Level of Participants: Fresher Engineers

Participants Count: 6-12

Post assessment is needed

Daily engagement report is needed

Day 1

Python

1) Python Environment Set-up and Installation
2) Python Basics
    a) Pre-read: https://www.w3schools.com/python/python_intro.asp
3) Using NumPy Package in Python
    a) Why use NumPy?
    b) Numpy Arrays
    c) Numpy Array Indexing
    d) Numpy Array Manipulation
    e) Numpy Operations
    f) Various useful Numpy functions
    g) Broadcasting
    h) Numpy Statistical Functions
    i) Numpy Mathematical Functions
    j) Excersices
4) Using Pandas Package in Python
    a) Introduction
    b) Installation of Python

c) Series

d) DataFrames

e) Missing Data

f) Groupby

g) Merging Joining and Concatenating

h) Operations

i) Data Input and Output

j) Window Functions

k) Pandas Plotting

5) Reading data from various sources using Pandas

a) Reading Data from CSV

b) Reading Data from excel

c) Reading data from XML

d) Reading data from JSON

Day 2

Python

6) Using Matplotlib for Data Visualization
    a) Intro to pyplot
    b) Plotting with keyword strings
    c) Plotting with categorical variables
    d) Controlling line properties
    e) Working with multiple figures and axes
    f) Configuration and Styling
    g) Bar Chart
    h) Pie Charts
    i) Scatter Chart
    j) Histogram
    k) Plotting multiple charts on the same plot
7) Using Seaborn for Data Visualization
    a) Introduction
    b) Distribution Plots
    c) Categorical Plots
    d) Matrix Plots
    e) Grids
    f) Regression Plots
    g) Style and Color
    h) Exercise
8) Scikit-learn Tutorial

Day 3

9) Simple Linear Regression
    a) Dataset + Business Problem Description
    b) Simple Linear Regression Intuition
    c) RMSE
    d) Simple Linear Regression in Python
10) Introduction to NLTK (Basic Concepts)

R Programming

1) Introduction
2) Installation Set-Up
    a) Windows
    b) Mac OS
    c) Linux
3) Overview of Development Environment
    a) Overview
    b) Guide to RStudio
4) R Basics
    a) Introduction
    b) Arithmetic
    c) Variables
    d) Basic Data Types
    e) Vector Basics and Operations
    f) Vector Indexing and Slicing
    g) Getting Help with R Studio
    h) Comparison Operators

i) Exercise

5) Matrices

a) Introduction

b) Creating a Matrix

c) Matrix Arithmetic and Operations

d) Matrix Selection and Indexing

e) Factor and Categorical Matrices

f) Exercise

Day 4

6) Data Frames
    a) Introduction
    b) Basics
    c) Data Frame Indexing and Selection
    d) Data Frame Operations
    e) Exercise
7) R Lists
8) Data Input and Output
    a) Introduction
    b) CSV Files
    c) Excel Files
    d) SQL
9) Web Scraping
10) Programming Basics
    a) Introduction
    b) Logical Operators
    c) if, else, and else if Statements
    d) Conditional Statements Exercise
    e) While and For Loops
    f) Functions
11) Statistic for Data

a) Measure of Central Tendency – Mean, Mode and Median

b) Grouped and Ungrouped Data

c) Measure of Spread – IQR, Variance and Standard Deviation

d) Covariance

e) Correlation

Day 5

12) ggplot2 - Data Visualization with R
    a) Overview
    b) Histograms
    c) Scatterplots
    d) Barplots
    e) Boxplots
    f) 2 Variable Plotting
    g) Coordinates and Faceting
    h) Exercises
13) Tidyverse
    a) What is tidyverse?
    b) How to use it?
    c) Installing the Tidyverse
    d) Reshaping
    e) Exporting data
14) Dplyr
    a) Filtering Data
    b) Selecting variables in data
    c) Extracting rows in data
    d) Creating new variables from data
    e) Sorting data

f) Grouping variables

g) Summarizing data

h) Magrittr forward pipe (%>%)

i) Joining or merging several data sets

15) How to handle dates in R

a) The as.Date() Function

b) Getting the Current Date and Time for System

c) Using the lubridate Package

d) Extraction and Manipulation of the Parts of the Date

e) Converting strings to dates

f) Calculations with dates