



Level Editor allows you to create new buildings, models and quickly prototype your levels right in the Unity editor. The program uses an intuitive point and click design style that is very fast and flexible. With a little practice you'll find this program great for not only prototyping but also for creating very detailed meshes and prefabs for your projects.



*Quick Preview Video*

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## Getting Started

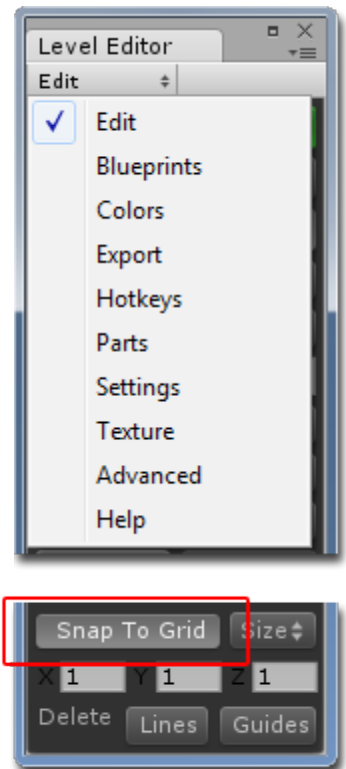
To open the program first click on the Window menu item on the Unity menu bar, scroll down to the Level Editor item and then click on Open Window.

When the program opens you will see the new floating window called Level Editor. At the top of this window is a drop down list where you can access all of the pages for creating blueprints, texturing and more.

The main page at the top is called Edit and is selected by default when the program starts.

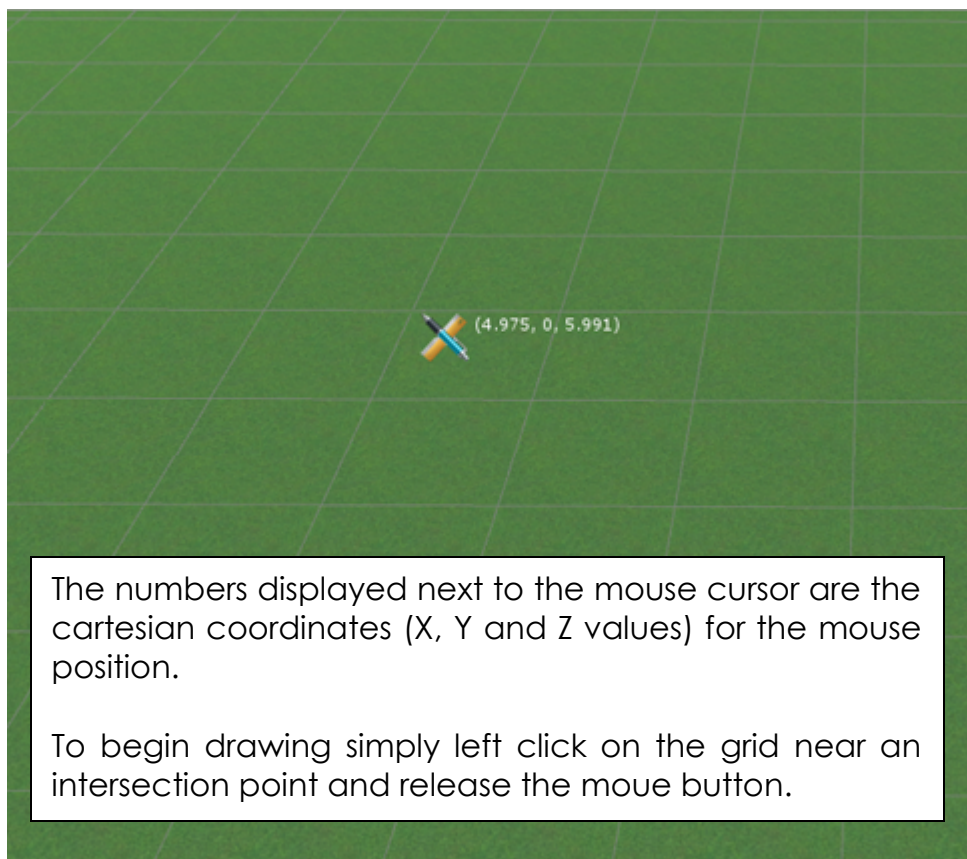
## Quick Tutorial

For this tutorial we will be using the default settings for the program with the exception of turning on Snap To Grid. You can restore the default settings at any time by going to the Settings page and clicking on the Load Defaults button.



Within the Level Editor folder, in a subfolder called Scenes, is a basic scene (called LevelEditor) which includes a character controller and flat terrain. Double click on the scene to open it and a grid will appear over the terrain wherever the mouse moves.

figure 1.



The numbers displayed next to the mouse cursor are the cartesian coordinates (X, Y and Z values) for the mouse position.

To begin drawing simply left click on the grid near an intersection point and release the mouse button.

figure 2.

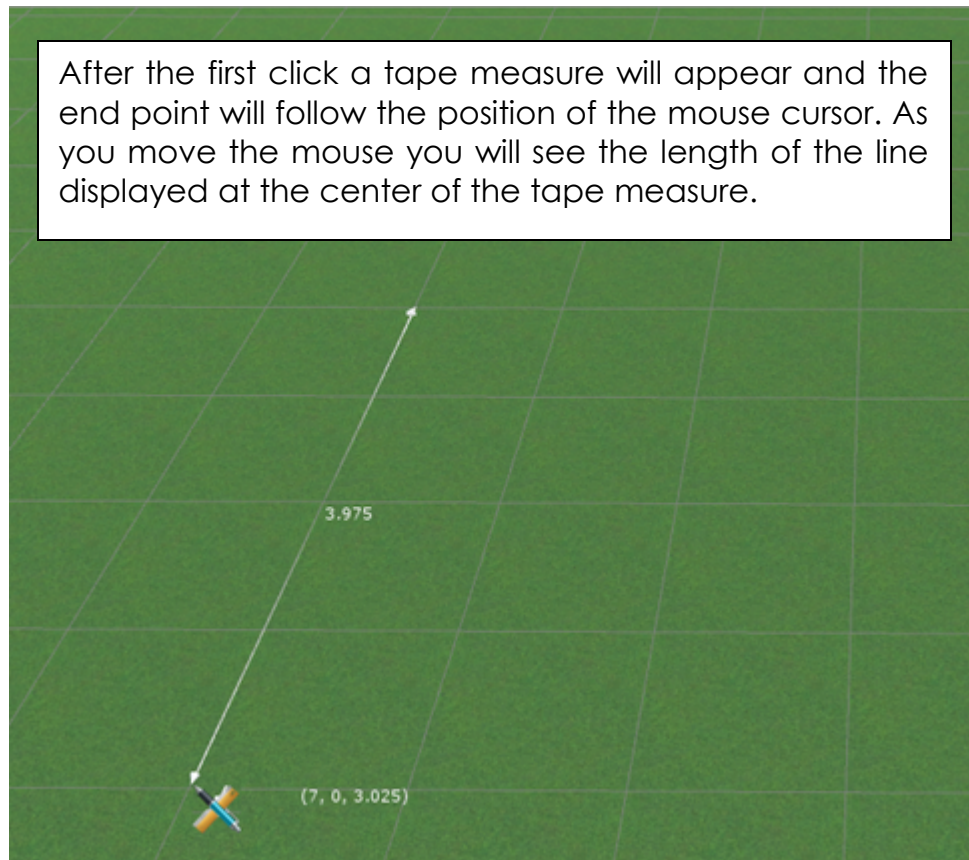


figure 3.

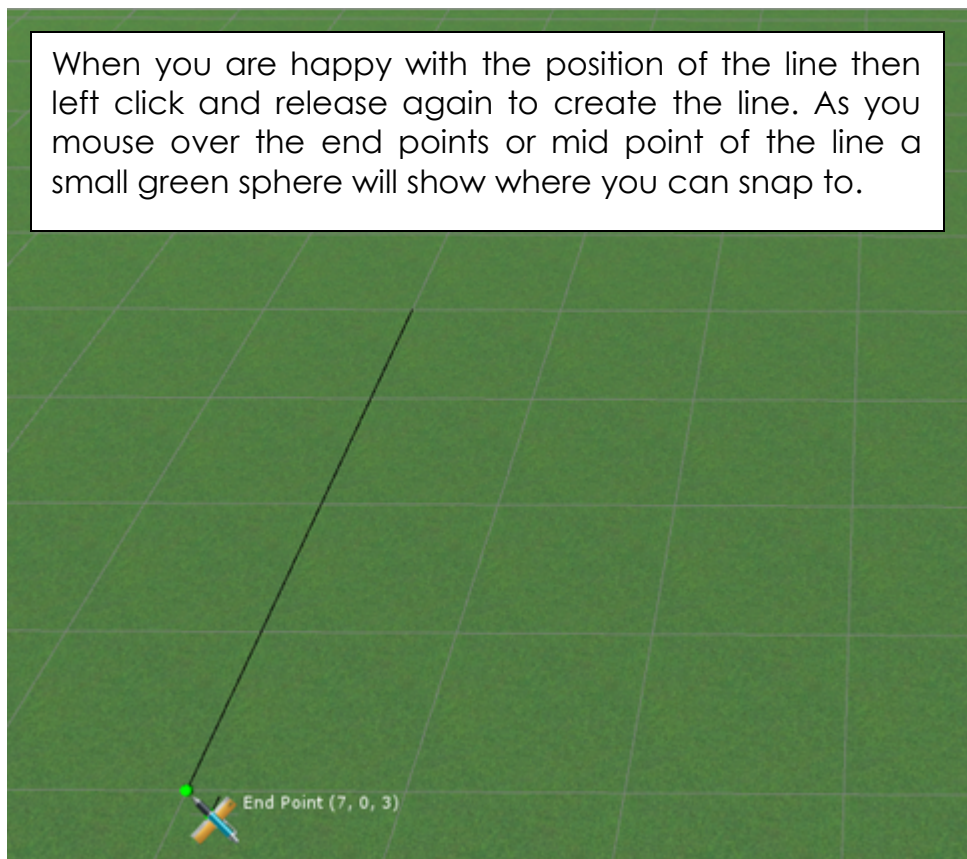




figure 4.

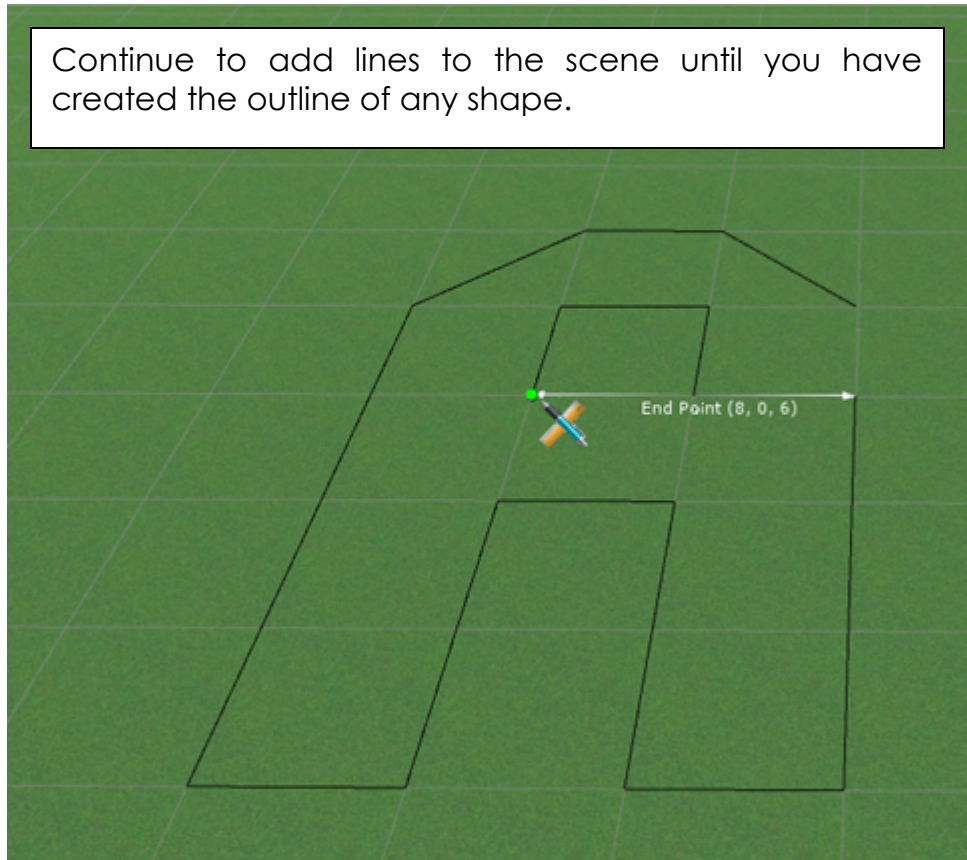
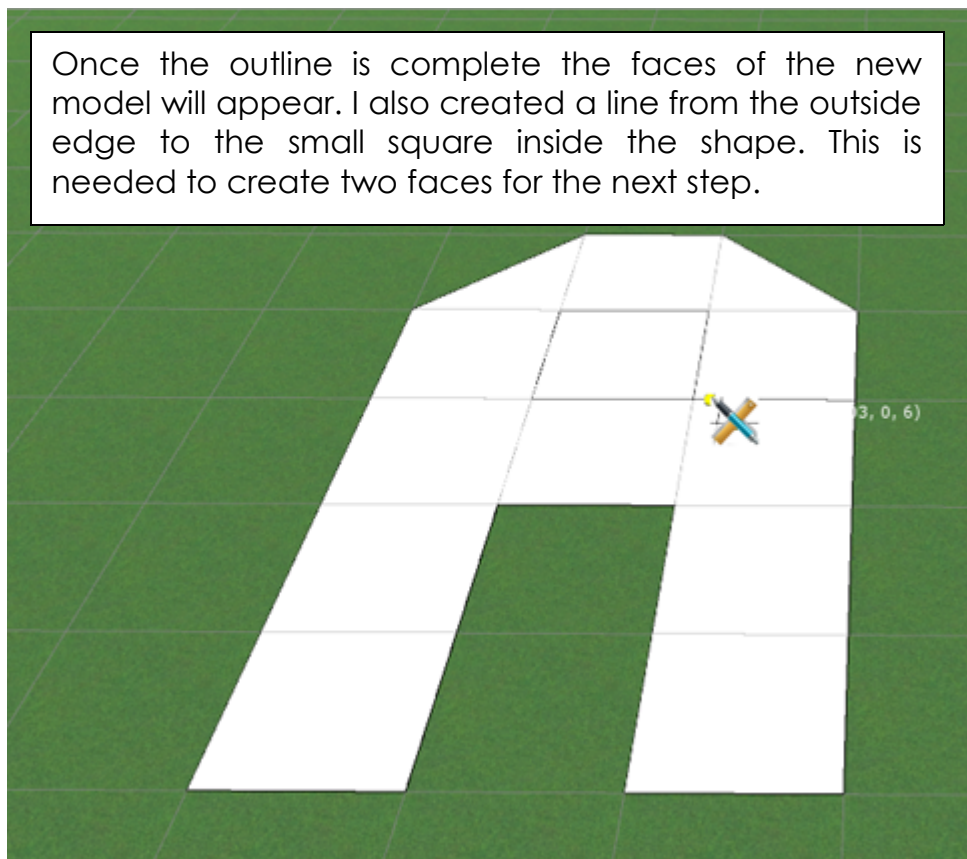


figure 5.



To turn the shape into a 3D model you first click on the Extrude button. In Extrude mode you can left click on any face of the model, and while holding the mouse button down, drag the mouse in the direction you want to extrude. You will see a dotted outline of how the final shape will look and when you're ready to create the extruded model simply let go of the mouse button.

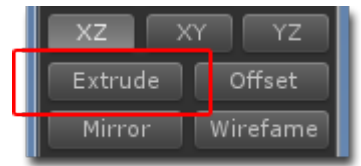
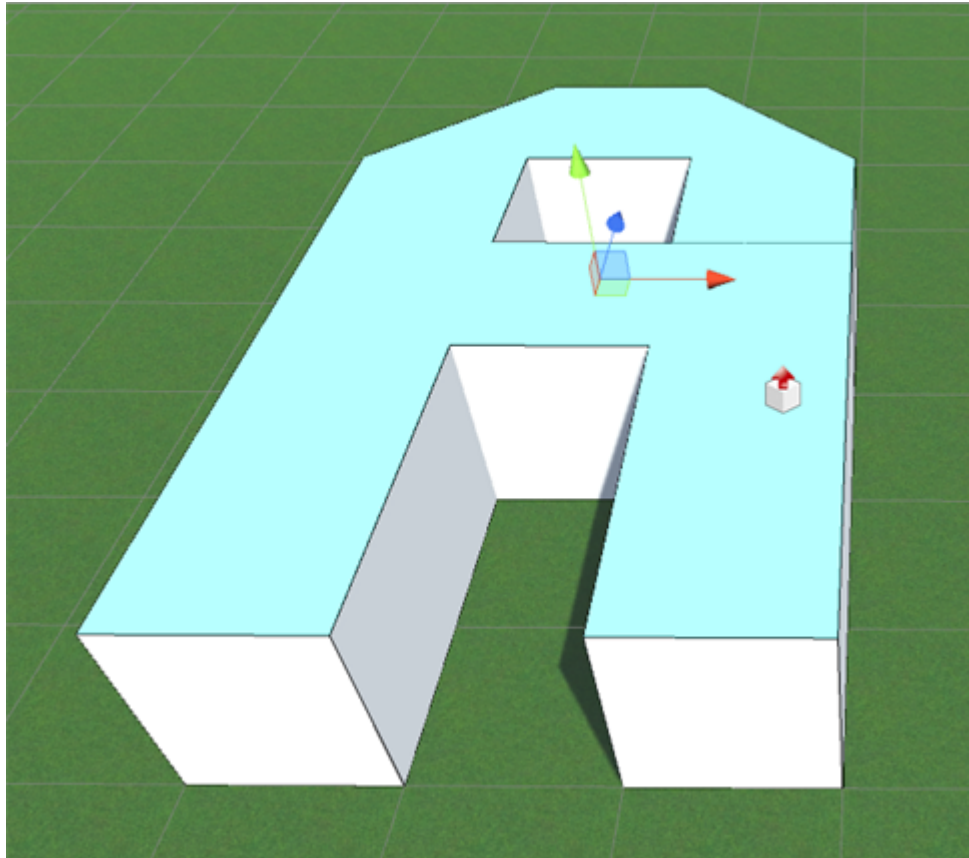


figure 6.



To remove the small square face inside the letter you hold down the hotkey, left click to select the face (but don't drag the mouse) and it will turn blue. Once selected you can use the delete key to remove it from the final model. This works the same in both Triangle mode and Extrude mode.

The program will create a new face whenever it finds a flat enclosed shape. This can result in faces that overlay other faces. By creating a line from the outside shape to the inside shape we are telling the program that this surface should be treated as two separate faces, one within the other.

A deleted face will remain deleted until a change is made to any one of the lines that make up its edges. To restore a deleted face you simply recreate one of the lines around its border.

There are too many features to cover in a short tutorial so I recommend you check out my playlist of videos for full instructions on how the program works here on **YouTube**.

## Parts

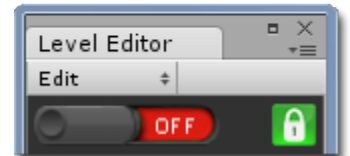
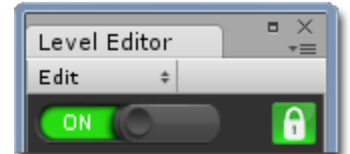
Another way of thinking about the current model is as a part. You can have many parts in the same scene and the currently selected part is highlighted with a black outline.

Each part is updated completely when a new line or other change is made to it so this can get a bit slow to update when there are many lines in the same part. Whenever possible you should consider creating your model out of many parts. A house for example would be made out of parts for the walls, a roof part, a door part, etc.

## Edit Page

At the top of the Edit page is a large button for turning the program on and off. When the program is set to off the program will sit quietly in the background and you can use Unity as normal.

**Hotkey:** You can toggle the editor on and off using the **Shift-Q** keys.



### 1. Editing Modes

The first row of buttons switch between the three editing modes supported by the program. The first button selects vertex editing and allows for selecting and transforming the vertices of the current part. The second button selects edge editing and the third is for editing faces.

**Hotkey:** The **H** key switches between editing modes.



### 2. Transform Modes

The second row of buttons switch between the different transform modes. When features have been selected you can select between three different transformations. The first button switches to translate mode which allows you to move the selected features in three axes. The second is for rotating the selected features and the third is for scaling.

**Hotkey:** The **G** key switches between transform modes.

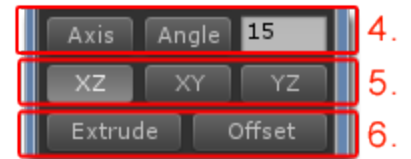
### 3. Drawing Modes

Below the transform mode buttons are the six drawing modes. You can switch between lines, guidelines, eraser, rectangles, circles and arcs. There are also two more for extruding and offsetting faces (shown in next image.) Each of these will be covered in the online videos.

**Hotkey:** The **Space Bar** switches between the different drawing modes.

## 4. Axis & Angle

Below the drawing mode buttons are two toggle buttons for selecting between snapping to an axis and snapping to an angle. The axis & angle states only apply to working with lines and guidelines. When the Axis mode is set the lines will conform to one of the two major axes depending on the selected rendering plane (discussed next.) When Angle mode is set then the lines will conform to increments of the angle entered next to the button.



**Hotkey:** The **Shift-A** keys switch between the different states and none.

## 5. Rendering Plane

You can select between three different rendering planes, the XZ, XY and YZ. When drawing lines and other features they will be rendered on one of these three planes. Normally you would draw on the floor plane (XZ) but often it is helpful to paint onto one of the vertical planes (XY or YZ) as it allows you to quickly create walls. The position of the rendering plane is important so it can be moved easily by unlocking and locking the the pivot point to new locations (covered shortly.)

**Hotkey:** The **P** key switches between the three different rendering planes.

## 6. Special Modes

As well as using lines and other shapes for rendering you can use the extrude and offset tools to modify the current model. The extrude works by placing the mouse over a face and left clicking and dragging the mouse in the direction you would like to extrude. You will see a dotted outline of where the new faces will appear when the mouse button is released. The offset tool works the same, except the new lines will appear to spread outwards or inwards depending on which way you move the mouse.

**Tip:** You can cancel the extrude or offset by pressing the hotkey or escape key before releasing the mouse button.

**Hotkey:** The **Tab** toggles the lock on and off

### Pivot Point

As mentioned above, the rendering plane determines where the drawing will appear. Being able to move the central location of the rendering plane allows you to draw walls and other features wherever you want.

To move the pivot point simply click on the lock icon at the top of the window, move the mouse to where you would like to position the pivot point and left click to place it in the scene.



**Tip:** You can set the pivot point to the world origin by clicking on the lock icon twice.

## 7. Mirror

This feature is not yet implemented in this version. When added it will allow for symmetrical drawing. When a mirror is added to the scene any changes that are made to a part will cause a copy of the change to appear on the other side of the mirror.



**Hotkey:** The **M** key toggle the mirror state on and off.

## 8. Wireframe

By turning wireframe mode on the faces will be hidden and only the lines will be shown. When working with complicated models it is often helpful to be able to select lines inside or on the far side.

**Hotkey:** The **Hotkey-W** keys toggle the wireframe mode on and off.

## 9. Reverse

When in double sided mode this has no visible effect. When double sided mode is off (from the Settings page covered later) you will notice that some of the faces are pointing in the wrong direction. To fix these you can switch to face editing, select these faces and click on the Reverse button to flip them to face the right way.

In a future update this will be done automatically but there will probably always be times when you want to reverse faces.

**Hotkey:** The **I** key reverses/inverts all selected faces.

## 10. Duplicate

Duplicate works with selected lines and whole parts. After selecting some lines or a part you can change the increment values that appear near the bottom of the Edit page before clicking on the duplicate button. Each press of the button will create a new part that is offset by the increments you entered.



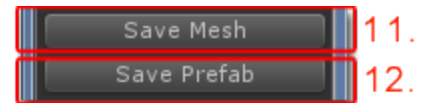
Currently the lines are copied as new parts but in the next update there will be an option to add them to the current part instead. If you would like to copy lines and paste them to the current part you can do this by first selecting the lines and then pressing **Shift-C** to copy and **Shift-V** to paste them. They will appear in front of the scene camera at the same relative distance away as when they were copied. If the camera hasn't moved between the copy and the paste then they will be pasted over the selected lines and there will be no visible change.

**Hotkey:** The **Hotkey-D** keys duplicate all selected lines or parts.



## 11. Save Mesh

Once you have created a part with at least one face you can save it to a Unity mesh by clicking on the Save Mesh button. If you have selected double sided on the settings page then a dialog will open alerting you that the current part is double sided. You can safely ignore this or cancel and change to single sided if preferred. After clicking on continue a save dialog will open and you can enter a new name and location to save the mesh asset to.



**Note:** At the moment you can only save the current part to a mesh file. This will be changed to save all selected parts to the same mesh in the next update.

**Hotkey:** You can save to a mesh using the **Shift-M** keys.

## 12. Save Prefab

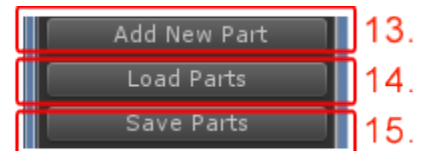
The process for saving a prefab is the same as saving a mesh. The main difference is that you will be asked to save the mesh before saving the prefab. This is due to the fact that the prefab needs to reference a mesh that is located in your project.

**Note:** At the moment you can only save the current part to a prefab. This will be changed to save all selected parts to the same prefab in the next update.

**Hotkey:** You can save to a prefab using the **Shift-P** keys.

## 13. Add New Part

To add a new part to the scene you can click on the Add New Part button. The previously active part will lose it's black outline and you can begin creating the new part.



**Hotkey:** You can add a new part using the **Shift-T** keys.

## 14. Load Parts

Clicking on Load Parts will open a dialog where you can select a previously saved parts file. The parts will be placed in the scene relative to the current pivot point location.

**Hotkey:** You can load parts using the **Hotkey-L** keys.

## 15. Save Parts

Clicking on the Save Parts button will save the currently active part (highlighted in black) and all selected parts (highlighted in blue) to the same XML file.

**Hotkey:** You can save parts using the **Hotkey-K** keys.

## Changing Dimensions

After placing a line in the scene you can adjust the length of the line by entering a new length in the Dimensions text field. Either imperial and metric values are accepted depending on which measurement system is selected on the Settings page.

You can also adjust the positions of the start and end points explicitly by changing the values in the fields. This allows for very precise positioning of the lines.



**Note:** At the moment changing the dimensions only applies to lines. In the final release this will also apply to extrude and offset.

## Snap To Grid

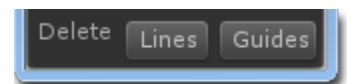
Clicking on the Snap To Grid button toggles the current state. When active all drawing, extrusion and offsetting will take the grid size into account and snap to the nearest grid lines. It can take a while to get used to and is especially noticable when turning it on after doing a lot of freehand work, as the existing lines are likely to be off the grid.



**Hotkey:** The **Shift-G** keys toggle the snap to grid state.

## Deleting Lines

You can quickly delete all of the lines or guidelines in the currently active part by clicking on the buttons at the bottom of the Edit page. If you change your mind you can always undo the operation by using the **Hotkey-Z** keys.



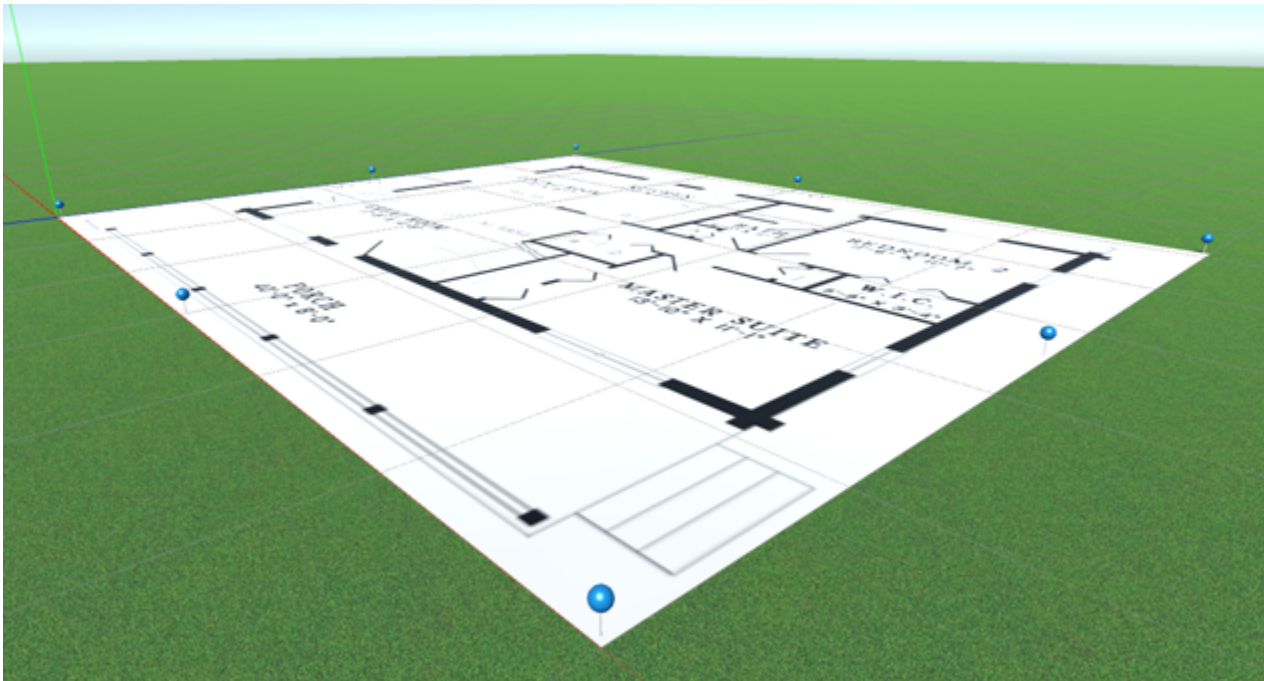
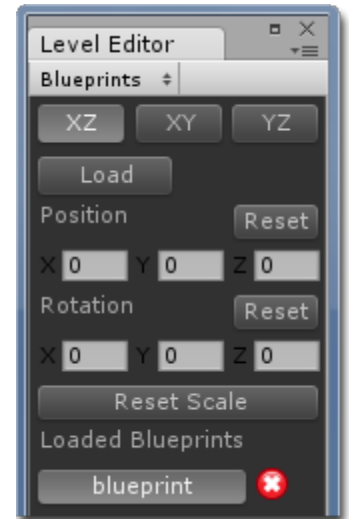
**Hotkey:** The **Shift-X** keys will delete all lines and the **Shift-B** keys will delete all guidelines.

# Blueprints Page

From the dropdown list select the Blueprints page to view the options for loading and modifying the blueprints in the scene.

At the top are the buttons for changing the rendering plane. Normally you would leave this on XZ for a ground plan, but you can change this to a vertical plane before loading the blueprint.

Clicking on the Load button allows you to select any PNG or JPEG file as your blueprint. It will be placed in the scene relative to the current pivot point. Once in the scene you can then use the handles around the edge of the blueprint (which look like push pins) to stretch and scale the blueprint to the desired size. Simply move the mouse over the pins and the cursor icon will change to show you the action available, then left click and drag the mouse to move or resize the blueprint.



If you have more than one blueprint you can left click on each one to make it active, the one with visible pins is the currently active one. You can also enter values directly into the fields to position, rotate or scale the blueprint. At any time you can reset these values by clicking on the buttons next to the values.

As more blueprints are loaded the list at the bottom of the page will grow to show the currently available blueprints. To hide a blueprint, but not delete it, you can click on the button with the blueprints name to toggle it on or off. Next to each button in the list is a small button which will delete the blueprint from the list.

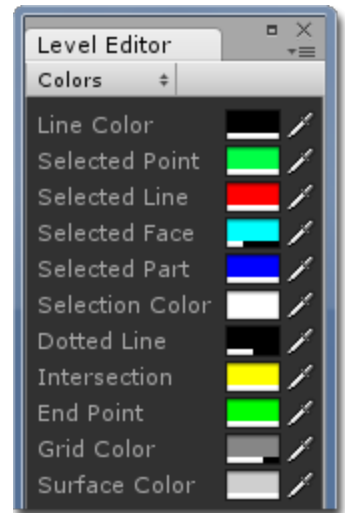
**Tip:** You can temporarily hide the blueprints in the scene by holding down the hotkey.

## Colors Page

From the dropdown list select the Colors page to view the customizable colors used by the program. Most of the colors are self explanatory but a couple that might not be are the Selection Color and the Surface Color.

The Selection Color is actually the color of the tape measure. Depending on what color the terrain or blueprint is you may want to change this to contrast with these.

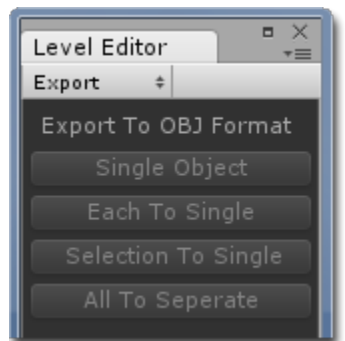
When you mouse over another mesh (except skinned meshes) the highlighted point color will change from green at the ends of the lines, yellow on the edges of the triangles and everywhere else will be highlight point color will be the set to the Surface Color.



## Export Page

From the Export page you can choose to export one or more game objects. You will need to create your models by exporting to a mesh or prefab first. Once created just select the objects you want to export and select the appropriate button depending on how many objects you have selected.

This page is a place holder for the full release which will include options to export directly from the parts to OBJ, STL and more. The goal is also to be able to import from the DAL format which will be added to a new page called Import.



## Hotkeys Page

From the Hotkeys page you customize most of the shortcuts used by the program. At the top of this page is the Main Modifier selection. You can either select it from the drop down list or use the Select button which will prompt you to press your desired hotkey.

The Secondary Modifier is set to the Shift key and this one cannot be customized.

Below this is a list of customizable hotkeys. To change these start by clicking on the button for the function, select the key you want to use and then tick the boxes next to the button to add a modifier key. The first check box is for the Main Modifier key and the second checkbox is for the Secondary Modifier key (Shift key.)

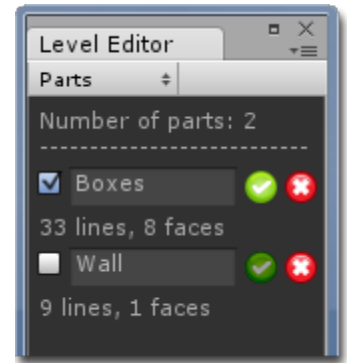




# Parts Page

From the dropdown list select the Parts page to view all of the parts in the scene. As more parts are added via the Add New Part button on the Edit page the list of parts will grow. From this page you can change the active part by ticking the box next to the part name, which is customizable by entering a new name in the text field.

Next to the part names are two small buttons. The green tick button toggles the parts visibility in the scene. If you are working on the walls of a building for example you might want to hide the roof from this page to be able to see the walls easier. The small cross button allows you to delete the part from the scene. Because this action cannot be undone you will be prompted to confirm the delete.



Another way to delete a part from the scene while on the Edit page is to first select the part, by holding down the hotkey and double clicking on the part, which will be highlighted in blue, and then pressing the delete key. Again you will be prompted to confirm the delete as this action cannot be undone.

# Settings Page

From the Settings page you can change many of the defaults used by the program.

1. At the top of the page you can switch between metric and imperial measurements which is used for the dimensions on the Edit page.

2. You can switch the type of line rendering used by the program. By default it is set to Custom as these lines look thicker and also show joins around the edges of faces which can help with the selection.

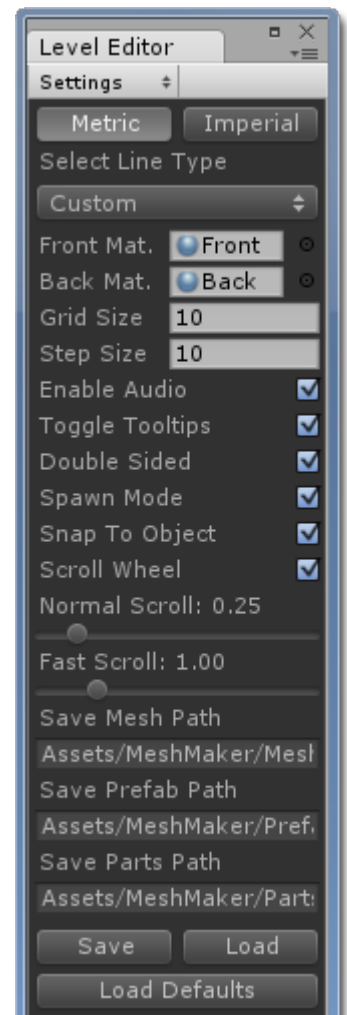
3. The default textures used by the program are normally set to white for the front face and blue for the back face. From here you can choose your own materials for use during the design stage.

4. The width of the floating grid visible when Snap To Grid is enabled is set here.

5. The step size sets the number of steps used when creating circles and arcs when drawing. Changing this to a smaller number allows for creating different types of polygons.

6. You can enable or disable the sounds used when clicking on the buttons here.

7. You can enable or disable the tooltips here.



8. When drawing faces they are set to double sided by default but when creating the final mesh you may want to make them single sided. You can toggle the creation of double side meshes here.
9. When checked the loading of parts from file will be placed relative to the current pivot point. If you want them to load them at the same location as when they were saved you can uncheck this box.
10. By double right clicking on a part you can change the scene camera to make it orbit the part (by holding down the middle mouse button and moving the mouse.) If you would like disable this behavior you can uncheck the box here.
11. A unique feature of the program is that it replaces the default scroll wheel movement used by Unity. The new scrolling behavior has three speeds, fast scroll (when the shift key is pressed), a normal speed and a slow speed (when the hotkey is pressed.) The slow speed is ideal when you want to zoom in on a part for editing. If you don't need this feature you can turn it off here.
12. The default pathways used by the program when saving meshes, prefabs and parts can be set here. They will automatically change if you save these to a new location.
13. When you are happy with the settings you can save them to a new file here or load a previous settings file.
14. If you need to restore the program to its default state then you can click on the Load Defaults button here.

## Textures Page

From the Textures page you can select the faces you want to paint and which material you want to use. It is recommended to do this as a last step after finishing the design of a part. The reason for this is that if you continue to edit a face then the material information for that face is lost.

To begin start by left clicking on the faces you want to paint (they will be colored with a blue tint) and then select a material to use (this is highlighted with a red background) before clicking on the Set button to apply the material. You can select all of the faces of a part by clicking on the All button or clear the selected faces by clicking on the Clear button.

When modifying the vertices of a face the UVs may have become stretched so you can select these faces and click on the Recalculate UVs button here to reset them.

The two ways to transform the faces material are to use the handles in the scene or enter new values on this page before clicking on the Set buttons. You can also quickly reset all of the values here too.

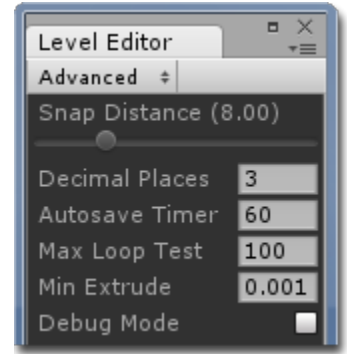


## Advanced Page

If you find that you need to change some of the internal settings used by the program you can change them from here.

The Snap Distance is the number of pixels (in screen space) that are used to determine if the mouse cursor is near a snap point.

The Decimal Places adjusts the float values shown next to the mouse cursor.



By default the program will save your work every minute so if there is a problem with the program and you need to recover your work you can click on the Load Parts button from the Edit page to load the file called 'autosave' from the Parts folder.

The program uses a very complicated algorithm to find and create the faces from the lines and occasionally you might find that the program has a problem calculating these faces. If this happens it is recommended to undo the last operation, save your work to file and then try again in a different way. The error condition is determined by the program getting stuck in a loop. You can adjust the number of loops that are considered an error from here.

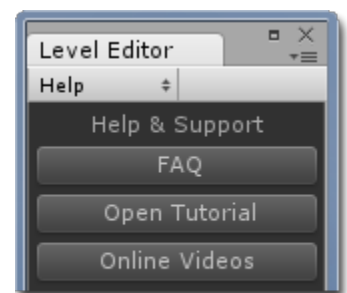
Some values are too small for the program to calculate, the Min Extrude helps to prevent these small values from entering into the design.

Finally you can check the Debug Mode box to enable some of the debugging notifications. At the moment it only shows the line numbers but more information will be shown in the full version.

## Help Page

If you need quick access to this tutorial then you can open the file easily from the Help page. You can also access the FAQ page on the MeshMaker.com website which may help with a specific problem. You can also quickly access the online videos from this page.

If you need further help you can write to [support@meshmaker.com](mailto:support@meshmaker.com) and we will do our best to solve the problem.



**Videos:** Click **Here** to view the playlist of tutorial videos online.

## Pro Tips

1. When rotating faces the selected faces may disappear but the selected vertices are still correct and you can continue to rotate the part safely.
2. To test your level design you can switch between Edit and Play modes and the program will restore your work ready to continue editing.
3. You can switch between different parts by double clicking on a part to make it the active part (highlighted in black.)
4. To select parts for saving first hold down the hotkey and double click to select the part (highlighted in blue.)
5. To deselect a part first hold down the hotkey plus the shift key before double clicking on the part.
6. The program may have problems if Unity updates the project while the program is running. It is recommended to only have the program open while designing your level and close it when not in use.
7. Unity 5.0 has a bug where the scene needs to be saved to work with deformed terrains. This was fixed in the next build.
8. You can cancel the current line drawing with Escape key or Hotkey. This is helpful if you have clicked in the wrong position and need to reposition the line.
9. The pivot point can be restored to the world origin by clicking on the lock icon twice.
10. The speed of the scroll wheel zoom in the editor can be adjusted by holding down the Shift key for fast zoom or the Hotkey for slow zoom.
11. You can orbit the camera around a part by first double clicking with the right mouse button and then orbit around while holding the middle mouse button down.
12. If you need to load a part repeatedly you can do this by using the keys Shift-R to reload the last loaded part.
13. If the spawn mode is selected the part will load relative to the current pivot point, otherwise it will load at the saved position.
14. You can hide blueprints temporarily by holding down the hotkey. This can help identify which lines have been traced from the blueprint or not.
15. You can copy the selected lines of a part by using the **Shift-C** keys and paste the lines again by using the **Shift-V** keys.
16. The two ways to reset uvs on model are to recreate one of the edge of the face or use the feature on Textures page.



17. In extrude and offset modes the original lines and faces can be deleted by holding down the shift key when releasing the mouse button.
18. The space bar is the fastest way to cycle through all drawing modes.
19. Pressing the Shift key temporarily toggles Snap To Grid to the opposite state.

## Notes

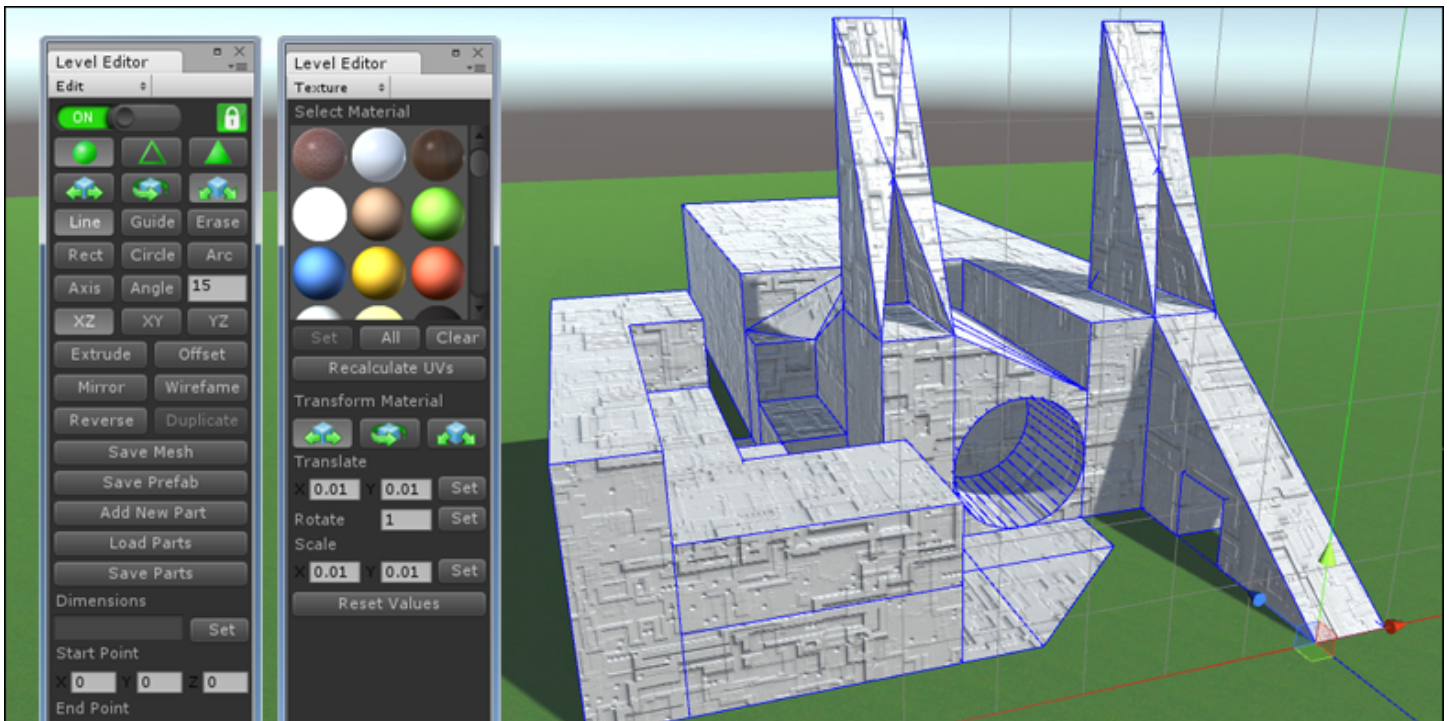
This program is still in BETA v0.7

While fully functional there are a few bugs that need to be ironed out, lots of new features to be added and many improvements planned for the full version.

## Thank You

We hope you find the program very useful for creating your level geometry and new models right within Unity. Thank you for your support while we continue to improve the program and work on the new features.

If you have a suggestion or find a bug then we would really like to hear from you as it will help shape the development of the program as we approach the final release. Please write to us at [support@meshmaker.com](mailto:support@meshmaker.com) and we will do our best to add the changes and fixes to the next update.



To learn more about Level Editor you can visit [MeshMaker.com](http://MeshMaker.com)

You can view all of the tutorial videos here at [Level Editor](#)

## Hotkeys

Main Modifier	Ctrl/Command/Selected Hotkey
Secondary Modifier	Shift (Not Customizable)
Undo	Main Modifier + Z
Redo	Main Modifier + Y
Multiple Select	Main Modifier + Left Click & Drag
Multiple Deselect	Main Modifier + Shift + Left Click & Drag
Switch On/Off Editor	Shift + Q
Editing Mode	H
Transform Mode	G
Drawing Mode	Space
Angle/Axis/None	Shift + A
Rendering Planes	P
Toggle Mirror Mode	M
Reverse Faces	I
Duplicate	Main Modifier + D
Toggle Wireframe	Main Modifier + W
Save Mesh	Shift + M
Save Prefab	Shift + P
Add New Part	Shift + T
Load Parts	Main Modifier + L
Repeat Load	Shift + R
Save Parts	Main Modifier + K
Set Dimensions	Shift + E
Snap To Grid	Shift + G
Delete Lines	Shift + X
Delete Guidelines	Shift + B
Delete Selected	Delete
Clear Selected	Escape
Move Pivot Point	Tab
Copy Lines	Shift + C
Paste Lines	Shift + V