

Guide2Code - R Programming Roadmap

◆ Phase 1: Beginner Level

📌 Topics to Learn:

1. Introduction to R (Installation, RStudio, Basic Syntax)
2. Variables & Data Types (Numeric, Character, Logical, Factors)
3. Vectors, Matrices, Lists & Data Frames
4. Control Flow (if-else, switch-case)
5. Loops (for, while, repeat)
6. Functions & Scope (User-defined Functions, apply() Family)
7. Basic Data Manipulation (subset(), sort(), filter())
8. Importing & Exporting Data (CSV, Excel, JSON)
9. Basic Plotting (Histograms, Bar Charts, Scatter Plots)
10. Debugging & Error Handling (tryCatch(), print(), warnings())

🚀 Beginner Project Ideas:

- 📊 **Basic Data Visualization** – Create bar plots and histograms
- 📈 **Statistical Calculator** – Compute mean, median, and mode
- 📅 **Age Calculator** – Calculate age based on birth year
- 🏆 **Student Grade Analyzer** – Analyze student marks
- 💰 **Basic Financial Dashboard** – Visualize expenses






◆ Phase 2: Intermediate Level

📌 Topics to Learn:

1. Data Manipulation with dplyr (Filtering, Grouping, Summarization)
2. Data Visualization with ggplot2 (Advanced Graphs, Customization)
3. Statistical Analysis (Hypothesis Testing, Regression, ANOVA)
4. Working with Time Series Data (Decomposition, Forecasting)
5. Web Scraping with rvest (Extracting Data from Websites)
6. Working with Databases (DBI, RSQLite)
7. Shiny App Development (Interactive Web Apps with R)

8. Machine Learning Basics (caret, randomForest, glm)
9. Text Analysis (tm, tidytext)
10. Advanced Data Cleaning (tidyverse, janitor)

Intermediate Project Ideas:






-  **E-commerce Sales Analysis** – Analyze online store data
-  **Stock Market Analysis** – Predict trends with time series
-  **Weather Data Visualization** – Analyze and plot temperature trends
-  **Healthcare Data Analysis** – Insights from hospital records
-  **Movie Ratings Predictor** – Predict IMDB ratings with regression

Phase 3: Advanced Level

Topics to Learn:

1. Advanced Machine Learning (xgboost, h2o.ai, tensorflow)
2. Deep Learning with keras (Neural Networks, CNNs, RNNs)
3. Geospatial Data Analysis (sf, leaflet)
4. API Integration & Data Extraction (httr, jsonlite)
5. Parallel Computing (parallel, foreach, future)
6. R for Big Data (sparklyr, data.table)
7. Advanced Statistical Modeling (Bayesian Analysis, SEM)
8. Deployment of R Models (Plumber API, Docker, R on Cloud)
9. Optimization Techniques (Linear Programming, Genetic Algorithms)
10. Report Automation (R Markdown, Flexdashboard)

Advanced Project Ideas:

-  **Sentiment Analysis on Social Media Data** – NLP in R
-  **Car Price Prediction Model** – Machine Learning with R
-  **Customer Segmentation in Retail** – Clustering with k-means
-  **Cryptocurrency Price Forecasting** – Predict Bitcoin trends
-  **Disease Prediction Model** – Predict health risks using ML