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**R Programming & Data Analytics**

# Class 1: What is R

History of R

Features of R

SAS versus R

S and S-PLUS

Obtaining R

R Interface

# Class 2: R Data Types

What are R Data types

What are vectors

What is Coercion

Mathematical Operations on Vectors

# Class 3: Array and Matrix

What is an Array in R

What is Matrix in R

R-bind and C-bind in Matrix

Operations on Matrix and Array

# Class 4: Factors and List

What are Factors

What is List

# Class 5: Data Frame

What is Data Frame

Merging of Data frame

Joins in Data frame

# Class: 6 Apply Family

Lapply

Sapply

Apply

Tapply

Mapply

Sapply

# Class 7: Date/Time

Date and Time in R

Dates in R

Time in R

Operation on Dates and Time on R

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Reading Tabular Data

Reading Large Tables

Writing File

Reading data file

File Connection

Reading lines of text file

# Class 9: Loops in R

If

For

Repeat

Next

Return

# Class 10: Graph Plotting

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Dot Plot

Bar Plot

Pie Charts

Line Charts

Box Pot

Scatter Pot

# Class 11: Probability

Theorem of Addition

Theorem of Multiplication

Bayes theorem

Binomial Distribution

Normal Distribution

Uniform Distribution

# Class 12: Statistics

Descriptive Statistics: Mean, Median, Mode, SD, Variance, Correlation

Inferential Statistics: Hypothesis testing

Non Parametric Tests

Analytics Methodology

# Class 13: Regression

Data Exploration and Data Preparation for Modelling

Linear Regression

Logistic Regression

Poisson Regression

Polynomial Regression

# Class 14-17: Classification

K-Nearest Neighbour classification

Naive Bayes classifier

Artificial Neural Network

Support Vector Machines

# Class 18: Clustering

K-Means Clustering

Hierarchical Clustering

# Class 19: Time Series Analysis

Components of Time Series

Differencing

Moving Average Method

Auto Regression

ARMA

ARIMA

# Class 20: Revision

Q/A