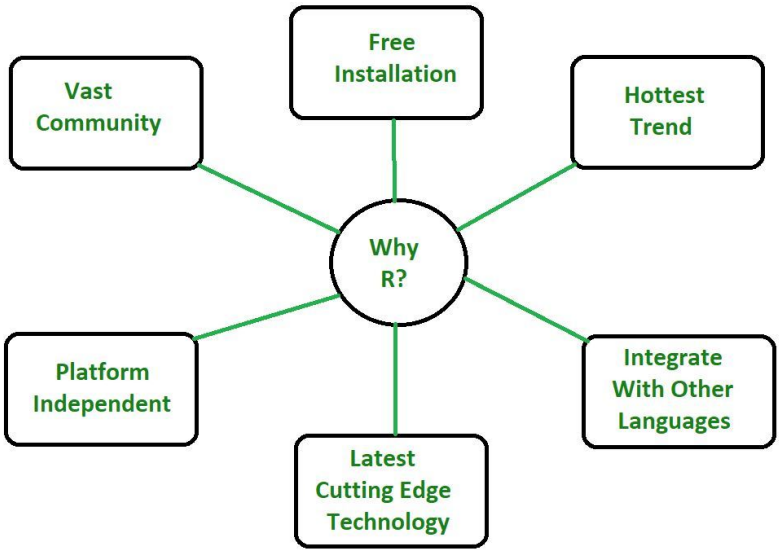
R Programming Language – Introduction

A AmiyaRanjanRout

R is an open-source programming language that is widely used as a statistical software and data analysis tool. R generally comes with the Command-line interface. R is available across widely used platforms like Windows, Linux, and macOS. Also, the R programming language is the latest cutting-edge tool.

It was designed by **Ross Ihaka and Robert Gentleman** at the University of Auckland, New Zealand, and is currently developed by the R Development Core Team. R programming language is an implementation of the S programming language. It also combines with lexical scoping semantics inspired by Scheme. Moreover, the project conceives in 1992, with an initial version released in 1995 and a stable beta version in 2000.

Why R Programming Language?



- R programming is used as a leading tool for machine learning, statistics, and data analysis. Objects, functions, and packages can easily be created by R.
- It's a platform-independent language. This means it can be applied to all operating system.
- It's an open-source free language. That means anyone can install it in any organization without purchasing a license.

- R programming language is not only a statistic package but also allows us to integrate with other languages (C, C++). Thus, you can easily interact with many data sources and statistical packages.
- The R programming language has a vast community of users and it's growing day by day.
- R is currently one of the most requested programming languages in the Data Science job market that makes it the hottest trend nowadays.

Features of R Programming Language

Statistical Features of R:

- **Basic Statistics:** The most common basic statistics terms are the mean, mode, and median. These are all known as "Measures of Central Tendency." So using the R language we can measure central tendency very easily.
- **Static graphics:** R is rich with facilities for creating and developing interesting static graphics. R contains functionality for many plot types including graphic maps, mosaic plots, biplots, and the list goes on.
- **Probability distributions:** Probability distributions play a vital role in statistics and by using R we can easily handle various types of probability distribution such as Binomial Distribution, Normal Distribution, Chi-squared Distribution and many more.
- **Data analysis:** It provides a large, coherent and integrated collection of tools for data analysis.

Programming Features of R:

- **R Packages:** One of the major features of R is it has a wide availability of libraries. R has CRAN(Comprehensive R Archive Network), which is a repository holding more than 10, 0000 packages.
- **Distributed Computing:** Distributed computing is a model in which components of a software system are shared among multiple computers to improve efficiency and

performance. Two new packages **ddR and multidplyr** used for distributed programming in R were released in November 2015.

Programming in R:

Since R is much similar to other widely used languages syntactically, it is easier to code and learn in R. Programs can be written in R in any of the widely used IDE like **R Studio, Rattle, Tinn-R**, etc. After writing the program save the file with the extension **.r**. To run the program use the following command on the command line:

```
R file_name.r
```

Example:

R

```
# R program to print Welcome to GFG!

# Below line will print "Welcome to GFG!"
cat("Welcome to GFG!")
```

Output:

```
Welcome to GFG!
```

Advantages of R:

- R is the most comprehensive statistical analysis package. As new technology and concepts often appear first in R.
- As R programming language is an open source. Thus, you can run R anywhere and at any time.
- R programming language is suitable for GNU/Linux and Windows operating system.
- R programming is cross-platform which runs on any operating system.
- In R, everyone is welcome to provide new packages, bug fixes, and code enhancements.

Disadvantages of R:

- In the R programming language, the standard of some packages is less than perfect.
- Although, R commands give little pressure to memory management. So R programming language may consume all available memory.
- In R basically, nobody to complain if something doesn't work.
- R programming language is much slower than other programming languages such as Python and MATLAB.

Applications of R:

- We use R for Data Science. It gives us a broad variety of libraries related to statistics. It also provides the environment for statistical computing and design.
- R is used by many quantitative analysts as its programming tool. Thus, it helps in data importing and cleaning.
- R is the most prevalent language. So many data analysts and research programmers use it. Hence, it is used as a fundamental tool for finance.
- Tech giants like Google, Facebook, bing, Twitter, Accenture, Wipro and many more using R nowadays.

R and Python both play a major role in data science. It becomes confusing for any newbie to choose the better or the most suitable one among the two, R and Python. So take a look at R vs Python for Data Science to choose which language is more suitable for data science.

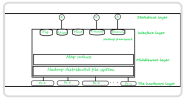
Last Updated : 15 Aug, 2021

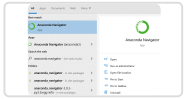
57

Similar Reads

Interesting Facts about R Programming Language

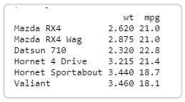
Differences Between MATLAB and R Programming Language


Integration of Hadoop and R Programming Language

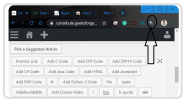

Using R programming language in Jupyter Notebook


Finding Day and Month on a Specific Date in R Language - weekday() and month() function


Single-Table Analysis with dplyr using R Language


Scatter plots in R Language


Datatypes in R language


Web Scraping using R Language


Playing a beep Sound in R Language - beep() Function

Previous Next

Article Contributed By :

AmiyaRanjanRout

A AmiyaRanjanRout Follow

Vote for difficulty

Current difficulty : Easy

Easy | Normal | Medium | Hard | Expert

Improved By : naveenkumarkharwal, varshagumber28

Article Tags : R Language, Write From Home

Improve Article | Report Issue

GeeksforGeeks
A-143, 9th Floor, Sovereign Corporate Tower, Sector-136, Noida, Uttar Pradesh - 201305

feedback@geeksforgeeks.org

Machine Learning Tutorial

Maths For Machine Learning

Pandas Tutorial

NumPy Tutorial

NLP Tutorial

Deep Learning Tutorial

Docker

Kubernetes

Azure

GCP

Competitive Programming

Top DSA for CP

Top 50 Tree Problems

Top 50 Graph Problems

Top 50 Array Problems

Top 50 String Problems

Top 50 DP Problems

Top 15 Websites for CP

System Design

What is System Design

Monolithic and Distributed SD

Scalability in SD

Databases in SD

High Level Design or HLD

Low Level Design or LLD

Top SD Interview Questions

Interview Corner

Company Wise Preparation

Preparation for SDE

Experienced Interviews

Internship Interviews

Competitive Programming

Aptitude Preparation

GfG School

CBSE Notes for Class 8

CBSE Notes for Class 9

CBSE Notes for Class 10

CBSE Notes for Class 11

CBSE Notes for Class 12

English Grammar

Commerce

Accountancy

Business Studies

Economics

Management

Income Tax

Finance

UPSC

Polity Notes

Geography Notes

History Notes

Science and Technology Notes

Economics Notes

Important Topics in Ethics

UPSC Previous Year Papers

SSC/ BANKING

SSC CGL Syllabus

SBI PO Syllabus

SBI Clerk Syllabus

Write & Earn

Write an Article

Improve an Article

Pick Topics to Write

IBPS PO Syllabus

IBPS Clerk Syllabus

Aptitude Questions

SSC CGL Practice Papers

Write Interview Experience

Internships