Blender
The Joy of 3D Modeling
Blender Showcase
Cycles’ toon shaders by reddit user scumdogmillionair
Blender 2D Style FX by CodyWinch
Arduino Style board by reddit user jehnerated
The Attic by reddit user OpusGeo
Cyberpunk looking neon city by reddit user el_pistolero7
80's Style Animation Loop by Ducky 3D
Ok, but what else does Blender do?

- 2D animation (Adobe Animate)
- Sculpting (Pixologic ZBrush)
- VFX (Adobe After Effects)
- Video Editing (Adobe Premiere)

Why? Because Blender was born from a piece of software from a Dutch animation studio in the mid 90s: [https://www.blender.org/foundation/history/](https://www.blender.org/foundation/history/)
This sounds expensive!

No! Blender is free!

Download it at https://www.blender.org/download/
The Basics

- **Vertex** - a point in 3D space
- **Edge** - a connection/line between two vertices
- **Edge Loop** - A series of connected edges
- **Face** - a 2D plane enclosed by edges
  - Triangle - a face with 3 sides (always planar)
  - Quad - a face with 4 sides (can be non-planar)
  - N-gon - a face with 5+ sides (can be non-planar)
- **Normal** - the ray perpendicular (most of the time) to a face
- **Mesh** - a collection of faces that usually make up a shape
- **Manifold** - A mesh with no holes or cracks (volume vs folded paper)
- **Object** - A container for meshes, with location, scale, and rotation parameters
- **Origin** - The rotational root of an object
Essential Shortcut Keys
Memorize this:

Haha, j/k
Camera & Viewport Movement

**Middle mouse button** - pivot around frame

Shift + middle mouse button - pan view

**Ctrl + middle mouse button / scroll wheel** - zoom view

Numpad . - center frame to selected

Numpad 7 - top  Numpad 8 - orbit up  Numpad 9 - orbit opposite

Numpad 4 - orbit left  Numpad 5 - orthographic  Numpad 6 - orbit right

Numpad 1 - front  Numpad 2 - orbit down  Numpad 3 - right

Numpad 0 - camera  Ctrl + Alt + Numpad 0 - align camera to view
No numpad?

You can access the numpad shortcuts through the view menu.

You can also emulate the numpad with adjustments to your preferences. See: https://docs.blender.org/manual/en/latest/getting_started/configuration/introduction.html#input
Layout Keys

A - select all
X - delete
Shift + A - create new object
Shift + D - duplicate an object
Tab - toggle between object mode and edit mode
Transformations

G - Grab (translate)
R - Rotate
S - Scale

+ X - Lock transformation to X-axis
+ Y - Lock transformation to Y-axis
+ Z - Lock transformation to Z-axis
+ Shift + X/Y/Z - Lock transformation to not X/Y/Z

Ctrl + transformation - Snap

Everything can be fine-tuned
Mesh Editing

F - create face / create edge from selection
J - Split a face
Alt + click - Select edge / face loop
Ctrl + J - Join two objects into a single mesh
Too much to cover in slides

Just remember the basics, and treat modeling like a programming language. When you don’t know how to do something, look it up on Stack Exchange. Yes, Blender is a network on Stack Exchange: https://blender.stackexchange.com
Good places to begin exploring

- Extruding faces
- Bridging edge-loops/faces
- Subdividing faces/edges
- Loop cuts
- Proportional editing
- Basic modifiers: Boolean, Array, Simple Deform
The rabbit hole...

- Lighting
- Cameras
- Textures
- Shaders
- Particles
- Physics engine
- Render engines: Eevee, Cycles, Freestyle
- Sculpting
- An entire Python scripting engine
- All the other stuff I don’t know about
We only have a couple of hours, so let’s get modeling.