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# Blender

1 unit = 1m

[Blender Launcher](#)

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## Shortcuts

Manual adjustments Ctrl , preferences

### General

| Action                                          | Shortcut                |
|-------------------------------------------------|-------------------------|
| Property box                                    | F9                      |
| Apply to all selected elements                  | hold Alt                |
| Frame selected                                  | . (numpad)              |
| Frame camera                                    | 0 (numpad)              |
| Set selected item as active viewpoint           | Ctrl 0                  |
| Set active camera to view                       | Ctrl Alt 0              |
| Transform all selected objects                  | Alt (hold)              |
| Join objects                                    | Ctrl j                  |
| Move to collection                              | M                       |
| Link to collection                              | Shift M                 |
| Radial view selection menu                      | `                       |
| Scale around z axis                             | Alt s                   |
| Cursor/view to center                           | Shift c                 |
| Place cursor                                    | Shift right mouseclick  |
| Drag viewport/window                            | Shift middle mouse      |
| Zoom viewport/window                            | Ctrl middle mouse       |
| Hide selected                                   | h                       |
| Isolate selected                                | Shift h                 |
| Unhide all                                      | Alt h                   |
| Quick favorites                                 | q                       |
| Snap to orthographic views                      | hold Alt while rotating |
| Toggle quad view (orthographic and perspective) | Ctrl Alt q              |
| Batch rename                                    | Ctrl f2                 |

### Rendering

| Action          | Shortcut |
|-----------------|----------|
| Render frame    | F12      |
| Render sequence | Ctrl F12 |

| Action               | Shortcut   |
|----------------------|------------|
| Render region        | Ctrl b     |
| Delete render region | Ctrl Alt b |

## Modeling

| Action                                                   | Shortcut                                                                     |
|----------------------------------------------------------|------------------------------------------------------------------------------|
| Extrude point, edge or poly                              | e                                                                            |
| Select edge/poly loop                                    | Alt click (the loop will follow the direction relative to where you clicked) |
| Rotate allong edges                                      | Ctrl Shift Alt s                                                             |
| Even mode when doing loop cut                            | e                                                                            |
| Subdivide (combine with Auto Smooth for best experience) | Ctrl 1,2,3,... or Ctrl 0 to reset to original mesh                           |
| Snap to points with ruler                                | Hold Ctrl                                                                    |
| Scale along normals                                      | Alt s                                                                        |
| Measure thickness with ruler                             | Hold Shift                                                                   |
| Mesure angle with ruler                                  | Click in the middle                                                          |
| Delete a ruler                                           | x                                                                            |
| Inset                                                    | i                                                                            |
| Toggle constraint to outer edge while inseting           | i + b                                                                        |

## Sculpting

| Action                   | Shortcut       |
|--------------------------|----------------|
| Perspective/orthographic | numpad 5       |
| Rescale brush            | f              |
| Intensity brush          | Shift f        |
| Invert brush             | hold Ctrl      |
| Smooth                   | Shift          |
| Stroke method            | e              |
| Dyntopo                  | Ctrl d         |
| Invert Masked            | Alt i          |
| Undo mask                | Alt m          |
| Hide masked              | Ctrl h         |
| Unhide all               | h              |
| Lasso mask               | Ctrl Shift lmb |
| box mask                 | b              |

## Rigging

| Action          | Shortcut |
|-----------------|----------|
| Set pivot point | .        |

## Animation

| Action       | Shortcut |
|--------------|----------|
| Set keyframe | i        |

## Unwrapping

| Action           | Shortcut |
|------------------|----------|
| Select UV island | i        |

## Shading

| Action                   | Shortcut              |
|--------------------------|-----------------------|
| Preview shader           | Ctrl Shift click      |
| Principled texture setup | Ctrl Shift t          |
| Cut node wires           | Ctrl right-click drag |

## Tracking

| Action               | Shortcut   |
|----------------------|------------|
| Create new tracker   | Ctrl click |
| Show search box      | Alt s      |
| Track manually       | Alt arrows |
| Lock view to tracker | l          |
| Start auto tracker   | Ctrl t     |
| Lock tracker         | Ctrl l     |

## Boxcutter/Hardops

### Add-on Specific

Install Hardops first, then Boxcutter. This way Boxcutter is the first mode you access when pressing Alt w

| Action                             | Shortcut                         |
|------------------------------------|----------------------------------|
| <b>Hardops/Boxcutter</b>           |                                  |
| Toggle between Hardops & Boxcutter | Alt w                            |
| Viewport settings                  | Alt v                            |
| Align boxcutter                    | Shift v                          |
| Hardops menu                       | q                                |
| Radial hardops menu                | Shift q                          |
| Box cutter menu/hopstools          | d                                |
| HOps helper                        | Ctrl `                           |
| Hold shift when releasing cutter   | Displays and selects your cutter |
| Mirror                             | Alt x                            |
| Align edges                        | Alt a                            |
| <b>MaterialIQ</b>                  |                                  |
| Toggle asset library               | press e over any area            |

## Add-on's



MaterialQ can cause problems with commonly used Blender shortcuts, like the mode switching (1,2,3) and a MachineTools shortcut "Alt X"

| Name                                 | Description                                                          |
|--------------------------------------|----------------------------------------------------------------------|
| <a href="#">Loop tools</a>           | Mesh modelling toolkit. Several tools to aid modelling.              |
| <a href="#">Edit Mesh Tools</a>      | Mesh modelling toolkit. Several tools to aid modelling.              |
| <a href="#">Node wrangler</a>        | Improve the node experience by a lot                                 |
| <a href="#">MACHIN3tools</a>         | MACHIN3tools                                                         |
| <a href="#">CURVEmachine</a>         | Makes POLY Curve editing more flexible                               |
| <a href="#">Hard Ops / Boxcutter</a> | Hard Ops / Boxcutter                                                 |
| <a href="#">Edge Flow</a>            | Helps adjusting mesh geometry to curved surfaces.                    |
| <a href="#">GrabDoc</a>              | A trim & tileable baker for Blender.                                 |
| <a href="#">Quick Rigid</a>          | Easy access to the most used rigid body settings.                    |
| <a href="#">Poly Haven</a>           | Asset library integration of all polyhaven assets                    |
| <a href="#">Materialiq</a>           | Material library                                                     |
| <a href="#">EZLattice</a>            | Lattice companion for Blender.                                       |
| <a href="#">AddRoutes</a>            | Work with MIDI and OSC signals in Blender                            |
| <a href="#">PinVerts</a>             | Pin unselected vertices for Proportional Editing to aid in modelling |
| <a href="#">Shot manager</a>         | Render manager                                                       |
| <a href="#">fSpy</a>                 | Open source still image camera matching                              |
| <a href="#">KeenTools</a>            | GeoTracker                                                           |
| <a href="#">Dream textures</a>       | AI-generate textures, ...                                            |
| <a href="#">Palladium</a>            | AI-generate video, image, and audio from text prompts                |
| <a href="#">PhyX</a>                 | Scene layout tool                                                    |
| <a href="#">Engon</a>                | Asset browser                                                        |
| <a href="#">Udin Shaders</a>         | Car shaders                                                          |
| <a href="#">Poly Quilt</a>           | Retopology tool                                                      |
| <a href="#">StoryPencil</a>          | Storyboarding                                                        |
| <a href="#">Gaffer</a>               | Light & Hdri Manager                                                 |
| <a href="#">Light manager</a>        | Light manager                                                        |
| <a href="#">Sketchup Importer</a>    | Tested with 3.6                                                      |
| <a href="#">Compify</a>              | Easier/better compositing in 3D space                                |
| <a href="#">3DGS Render</a>          | Gaussian Splatting Editor/Renderer                                   |
| <a href="#">DreamUV</a>              | Tools that allow you to manipulate UVs in the 3D viewport            |
| <a href="#">BoltFactory</a>          | Add a bolt or nut.                                                   |
| <a href="#">Sculpt Bridge Tool</a>   | Create a bridge or punch a hole in a mesh                            |
| <a href="#">Shaders Plus</a>         | Caustics, Thin Film, Dispersion For Cycles & Eevee                   |
| <a href="#">Gobos Plus</a>           | Procedural & 4K Gobos For Cycles + Eevee                             |
| <a href="#">Ies Plus</a>             | Procedural Ies Light Nodes                                           |
| <a href="#">Light Wrangler</a>       | Modify lights faster with shortcuts etc                              |

| Name                                     | Description                                                                         |
|------------------------------------------|-------------------------------------------------------------------------------------|
| <a href="#">Lens Sim</a>                 | Lens simulation for Bokeh, Chromatic Aberration                                     |
| <a href="#">nijiGPen</a>                 | Adds new features to Grease Pencil for creating 2D graphic design and illustrations |
| <a href="#">Grease pencil tool wheel</a> | Extended pie menu for selecting Grease Pencil tools quickly.                        |
| <a href="#">Camera Plane</a>             | Import images and stick them to the camera                                          |
| <a href="#">Timelapse orbit</a>          | Create rotating viewport to record                                                  |
| <a href="#">Target, Please!</a>          | The Ultimate Targeting Add-on for Blender                                           |

[A curated list of Blender Add-on's](#)

## Python scripts

Assign shaders to selected meshes with the same name as the shader

```
import bpy
# Get selected objects
selected_objects = bpy.context.selected_objects
# Loop through selected objects
for obj in selected_objects:
    if obj.type == 'MESH':
        # Check if there's a material with the same name as the object
        matching_material = bpy.data.materials.get(obj.name)

        if matching_material:
            # Clear existing materials on the object
            obj.data.materials.clear()

            # Assign the matching material to the object
            obj.data.materials.append(matching_material)
            print(f"Assigned material '{matching_material.name}' to object '{obj.name}'")
        else:
            print(f"No matching material found for object '{obj.name}'")
print("Material assignment complete for selected objects.")
```

Quickly Import KitBash3D Models into the Blender Asset Browser

```
# Open your KB3D Pack. Make sure the textures are loaded and everything
works as intended. This script assumes the Scene is named
KB3D_"TitleCasePackName"-Native. It should be that by default.
# Create a new folder in your Asset Library Folder for Blender.
(Edit>Preferences>FilePaths>AssetLibraries). I recommend a setup like this
# (D:/BlenderAssetLibraries/KB3D/CyberDistricts/Cyberdistricts.blend)
# Where "CyberDistricts" would be the AssetLibrary.
# Open the script in Blender by going to the Text Editor and clicking "Open"
to locate the file, or paste it from the Gist.
# Run the script by clicking the "Run Script" button in the Text Editor or
```

pressing Alt+P.  
# The script will create new collections for each type of asset in your scene and move the assets into these collections. It will also generate a unique ID for the asset pack and each asset in the pack.  
# The script will then update the asset catalog file to include the new asset pack and each asset in the pack.  
# Once the script is finished, you can save your Blender file and close it.  
# You should now see it in the asset libraries section on Blender.  
# Troubleshooting: If something goes wrong or a mistake is made I have minimal errorchecking. Just undo before the script was run and delete the Catalogs or the "blender\_assets.cats.txt" file,  
# they may trip up the script if it failed partway through.  
# I put a lot of effort into making this, so if you'd like to show your appreciation-  
# you can donate to me through PayPal at the link below:  
<https://paypal.me/mintyfresh>  
  
# Update: Remade better.  
# TODO: Add simple GUI, test all packs, ensure consistent sizing and proper integration for easy placing of props.

```
import bpy
import os
from pathlib import Path
import uuid

#filename
file_name = str(bpy.data.scenes.keys()[0].split('_')[1].split('-')[0])
folder = Path(bpy.data.filepath).parent
new_uuid = str(uuid.uuid4())

# Mapping for collections to asset types
collection_map = {
    "Props": "Prop",
    "Buildings": "Bldg",
    "Structures": "Strc",
    "Vehicles": "Vehi",
    "Creatures": "Crea"
}

kit_catalog = {}

flipped_cmap = {v: k for k, v in collection_map.items()}

# Create the primary collections
primary_collections = ["Props", "Buildings", "Structures", "Vehicles",
"Creatures", "Other"]
for collection_name in primary_collections:
    new_collection = bpy.data.collections.new(collection_name)
    bpy.context.scene.collection.children.link(new_collection)
```

```
# Loop through all the empties and sort them into the collections for the
library
for obj in bpy.data.objects:
    if obj.type == "EMPTY" and obj.name.startswith("KB3D_"):

        # Sort the new collection into the correct group
        asset_type = obj.name.split("_")[2][:4]

        # Check if the asset_type exists in the flipped_cmap dictionary
        if asset_type in flipped_cmap:
            cm_col_name = flipped_cmap[asset_type]
        else:
            cm_col_name = "Other"

        # Create a new collection with Empty's name
        new_collection = bpy.data.collections.new(obj.name)
        bpy.data.collections[obj.name].objects.link(obj)

        # Linking Object groups
        cm_col = bpy.data.collections[cm_col_name]
        # Move the object's children to the new collection
        bpy.data.collections[cm_col.name].children.link(bpy.data.collections[obj.name]
        e])
        kit_catalog[obj.name] = cm_col.name

print(kit_catalog.values())

# Loop over Object and relink to parents.
for obj in bpy.data.objects:
    if obj.type == "MESH" and obj.parent != None:
        bpy.data.collections[obj.parent.name].objects.link(obj)

for empty in bpy.data.objects:
    if empty.type == 'EMPTY' and empty.name.startswith('KB3D_'):
        bpy.context.scene.collection.objects.unlink(empty)
        for child in empty.children:
            bpy.context.scene.collection.objects.unlink(child)

for col in bpy.data.collections:
    if col.name.startswith('KB3D_'):
        col.asset_mark()

# Create a list of all empty objects
empty_objects = [obj for obj in bpy.data.objects if obj.type == "EMPTY" and
obj.name.startswith("KB3D_")]

# Loop through the list of empty objects and clear their locations
for obj in empty_objects:
    obj.location = (0, 0, 0)

asset_catalog_path = folder / "blender_assets.cats.txt"
```

```
# Initialize the list of lines and the asset_uuids dictionary
lines = []
asset_uuids = {}

# Read the existing asset catalog file into a list of lines
with asset_catalog_path.open('a+') as f:
    f.seek(0) # Move the file pointer to the beginning of the file
    lines = f.readlines()

# Check if the blender_assets.cats.txt file is empty and initialize it if necessary
if os.path.getsize(asset_catalog_path) == 0:
    header_lines = [
        "# This is an Asset Catalog Definition file for Blender.\n",
        "#\n",
        "# Empty lines and lines starting with `#` will be ignored.\n",
        "# The first non-ignored line should be the version indicator.\n",
        "# Other lines are of the format\n",
        "\"UUID:catalog/path/for/assets:simple catalog name\"\n",
        "\n",
        "VERSION 1\n\n"
    ]
    lines.extend(header_lines)

# Add new lines to the catalog if necessary
file_contents = ''.join(lines)

# Initialize the asset_uuids dictionary outside the condition
collection_uuids = {collection_name: [] for collection_name in collection_map.keys()}
collection_uuids["Other"] = []

if file_name not in file_contents:
    if "KB3D" not in file_contents:
        lines.append(f"{str(uuid.uuid4())}:KB3D:KB3D\n")
        lines.append(f"{str(uuid.uuid4())}:KB3D/{file_name}:{file_name}\n")

    for collection_name in collection_map.keys():
        asset_uuid = str(uuid.uuid4())
        asset_uuids[collection_name] = asset_uuid
    lines.append(f"{asset_uuid}:KB3D/{file_name}/{collection_name}:{collection_name}\n")

    asset_uuid = str(uuid.uuid4())
    asset_uuids["Other"] = asset_uuid
    lines.append(f"{asset_uuid}:KB3D/{file_name}/Other:Other\n")

# Write the updated list of lines back to the file
with asset_catalog_path.open("w") as f:
```

```

    f.writelines(lines)

kit_catalog = {}

# Asset Library Adder
for col in bpy.data.collections:
    if col.name.startswith("KB3D_"):
        # Gets the asset type of an object from the Name
        # Ex: Bldg Prop Strc
        asset_type = col.name.split("_")[2][:4] # e.g. "Bldg"

        # Check if the asset_type exists in the flipped_cmap dictionary
        if asset_type in flipped_cmap:
            asset_name = flipped_cmap[asset_type] # e.g. "Buildings"
            col.asset_data.catalog_id = asset_uuids[asset_name]
        else:
            asset_name = "Other"
            col.asset_data.catalog_id = asset_uuids[asset_name] # Set the
            # catalog_id for the "Other" category

    print(col.name, asset_name)
    # Linking Object groups
    cm_col = bpy.data.collections[col.name] # Buildings [Collection]
    print('adding', col.name, 'asset_data')
```

## Demo Scenes

| Description                             | Name                                               |
|-----------------------------------------|----------------------------------------------------|
| Fake caustics                           | <a href="#">Refractive Caustics (Blender 3.2+)</a> |
| Geo nodes presets wit fields (like C4D) | <a href="#">Geo Nodes presets</a>                  |
| Abstract Loops                          | <a href="#">Abstract Loops</a>                     |

## Links

[Beginners tutorial](#)

[Blender Shortcuts](#)

[Manual](#)

[Export Houdini KineFX Rigs & BlendShapes to Blender](#)

[Macro Photorealism in Blender](#)

## Grease Pencil

[Grease Pencil](#)

[Storyboarding in 3D Space](#)

[Storyboard with Blender's Grease Pencil: tips for your short film](#)

[Blender 2D Animation Basics for Beginners - Grease pencil guide](#)

[31-Day Grease Pencil Challenge in Blender](#)

## Brushes

[PENCIL TEXTURE pack](#)

[Greace pencil brush pack](#)

[How to create and manage Grease Pencil 3.0 Brush Assets in Blender](#)

## Production

[How Ian Hubert Hacked VFX - Delighting](#)

[A Guide on Achieving Flawless Bakes](#)

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