

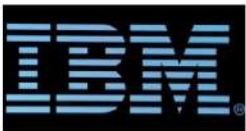


Rocket Data Analytics operates as an affiliate of Data Minds Analytics pvt ltd

DATA ANALYTICS

Professional Course

In Collaboration with



**CLASSROOM
ONLINE
HYBRID MODEL**

3 MONTHS- Certificate Course



MODULE 01

PYTHON PROGRAMMING



FUNDAMENTALS

Python - Basics

- Historical Context
- Python Installation
- Overview of Integrated
- Development Environments (IDEs)
- Basics: Identifiers, Statements,
- Comments, Variables
- Memory Management
- Types of Data Types
- Integers, Float, Complex,
- Boolean, String
- Operators :
- Arithmetic, Relational,
- Logical, Assignment, Bitwise

Input, Output, and Import

- Python Input and Output
- Importing Modules

Namespaces and Scope

- Python Namespace and Scope
- Global, Local, and
- Non-local Variables

Control Flow

- Python Flow Control Statements
- if Statement
- if-else Statement
- if-elif-else Statement
- Nested if Statement
- for Loop
- while Loop
- break, continue &
- pass Statements

Date and Time

- Working with Dates and Times
- Formatting Dates and Times
- Current Date and Time
- Timestamps to Datetime Conversion
- Timing Functions with the
- time Module
- Introducing the sleep Function

DATA STRUCTURES

Lists-Introduction

- Creating and accessing elements
- List Operations
- Modifying, appending
- deleting elements
- List comprehensions

Tuples-Introduction

- Tuple Operations:
- Accessing elements
- Concatenation and repetition

Sets - Introduction

- Set Operations:
- Intersection, union, and difference
- Membership testing

Dictionaries -Introduction

- Key-value pairs and uniqueness.
- Creating and accessing elements.
- Dictionary Operations:
- Modifying, deleting, and
- iterating over elements.
- Dictionary comprehensions

String Basics

- String manipulation methods.
- String Operations:
- Concatenation, slicing, and formatting
- Common string functions

ADVANCE

Functions

- Python Functions
- Defining and Calling Functions
- Global Keyword
- Function Arguments
- Recursion
- Anonymous (Lambda) Functions
- Modules and Packages
- Working with random Module
- Working with math Module
- Documenting Functions
- (Docstrings)
- User-Defined Functions

File Handling

- File Input and Output (I/O)
- File Handling Techniques
- Working with Directories
- Handling Exceptions with Files
- User-Defined Exceptions

Object-Oriented Program

- OOP Concepts
- Classes and Objects
- Inheritance
- Operator Overloading

Advanced Topics

- Iterators
- Generators
- Closures
- Decorators
- *args and **kwargs
- Properties
- Regular Expressions (RegEx)

MODULE 02



NUMPY

Introduction to NumPy

- What is NumPy?
- History of NumPy

Understanding ndarrays

- What is an ndarray (N-dimensional array)?
- Creating NumPy arrays
- Array functions
- Numerical arrays
- Homogeneous arrays
- Diagonal arrays
- Random number generation with NumPy

Array Attributes

- Overview of array attributes
- Exploring and understanding
- array attributes

Multi-Dimensional Arrays

- Creating multi-dimensional arrays
- Extracting data from
- multi-dimensional arrays

Indexing and Slicing

- Basics of indexing
- Basics of slicing
- Boolean indexing
- Random indexing

Reshaping and Resizing

- Reshaping arrays
- Resizing arrays
- Transposing arrays

Vector Operations &

Array Functions

- Vector multiplication
- Array operations
- Broadcasting rules

PANDAS

Introduction to Pandas

- What is Pandas?
- History and evolution of Pandas

Series and DataFrames

- Introduction to Series and DataFrames
- Creating Series and DataFrames
- Essential operations on Series and DataFrames

Data Structures in Pandas

- Understanding the various data structures in Pandas
- Working with Series, DataFrame, and Index objects

Data Manipulation with Pandas

- Loading and saving data in
- different formats (CSV, Excel, SQL)
- Data cleaning and handling missing values
- Data transformation and manipulation techniques

Indexing and Selection

- Basics of indexing and selecting data in Pandas
- Advanced indexing techniques
- Boolean indexing

Grouping and Aggregation

- Grouping data with Pandas
- Aggregating data using different functions
- Transformations and filtering within groups

Merging and Joining DataFrames

- Combining DataFrames using merge and join operations
- Concatenating DataFrames

Time Series Analysis with Pandas

- Handling time and date data
- Resampling and frequency conversion
- Time shifting and lagging

Data Visualization with Pandas:

- Plotting with Pandas
- Exploratory data analysis using visualizations

Advanced Topics in Pandas:

- Handling categorical data

MODULE 03

DATA VISUALIZATION



MATPLOTLIB

Overview of Matplotlib

Matplotlib Basics

- Installing Matplotlib
- Basic plotting with Matplotlib
- Line plots, scatter plots, and bar plots

Customizing Matplotlib Plots

- Adding titles and labels
- Setting colors and styles
- Adding legends and annotations

Multiple Plots and Subplots

- Creating multiple plots in a single figure
- Working with subplots

Advanced Matplotlib Plots:

- Histograms
- Box plots
- Pie charts
- 3D plots
- Violin plots

SEABORN

Overview of Matplotlib

Seaborn Introduction

- Installing Seaborn
- Overview of Seaborn's capabilities

Seaborn Plots for Univariate Data

- Distplot for distribution visualization
- Countplot for categorical data
- Boxplot and violin plot for summarizing distributions

Seaborn Plots for Bivariate Data:

- Scatter plots and regression plots
- Pair plots for pairwise relationships
- Heatmaps for correlation visualization

Styling and Customization in Seaborn

- Themes and color palettes
- Customizing Seaborn plots

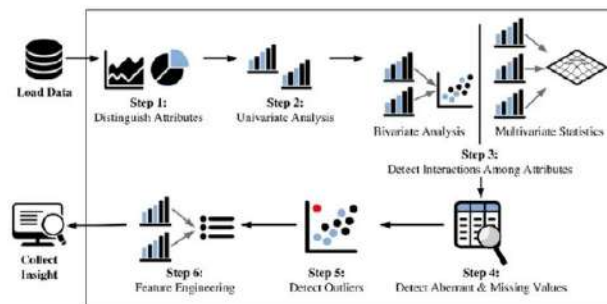
Additional Seaborn Features

- FacetGrid for multi-plot grids
- Categorical plots for complex categorical relationships

Real-world Data Visualizations

MODULE 04

Exploratory Data Analysis



Exploratory Data Analysis

- Understanding the impact of EDA on decision-making
- Identifying patterns and trends in the data
- Assessing normality and skewness

Type castings

- Converting data types for compatibility and efficiency
- Addressing issues with incorrect data types

Outlier Analysis and Treatment

- Identifying outliers through statistical methods & visualization
- Understanding the impact of outliers on analysis
- Outlier Treatment
- Techniques for handling outliers (e.g., trimming)
- Deciding when to remove or transform outliers

Discretization / Binning / Grouping

Missing Values

- Identifying Missing Values
- Techniques for recognizing and quantifying missing data
- Understanding the reasons behind missing values
- Imputation Techniques
- Strategies for filling or imputing missing values
- appropriate imputation method based on the data

Introduction to Data Preprocessing

- Overview of Data Preprocessing

Handling Duplicates

- Identifying and removing duplicate records
- Strategies for handling duplicate values

Data Exploration Techniques

- Univariate, bivariate,
- Histograms, box plots, scatter plots
- Multivariate analysis
- Correlation and covariance analysis
- Heatmaps and pair plots

Feature Engineering

- Creating new features for better model performance
- Techniques such as encoding, scaling & transformations

Encoding: Dummy Variable Creation

- Creating dummy variables for categorical data
- Handling multicollinearity issues

Scaling: Standardization Normalization

- Scaling features to a standard normal distribution
- Considering the suitability of normalization for different algorithms

Communication and Reporting

- Communicating EDA Findings
- Creating clear and compelling data narratives
- Designing visualizations for effective communication
- Documenting and sharing EDA insights
- Preparing reports for stakeholders and team members

MODULE 05

STATISTICS - ESSENTIALS



Descriptive Statistics

Measures of Central Tendency & Dispersion

- Measures of Central Tendency (Mean, Median, Mode)
- Measures of Dispersion (Range, Variance, Standard Deviation)
- Percentiles and Quartiles

Foundations of Probability and Distribution

- Basic Probability Concepts
- Probability Distributions (e.g., Normal, Binomial, Poisson)
- Joint and Marginal Distributions
- Z Scores and the Z Table
- QQ Plot / Quantile-Quantile Plot

Inferential Statistics:

Hypothesis Testing

- Formulating a Hypothesis
- Choosing Null and Alternative Hypotheses
- Type I or Alpha Error and Type II or Beta Error
- Confidence Level, Significance Level, Power of Test

Confidence Intervals

- Confidence Interval - Concept

P-value:

Comparative Statistical Tests

- Comparative Study of Sample Proportions using Hypothesis Testing
- Two-Sample t-Test
- Analysis of Variance (ANOVA)
- Two Proportion Test
- Chi-Square Test

Sampling and Central Limit Theorem

- Sampling Variation
- Central Limit Theorem
- Sample Size Calculator



MODULE 06



Data Sources

- Identify and Connect to a data source
- Types of Data Source –
SQL, APIs, OneDrive, CSV, Excel, Web etc.
- Common Data Sources
- Data Source Settings
- Connection Modes -
Direct Query, Import, and Dual mode
- Inconsistencies, Unexpected or Null Values
& Data Quality issue
- Change data source settings
including credentials, privacy levels &
data source locations

Data Modelling

- Tables
- Data Types
- Primary Key Vs
Foreign Key Vs
Composite Key
- Relationships
- Star Schema Vs
Snowflake Schema
- Naming Convention
- Hierarchies
- Physical Vs
Virtual Relationships
- Performance
- Handling Missing / Null Values
- Configuring Q&A

MODULE 06



DAX

- Introduction to DAX
- DAX Functions
- Types
- Evaluation Context
- Row Context Vs
 - Filter Context
- Scalar Vs Tables
- Calendar Table
- Calculated Columns
- Measures
- Quick Measures

ETL using Power Query

- Introduction to Power Query
- Introduction to M-Code
- Data Types
- Column Quality & Distribution
- Data Source Settings
- Removing Duplicates
- Merging Columns
- Transpose
- Group By
- Pivot Vs Unpivot
- Parameters
- Data Refresh Settings
- Split Columns
- Index Columns
- Error Handling
- Custom Functions
- UI Vs M-Code
- Custom Columns
- Merge and Append Queries
- Joins
- Fuzzy Logic

MODULE 06



Time Intelligence

- Data Types
- Calendar Vs Fiscal
- Global Impact
- Cumulative Aggregation
- Rolling Totals
- Parallel Comparison
- Successive Time Comparison
- Excel Vs DAX Vs M-Code
- Calendar Table
- Business Examples
- Time Intelligence
 - DAX Functions

DATA VISUALIZATION

- Themes
- Reports Vs Dashboards
- Wallpaper
- Power BI Visuals
- Slicers Vs Filters
- Types of Filters
- Edit Interactions
- Format Options
- Drill Down Vs Drill Through
- Layers

MODULE 06



External Tools & Data Security

- DAX Studio
- Bravo for Power BI
- DAX Formatter
- Vertipaq Analyzer
- Analyze in Excel
- Data Source
- User Authentication
- Access Rights
- Row Level Security
- Roles Creation
- Static Vs Dynamic
- Sharing Reports
- Mapping Files
- Cross Filter
- Security Filter

Report Maintenance

- Workspaces
- Roles in Workspace
- Apps
- Dashboards
- Reports
- Scheduled Refresh
- Data Access
- Native Queries

Performance Optimaztion

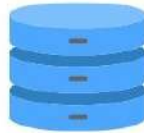
- Performance Analyzer
- Diagnostics
- DAX Studio
- Best Practices

MODULE 07

DATABASE



SQL



1. Introduction to SQL Databases

- Definition and Purpose
- Comparison with NoSQL database

2. Introduction to Mysql

- Introduction to Databases
- Introduction to RDBMS
- Explain RDBMS through normalization
- Different types of RDBMS
- Software Installation(MySQL Workbench)

3. SQL Commands and Data Types

- Types of SQL Commands
 - DDL,DML,DQL,DCL,TCL
- Data Types in SQL
 - Numeric, Char, Datetime

4. Data Query Language & Operators

- SELECT
- LIMIT
- DISTINCT
- WHERE AND
- OR
- IN
- NOT IN
- BETWEEN
- EXIST
- ISNULL
- IS NOT NULL
- Wild Cards
- ORDER BY

5. Case When Then and Handling NULL Values - NULL Values (IFNULL, COALESCE)

6. Group Operations & Aggregate Functions

- Group By
- Having Clause
- COUNT
- SUM
- AVG
- MIN
- MAX
- COUNT String Functions
- Date & Time Function

7. Constraints

- NOT NULL
- UNIQUE
- CHECK
- DEFAULT
- Primary key
- Foreign Key

.(Both at column level and table level)

8. Joins

- Inner
- Left
- Right
- Cross
- Self Joins
- Full outer join

9. Data Definition Language

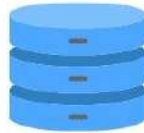
- Create
- Drop
- Alter
- Rename
- Truncate
- Modify.
- Comment

MODULE 07

DATABASE



SQL



10.Data Manipulation Language

- Insert
- Update & Delete

11.Data Transaction Language

- Commit
- Rollback
- Savepoint
- Data Partitioning

12.Indexes and Views

- Indexes (Different Type of Indexes)
- Views in SQL

13.Stored Procedures

- Procedure with IN Parameter
- Procedure with OUT parameter
- Procedure with INOUT parameter

14.Function & Constructs

- User Define Function
- Window Functions
- Rank
- Dense Rank
- Lead
- Lag
- Row_number

15.Union, Intersect, Sub-query

- Union, Union all
- Intersect
- Sub Queries, Multiple Query

16.Exception Handling

- Handling Exceptions in a query
- CONTINUE Handler
- EXIT handler

17.Triggers

- Triggers - Before | After DML Statement

MODULE 06

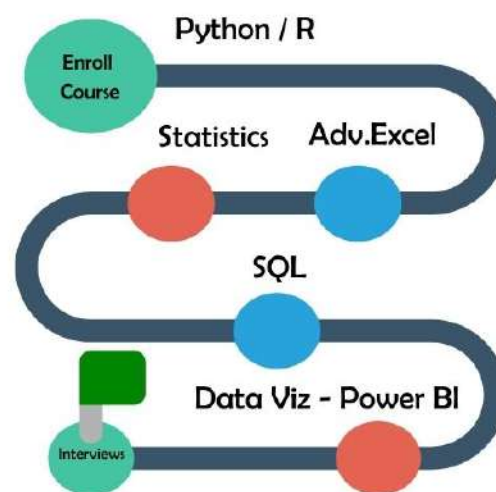
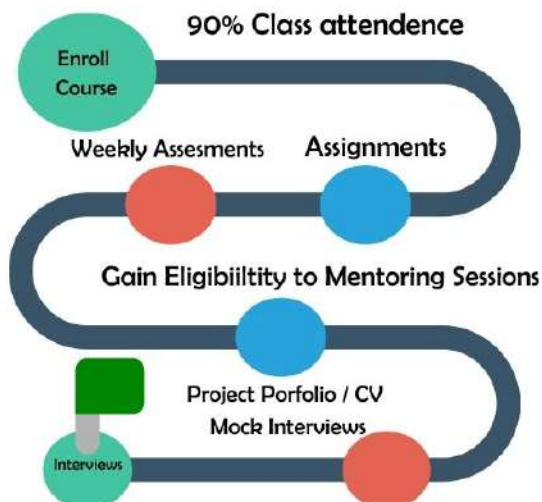


Applications and Use Cases

Live Projects

- Guidance on PL-300 Microsoft Certification for Power BI
- Guidance on MO-200 Microsoft Certification for Excel
- Guidance on PL-100 Microsoft Certification for Power Apps

JOB ORIENTED PROGRAM ROAD MAP



LIVE Projects

Interview Faq's

Cheat Sheets

Tool Kits

CV Preparation

Linkedin Optimization

Applicant Tracking System

ABOUT US



Rocket Data Analytics operates as an affiliate of Data Minds Analytics pvt ltd

Our professional courses are instructed by industry experts actively engaged in real-time practices, utilizing the latest teaching tools and techniques. The combination of our Learning Management System (LMS) and dedicated support mentors constitutes key elements that facilitate easy and simplified learning

- 5000 + Successfully trained students
- 2056 + Facilitated career transitions
- 10+ Industry 4.0 diverse range of Digital Transformation courses
- Flexible training options, including Classroom, Online, E-Learning, and Corporate Trainings.

ROCKET DATA ANALYTICS

PROFESSIONAL COURSES

- | | | |
|---------------------|-------------------|---------------------------|
| ✓ Data Science | ✓ Data Analytics | ✓ Data Engineering |
| ✓ Gen - AI | ✓ Block Chain | ✓ Artificial Intelligence |
| ✓ Python Full Stack | ✓ Java Full Stack | ✓ R Language |
| ✓ Power BI / Apps | ✓ Aws / Devops | ✓ Azure Cloud |
| ✓ Cyber Security | ✓ ERP - SAP | ✓ Digital Marketing |

Our Collaborations & Placements

We foster meaningful collaborations with industry partners to enhance opportunities for our students. Our commitment to facilitating placements ensures that our graduates seamlessly transition into promising career paths, establishing a strong foundation for their professional journey.

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