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| **DAY** | **TOPIC** |
| **Day-1** | Overview of Python. Why Python? |
| Environment Setup |
| Basic Syntax, Variable and Data Types |
| Operator |
| Conditional Statement: if, ifelse, nested if |
| Input & Output |
| Loop/Iteration: for, while, nested loop |
| **Day-2** | Break , continue |
| Accessing Strings |
| Function and Methods |
| List - properties, related operations |
| Tuple - properties, related operations, comparison with list |
| Dictionary - properties, related operations, comparison with list |
| Set - properties, related operations, **comparison with dictionary** |
| Tuple |
| Accessing tuples |
| Operations |
| Working |
| Functions and Methods |
| **Day-3** | Dictionary |
| Accessing values in dictionaries |
| Working with dictionaries |
| Properties |
| Functions |
| Defining a function |
| Calling a function |
| Types of functions |
| Function Arguments |
| Anonymous functions /default |
| Global and local variables |
| Modules |
| Importing module |
| Math module |
| Random module |
| Packages : pip install pkgname |
| **Day-4** | File Handling |
| Printing on screen |
| Reading data from keyboard |
| Opening and closing file |
| Reading and writing files |
| Other Functions |
| Exception Handling |
| Exception |
| Exception Handling |
| Except clause |
| Try ? finally clause |
| User Defined Exceptions |
| **Day-5** | OOPs concept |
| Class and object |
| Attributes (properties/variable/data member) |
| Inheritance |
| Overloading (python doesn’t support) |
| Overriding |
| Data hiding |
| **Day-6** | Regular expressions |
| Match function |
| Search function |
| Matching VS Searching |
| Modifiers |
| Patterns |
| **Day-7** | Database |
| Introduction |
| **Connections** |
| Executing queries |
| Transactions |
| Handling error |
| **Day-8** | Networking |
| Socket |
| Socket Module |
| Methods |
| Client and server |
| Internet modules |
| **Day-9** | Multithreading |
| Thread |
| Starting a thread |
| Threading module |
| Synchronizing threads |
| Multithreaded Priority Queue |
| **Day-10** | GUI Programming |
| Introduction |
| Tkinter programming |
| Tkinter widgets |
| **Day-11** | CGI |
| Introduction |
| Architecture |
| CGI environment variable |
| GET and POST methods |
| Cookies |
| File upload |
| **Day-12** | Statistics - Machine Learning Prerequisites  Data sci. vs ML vs AI |
| Statistics - data terminology, measurement scales, types of data |
| Libraries - IPython, Matplotlib |
| Measures, Dimenssion, Moments, Variance, Std. Deviation using numpy |
| Distributions, Probability and Bayes’ Theorem using Scipy |
| Numpy - arrays, matrices, related operations |
| Scipy - overview, areas of application |
| **Day-13** | Numerical measure |
| Matplotlib introduction |
| Deviation and variance |
| Standard deviation |
| Covariance and correlation |
| Conditional probability |
| **Day-14** | Distribution/Probability functions |
| Installing Numpy |
| Numpy arrays and matrices |
| Installing Scipy |
| Scipy Modules and stats |
| **Day-15** | Apply Supervised Learning process flow, regression analysis |
| Apply Unsupervised Learning process flow, clustering |
| Apply Linear Regression, Multivariate Regression |
| Measure accuracy using Mean Squared Error, Cross Validation |
| Analyze data using Pandas |
| Feature engineer datasets using PCA, Bias/Variance analysis |
| **Day-16** | Apply classifications algorithms like KNN, Random Forests, SVM etc. |
| Apply clustering algorithms like K-Means, Hierarchical clustering etc. |
| Compute classification and clustering metrics to ascertain model accuracy |
| **Day-17** | Web Scraping in Python and Project Work |
| Goal : Discuss about the powerful web scraping using Python and discuss a real-world project. |
| Discuss web scraping and its advantages |
| Discuss Steps Involved in Web Scraping |
| **Day-18** | Use BeautifulSouppackage and its functions |
| Scrape IMDB webpage |
| Fetch Streaming Tweets from Twitter |
| Perform Sentiment Analysis on tweets Fetched from Twitter and determine which is more popular Ferrari or Porsche |