

Intro to R Programming

Learning Objectives:

Get an idea of what R is all about and it is such a popular tool among Data Scientists.

Topics Covered:

- What is R?
- Why is it in demand?

Hands-on: No hands-on

Installing and Loading Libraries

Learning Objectives:

In this module you will learn to install R and its components, install and load R libraries and learn about the frequently used libraries.

Topics Covered:

- Installation of R - step by step
- Installing Libraries
- Getting to know important Libraries

Hands-on:

Know how to install R, R Studio and other libraries.

Data Structures in R

Learning Objectives:

Learn about data structures in R.

Topics Covered:

- List
- Vectors
- Arrays
- Matrices
- Factors
- String
- Data Frames

Hands-on:

Write an R Code to understand and implement R Data Structures.

Control & Loop Statements in R

Learning Objectives:

Learn all about loops and control statements in R.

Topics Covered:

- For Loop
- While Loop
- Break Statement
- Next Statements
- Repeat Statement
- if, if...else Statements
- Switch Statement

Hands-on:

Know how to install R, R Studio and other libraries.

Functions in R**Learning Objectives:**

Learn how to write custom functions, nested functions, and functions with arguments

Topics Covered:

- Writing your own functions (UDF)
- Calling R Functions
- Nested Function Calls in R
- Functions with Arguments
- Calling R Functions by passing Arguments

Hands-on:

Learn how to write custom functions, nested functions and functions with arguments

Loop Functions in R**Learning Objectives:**

Learn all about the efficient loop functions available in R which can be written with a single command.

Topics Covered:

- apply
- lapply
- Sapply
- mapply
- tapply

Hands-on:

Work on loop functions available in R.

String Manipulation & Regular Expression in R**Learning Objectives:**

Learn all about string manipulations and regular expressions. The functions can be extremely useful for text or unstructured data manipulations.

Topics Covered:

- stringr()
- grep() & grepl()
- regexpr() & gregexpr()
- regexec()
- sub() & gsub()

Hands-on:

Work on string manipulations and regular expressions.

Working with Data in R**Learning Objectives:**

Learn how to import data from various sources in R and how to write files from R. Also learn how to connect to various databases from R.

Topics Covered:

- Reading data files in R
- Reading data files from other Statistical Software
- Writing files in R
- Connecting to Databases from R
- Data Manipulation & Analysis

Hands-on:

Import data, write files and connect to databases.

Data Manipulation using dplyr**Learning Objectives:**

Manipulate & learn to transform raw data using dplyr. Learn to generate insights from your data.

Topics Covered:

- Clean & Prepare Datasets
- Data Transformations

- Encoding

Hands-on:

Write R code to generate insights from data.

Exploratory Data Analysis

Learning Objectives:

Learn to summarize datasets through descriptive statistics. Use a variety of measurements to better understand you data. Learn to treat missing values. Also, learn how to discover patterns in your data.

Topics Covered:

- Summarize Data
- Statistical analysis of Data
- Extensive Data Exploration for deeper insights
- Missing value treatment
- Quality Analysis

Hands-on:

Write R code to better understand the data.

Data Visualization in R

Learning Objectives:

Learn visualization in R with base and ggplot libraries. Learn Grammar of Graphics in a very structured and easy-to-understand manner.

Topics Covered:

- Visualization with base R
- ggplot2: Grammar of Graphics
- Visualisation using ggplot2

Hands-on:

Write R Code to implement ggplot for data visualization.

Case Study

Learning Objectives:

Explore a case study.

Topics Covered:

- Real-Life Case Study

Hands-on:

Case Study: House Attributes and Sales Price data. Use this data to explore more. Deep Dive into advanced explorations. Analyze and Visualize missing data, treat missing data to missing value imputation. Visualize data with various libraries. Gain deep insights on your data.