Python Course Curriculum: Basic to Advance level

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Course Fee : Rs 3000/Per Month

Part 1 (1st Quarter): 500+ Questions exercise

- Programming language overview
- Installation (tools: sublime, vscode, pycharm, anaconda, atom,jupyter notebook, kite)
- Virtual environment
- Why python
- Introduction of python and comparison with other programming language
- Installation of anaconda distribution and other python ide
- Python objects, number & Booleans, strings
- Container objects, mutability of objects
- Operators - arithmetic, bitwise, comparison and assignment operators, operator's precedence and associativity
- Conditions (if else, if-elif-else), loops (while, for)
- Break and continue statement and range function
- Introduction of python and comparison with other programming language
- Preview
- Installation of anaconda distribution and other python ide
- Python objects, number & Booleans, strings
- Container objects, mutability of objects
- Operators - arithmetic, bitwise, comparison and assignment operators, operator's precedence and associativity
- Conditions (if else, if-elif-else), loops (while, for)
- Break and continue statement and range function
- List methods
- List as stack and queues
- List comprehensions
- Dictionary object methods
- Dictionary comprehensions
- Dictionary view objects
- Functions basics, parameter passing, iterators
- Generator functions
- Lambda functions
- Map, reduce, filter functions
- Probability density/distribution function
- Types of the probability distribution
- Binomial distribution
- Poisson distribution
- Normal distribution (Gaussian distribution)
- Probability density function and mass function

- Cumulative density function
- Examples of normal distribution
- Bernoulli distribution
- Uniform distribution
- Z stats
- Central limit theorem
- Estimation

Part2 (2nd Quarter): 500+ Questions exercise

- Iterables and the iterable protocol
- Iterators and the iterator protocol
- List comprehensions and their relation to closures
- Generator functions
- Generator expressions
- Context managers
- Creating context managers using generator functions
- Using Generators as Coroutines
- Sequence Types and the sequence protocol
- Python pandas - series
- Python pandas – data frame
- Python pandas – panel
- Python pandas - basic functionality
- Reading data from different file system
- Python pandas – re indexing python
- Pandas – iteration
- Python pandas – sorting.
- Working with text data options & customization
- Indexing & selecting
- Data statistical functions
- Python pandas - window functions
- Python pandas - date functionality
- Python pandas –time delta
- Python pandas - categorical data
- Python pandas – visualization
- Python pandas - iotools
- a Hypothesis
- Hypothesis testing's mechanism
- P-value

- T-stats
- Student t distribution
- T-stats vs. Z-stats: overview
- When to use a t-tests vs. Z-tests
- Type 1 & type 2 error
- Bayes statistics (Bayes theorem)
- Confidence interval(ci)
- Confidence intervals and the margin of error
- Interpreting confidence levels and confidence intervals
- Chi-square test
- Chi-square distribution using python
- Chi-square for goodness of fit test
- When to use which statistical distribution?
- Analysis of variance (anova)
- Assumptions to use anova
- Anova three type
- Partitioning of variance in the anova
- Calculating using python
- F-distribution
- F-test (variance ratio test)
- Determining the values of f
- F distribution using python

Part3(Quater3):500 + Questions exercise

- what are classes and instances
- class data and function attributes
- properties
- instance, class and static methods
- polymorphism and the role special functions play in this
- single inheritance
- slots
- the descriptor protocol and its relationship to properties and functions
- enumerations
- exceptions
- metaprogramming (including metaclasses)

- Numpy - ND array object.
- Numpy - data types.
- Numpy - array attributes.
- Numpy - array creation routines.
- Numpy - array from existing.
- Data array from numerical ranges.
- Numpy - indexing & slicing.
- Numpy – advanced indexing.
- Numpy – broadcasting.

- Numpy - iterating over array.
- Numpy - array manipulation.
- Numpy - binary operators.
- Numpy - string functions.
- Numpy - mathematical functions.
- Numpy - arithmetic operations.
- Numpy - statistical functions.
- Sort, search & counting functions.
- Numpy - byte swapping.
- Numpy - copies &views.
- Numpy - matrix library.
- Numpy - linear algebra
- Visualization - Matplotlib
- Visualization -Seaborn
- Visualization -Cufflinks
- Visualization -Plotly
- Visualization –Bokeh
- linear algebra
- Vector
- Scaler
- Matrix
- Matrix operations and manipulations
- Dot product of two vectors
- Transpose of a matrix
- Linear independence of vectors
- Rank of a matrix
- Identity matrix or operator
- Determinant of a matrix
- Inverse of a matrix
- Norm of a vector
- Eigenvalues and eigenvectors
- Calculus
- Ai vs ml vs dl vs ds
- Supervised, unsupervised, semi-supervised, reinforcement learning
- Train, test, validation split
- Performance
- Overfitting, under fitting
- Bias vs variance
- Handling missing data
- Handling imbalanced data
- Up-sampling
- Down-sampling
- Smote
- Data interpolation
- Handling outliers
- Filter method
- Wrapper method
- Embedded methods

- Feature scaling
- Standardization
- Mean normalization
- Min-max scaling
- Unit vector
- Feature extraction
- Pca (principle component analysis)
- Data encoding
- Nominal encoding
- One hot encoding
- One hot encoding with multiple categories
- Mean encoding
- Ordinal encoding
- Label encoding
- Target guided ordinal encoding
- Covariance
- Correlation check
- Pearson correlation coefficient
- Spearman's rank correlation
- Vif
- Feature selection
- Recursive feature elimination
- Backward elimination
- Forward elimination

Part4(Quater4): 500 + Questions exercise

- associative arrays and how they can be implemented using hash maps
- hash functions and how we can leverage them for our own custom classes
- Python dictionaries and sets and the various operations we can perform with them
- specialized dictionary structures such as *OrderedDict* and how it relates to the built-in Python3.6+ *dict*
- Python's implementation of multi-sets, the *Counter* class
- the *ChainMap* class
- how to create custom dictionaries by inheriting from the *UserDict* class
- how to serialize and deserialize dictionaries to JSON
- the use of schemas in custom JSON deserialization
- a brief introduction to some useful libraries such as *JSONSchema*, *Marshmallow*, *PyYaml* and *Serpy*

- Working with files
- Reading and writing files
- Buffered read and write
- Other file methods
- Logging, debugger
- Modules and import statements
- Exceptions handling with try-except
- Custom exception handling
- List of general use exception
- Best practice exception handling
- SQLite
- MySQL
- Mongo dB
- NoSQL - Cassandra
- What is web API
- Difference b/w API and web API
- Rest and soap architecture
- Restful services
- Flask introduction
- Flask application
- Open link flask
- App routing flask
- Url building flask
- Http methods flask
- Templates flask
- Flask project: food app
- Postman
- Swagger
- Django introduction
- Django project: weather app
- Django project: memes generator
- Django project: blog app
- Django project in cloud
- Stream lit introduction
- Stream lit project structure
- Stream lit project in cloud
- Feature engineering and selection.
- Analyzing bike sharing trends.
- Analyzing movie reviews sentiment.
- Customer segmentation and effective cross selling.
- Analyzing wine types and quality.
- Analyzing music trends and recommendations.
- Forecasting stock and commodity prices
- Regression
- Logistics Regression
- Decision Tree
- Support Vector Machines
- Naive Baye

- Ensemble Technique and its Types
- Boosting
- Stacking
- KNN
- Dimensionality Reduction
- Clustering
- Anomaly Detection
- Time-Series
- NLP Basic