



MANGALMAY
INSTITUTE OF MANAGEMENT TECHNOLOGY

Greater Noida



ADD ON
CERTIFICATION PROGRAM
on
Python for Data Analysis

BBA 1st Year students

Date: 27th Feb, 2024 to 2nd April, 2024
Time: 3:00 PM - 5:00 PM | Venue: Classroom

Coordinator:
Dr. Anuradha Singh



Resource Person
Ms. Anuradha Yadav

Toll-Free : 1800 103 3797 | www.mangalmay.net.in
Plot No. 8 & 9, Knowledge Park-II, Greater Noida, Delhi-NCR, India



Mangalmay Institute of Management Technology
Greater Noida (U.P.)



Date: 12th February, 2024

NOTICE

All the students of BBA I Year are hereby informed that MIMT is organizing Add on -Certification Course on "Python for Data Analysis", the details of the same are given below:

Program Details: -

Date: 27th Feb, 2024 - 2nd April 2024

Time: 3:00 pm-5:00 pm

Venue: Computer Lab, MIMT

Beneficiaries: BBA I Year

Resource Person: Dr. Anuradha Yadav

Participation: Participants can give their names to the coordinators by 23rd Feb 2024.

Activity Coordinator: Dr. Anuradha Singh


Associate Dean,
MIMT

CC to:

Principal, MIMT

IQAC, MIMT

HODs/Coordinators

Faculty Members

Notice Board

Office File

SYLLABUS

(30 Hours)

Module 1: Introduction to Python

Session 1: Introduction to Python

- **Overview of Python and Its Popularity:** Introduction to Python's history, development, and widespread use. Discussed its evolution and why it has become a popular choice for developers.
- **Advantages of Using Python:** Explored Python's key advantages, including its simplicity, readability, and ease of learning. Covered its broad applicability and supportive community.

Session 2: Python Basics

- **Setting Up Python:** Walkthrough of installing Python and setting up the development environment.
- **Python Basics:** Introduction to fundamental Python concepts, including syntax, indentation, and basic structure.
- **Variables and Data Types:** Covered the use of variables and different data types in Python such as integers, floats, and strings.
- **Basic Operations and Strings:** Introduced basic arithmetic operations and string manipulation techniques.
- **Loops and Functions:** Explained loops (for, while) and functions, including defining and calling functions.

Session 3: Hands-On Exercises

Practical coding exercises, including writing simple Python scripts, solving basic problems, and reinforcing their understanding through hands-on practice.

Module 2: Applications of Python

Session 4: Real-World Applications of Python

Explored various real-world applications of Python across different industries. Discussed case studies and examples illustrating Python's use in solving practical problems.

Session 5: AI/ML and Data Visualization

- **AI/ML:** Introduced Python's role in artificial intelligence and machine learning, discussing libraries like TensorFlow and Scikit Learn.
- **Data Visualization:** Covered Python tools for data visualization, including Matplotlib and Seaborn, and demonstrated how to create charts and plots to visualize data.

Session 6: Software Development

Examined Python's application in software development, including its use in web development with frameworks like Django and Flask, and its role in automation and scripting.

Module 3: Python and Its Features

Session 7: Introduction to Python's Key Features

- **Object-Oriented Programming (OOP):** Overview of OOP principles in Python, including classes, objects, inheritance, and encapsulation.
- **Interpreted Language:** Discussed Python's interpreted nature and how it simplifies coding and debugging.
- **High-Level Programming:** Explained the high-level programming features of Python and its abstraction from machine-level operations.

Session 8: Dynamic Semantics and Built-in Data Structures

- **Dynamic Semantics:** Introduced Python's dynamic typing and its implications for programming.
- **Built-in Data Structures:** Detailed Python's built-in data structures such as lists, tuples, dictionaries, sets, and their use cases.

Session 9: Automatic Garbage Collection

Explained Python's automatic garbage collection mechanism, focusing on how Python manages memory and deallocates unused objects.

Module 4: Python Built-in Data Types and Operators

Session 10: Python's Built-in Data Types

- **Boolean, Text, Numeric:** Covered Boolean values, text data types (strings), and numeric types (integers and floats).
- **List, Tuple:** Detailed the use of lists and tuples, including operations and methods.
- **Dictionary, Set, Bytes:** Explained dictionaries, sets, and bytes, covering their characteristics and usage.

Session 11: Overview of Python Operators and Tokens

Various Python operators, including arithmetic, relational, logical, and bitwise operators. the concept of tokens and their role in Python syntax.

Module 5: Packages Overview

Session 12: Understanding Python Packages and Modules

Introduced the concept of Python packages and modules, including how to create, use, and organize them in Python projects.

Session 13: Overview of Essential Packages

- **NumPy: Introduction to NumPy for numerical operations.**
- **Pandas: Overview of Pandas for data manipulation and analysis.**
- **Scikit Learn: Introduction to Scikit Learn for machine learning.**
- **Matplotlib and Seaborn: Covered these packages for data visualization and creating charts and plots.**

Module 6: Installation Steps and Jupyter Notebook

Session 14: Introduction to Python IDEs and Installation Steps

- **Python IDEs: Discussed various Python Integrated Development Environments (IDEs) and their importance.**
- **Installation Steps: Provided an overview of the Python installation process, including best practices.**

Session 15: Introduction to Anaconda Distribution and Anaconda Navigator

- **Anaconda Distribution: Introduced Anaconda as a comprehensive Python distribution for data science and machine learning.**
- **Anaconda Navigator: Overview of Anaconda Navigator, its features, and how to use it for managing Python environments and packages.**

Session 16: Introduction to Jupyter Notebook and Essential Shortcuts

- **Jupyter Notebook: Introduction to Jupyter Notebook, its functionalities, and how to create and manage notebooks.**
- **Essential Shortcuts: Covered essential shortcuts and tips for efficient use of Jupyter Notebook.**

SCHEDULE

Session	Content	Time	Date
S1	Introduction to Python	3:00 pm-5:00 pm	27-02-2024
S2	Python Basics	3:00 pm-5:00 pm	29-02-2024
S3	Hands-On Exercises	3:00 pm-5:00 pm	04-03-2024
S4	Real-world applications of Python	3:00 pm-5:00 pm	07-03-2024

S5	AI/ML and data visualization	3:00 pm-5:00 pm	13-03-2024
S6	Software development	3:00 pm-5:00 pm	15-03-2024
S7	Introduction to Python's Key Features	3:00 pm-5:00 pm	18-03-2024
S8	Dynamic Semantics and Built-in Data Structures	3:00 pm-5:00 pm	20-03-2024
S9	Automatic Garbage Collection	3:00 pm-5:00 pm	21-03-2024
S10	Python Built-in Data Types and Operators	3:00 pm-5:00 pm	22-03-2024
S11	Overview of Python Operators and Tokens	3:00 pm-5:00 pm	26-03-2024
S12	Understanding Python Packages and Modules	3:00 pm-5:00 pm	27-03-2024
S13	Overview of Essential Packages	3:00 pm-5:00 pm	29-03-2024
S14	Introduction to Python IDEs and Installation Steps	3:00 pm-5:00 pm	01-04-2024
S15	Introduction to Anaconda Distribution and Anaconda Navigator	3:00 pm-5:00 pm	02-04-2024
	Assessment	3:00 pm-4:00 pm	04-04-2024

Report	
Name of Activity	Add-on Certification Course Python for Data Analysis
Date	27th Feb, 2024- 2nd April, 2024
Venue	Computer Lab, MIMT
Organized by	Management Department
Participation by	BBA I Year students
Resource Person	Ms. Anuradha Yadav, Data Analytics Trainer.
Activity Convener	Dr. Anuradha Singh
Objective	<p>The objective of this activity is to make the students understand data By using libraries like Pandas, you can clean messy data, handle missing values, and format it in a way that makes sense.</p> <p>Visualize Your Findings Python offers libraries like Matplotlib and Seaborn to create cool graphs and plots. These visuals help you see trends and patterns in your data more easily. It's like turning boring numbers into colorful pictures!</p> <p>Answer Interesting Questions: With Python, you can dive into your data to find answers. Want to know which factors affect student grades the most? Or how different study habits impact exam scores? Python lets you ask these questions and find the answers in your data.</p> <p>Predictive Superpowers: Using Python's machine learning libraries like Scikit-learn, you can build models that predict future outcomes. Imagine predicting the next test score based on previous performance, or whether a student will pass a course based on their study habits. It's like having a crystal ball for your data!</p> <p>Tell a Story with Data: Python helps you craft a story with your data. You can create reports and presentations using Jupyter Notebooks or other tools. It's not just about crunching numbers; it's about sharing your discoveries in a way that others can understand and learn from.</p> <p>Get Job-Ready Skills: Learning data analysis with Python is a valuable skill for many careers. Whether you're interested in science, business, social sciences, or technology, being able to analyze data sets you apart. Plus, Python is widely used in the industry, so it's a great skill to have on your resume!</p> <p>Have Fun with Data: Lastly, Python makes data analysis fun! It's like solving puzzles or uncovering secrets in your data. You can explore topics you're curious about, like sports stats, social media trends, or even your own school performance.</p>

So, the objective of learning data analysis and interpretation through Python is not just about numbers and code. It's about gaining insights, answering questions, telling stories, and having a blast while doing it!

The objective of this module is to provide students with an understanding of Python as a programming language and its widespread popularity in various industries. By the end of this module, students should be able to recognize the key features and advantages of Python compared to other programming languages, laying the groundwork for further exploration.

In this module, the goal is to illustrate the real-world applications of Python across different domains. Students will explore how Python is used in artificial intelligence, machine learning, data visualization, and software development projects. By understanding the practical applications of Python, students can appreciate its versatility and relevance in today's technology landscape.

The objective of this module is to familiarize students with the key features of the Python programming language. By the end of this module, students should be able to describe Python's characteristics such as its object-oriented nature, interpreted execution model, high-level syntax, dynamic semantics, built-in data structures, and automatic memory management. This module aims to provide a comprehensive understanding of Python's built-in data types and operators. Students will learn about Boolean values, text processing, numeric data types, and various data structures like lists, tuples, dictionaries, sets, and bytes. Additionally, they will explore Python's operators and tokens to manipulate and perform operations on data.

The objective of this module is to introduce students to essential Python packages used for data analysis and scientific computing. By the end of this module, students should be able to identify the purpose and functionality of packages like NumPy, Pandas, Scikit Learn, Matplotlib, and Seaborn. They will understand how these packages enhance Python's capabilities for data manipulation, analysis, visualization, and machine learning.

The overall objective of the provided modules is to equip students with a comprehensive understanding of Python programming language and its applications in data analysis, machine learning, and software development. By the end of these sessions, students should be able to:

1-Understand the fundamental features and advantages of Python as a versatile programming language.

2-Recognize real-world applications of Python in various domains, including AI/ML, data visualization, and software development.

3-Describe key features of Python such as its object-oriented nature, dynamic semantics, and built-in data structures.

4-Utilize Python's built-in data types, operators, and control structures to manipulate and process data effectively.

5-Identify and utilize essential Python packages like NumPy, Pandas, Scikit Learn, Matplotlib, and Seaborn for data analysis, visualization, and machine learning tasks.

6-Set up their Python environment using Anaconda distribution and effectively use Jupyter Notebook for interactive coding and data analysis.

	<p>7-Apply Python programming skills to solve real-world problems and perform data analysis tasks efficiently.</p> <p>Overall, the objective is to provide students with a solid foundation in Python programming and practical skills necessary for data analysis and interpretation using Python.</p>
Content	<p>Python is the most effective tool for managing and analyzing data of all kinds. Its increasing use in several management functional areas is generally recognized. This dynamic tool provides several options for not only making the task easier, but also for improving the sophistication of data reporting and analysis.</p> <p>The programme extended for a period of 15 days, covering two hours per day (theory and practical -1hour each)</p> <p>Topics covered under the program are as follows:</p> <p>Day 1: Introduction to Python In the first session, we introduced Python, exploring its history and the factors that contributed to its widespread popularity. We discussed Python's design philosophy, which emphasizes readability and simplicity, making it accessible for both beginners and experienced developers. The session covered the advantages of Python, such as its versatility, extensive libraries, and active community support. Participants were guided through the initial setup process, including installing Python and setting up a basic development environment to start coding.</p> <p>Day 2: Python Basics The second session focused on Python basics. Participants learned about the fundamental syntax of Python, including indentation and structure. We covered variables and their types, basic operations such as arithmetic, and string manipulation techniques. The session also introduced control flow constructs like loops and conditional statements. Functions were explained, showing how to define and call them, which is crucial for writing reusable and organized code.</p> <p>Day 3: Hands-On Exercises During the hands-on exercises session, participants applied the concepts learned in previous sessions through practical coding tasks. They wrote simple Python scripts to practice basic operations, string manipulation, and control flow. Exercises included creating functions, working with loops, and solving basic programming problems. This session was designed to reinforce learning and provide real coding experience, helping participants to become more comfortable with Python's syntax and functionalities.</p> <p>Day 4: Real-World Applications of Python The fourth session explored how Python is applied in real-world scenarios. We discussed various industries where Python is widely used, such as finance, healthcare, and technology. Participants reviewed case studies that illustrated Python's role in solving practical problems, automating tasks,</p>

and enhancing productivity. The session aimed to demonstrate Python's versatility and effectiveness in addressing real-world challenges across different domains.

Day 5: AI/ML and Data Visualization

In this session, we examined Python's capabilities in artificial intelligence (AI) and machine learning (ML). Participants learned about key libraries such as TensorFlow and Scikit Learn, and their applications in building and training ML models. We also covered data visualization techniques using libraries like Matplotlib and Seaborn. Participants saw how to create various types of visualizations to represent data insights effectively.

Day 6: Software Development

The session on software development focused on Python's use in developing software applications. We explored Python's role in web development with frameworks like Django and Flask, and its applications in automation and scripting. Real-world examples demonstrated how Python can be used to build scalable web applications, automate repetitive tasks, and write robust software solutions.

Day 7: Introduction to Python's Key Features

We introduced Python's key features, starting with its object-oriented programming (OOP) capabilities. The session covered concepts such as classes, objects, inheritance, and encapsulation. We also discussed Python's interpreted nature and high-level programming characteristics, highlighting how these features contribute to Python's ease of use and efficiency in development.

Day 8: Dynamic Semantics and Built-in Data Structures

Participants learned about Python's dynamic semantics, which include dynamic typing and automatic memory management. We explored Python's built-in data structures, such as lists, tuples, dictionaries, and sets. The session focused on how these structures can be used to organize and manipulate data effectively within Python programs.

Day 9: Automatic Garbage Collection

The ninth session covered Python's automatic garbage collection mechanism. Participants learned how Python manages memory by automatically reclaiming unused objects, which helps prevent memory leaks. We discussed how garbage collection works behind the scenes and its impact on performance and resource management in Python applications.

Day 10: Python Built-in Data Types and Operators

We delved into Python's built-in data types, including Boolean, text, numeric types, lists, tuples, dictionaries, and sets. The session also covered various operators in Python, such as arithmetic, relational, and logical operators. Participants learned how to use these data types and operators to perform different programming tasks and operations.

	<p>Day 11: Overview of Python Operators and Tokens The session focused on Python operators and tokens. We discussed different types of operators, including arithmetic, comparison, and logical operators, and how they are used in expressions. Participants also learned about Python tokens, such as keywords, identifiers, and literals, and their role in the Python language’s syntax and structure.</p> <p>Day 12: Understanding Python Packages and Modules Participants learned about Python packages and modules, which help organize and manage code. We explained how to create, import, and use packages and modules to modularize Python programs. The session highlighted the benefits of using packages to structure code efficiently and avoid naming conflicts.</p> <p>Day 13: Overview of Essential Packages The session provided an overview of essential Python packages, including NumPy for numerical operations, Pandas for data manipulation, Scikit Learn for machine learning, and Matplotlib and Seaborn for data visualization. Participants learned about the functionality of each package and how to use them effectively in Python projects.</p> <p>Day 14: Introduction to Python IDEs and Installation Steps We introduced various Python Integrated Development Environments (IDEs) and their importance for coding and development. The session included a detailed walkthrough of Python installation steps, ensuring participants understood how to set up their development environment properly and choose the right IDE for their needs.</p> <p>Day 15: Introduction to Anaconda Distribution and Anaconda Navigator Participants were introduced to the Anaconda distribution, a popular platform for managing Python environments and packages. We covered Anaconda Navigator, its features, and how it simplifies environment management and package installation. The session aimed to equip participants with tools to manage their Python setups effectively. The final session focused on Jupyter Notebook, a tool for interactive computing. Participants learned about Jupyter Notebook’s functionalities, including creating, managing, and sharing notebooks. Essential shortcuts and tips for using Jupyter Notebook efficiently were also covered, helping participants enhance their productivity and streamline their workflow.</p> <p>This structured session plan aims to provide a comprehensive introduction to Jupyter Notebook and its functionalities within a two-hour timeframe, catering to beginners and those new to interactive computing environments. Adjust the depth and pace based on the audience's familiarity with programming concepts and tools.</p>
Assessment	At the end of the “Python for Data Analysis” program there was an assignment to assess the understanding level of the students.

<p>Outcome of Activity</p>	<p>After undergoing the aforementioned program, students were able to reap the following benefits:</p> <ul style="list-style-type: none">● Automatic computation to cells with formulas● Instead of performing the computation manually, Python can help students with their computational ease.● Python can support decisions by coding conditional statements like IF, IF-ELSE statements inside the cell.● Python supports numbers of columns and rows which can contain large amounts of data and computations. Hence students will be able to analyze large amounts of data through Data Analytics. <p>At the end of Python for Data Analysis the program, students were able to understand the basic and advanced concepts of Python along with its practical applications. They were assessed on the basis of their theoretical and practical knowledge at the end of the session. Students received the certificates after the successful completion of their course.</p>
----------------------------	--

PROFILE OF THE RESOURCE PERSON

MS. ANURADHA YADAV, Data Analytics Trainer

EDUCATIONAL QUALIFICATION

B.Tech in INFORMATION TECHNOLOGY from Purvanchal University. Working as Assistant Professor in MANGALMAY INSTITUTE OF ENGINEERING AND TECHNOLOGY

- **ERP CO-Coordinator and IT CLUB Member.**
- **6 month of Experience as Assistant professor in GNIOT.**
- Working as a **placement coordinator** from IT Department.
- Active member of **ALUMNI Coordinator.**
- Assisting with various department activities.
- Attending faculty and departmental meetings and providing suggestions for improvement.
- Teaching and supervising undergraduate student.
- **2 Year of experience in Prasad institutions in Lucknow**
- **Attend International conference on “c#” organized by SHARK IN DELHI.**
- **3** Month training experience on **ASP .NET framework** and database as **SQL server.**
- **2** Month learning course on **Python**
- Have good knowledge on writing SQL queries to pull the reports from the DB.
- Expertise in developing **courier Portal** web application using **.NET Framework, java script, HTML** and database using SQL server.
- Have been involved in the entire project life cycle starting from requirement gathering to implementation.
- Experienced interacting directly with customers on numerous occasions; to gather requirements, develop, debug and solve critical issues and introduce them to new product feature.



List of Registered Students (BBA 1st Year) for Add-on Certification Program PYTHON FOR DATA ANALYSIS

Sr. NO.	Roll No.	NAME OF STUDENT	REGISTERED
1	230992010217	ADITYA GIRI	REGISTERED
2	230992010237	ANAMIKA TIWARI	REGISTERED
3	230992010245	ANKITA KUMARI	REGISTERED
4	230992010261	APRAJITA GAUTAM	REGISTERED
5	230992010271	ASHMIT KUMAR SINGH	REGISTERED
6	230992010292	DEEPANSHU	REGISTERED
7	230992010312	GAUTAM GOSWAMI	REGISTERED

8	230992010324	HARSH CHAUHAN	REGISTERED
9	230992010326	HARSHIT CHAUHAN	REGISTERED
10	230992010334	HIMANSHU	REGISTERED
11	230992010359	KRISHNA CHANDRA GUPTA	REGISTERED
12	230992010382	MAYANK UPPADHAYAY	REGISTERED
13	230992010420	NIKHIL RAGHAV	REGISTERED
14	230992010425	NIRAJ KUMAR	REGISTERED
15	230992010444	PINKAL KHARI	REGISTERED
16	230992010450	PRANAV VASHISTH	REGISTERED
17	230992010463	PRIYANSHU	REGISTERED
18	230992010494	RITIK KUMAR	REGISTERED
19	230992010501	RUCHI CHAUHAN	REGISTERED
20	230992010504	SAANVI GUPTA	REGISTERED
21	230992010538	SHIKHA	REGISTERED
22	230992010543	SHIVAM KUMAR	REGISTERED
23	230992010547	SHIVDUTT RAI	REGISTERED
24	230992010568	SURAJ KUMAR	REGISTERED
25	230992010583	UJESH	REGISTERED
26	230992010589	VANSH KUMAR	REGISTERED
27	230992010594	VICKEY	REGISTERED
28	230992010597	VIKRAM KUMAR	REGISTERED
29	230992010603	VISHNU JEE	REGISTERED
30	230992010612	ZAINAB RAHIMI	REGISTERED

**Status of Registered Students (BBA 1st Year) for Add-on Certification Program
PYTHON FOR DATA ANALYSIS**

Sr. NO.	Roll No.	NAME OF STUDENT	REGISTERED	COMPLETED
1	230992010217	ADITYA GIRI	REGISTERED	COMPLETED
2	230992010237	ANAMIKA TIWARI	REGISTERED	COMPLETED
3	230992010245	ANKITA KUMARI	REGISTERED	COMPLETED
4	230992010261	APRAJITA GAUTAM	REGISTERED	COMPLETED
5	230992010271	ASHMIT KUMAR SINGH	REGISTERED	COMPLETED
6	230992010292	DEEPANSHU	REGISTERED	COMPLETED
7	230992010312	GAUTAM GOSWAMI	REGISTERED	COMPLETED
8	230992010324	HARSH CHAUHAN	REGISTERED	COMPLETED
9	230992010326	HARSHIT CHAUHAN	REGISTERED	COMPLETED
10	230992010334	HIMANSHU	REGISTERED	COMPLETED
11	230992010359	KRISHNA CHANDRA GUPTA	REGISTERED	COMPLETED
12	230992010382	MAYANK UPPADHAYAY	REGISTERED	COMPLETED
13	230992010420	NIKHIL RAGHAV	REGISTERED	COMPLETED
14	230992010425	NIRAJ KUMAR	REGISTERED	COMPLETED
15	230992010444	PINKAL KHARI	REGISTERED	COMPLETED
16	230992010450	PRANAV VASHISTH	REGISTERED	COMPLETED
17	230992010463	PRIYANSHU	REGISTERED	COMPLETED
18	230992010494	RITIK KUMAR	REGISTERED	COMPLETED

19	230992010501	RUCHI CHAUHAN	REGISTERED	COMPLETED
20	230992010504	SAANVI GUPTA	REGISTERED	COMPLETED
21	230992010538	SHIKHA	REGISTERED	COMPLETED
22	230992010543	SHIVAM KUMAR	REGISTERED	COMPLETED
23	230992010547	SHIVDUTT RAI	REGISTERED	COMPLETED
24	230992010568	SURAJ KUMAR	REGISTERED	COMPLETED
25	230992010583	UJESH	REGISTERED	COMPLETED
26	230992010589	VANSH KUMAR	REGISTERED	COMPLETED
27	230992010594	VICKEY	REGISTERED	COMPLETED
28	230992010597	VIKRAM KUMAR	REGISTERED	COMPLETED
29	230992010603	VISHNU JEE	REGISTERED	COMPLETED
30	230992010612	ZAINAB RAHIMI	REGISTERED	COMPLETED

Glimpses of the Python Certification Program:

Introductory session of the Python prog





DAY-2 STUDENT PRACTICING ON PYTHON



Students working on Python in Computer Lab

Sample Certificate

 **Mangalmy Institute of Management Technology** 
Greater Noida (U.P.)

CERTIFICATE

It is to certify that **Mr. Aditya Giri** of **BBA 1st year** has successfully completed **30 hours** certification course on **"Python for data analysis"** from **27/02/2024** to **02/04/2024** organized by Mangalmy Institute of Management & Technology, Greater Noida.

 _____ VICE CHAIRMAN Mangalmy Group of Institutions	 _____ IQAC Coordinator Mangalmy Institute of Management & Technology	 _____ PRINCIPAL Mangalmy Institute of Management & Technology
---	---	--



Name: Anomika Tiwari
Roll:

Subject Name: Python for Data Analysis
Duration: 40 minute

General Instructions: There are 20 Questions in the Question Paper. Attempt all Questions.

36/40
AT

1- Which library is commonly used for data manipulation and analysis in Python?

- A) NumPy
- B) SciPy
- C) TensorFlow
- D) Django

2

2- What is the primary data structure used in Pandas for storing and manipulating data?

- A) Array
- B) DataFrame
- C) List
- D) Dictionary

2

3- How do you import the Pandas library in Python?

- A) import pandas
- B) import pd
- C) from pandas import *
- D) All of the above

2

4 - Which function is used to read a CSV file into a Pandas DataFrame?

- A) read_csv()
- B) load_csv()
- C) import_csv()
- D) open_csv()

2

5- What does NaN represent in Pandas?

- A) Not a Number
- B) Null or missing value
- C) Numeric analysis notation
- D) Non-applicable number

2

6 - Which library provides support for large, multi-dimensional arrays and matrices in Python?

- A) Pandas
- B) NumPy
- C) Matplotlib
- D) Seaborn

2

7- What is the purpose of the `apply()` function in Pandas?

- A) To create new columns in a DataFrame
- B) To apply a function along an axis of a DataFrame
- C) To merge two DataFrames
- D) To filter rows based on a condition

2

8- Which plotting library is commonly used for data visualization in Python?

- A) Seaborn
- B) SciPy
- C) NumPy
- D) TensorFlot

2

9- How do you create a scatter plot using Matplotlib?

- A) `plt.scatter()`
- B) `plt.plot()`
- C) `plt.bar()`
- D) `plt.hist()`

2

10- What does the `.loc[]` method do in Pandas?

- A) Access elements by index label
- B) Access elements by integer position
- C) Perform element-wise operation
- D) None of the above

2

11- Which of the following is not a valid data type in NumPy?

- A) `int32`
- B) `float64`
- C) `str`
- D) `bool`

2

12- How do you concatenate two NumPy arrays vertically?

- A) `np.concat(axis=0)`
- B) `np.concatenate((arr1, arr2), axis=0)`
- C) `np.append(arr1, arr2)`
- D) `np.vstack(arr1, arr2)`

2

13- What is the purpose of the `groupby()` function in Pandas?

- A) To group data based on column values
- B) To aggregate data

2

- C) To perform data filtering
- D) All of the above

14- How do you install additional Python packages using conda?

- A) `conda install package_name`
- B) `pip install package_name`
- C) `install package_name`
- D) `python -m install package_name`

2

15- Which library provides machine learning algorithms and tools in Python?

- A) SciPy
- B) Pandas
- C) Scikit-Learn
- D) TensorFlow

2

16- What is the purpose of virtual environments (venv) in Python?

- A) To isolate Python environments and dependencies
- B) To speed up Python code execution
- C) To provide a graphical user interface for Python
- D) To store Python packages locally

2

17- How do you access the first element of a NumPy array arr?

- A) `arr[0]`
- B) `arr[1]`
- C) `arr(0)`
- D) `arr.first`

2

18- Which method is used to check for missing values in a Pandas DataFrame?

- A) `df.check_missing()`
- B) `df.isnull()`
- C) `df.has_missing()`
- D) `df.missing_values()`

2

19- What is the purpose of the `describe()` function in Pandas?

- A) To calculate summary statistics of numerical columns
- B) To sort DataFrame rows based on column values
- C) To visualize data distribution
- D) To apply a function to each element in a DataFrame

2

20- Which of the following is used to perform statistical tests and calculations in Python?

- A) Pandas
- B) SciPy

- C) SciPy
- D) NumPy

2