**

a. Create two vectors x1 and x2 as follows:

x1 <- c(1, 2, 3, 4, 5)

x2 <- c(1, 3, 5, 7, 9)

b. Perform the following operations:

∙ Display the values of x1 and x2.

∙ Add x1 and x2.

∙ Multiply x1 by x2.

c. Calculate the following statistics for x1:

∙ Mean

∙ Standard deviation

∙ Median

∙ Minimum value

∙ Maximum value

∙ Sum of all elements

∙ Range (minimum and maximum)

**5. Directory Management and Data Export/Import**

a. Get the current working directory:

getwd()

b. Set a new working directory to a folder on your desktop (change the path if necessary): setwd("")

**6. Saving and Reading Data**

a. Use the built-in iris dataset and perform the following:

∙ Display the iris dataset using View().

∙ Save the dataset as a CSV file:

write.csv(iris, "irisdata.csv", row.names = FALSE)

b. Read the saved CSV file and perform the following:

∙ Load the dataset:

irisdata <- read.csv("irisdata.csv")

∙ Display the first six rows and the last six rows of the dataset.

∙ Check the structure of the dataset using nrow(), ncol(), and dim().

**7. Summary Statistics and Data Manipulation**

a. Obtain summary statistics for the irisdata dataset:

b. Add a new column ratio\_sepal to the dataset, which is the ratio of Sepal.Length to Sepal.Width. View the first six rows:

**8. Exercise: Ratio Calculation**

a. Add a new column ratio\_petal, which is the ratio of Petal.Length to Petal.Width. View the first six rows.

**9. Species-Specific Analysis**

a. Calculate the mean and standard deviation of Sepal.Length for each species in the dataset: b. Extract data for species setosa and obtain a summary of this subset:

**Submission**:

∙ Upload your R script and the results of each section.

∙ Be prepared to discuss the logic behind your calculations in the next class.