Python Basics

Class 1 – Introduction

- What is python?
- Why we need it?
- Why is it so popular?
- What is role of python in Data Science?
- Difference between ML , AI, Data Science

Class 2 – operators

- Types of Operators in Python:
  - # Assignment Operators
  - # Comparison Operators
  - # Identity Operators
  - # Bitwise Operators
  - # Arithmetic Operators
  - # Logical Operators
  - # Membership Operators
- variables
  - # What is Varaible
  - # How to create it?
  - # Rules of naming a variable
  - # Use of variable

Class 3 – data types (int,str,float,bool)

- # What is int?
- # What is float?
- # what is str ?
- # what is bool?

implicit conversion

- (int to str,
- str to int,
- float to int,
- int to float)

Class 4 – list

Learn various concepts and methods in list

- Indexing,
  - #positive index value to element
  - #elment to positive index value
  - #elment to negative index value
- Slicing,
  - #slicing & skiping one element
  - #slicing & skiping two element
  - #reverse slicing & skiping zero element for negavite index
  - #reverse slicing & skiping one element for negavite index
- item assignment,
- Add,
  - Append
  - Insert
- Remove,
  - Remove
  - Del
  - Clear
- Copy

Class 5 – Learn various concepts and methods in string

- indexing,
- slicing,
- Replace,
- Join,
- Split,
- Capitalize,
- Title
- #title
- #upper
- #lower
- #Count

Class 6 – Learn various concepts and methods in tuple

- indexing
- Slicing
- Immutable
- #Tuple convert to List
- #Tuple modifying by convert to List
- #List converting to Tuple

Learn various concepts and methods in set

- Difference between set,tuple and dict
- intersection.
- Union,
- Difference,
- unique elements
- Unordered
- #Adding in set
- #Removing in set
- #Finding the common element
- #update

Class 7 - Learn various concepts and methods in dict

- key value relationship
- Items
- Add
- Remove,
- unique keys
- Key value difference

Class 8- Conditional Statement

- If
- If elif
- If elif else

Class 9 - Loops

- For loop
- Examples for for loop
- While loop
- Examples for while loop

Class 10- 14 – Assignment practice,Revision and Doubt

class 15 - Miscellaneous topics

- lamda,

- Filter,
- Map
- Reduce
- list comprehension

class 16 -OOPs

- How to create Functions,
- Why are function required?
- Difference between return and print statement
- What is Class,
- What Object,
- What is self,
- Inheritance,
    - Single level Inheritance
    - Multilevel Inheritance,
    - Multiple Inheritance,
    - Hierarchical Inheritance

Class 17 –OOPs

- Polymorphism,
- Encapsulation,
- Abstraction
- Constructor
    - parameterized default constructor,
    - unparameterized default constructor

Class 18 -decorator

- Why do we need decorator
- How to create decorator

Class 19- generators

- Why do we need generator
- How to use next
- How to use yield
- Difference between return and yield

Python Libraries and Data Analysis

Class 20 Numpy

- 1-Dimensional Array,
- 2-Dimensional Array,
- np.zeros,
- np.ones,
- Np.full
- Np.arange,
- np.linespace,
- Np.random,
- modify shapes,
- Mathematical functions of numpy; np.multiply etc
- Array compare, Aggregate functions like mean, sqrt,min,max etc
- Concept of broadcasting
- Indexing and slicing
- Array Manipulation, hstack, vstack etc

Class 20-21- pandas

- Creating a dataframe
- Reading in csv, excel data
- Df.info
- Changing the datatypes
- Df.head, df.tail, df.describe
- Renaming columns
- Finding missing values
- Filling missing values
- Creating a pandas series and dataframe
- remove select single or multiple rows and columns
- Merging two dataframes
- merge tables based on one columns or multiple columns)
- Joining two dataframes
- Loc and iloc method to identify columns and rows

Class 22 - Matplotlib

- Line plot
- Changing color, size, style of line plot
- Scatter plot, customizing scatter plot
- Bar plot
- Histogram, customizing histogram
- Subplots
- Pieplot

- Doughnut plot, Area chart

Class 23- Seaborn

- Countplot
- Histplot
- Pairplot
- Boxplot
- Barplot
- Hue
- Univariate analysis
- Multivariate analysis

Class 24- Project - Exploratory data analysis on iris

Class 25- Project - Exploratory data analysis on haberman dataset

Statistics

Class 26 - Descriptive Statistics

- Types of Analytics
  - Descriptive statistics
  - Diagnostics statistics
  - Predictive statistics
  - Prescriptive statistics
- Concept of population and mean
- Mean,Meduim,mode
- Variance
-

Class 27- Continuation

- Types of Data
  - **Quantitative**
  - **Qualitative**
  - **Nominal**
  - **Ordinal**
  - **Interval**
  - **Ratio**

Class 26- Introduction to machine learning

- use of machine learning and

- practical use with example
- pipeline

Class 27 -

- Pipeline
- NLP
- cleaning
- Stemming
- lemmatization
- BOW
- TFIDF

Class 28 - Dimension Reduction - PCA ,

- why dimension reduction required
- why dimension reduction required
- Eigen values and eigen vector
- Implementation of PCA
-

class 29 - Data Processing

- Standardization,
- normalization,
- handle missing value
- one hot encoding
- label encoding

Class 30-31-KNN (Theoretical analysis with implementation on iris ,haberman,titanic dataset)

Class 32-Naïve Bayes (Theoretical analysis with implementation on iris ,haberman,titanic dataset)

Class 33-logistic regression (Theoretical analysis with implementation on iris ,haberman,titanic dataset)

Class 34- linear regression (Theoretical analysis with implementation on iris ,haberman,titanic dataset)

Class 35 – decision tree (Theoretical analysis with implementation on iris ,haberman,titanic dataset)

Class 36- Random Forest (Theoretical analysis with implementation on iris ,haberman,titanic dataset)

Class 37 – xgboost (Theoretical analysis with implementation on iris ,haberman,titanic dataset)

class 38 - Unsupervised Learning - K Means

class 39 - k means implementation

Class 39-42 – Practice

Class 43 Flask Framework POST GET request, POSTMAN,

Class 44 – heroku to deploy machine learning models

Class 45 - Personalized cancer prediction
class 46 - Quora question Pair similarity
class 47- NER using spacy
class 48 - Sentiment analysis