Introduction to R

Worksheet

DAY 1

1. You are monitoring the growth stages of a plant. Create a vector with the stages: "Seedling", "Vegetative", "Flowering", and "Harvest". Then, check the second stage in the vector.
2. You recorded the heights (in cm) of three plants: 45, 60, and 72. Create a vector with these values and increase each height by 10 cm to simulate growth over time.
3. The yields (in tons per hectare) for wheat and corn are:
   - Wheat: 3.2 (Field A), 3.5 (Field B)
   - Corn: 4.1 (Field A), 4.4 (Field B)

   Create a matrix with this data, and retrieve the yield of corn in Field A.
4. You are recording field data. Create a data frame with the following:
   - Field: "Field A", "Field B", "Field C"
   - Area (hectares): 5, 10, 8
   - Crop: "wheat", "corn", "soybean"

   Retrieve the crop grown in Field B.

DAY 1

5. The average rainfall (in mm) for three regions is recorded: 45, 75, and 30. Create a vector for these values and check:
   - Which regions had rainfall above 50 mm?
   - Did any region have exactly 30 mm?
6. A soil sample is tested for pH levels in three locations: 6.8, 7.2, and 5.9. Create a vector for the pH values and check:
   - Is the pH of all locations greater than 6?
   - Is the pH of any location less than 6?
7. Using the matrix from Question 3, calculate the average yield of wheat across all fields.
8. Write a function called `fahrenheit_to_celsius()` that takes one argument, `fahrenheit`, and converts it to Celsius using the formula:

$$celsius = (fahrenheit - 32) \times \frac{5}{9}$$

   Call the function to convert $100°$F to Celsius and print the result.

Thank you!