BITBYTE

ROBOTRONIX

The Creativity of your Mind

ROBOTRONIX ENGINEERING TECH PVT. LTD.

Data Analysis

Week 1 - 10



python

NumPy

pandas

matplotlib

seaborn

MySQL

Power BI

Data Analysis with Python –

Python

1. Introduction

i. What is it?
ii. Where it is used?
iii. History of Python
iv. Comparison of python with other CPL's?
v. Why it is best for you and new learners?
vi. What is compiled language and interpreted language?
vii. Installation of python

2. Python Basics

i. Basics of python
   (a) Input() operation in python
   (b) Output (format) operation in python
   (c) Discuss about different IDLE's

ii. Variable and Data Types in python
   a. What are variables?
   b. Number (Int, float, Complex)
   c. String
   d. Boolean
   e. List
   f. Tuple
   g. Dictionary
   h. Set

iii. Operators
   a. Arithmetic operators
   b. Assignment operators
   c. Comparison operators
   d. Logical operators
   e. Identity operators
   f. Membership operators
   g. Bitwise operators



iv. conditional statements
   a. If
   b. If-else
   c. if-elif-else

v. loops (While & For)
   a. for loop
   b. for loop with conditional statements
   c. while loop
   d. while loop with conditional statements

I. Operations and different methods of each data types

a. Operation and Methods of String
I. Indexing in strings
ii. Slicing of strings
iii. Important method of Strings
iv. Different .format methods



b. Operation and Methods of List
i. Indexing in List
ii. Slicing of List
iii. Adding and deletion of element in list
iv. Iteration of elements through loops
v. range( )

c. Operations on tuple
i. Indexing in tuple
ii. Slicing of tuple
iii. Iteration of elements through loops

d. Operation and Methods of Dictionary
I. Iteration of values by key
ii. Addition and deletion of key : value pair in dictionary
iii. Iteration of value by different methods through loops
iv. Set default( )

e. Operation and Methods on sets
i. Its features and application
ii. Iteration of elements
iii. Addition and deletion of elements
iv. Important Methods of Sets e.g., difference_update( )
v. Deletion of element from sets

ii. Control Statements (break, continue, pass)

iii. Scope of Variable in functions
a. Global
b. Local

iv. Function Declaration in python
a. Basic function
b. parameters and arguments in python
c. difference between print( ), return
d. type of function in python



1. User-defined

2. Built-in
I. map
ii. zip
iii. filter

3. Lambda (anonymous function)
4. Recursion

I. Exception handling
   a. Try
   b. Except
   c. Else
   d. Finally

ii. File handling
   a. Creation of file
   b. Writing in file and reading
   c. Delete the file using os module and some functions of os module

iii. Constructors
   a. parameterized
   b. non parameterized

iv. Oops with Python
   a. Class & Object
   b. Constructors

I. parameterized
ii. non parameterized
c. Inheritance
d. Encapsulation
e. Abstraction

v. Regular expressions in python

3. Understanding Working Environment

NumPy



(a) Arrays and Dimensions in array
(b) Data types in Arrays
(c) Reshape of Arrays
(d) Access the element of arrays
(e) Slicing of Arrays
(f) Filter in Arrays
(g) Mathematical operation with arrays

Pandas

(a) Introduction of Pandas
(b) Creating Series from List, Dict, and Scalar
(c) Creating DataFrame with Dict, List and Arrays
(d) Modification in DataFrame
(e) Creating the DataFrame from Different type of Data file Like csv, html, excel
(f) Some Filtering Operation in DataFrame
(g) Datatype conversion
(h) loc and iloc methods



Matplotlib

(a) What are the graphs?
(b) Type of Graphs
(I) Linear Graphs
(ii) Bar Graph
(iii) Scatter plot
(iv) Box Plot
(v) Histogram
(vi) Pie plot
(vii) Heatmap

EDA

1) What is EDA
2) Why EDA is important
3) Univariant, Bivariant, Multivariate Analysis
4) Preprocessing of Data
a) Imputing missing values.
b) Scaling and normalizing features.
c) Feature engineering

4. Power BI Basics

I. Introduction
a) How to Install Power BI
b) How to import data in Power BI using Excel, CSV, and DBMS

II. MySQL

a) Installation of MySQL
b) Import of existing DBMS
c) Creation of New DBMS
d) Import SQL queries

III. Correlation of Table and Features
IV. Cleaning and Filtering of Data in Power BI
V. Creating the groups and new analytical or Report Columns
VI. Preparing PowerBI Dashboard.
VII. Basic Visualizations

Project 1. PYTHON | Titanic Data EDA

Project 2. POWER BI | Sales Insights Data Analysis

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