IIM Guest Lecture Curriculum

Nilesh. D. Ohol – Data Scientist

Saturday 3:00 P.M.
Sunday 3:00 P.M.

R- Fundamentals - 1	
1	Object Assignment: *Assigning values to a particular variable to make our calculations more understandable. Creating objects within a variable and understanding its importance.*
2	Object Name Restriction: *We'll discuss some of the restriction that we have while defining the name of the variable.*
3	Data Types: *We'll discuss and understand the behaviour of different data types of the variables.*
4	Numeric Operators: *Perform Arithmetic operations on numeric variables. We'll also perform some complex mathematical calculations (e.g., sinusoidal) using inbuilt function.*
5	Concatenation, Substitution, Extraction, Count Characters: *We'll perform operations like concatenation, substitution, extraction and count character on character data type variables where we'll combine the strings, extract substring from a string and count occurrences of certain element.*

6	Logical Operators: *We'll understand the types of logical data types and perform logical operations on logical (Boolean) variables such as AND, OR and NOT.*

R- Fundamentals - 2	
1	Vectors: *A collection of similar basic data types to make our operations and calculations easy. We'll access a particular element or many elements from the vectors. Also perform arithmetic operations on two or more vectors.*
2	Lists: *To counter the limitations of Vectors data type we'll understand the characteristics of a List. We'll access a particular element or many elements from the Lists.*
3	Data Frames: *It's a structured data type which is a special kind of list data types having rows and columns.*
4	For Loops: *Perform iterative or repetitive operations using For Loops. Understanding its syntax and implementing it.*

R- Fundamentals - 3	
1	While Loops: *Perform certain operations until the conditions are being satisfied. Can be used to perform iterative or repetitive operations like for loops. Understanding its syntax and implementing it.*
2	Optimizing For Loops: *Instead of performing the whole FOR loop you might prefer to stop early. We'll understand the syntax of IF, ELSE and ELSE IF and implement it.*
3	Functions: *Create user defined functions that would perform certain operations and return the result.*

Univariate Statistics with R	
1	Central Tendency: *Understanding the average behaviour of the data using mean, median and mode*.

2	Variability: *To overcome some limitations of Central Tendency we will try to understand more about the Range, Standard Deviation, Variance, IQR (Inter Quartile Range) and optionally MAD (Mean Absolute Deviation).*
3	Shape: *Plotting a frequency bar chart (a.k.a. Histogram) and understanding its skewness. Discussing types of skewness: Negatively Skewed, No Skew and Positively Skewed.*
4	Outliers: *Identifying outliers in dataset and understanding its existence*
5	Summary Stats: *Using an inbuilt function, we will understand the overall behaviour of the dataset.*

Data Visualization using ggplot2	
1	Data Layer and Aesthetic Mapping: *Creating a Data Layer and Aesthetic Mapping before creating a static data visualization. All the graphics that you'll generate are made up of some aesthetic and data mapped on that aesthetics in R.*
2	Adding geometric layer: *Adding geometric object layer(s) on top of the Data Layer to create a static data visualization.*
3	Manipulating color of the geometric layer: *We'll add colors to have visibly distinguished data points and make the plots more appealing.*

Overview & Functionalities of Tableau	
1	What is Data Visualization: *Understanding what data visualization means and discussing on why do need it.*
2	What is Tableau: *A brief introduction about the software, understanding its versions and Installing Tableau Public 2021.4.*
3	Worksheet, Calculated Field, Parameters, Filters: *Understanding the basics of Tableau and the use of Worksheet, Calculated Field, Parameters and Filters.*
4	Lines: *Understanding the need of lines and creating a basic dynamic data visualization.*

5	Clustering: *Understanding the need of clustering and creating a scatter plot.*
6	Forecasting: *Understanding Forecasting, its Algorithm and implementation in Tableau.*

Functionalities, Managing Data Sources & Creating Dynamic Visualization - 1	
1	Types of Joins: *Understanding the need of combining datasets from different sources, building relationships between those datasets using joins. We'll discuss about types of joins: Inner, Outer, Left and Right join.*
2	Grouping & blending: *Grouping various categories into a single category and understanding its need. We'll discuss the differences between joins and data blending and, understanding when do we need to use it.*
3	Worksheet: *Creating a Data Visualizations in a worksheet and understanding it. Modifying its Marks like Color, Size, Text, Details and Tooltip.*

Creating Dynamic Visualization - 2	
1	Dashboard: *Understanding and creating dashboards from the worksheets. Designing and adding new objects to the dashboard.*
2	Story: *One of key feature available on Tableau that enable us to narrate a story visually from the dataset.*
3	Practice: *We'll spend some time exploring and practice on Tableau by creating worksheets, dashboards and story using a Dataset.*
4	Questions & Answers