PYTHON LIBRARIES

FULL STACK SKILLS BOOTCAMP

PYTHON CONCEPTS

- **Lesson Overview:**
- In this lesson, we will be introduced to:

- Installing Python Libraries
- Requests
- NumPy
- PyMuPDF
- Rich

INTRODUCTION TO PYTHON LIBRARIES

- **What are Python Libraries?**
- Python libraries are collections of pre-written code that simplify complex tasks.
- They help developers save time and avoid reinventing the wheel.
- Libraries cover a wide range of functionalities, including data manipulation, networking, visualization, and more.

INSTALLING PYTHON LIBRARIES

- **Importing a Python Library**
- Python libraries can be installed using package managers like pip.

  Example

```
pip install library_name
```

VIRTUAL ENVIRONMENTS

Virtual environments help manage dependencies:

```
python -m venv myenv
source myenv/bin/activate  # On macOS/Linux
myenv\Scripts\activate  # On Windows
```

To install multiple libraries:

```
pip install -r requirements.txt
```

POPULAR PYTHON LIBRARIES

- **What are some popular Libraries?**

- **NumPy**: Numerical computing
- **Pandas**: Data analysis and manipulation
- **Matplotlib**: Data visualization
- **Requests**: HTTP requests handling
- **BeautifulSoup**: Web scraping
- **PyMuPDF**: Working with PDFs
- **Rich**: Formatting console output

REQUESTS LIBRARY

- The requests library is used for handling HTTP requests.

  Example:

```
import requests
response = requests.get("https://api.github.com")
print(response.status_code)
print(response.json())
```

- Supports GET, POST, PUT, DELETE requests.

NUMPY

- NumPy is used for numerical computing and handling large arrays efficiently.
- Example:

```
import numpy as np
array = np.array([1, 2, 3, 4])
print(array * 2)
```

- Supports matrix operations and advanced mathematical functions.

WORKING WITH PDFS USING PYMUPDF

- PyMuPDF (also known as Fitz) is used for extracting text and images from PDFs.
- Example:

```
import fitz
doc = fitz.open("sample.pdf")
for page in doc:
    print(page.get_text())
```

- Can also modify and annotate PDFs.

RICH LIBRARY

- **Rich** enhances console output with colours, tables, and markdown.
- Example:

```
from rich.console import Console
console = Console()
console.print("[bold red]Hello, Rich![/bold red]")
```

- Supports rendering tables, progress bars, and JSON formatting.

OTHER POPULAR PYTHON LIBRARIES

- **Scikit-learn**: Machine learning
- **TensorFlow & PyTorch**: Deep learning
- **Flask & Django**: Web development
- **SQLAlchemy**: Database management
- **OpenCV**: Computer vision
- **Pygame**: Game development

CONCLUSION

- Python libraries make development efficient and scalable.
- Always check documentation for best practices.
- Experiment with different libraries to enhance your skills.

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QUESTIONS?