

Experiment 1: Creating and Optimizing UV Maps for a Basic 3D Object

Objective:

To create, unfold, and optimize UV maps for a basic 3D model (cube) to prepare it for accurate texture application.

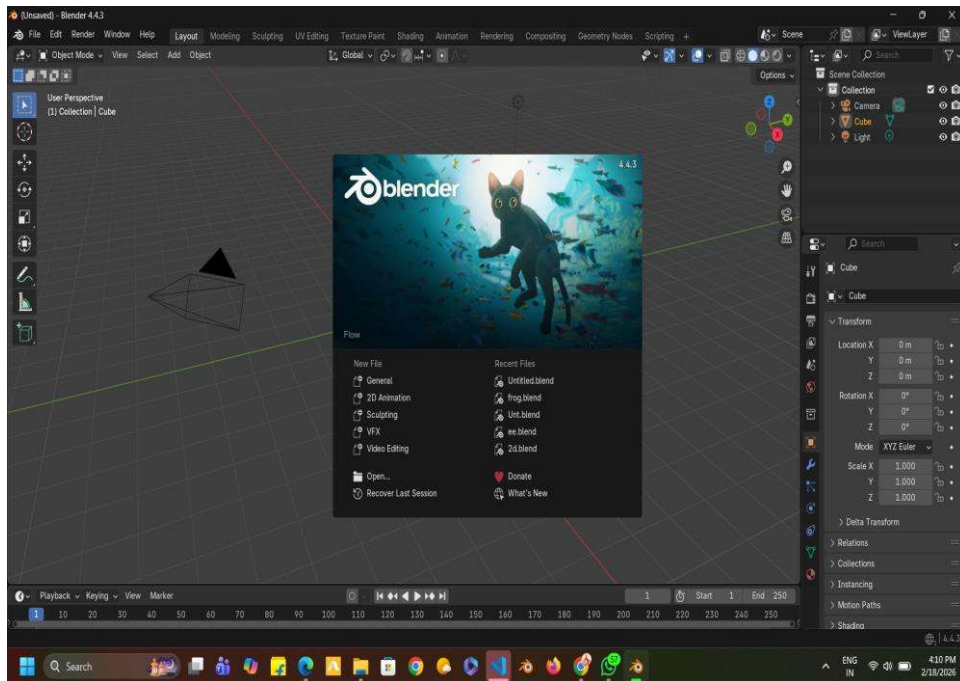
Materials / Software Required

- Computer with **Autodesk Maya** or **Blender** installed
- Basic 3D object (cube)
- Test texture image (checkerboard or similar)

Procedure

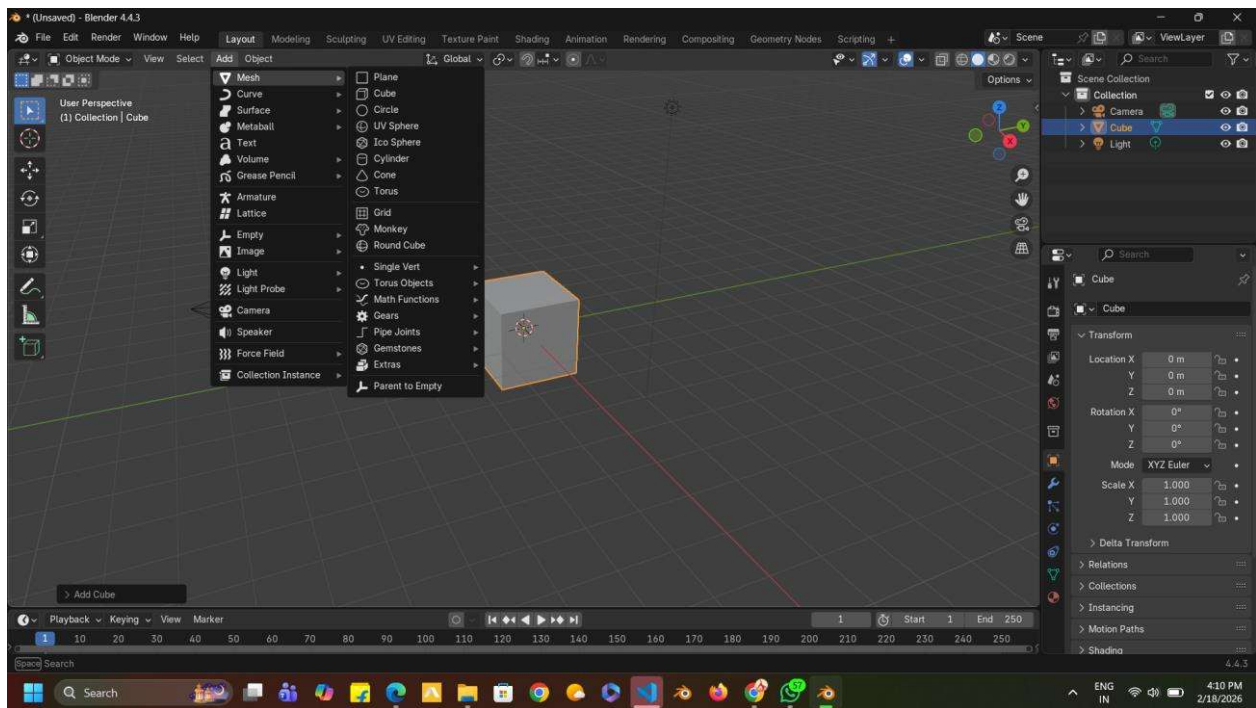
Step 1: Create the 3D Model

1. Open the 3D software.



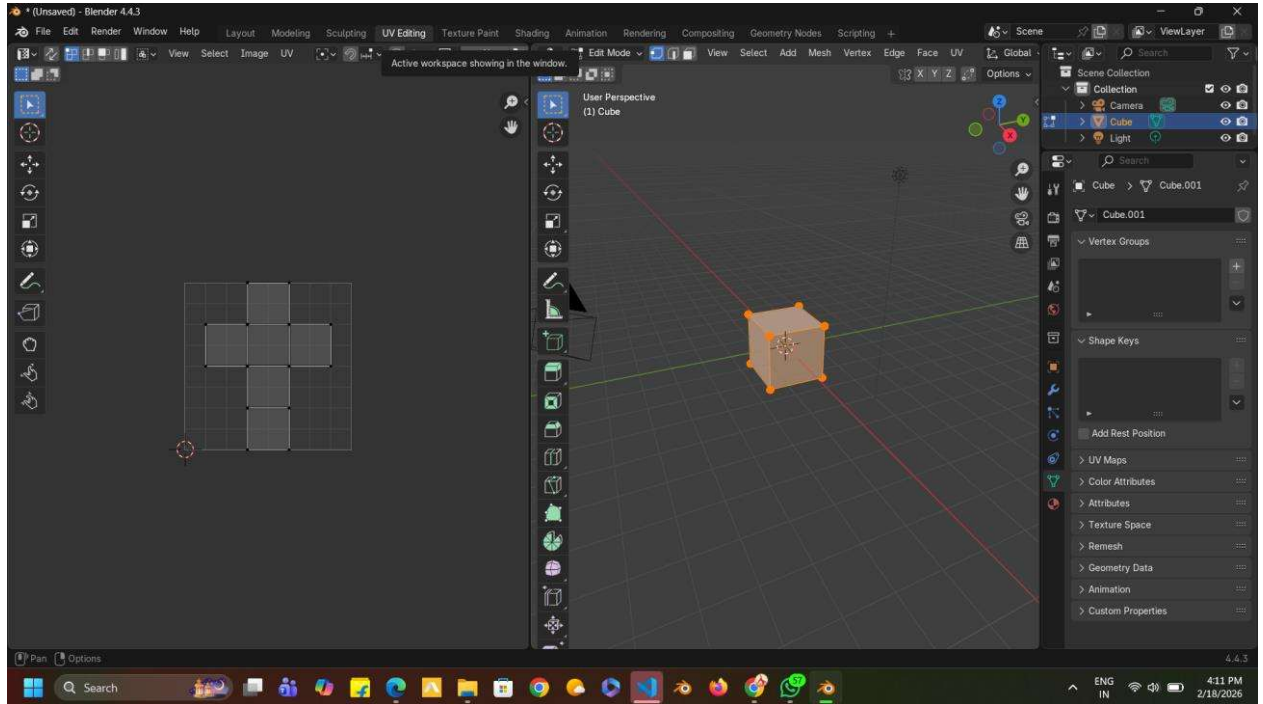
2. Create a basic cube:

- a. **Maya:** Create → Polygon Primitives → Cube
- b. **Blender:** Shift + A → Mesh → Cube



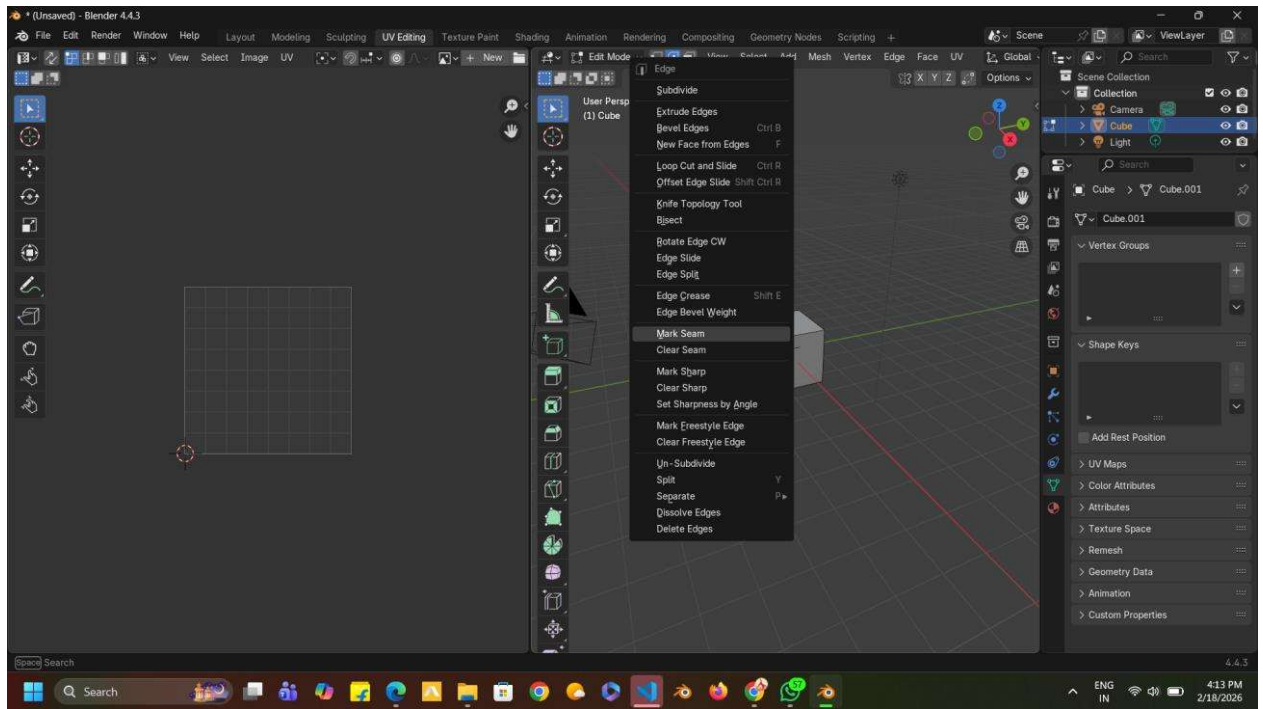
Step 2: Enter UV Editing Mode

1. **Maya:** UV → UV Editor
2. **Blender:** Tab → Edit Mode → Open UV Editor



Step 3: Mark or Cut Seams

- **Blender:** Select edges → Right-click → Mark Seam
- **Maya:** For simple objects, use automatic mapping; for complex surfaces, manually cut seams along hidden edges.



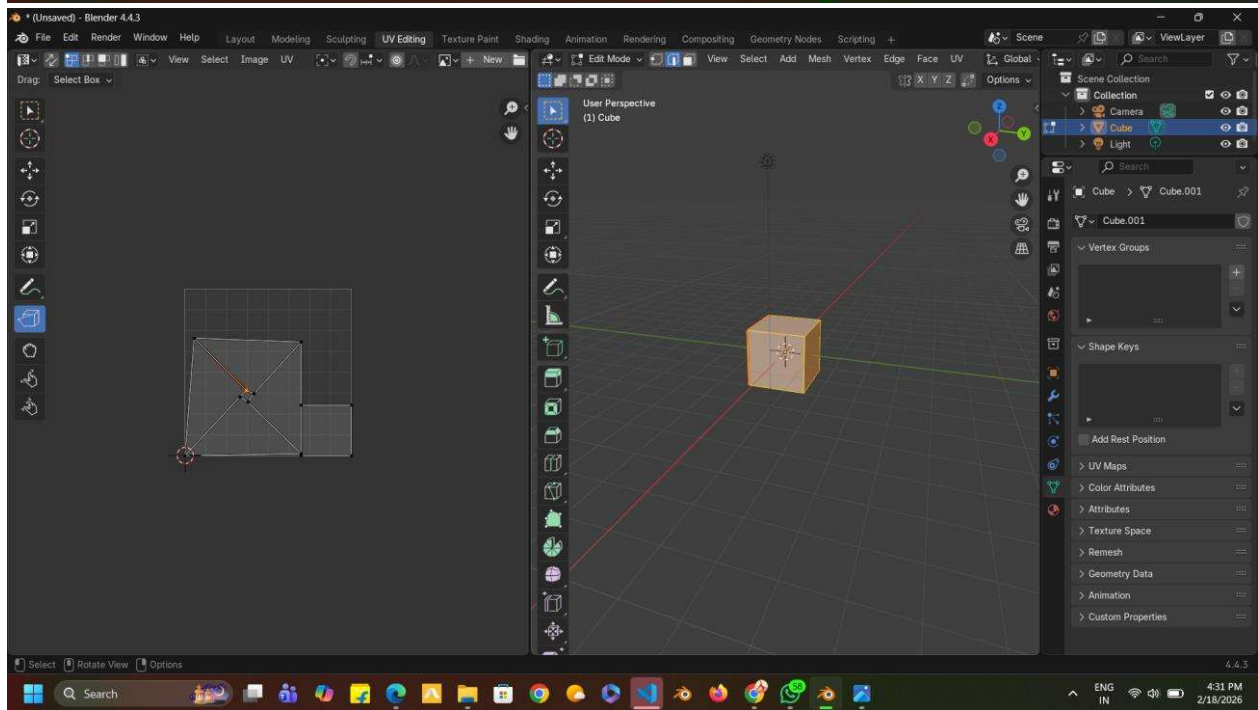
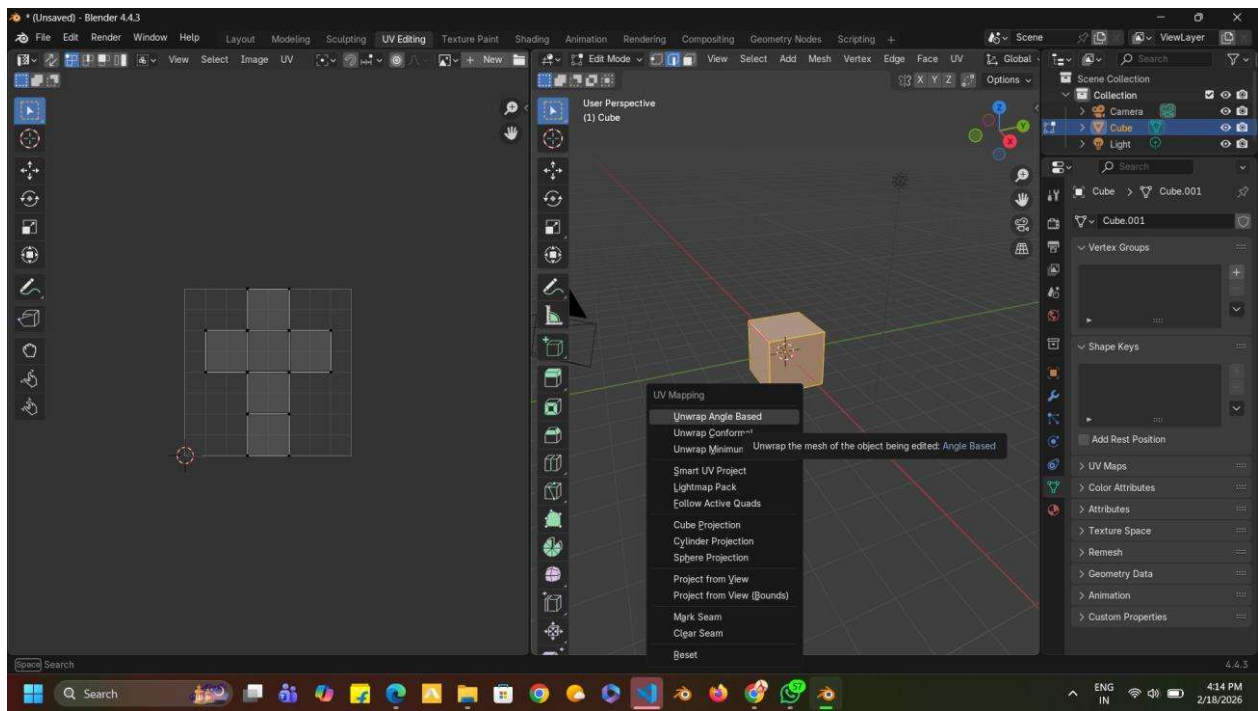
Step 4: Unfold / Unwrap the UVs

1. Maya:

- UV → Automatic (or Planar/Cylindrical/Spherical Mapping)
- UV → Unfold to relax UVs

2. Blender:

- Select all faces → U → Unwrap → Angle-Based method



Observations

- Proper unfolding and optimization prevent texture stretching.
- Checker texture confirms uniform texel density.
- Efficient UV layout maximizes texture resolution for all faces.

Conclusion

By following the steps to create, unfold, and optimize UVs:

- Textures can be applied cleanly without distortion.
- UV space is used efficiently.
- The model is ready for realistic texturing in Maya or Blender.