

Overview of R Language

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CONTENTS

1. Introduction to R Language

3. Reasons to Learn R Language

2. Features of R Language

4. Installation of R and R Studio on Windows

1. Introduction to R Language

Definition and Purpose

What is R?

- R is an interpreted computer programming language.
- It is a software environment for statistical analysis, graphical representation, reporting, and data modeling.
- R is part of the GNU free software project and is based on the S programming language.

History of R Language

1

Development Timeline

- Developed by Ross Ihaka and Robert Gentleman at the University of Auckland, New Zealand.
- The name "R" is derived from the initials of the developers.
- Initial project started in 1992; first version released in 1995.
- Latest version, R 4.0.0, released on April 24, 2020.

2

Key Milestones

- 1991: R language is created.
- 1993: First public announcement of R.
- 1995: Adoption of GNU General Public License.
- 1996: Creation of a public mailing list.
- 1997: Formation of the R Core Group.
- 2000: Release of R Version 1.0.0.
- 2013: Release of R version 3.0.2.
- 2014-2016: Versions 3.2x to 3.3x released.
- 2016: Release of R version 3.4.0.

2. Features of R Language

Programming Capabilities

Comprehensive Language

- Supports procedural programming with functions.
- Supports object-oriented programming with generic functions.

Integration and Compatibility

- Easily integrates with technologies like Hadoop and HDFS.
- Compatible with languages such as C, C++, Python, Java, FORTRAN, and JavaScript.



Open Source and Community

Accessibility

- R is an open-source language, free for anyone to use.
- Over 15,000 packages available on repositories like CRAN, Bioconductor, and GitHub.

Graphics and Performance

1 Graphical Capabilities

- Produces publication-quality graphs and plots.
- Enhanced by packages like ggplot2 and plotly.

2 Performance

- Interpreted language, no compiler needed.
- Cross-platform support, runs on any OS.
- Fast calculations on vectors, arrays, and data frames.

3. Reasons to Learn R Language

Career Opportunities

Job Market

- Approximately 2 million job openings for R programmers globally.
- Roles include data analysts, business analysts, data visualization experts, and business intelligence experts.

Industry Applications

Data Science and Beyond

- Widely used in the Data Science industry.
- Applications in health, finance, banking, manufacturing, and more.

Machine Learning

Advanced Techniques

- Implements best algorithms for machine learning.
- Integration with Keras and TensorFlow.
- Xgboost package available for high-performance modeling.

4. Installation of R and R Studio on Windows

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Installation Steps

- Detailed steps for installing R and R Studio on Windows.
- System requirements and prerequisites for installation.



Thank You