
Installing and Using Visual Studio (VS) Code & Miniconda

Part 1: VS Code

- VS Code is a lightweight code editor used to write and run code.
- Supports many programming languages, especially **Python**.

Installing VS Code

Step 1: Download VS Code

- Go to: <https://code.visualstudio.com/>
- Click **Download** for your operating system (OS).

Step 2: Install VS Code

- Open the installer file.
- Keep the default settings.

Step 3: Open VS Code

- Double-click the icon or search code on your machine.
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Part 2: Miniconda

- Miniconda is a smaller version of Anaconda.
- Helps manage **Python packages** and **environments**.
- Useful for running bioinformatics tools without messing up your system.

Installing Miniconda

Step 1: Download Miniconda

- Go to: <https://www.anaconda.com/docs/getting-started/miniconda/install#quickstart-install-instructions>
- Choose your operating system:
 - Windows: Miniconda3 Windows 64-bit
 - macOS: Miniconda3 macOS 64-bit
 - Linux: Miniconda3 Linux 64-bit

Step 2: Install Miniconda

- Open the downloaded file.
- Keep clicking **Next** or **Continue** until it installs.

Step 3: Verify

- Open your terminal (macOS/Linux) or **Anaconda** (Windows)
- Type:

```
conda --version
```

You should see something

```
conda 24.3.0
```

Part 3: Connect VS Code and Conda

Step 1: Install Python Extension

- Open VS
- Go to **Extensions** (left sidebar, the square icon) Search **Python**
- Click **Install** (Microsoft version)

Step 2: Create Conda Environment

In terminal or Anaconda Prompt,

```
conda create -n bioenv python=3.10
```

Then activate it:

```
conda activate bioenv
```

Step 3: Open VS Code in the Environment

- In terminal, type:

```
code .
```

This opens the folder you're in with VS Code.

Part 4: Write and Run a Python Script

Step 1: Create a Python File

- In VS Code, click **File > New File**
- Save as **hello.py**

Step 2: Write this code:

```
print("Hello, bioinformatics world!")
```

Step 3: Run It

- Open terminal in VS Code: Click on

Terminal > New Terminal

OR

Ctrl + shift + `

- Make sure your bioenv is activated (`conda activate bioenv`)

- Run:

```
python hello.py
```

You should see: **Hello, bioinformatics**

Tips for

- Read error messages well
 - Always activate your environment
 - Name your environments clearly
 - Use one terminal at a time
 - Celebrate small wins
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Conclusion

Mastering VS Code and Miniconda starts with understanding the basics. Stay consistent and the tools will soon feel familiar.

Alternatively, Miniconda can be installed via the Terminal without using the browser to download the installer package. Follow these steps:

1. Download the Installer Script

First, we need to grab the shell script (.sh) from the official servers. You can do this directly in your terminal using curl.

For macOS (Apple Silicon/M1/M2/M3):

```

**curl -O https://repo.anaconda.com/miniconda/Miniconda3-latest-MacOSX-arm64.sh**

```

For Linux (x86_64):

```

**curl -O https://repo.anaconda.com/miniconda/Miniconda3-latest-Linux-x86\_64.sh**

```

2. Run the Installation

Now, execute the script you just downloaded.

```

**bash Miniconda3-latest-\*.sh**

```

During this process, you will see a few prompts:

- *Review License:*

Press Enter to scroll through the terms.

- *Accept Terms:*

Type yes and press Enter.

- *Location:* It will suggest a default path (usually ~/miniconda3).

Press Enter to confirm.

- *Initialization:*

It will ask if you want to run `conda init`. **Type `yes`**. This ensures that every time you open your terminal, the conda command is ready to go.

3. Refresh Your Shell

The installer modified your shell profile (like .bashrc or .zshrc), but your current terminal session doesn't know that yet. You need to restart it.

- Option A: Close the terminal window and open a new one.

- Option B (The Pro way): Run the following command:

```**source ~/.bashrc** # For Linux```

```**source ~/.zshrc** # For macOS/Zsh```

4. Verify the Install

To make sure everything is humming along perfectly, check the version:

```**conda --version**``` # Note: double dashes (- -)

If you see something like conda 24.x.x, you're in business. You'll also likely notice (base) appearing before your terminal prompt --- this indicates you are in the default environment.

### 5. Basic Housekeeping (Optional)

Miniconda likes to activate the base environment automatically. If you find that annoying and want to keep your terminal "clean" until you explicitly call for conda, run:

```**conda config --set auto\_activate\_base false**```

Essential Commands You Can Experiment With On Your First Day

Task

1. Create an environment
2. Activate environment
3. Install a package
4. List environments

Command

conda create --name myenv python=3.10
conda activate myenv
conda install numpy (or **conda install <packagename>**)
conda env list