# Lecture Notes: Setting Up Python for Beginners

## 1. Lecture Overview

- **Previous Lecture:** Introduction to Python, its uses, and benefits.
- **Today's Lecture:** Installing Python and essential tools, followed by running your first program.

---

## 2. Why Set Up Python?

To write and run Python code, you need:

- Python installed on your system.
- Tools for managing packages and environments (Miniconda/Anaconda).
- A code editor (VS Code) for efficient programming.

---

## 3. What We Will Install

1. **Miniconda or Anaconda** (Python + essential tools).
2. **VS Code** (Code editor for writing and running Python).

---

## 4. Step 1: Install Miniconda or Anaconda

### 4.1 What's the Difference?

- **Anaconda:** Full package (Python + 1GB+ libraries, Jupyter Notebook, Spyder).

- **Miniconda:** Lightweight (only Python + essential tools).

### 4.2 Why Miniconda?

- Smaller and faster.
- Sufficient for beginners.

### 4.3 Installation Steps

1. **Download Miniconda:**
   - Search "Download Miniconda" and visit the official site.
   - Choose the correct version for your OS (Windows/macOS/Linux).
2. **Run Installer:**
   - Follow prompts (Next → Agree → Install).
   - **Important:** Check "Add Miniconda to PATH" for easy access.

---

## 5. Step 2: Install VS Code

### 5.1 What is VS Code?

A free, powerful code editor for Python (and other languages).

### 5.2 Installation Steps

1. **Download:** Visit the VS Code Website.
2. **Install:** Run the installer and follow default settings.

---

## 6. Step 3: Verify Python Installation

### 6.1 Check Python Version

1. Open **Anaconda Prompt** (Windows) or Terminal (macOS/Linux).
2. Run:
   bash
   ```
   python --version
   ```
   - **Expected Output:** `Python 3.x.x`
   - **If no output appears:** Reinstall Miniconda.

---

# 7. Step 4: Run Your First Python Program

## 7.1 Steps to Execute a Python Program

1. **Open VS Code** → Create a new file (`File > New File`).
2. **Write the code:**
   python
   ```
   print("Hello, World!")
   ```
3. **Save as** `first_program.py` (`.py` extension is required).
4. **Run the program:**
   - Open Terminal in VS Code (`Terminal > New Terminal`).
   - Run:
     bash
     ```
     python first_program.py
     ```
   - **Output:** `Hello, World!`

---

# 8. Summary of Key Points

- **Miniconda** is a lightweight Python installer.
- **VS Code** is a recommended editor for Python.

- Verify Python installation using `python --version`.
- The first program is typically `print("Hello, World!")`.

---

## 9. Conclusion

- Python is now set up and ready for use.
- **Next Lecture:** Variables, Data Types, and Basic Operations.

---

### Troubleshooting Tips

- If `python --version` fails:
  - Reinstall Miniconda with **PATH enabled**.
  - Restart your computer.
- If VS Code does not recognize Python, install the **Python extension** from the marketplace.