🧠 Lecture 02: Setting Up Python & Running Your First Program

📌 1. Lecture Overview

- Recap of previous lecture: What is Python & Who should learn it.
- Focus of this lecture:
  - ✅ **Installing tools** needed for Python
  - ✅ **Writing and running your first Python program**

⚙️ 2. Why Set Up Python?

Before coding in Python, we need to:

- Install Python itself.
- Set up tools that:
  - Manage Python packages.
  - Create **virtual environments** (safe project zones).
  - Provide a **comfortable space to write code**.

🧰 3. Tools You'll Install Today

Tool	Purpose
Miniconda / Anaconda	Provides Python and tools to manage environments/packages.
VS Code	A powerful and easy-to-use code editor (IDE).

🐍 4. Step-by-Step: Install Miniconda / Anaconda

📄 What are They?

Anaconda	Miniconda
Big package (~1GB) with Python + many tools (Jupyter, Spyder)	Lightweight version — only core Python and tools
Best if you want everything pre-installed	Best if you want control + save space

🧠 Why Use Miniconda?

- Lightweight
- Faster installation
- More control over packages

▼ 4.1 How to Install Miniconda

1. Open browser and search: `Download Miniconda`
2. Go to official site & download version for your OS (Windows/macOS/Linux)
3. Open installer & follow steps:
    - Click **Next**, agree to terms
    - Choose install location
    - ✅ **Add to PATH** (important for easy access!)
4. Finish installation

🧒💻 5. Install VS Code

🔍 What is VS Code?

- Free and open-source **IDE (Integrated Development Environment)**
- Features:
    - Code writing + editing
    - Terminal access
    - Extension support

□ Steps:

1. Search: `Download VS Code`
2. Select installer for your OS
3. Run it → Click **Next** and install
4. Done!

✅ 6. Verifying Python Installation

After installing Miniconda, check if Python is correctly installed.

□ 6.1 How to Check Python Version:

1. Press **Windows key** → search `Anaconda Prompt`
2. Open it and type:

```
bash
CopyEdit
python --version
```

3. If installed correctly, you'll see something like:

```
nginx
CopyEdit
Python 3.12.0
```

❌ If you don't see a version → Reinstall Miniconda or Anaconda.

🚀 7. Run Your First Python Program

✅ Steps:

1. Open **VS Code**
2. Create new file: `File > New File`
3. Write code:

```
python
CopyEdit
print("Hello, World!")
```

4. Save as: `first_program.py`
5. Open terminal: `Terminal > New Terminal`
6. Type in terminal:

```
bash
CopyEdit
python first_program.py
```

7. ✅ Output:

```
CopyEdit
Hello, World!
```

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8. Summary of Key Points

Concept	Description
Miniconda	Lightweight tool to install Python & manage environments
Anaconda	Full package with many tools (large size)
VS Code	Code editor for writing/running Python
`python --version`	Command to check if Python is installed
First program	`print("Hello, World!")` — verifies everything works

Difficult Words Explained

Word	Explanation
IDE	Integrated Development Environment: A program where you write, run, and debug code
PATH	A system setting that helps the computer find installed programs
Virtual Environment	Isolated space to manage Python packages for a specific project

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Practice / Revision Questions

1. What is the difference between Anaconda and Miniconda?
2. Why is Miniconda recommended for beginners?
3. What is the purpose of VS Code?
4. How can you check if Python is correctly installed?
5. Write the code for your first Python program and how to run it.

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9. Conclusion

- You've successfully installed the necessary tools for Python programming.
- Verified Python setup.
- Ran your **first Python program** using VS Code + Miniconda.

🎯 **Next up:** Learn Python basics — variables, data types & operations. Let's keep building!