Antrix Academy of Data Science

Helpline No. 8130-371-253
Email Id mail@antrixacademy.com
Website www.antrixacademy.com

Get Certified with Microsoft*
Exam 98-381 : Introduction to Programming Using Python

Microsoft Technology Associate

Course: Data Science - Professional Program

Duration: 4 Months (Weekend)

Microsoft Technology Associate Certificate Voucher would to be given to every participant

Python Programming	Statistical Fundamentals	Machine Learning	R Programming

Introduction to Python Programming

- Why do we need Python?
- Program structure in Python

Execution steps

- Interactive Shell
- Executable or script files.
- User Interface or IDE
- Introduction to Jupyter Editor

Data Types and Operations

- Numbers
- Strings
- List
- Tuple
- Dictionary
- Other Core Types

Statements and Syntax in Python

- Assignments, Expressions and prints
- If tests and Syntax Rules
- While and For Loops
- Iterations and Comprehensions

Functions in Python

- Function definition and call
- Function Scope
- Arguments
- Function Objects
- Anonymous Functions

File Operations

- Opening a file
- Using Files
- Other File tools

Data Analysis with pandas

- Using Series, DataFrame, Panels
- Data wrangling
- Sorting and filtering data
- Aggregate operations
- Analyzing time series
- Visualization with Pandas

Vectorizing Data in Numpy

- Creating Numpy arrays
- Common operations on matrices
- Using Analytics functions
- Views and broadcasting on Numpy arrays
- Optimizing performance by avoiding loops

Python: Data Manipulation – cleansing

- Cleansing Data with Python
- Data Manipulation steps(Sorting, filtering, duplicates, merging, appending, subsetting, derived variables, sampling, Data type conversions, renaming, formatting etc)
- Data manipulation tools(Operators, Functions, Packages, control structures, Loops, arrays etc)
- Python Built-in Functions (Text, numeric, date, utility functions)
- Python User Defined Functions
- Stripping out extraneous information
- Normalizing data
- Formatting data
- Important Python Packages for data manipulation (Pandas, Numpy etc)

Python: Accessing/Importing and Exporting Data

- Importing Data from various sources (Csv, txt, excel, access etc)
- Database Input (Connecting to database – MySQL, MS SQL, Oracle, Teradata)
- Viewing Data objects - subsetting, methods
- Exporting Data to various formats

Python: Data Analysis – Visualization

- Introduction exploratory data analysis
- Descriptive statistics, Frequency Tables and summarization
- Univariate Analysis (Distribution of data & Graphical Analysis)
- Bivariate Analysis(Cross Tabs, Distributions & Relationships, Graphical Analysis)
- Creating Graphs- Bar/pie/line chart/histogram/boxplot/scatter/density etc)
- Important Packages for Exploratory Analysis(NumPy Arrays, Matplotlib, Pandas and scipy.stats etc)

Machine Learning (Supervised Learning) - I

- Generalised Linear Models

    - Linear Regression
    - Ridge and Lasso Regression
    - Logistic Regression
- Classification
    - Random Forest
    - Decision Trees
    - Support Vector Machines
    - KNN
    - Naïve Bayes
    - Usage

Machine Learning (Unsupervised Learning) - II

- Clustering
    - K-Means
    - K Nearest Neighbours
    - Association Rule Learning
- Reinforcement Learning
    - Markov Decision
    - Monte Carlo Prediction

Introduction and Orientation

- Introduction to Data Science and R. Application and Uses case of R
- Introduction R/R-Studio - GUI
- Concept of Packages - Useful Packages (Base & other packages) in R

R Data Structure and its operation

- Variable & Value Labels – Date Values
- Data Types- Numeric, Integer, Factor, Boolean, Dates and Logical
- Vectors, Matrices, factors, Data frames, and Lists
- Importing Data from various sources
- Exporting Data to various formats)
- Viewing Data (Viewing partial data and full data)
- Missing Values
- Sequences of Numbers

Data Wrangling

- Data Manipulation steps- Sorting, Filtering, Duplicates, Merging, Appending, Sub-setting, Derived variables, Sampling, Data type conversions, renaming, formatting.
- Control Structures-if, If-else, Nested if-else
- Control Structures - Loops and advance loop functions
- R User Defined functions- Create your own functions
- R Operators
- Data Reshaping- Long to wide vice-versa
- Playing with Textual Data-Editing Textual data, regular expressions
- Data Aggregation and Summarization

Intro to Stats and Data Analysis

- Introduction exploratory data analysis (EDA)
- Descriptive statistics-Random sampling, Correlation, Central Limit Theorem, Variance Frequency Tables and summarization

- Univariate Analysis (Distribution of data & Graphical Analysis)
- Bivariate Analysis(Cross Tabs, Distributions & Relationships)
- Data Visualization
- Base Plotting System
- Exploratory data analysis using plots
- Univariate and Bi-variate plots
- Creating Graphs- Bar/pie/line chart/histogram/boxplot/scatter/density)