

# Python & PyOpenGL Installation Guide (Windows)

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## Step 1: Install Python

1. Download Python from the official website:  
*<https://www.python.org/downloads/>*
2. Install Python (any version). During installation:
  - Check 'Add Python to PATH' (recommended).
  - Complete the installation.

## Step 2: Verify Python Installation

1. Open Command Prompt (CMD) or PowerShell.
2. Run the following command:  
**python --version**
  - If Python is installed correctly, it will show something like: Python 3.12.5
  - If you get an error (Python not found), continue to the next step.

## Step 3: Check Python Path

1. In CMD, run:  
**where python**
  - If Python is installed correctly, this should show a path like:  
*C:\Users\LENOVO\AppData\Local\Programs\Python\Python312\python.exe*
  - If nothing shows, Python is not added to PATH.

## Step 4: Fix PATH Issue

1. Find your Python installation folder. Usually it is in:  
*C:\Users\LENOVO\AppData\Local\Programs\Python\Python3xx\*  
(where 3xx = version like 312).
2. Copy that folder path.
3. Go to: - **Settings** → **System** → **About** → **Advanced system settings** → **Environment Variables**.
  - Under System variables, select **Path** → **Edit**.
  - Add these two paths (adjust version number):

*C:\Users\LENOVO\AppData\Local\Programs\Python\Python312\  
C:\Users\LENOVO\AppData\Local\Programs\Python\Python312\Scripts\*

4. Save and restart your terminal.

## Step 5: Disable Microsoft Store Alias (if still not working)

1. **Open: Settings → Apps → Advanced app settings → App execution aliases.**
2. Turn OFF the switches for:
  - python.exe
  - python3.exe

This prevents Windows from redirecting to Microsoft Store.

## Step 6: Verify Installation

Reopen CMD or PowerShell and run:

**python --version**

It should now show something like:

*Python 3.12.5*

👉 If you already installed multiple versions of Python, remove all except one (preferably the latest version).

## Step 7: Download PyOpenGL

1. Open this GitHub repository:  
<https://github.com/cgohlke/pyopengl-build/releases>
2. Download the following files based on your system:
  - For Ryzen (AMD processor):
    - *PyOpenGL-3.X.X-cp3XX-cp3XX-win\_amd64.whl*
    - *PyOpenGL\_accelerate-3.X.X-cp3XX-cp3XX-win\_amd64.whl*
  - For Intel processor:
    - *PyOpenGL-3.X.X-cp3XX-cp3XX-win\_amr64.whl*
    - *PyOpenGL\_accelerate-3.X.X-cp3XX-cp3XX-win\_amr64.whl*

(Note: 3XX = Python version, e.g., for Python 3.12 → cp312)

3. Save both .whl files in a specific folder.

## Step 8: Install PyOpenGL

1. Open CMD or PowerShell in the folder where you saved the .whl files.
2. Run the following commands (adjust filenames to match your downloaded version):

```
pip install PyOpenGL-3.X.X-cp3XX-cp3XX-win_amd64.whl  
pip install PyOpenGL_accelerate-3.X.X-cp3XX-cp3XX-win_amd64.whl
```

3. Wait until installation completes.

## Step 9: Verify Installation

Run Python and try importing PyOpenGL:

```
import OpenGL  
print("PyOpenGL installed successfully!")
```

If no error appears, installation is complete 