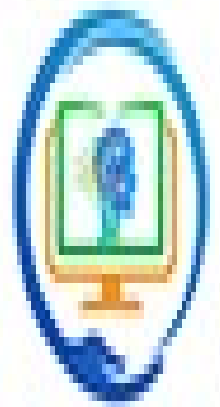


# Python Programming for Data Science and Analytics



**MERITORIUM**  
KNOWLEDGE ACADEMY

**Trainer: Vaishali KUNJIR**



# Introduction to Python Programming

Welcome to the world of Python programming! In this course, we will cover everything from the basics of Python installation to advanced data analysis with libraries like Pandas and Matplotlib. Get ready to dive into the world of coding!



**by vaishali kunjir**

# Getting Started: Python Installation

Before we begin coding, let's set up our environment. We'll guide you through the installation of Python using Anaconda and Jupyter Notebook, so you can start writing code in no time.

# Working with Variables and Data Types

## Variables

Learn how to assign values and manipulate variables to store and retrieve data.

## Data Types

Discover the different data types in Python, such as strings, integers, floats, and booleans.

## Operators and Operands

Master the use of operators and operands to perform calculations and logical operations.



# Manipulating Strings

Strings are a fundamental part of any programming language. Learn how to manipulate and transform strings to perform tasks like concatenation, slicing, and searching.

# Working with Lists, Tuples, and Dictionaries

## Important methods in Python

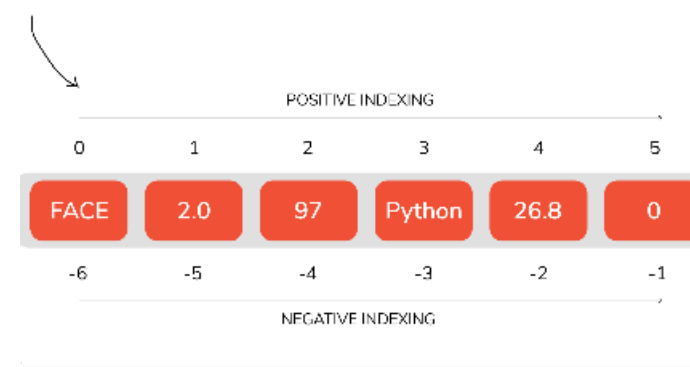
### Python List/Array Methods

append ()  
clear ()  
copy ()  
count ()  
extend ()  
index ()  
insert ()  
pop ()

### Python String Methods

capitalize ()  
casefold ()  
center ()  
count ()  
counvt ()  
encode ()  
endswith ()  
expandtabs ()  
find ()

Tuple = ('FACE', 2.0, 97, 'Python', 26.8, 0)



```
# Add two pairs to the dictionary, using the update method
>>> dictionary.update({'ran': 'run in the past tense',
                       'shoes': 'shoe plural'})

>>> dictionary
{'marathon': 'runners race about 26 miles',
 'person': 'human',
 'ran': 'run in the past tense',
 'run': 'move with speed',
 'shoe': 'shoe type, covering the leg no higher than the ankle',
 'shoes': 'shoe plural'}
```

## Lists

Explore the power of lists in Python and learn how to manipulate, access, and iterate through them.

## Tuples

Dive into tuples, an immutable collection of objects, and understand their advantages and use cases.

## Dictionaries

Discover dictionaries, a key-value data structure, and learn how to access, modify, and iterate through them.



# Working with Sets

1

## Set Basics

Explore the concept of sets and learn about the unique properties they offer in Python programming.

2

## Set Operations

Discover the power of set operations, such as intersection, union, and difference.

3

## Set Applications

Learn how to leverage sets for practical tasks like removing duplicates and membership testing.



# Conditional Statements and Loops

## Conditional Statements

Master the art of decision-making in Python with if, elif, and else statements.

## Loops

Explore the power of loops to iterate through data and perform repetitive tasks efficiently.





# Functions, Modules, and Packages

Take your code to the next level by organizing it into reusable and modular components. Learn about functions, modules, and packages to make your code more efficient and maintainable.

# Object-Oriented Programming in Python

Discover the power of object-oriented programming (OOP) in Python. Learn about classes, methods, and objects, and how to leverage inheritance for code reuse and flexibility.



# Data Science Libraries and Techniques



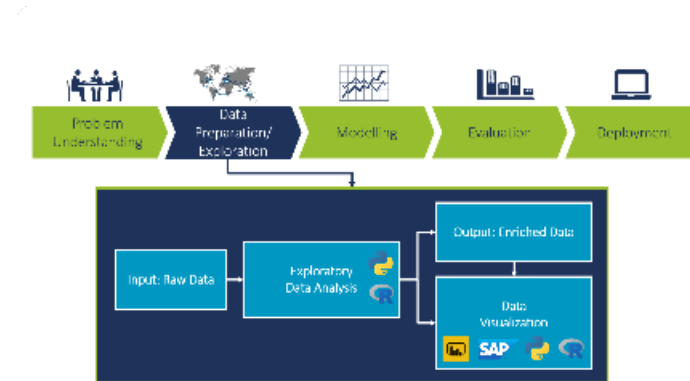
## Data Science Libraries

Unlock the power of Numpy, Pandas, Scikit-learn, Scipy, and Matplotlib for data analysis and visualization.



## Data Wrangling

Learn techniques for cleaning, transforming, and preparing data for further analysis.



## Exploratory Data Analysis

Explore and understand your data through statistical and visual analysis techniques.



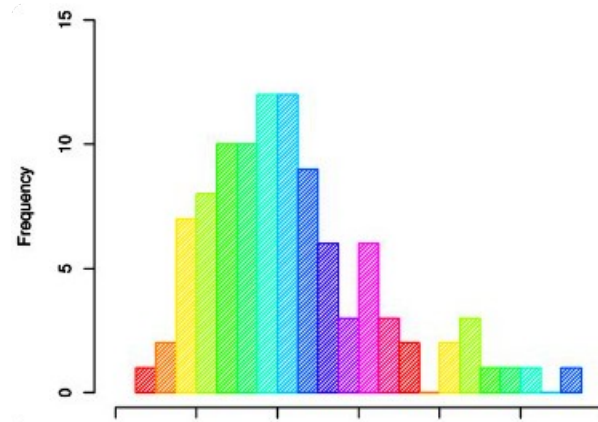
# Python Visualization: Unleashing the Power of Data

Create compelling and insightful visualizations with Python. Learn to create stunning histograms, bar charts, pie charts, box plots, scatter plots, and more.



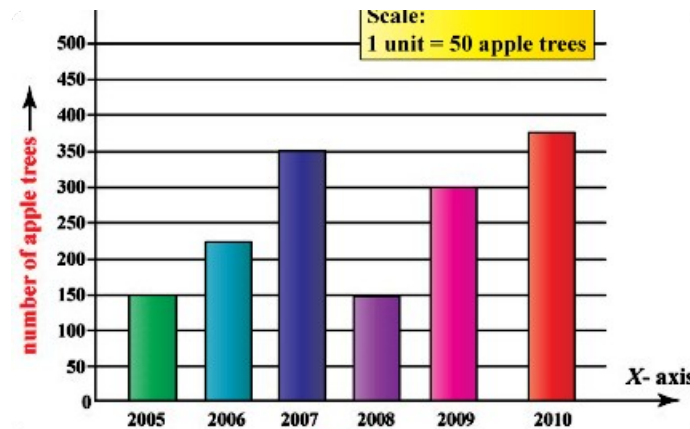
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# Unlock Your Data's Potential



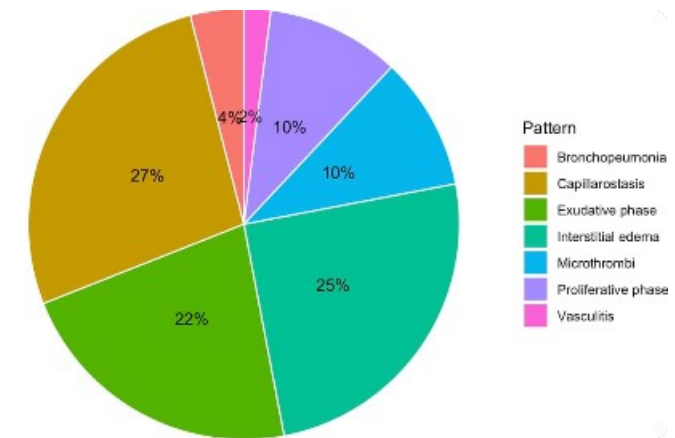
## Histograms

Visualize the distribution of your data using histogram charts. Gain insights into patterns and trends.



## Bar Charts

Effectively compare categorical data with bar charts. Communicate your findings with clarity and precision.



## Pie Charts

Display proportions and percentages using pie charts. Uncover hidden insights and trends with ease.



# Delve Deeper with Advanced Techniques

## Box Plots

Discover the distribution and variability of your data through box plots. Analyze outliers and identify central tendencies.

## Scatter Plots

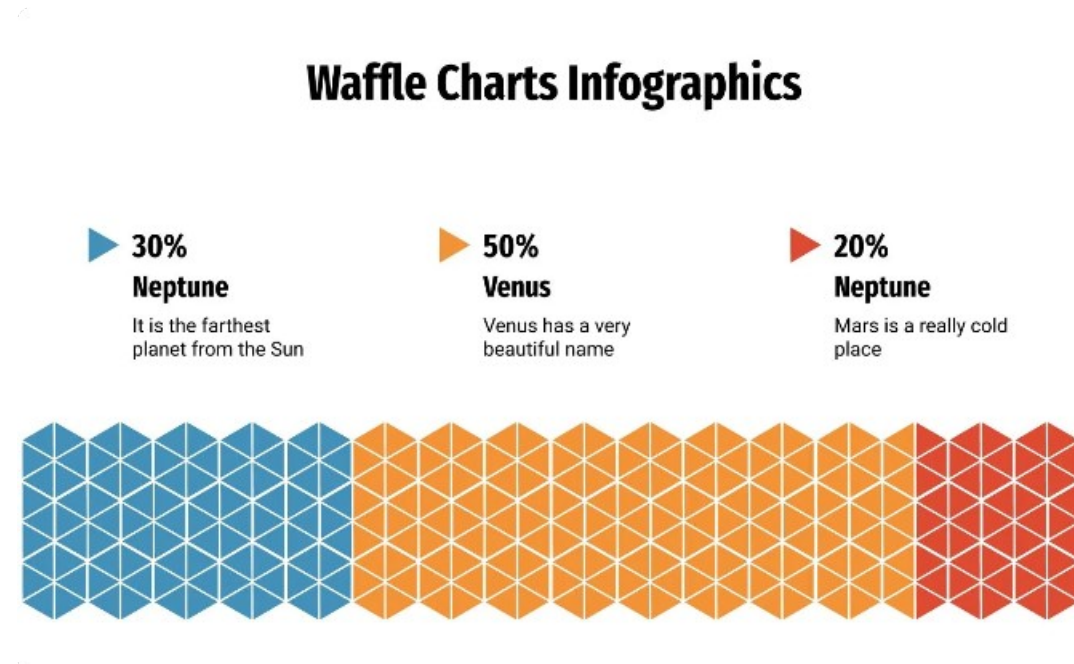
Reveal the relationship between two variables with scatter plots. Visualize correlations and detect outliers.

## Bubble Plots

Enhance your scatter plots with bubble plots. Convey an additional dimension of data using varying bubble sizes.



# Think Outside the Chart



## Waffle Charts

Engage your audience with waffle charts. Use icons or cells to represent proportions and percentages.



## Word Clouds

Visualize word frequency and importance with word clouds. Highlight key themes and trends in textual data.

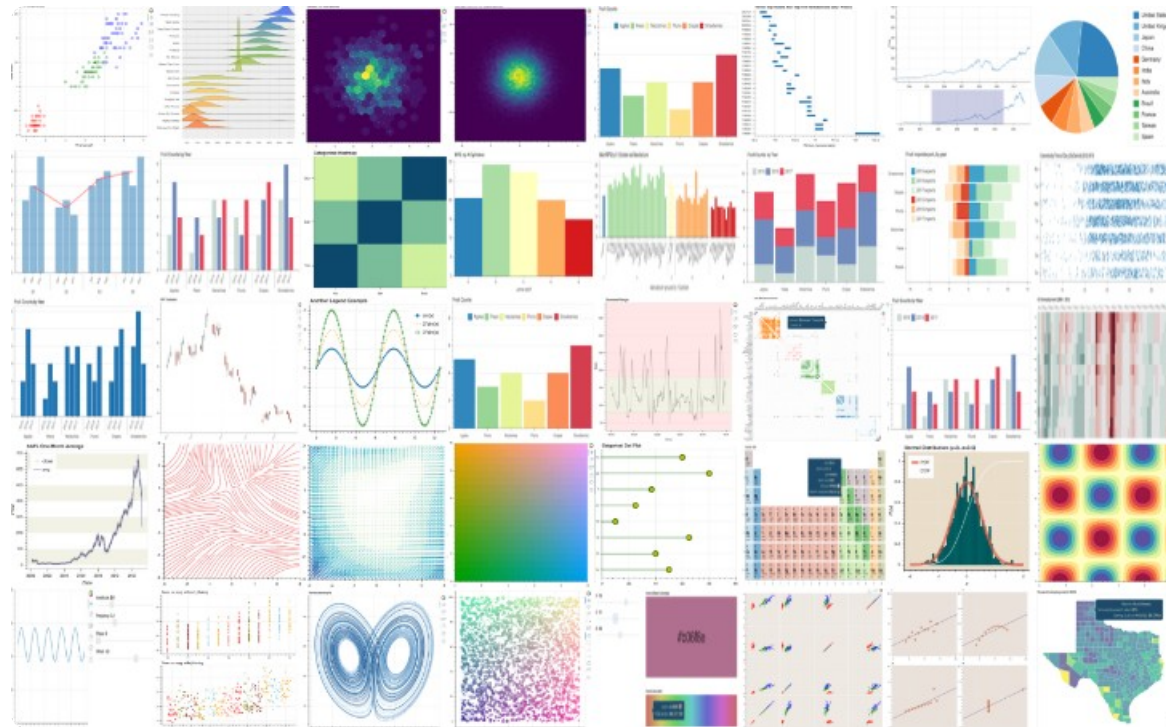
# Geographical Insights



## Generating Maps with Python

Create interactive and visually appealing maps with Python. Analyze spatial data and uncover geographic patterns.

# Elevate Your Visualizations with Bokeh



## Plotting with Bokeh

Take your visualizations to the next level with Bokeh. Craft interactive and aesthetically pleasing plots.



# Conclusion

Congratulations! You've completed the curriculum for our Python programming course. Now, it's time to put your skills to the test by working on a real-life project. Apply your knowledge and showcase your expertise!