

## Day 03

### Topic Covered: Functions in R

#### Summary:

Today's session focused on functions in R, which are modular blocks of code designed to perform specific tasks. Functions play an important role in code reuse, organization, and simplifying complex operations in data analytics. We learned about user-defined functions and built-in functions, along with different types of functions such as functions without arguments, functions with arguments, default arguments, nested functions, recursion, and how functions interact with global and local variables. Understanding these concepts helps in writing efficient and reusable code for data manipulation, automation, and analysis.

#### New Concepts Learned:

- User-defined functions: Creating reusable code using `function()`
- Function without arguments: Executes predefined tasks without input
- Function with arguments: Accepts input values to perform customized operations
- Default arguments: Use preset values when no input is provided
- Nested functions: Functions written inside another function
- Recursion: A function calling itself repeatedly to solve a problem
- Local vs Global variables: Understanding how variables behave inside and outside a function

#### Activity:

- Practiced writing simple functions without arguments
- Created functions with parameters and used them with different values
- Used default arguments in custom functions
- Wrote nested functions to understand inner and outer scope

- Implemented recursive functions for repetitive tasks
- Observed the difference between global and local variables inside functions

**Challenges Faced:**

Understanding how variable scope works, especially the difference between global and local variables, was slightly confusing. Recursion also required careful control to avoid infinite loops or excessive calls.

**Key Takeaway:**

Functions help create clean, modular, and reusable code in R. Mastering functions is essential for automation, data manipulation, and building efficient data analytics workflows.