

Python & PyOpenGL Installation Guide (Windows)

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:

- *PyOpenGL-3.X.X-cp3XX-cp3XX-win_amd64.whl*
- *PyOpenGL_accelerate-3.X.X-cp3XX-cp3XX-win_amd64.whl*

- *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:

```
from OpenGL.GL import *
from OpenGL.GLUT import *
from OpenGL.GLU import *

def show():
    glClear(GL_COLOR_BUFFER_BIT) # Clear window
    glLoadIdentity() # Reset transformations
    glOrtho(0, 500, 0, 500, -1, 1)

    #drawing triangle.
    glColor3f(0,0,1)
    glBegin(GL_POLYGON)
    for v in [(0,0),(250,0),(250,250)]:
        glVertex2f(*v)
    glEnd()

    glutSwapBuffers() # Refresh window

# Main setup
glutInit()
glutInitDisplayMode(GLUT_RGBA | GLUT_DOUBLE)
glutInitWindowSize(500, 500) # Window size
glutCreateWindow(b"Simple OpenGL Window") # Window title
#glClearColor(0.2, 0.6, 1.0, 1.0) # RGBA (Red, Green, Blue, Alpha)
glutDisplayFunc(show) # What to display
glutMainLoop() # Keep window open
```

If no error appears, installation is complete 