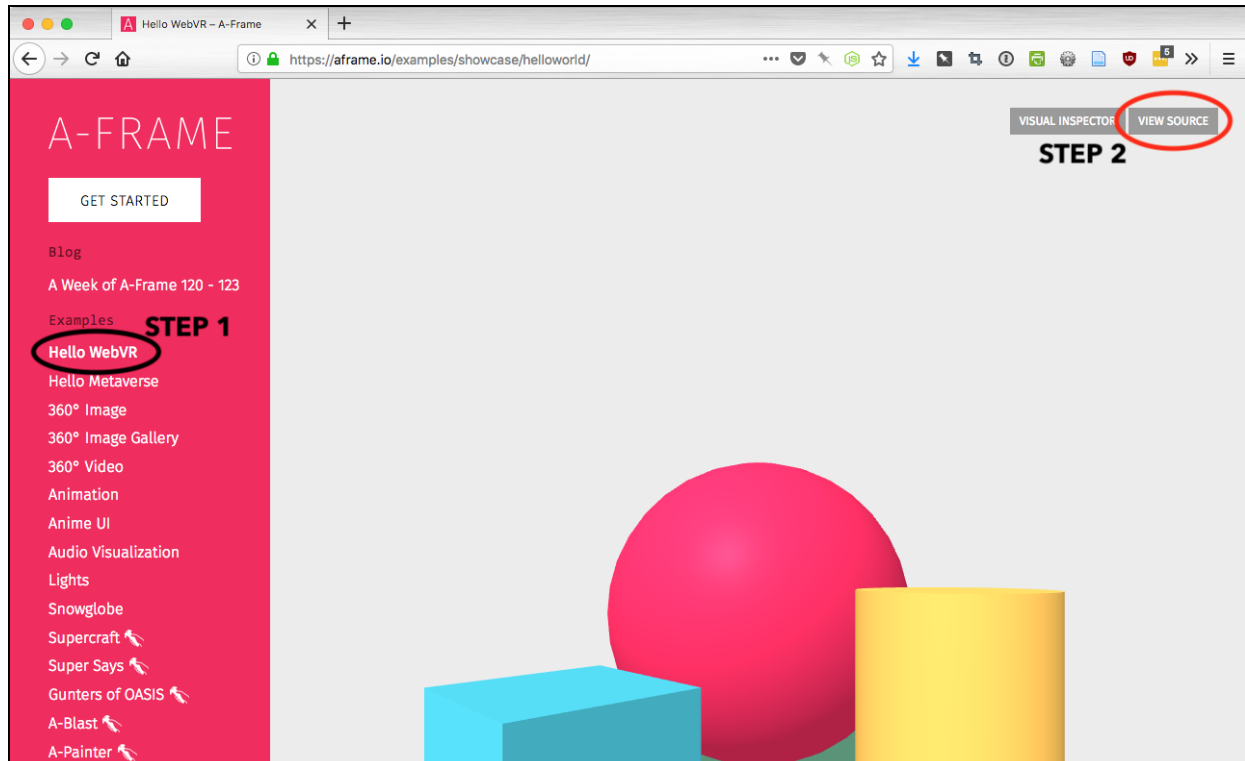


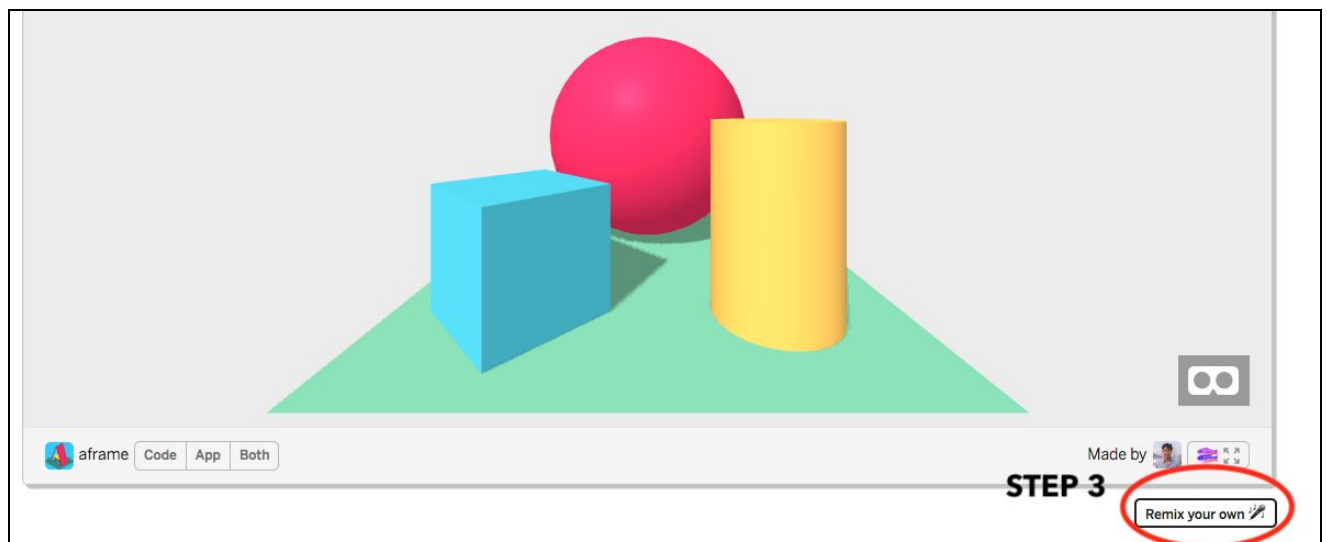
WebVR Using A-Frame

Go to the url, aframe.io

Click on “Hello WebVR” in the sidebar, then the “View Source” button in the upper-right:



Click on “remix your own.” This will bring you to glitch.com, which collaborates with A-Frame to create WebVR content. SignIn/Create an account on glitch.com so you can start to edit the code! (Glitch allows you to create accounts with Facebook, Gmail...)



Now after you made an account with glitch, download a 360 image off of google search. Literally, just google “360 image” and many panoramas should appear. Here we’ve chosen a panoramic view of the Pratt.



Save the image to where ever you want on your computer. And go back to the Glitch html webpage.



Click on the assets tab, and drag and drop your image onto the webpage. This will upload your image onto glitch.



Click on the image, and a smaller window will pop up on the webpage with the image and url. Click “copy” at the bottom right of the pop-up, and then click out of the window, and go back to the index.html page located on the far left of the sidebar. This is very important for those who are new to HTML.



This should be the existing code on your page. Notice the structure of the document.

There are `<html>` `</html>` these are called tags. `<Open tag>` `</Closing tag>` Any time you want to add something in `<body>` or `<a-scene>` make sure you do it in between the sandwich of the opening and closing tags. All the content is contained in “boxes” and in order to manipulate those boxes, they need to be in some kind of tag.

We will mainly be working in between the `<body></body>` tags. The `<a-scene></a-scene>` tags will be inside of the `<body></body>` tags. It's important to keep in mind the tag hierarchy. All tags are containers for. Imagine it like a sandwich.

```

<html>
  <body>
    <a-scene>
      <a-assets>
        <this is where the 3D objects will
go></a-assets>
      <a-sky this is where the 360 image will go> </a-sky>
    </a-scene>
  </body>
</html>

```

When you are typing in the tags make sure to have glitch automatically generates the closing tag for you. It should pop into place and be highlighted. This is important in order to see your code, as Glitch wants the tags to be connected this way. If your line of code is correct and there is still an error, then try retyping it, with glitch completing the tags to reboot work.



Add the tag below, right after the `<a-scene>` tag, but before the closing `</a-scene>` tag (remember it's supposed to be like a box within a box).

```

</a-scene>
  <a-sky src=""></a-sky>
</a-scene>

```

Once you finished typing out the tag, paste the url of the 360 image you uploaded in between the quotes `src=""`. Remember from earlier steps. Go to the image in the assets folder and copy + paste the url. The tag with the url inside of the quotes will look like this:

```

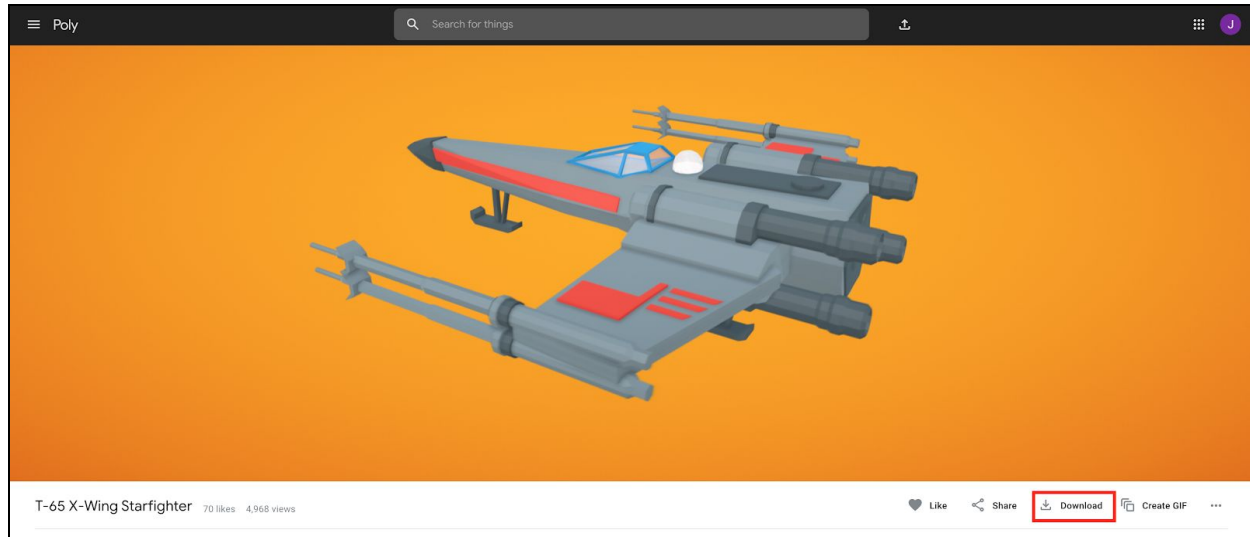
<a-sky
src="https://cdn.glitch.com/dc8aeff0-ef3e-4740-befa-2b3a2371bdbb%2FPrattCa
mpus360_17_small.jpg?v=1569609495132">
</a-sky>

```

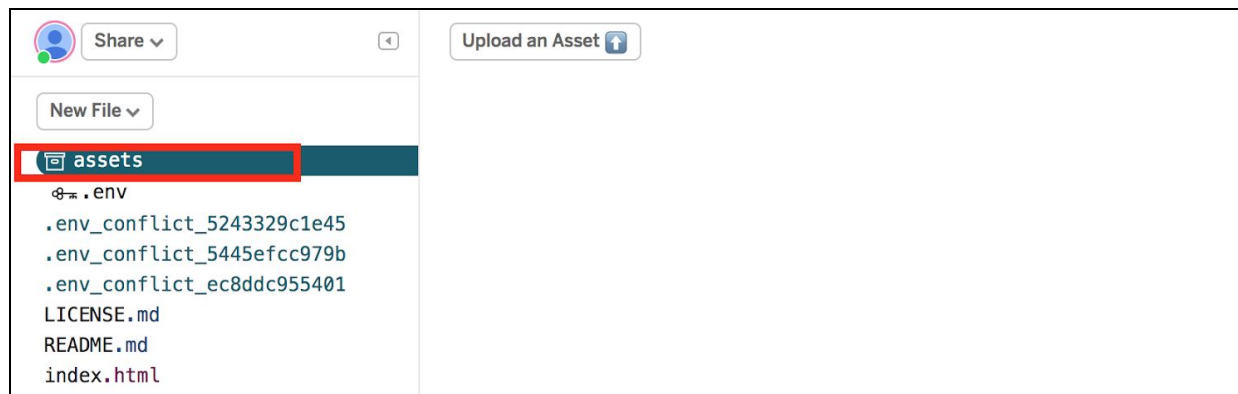
Then click on the drop-down “Show” button and check out your new VR environment!

Downloading Object (OBJ) Models

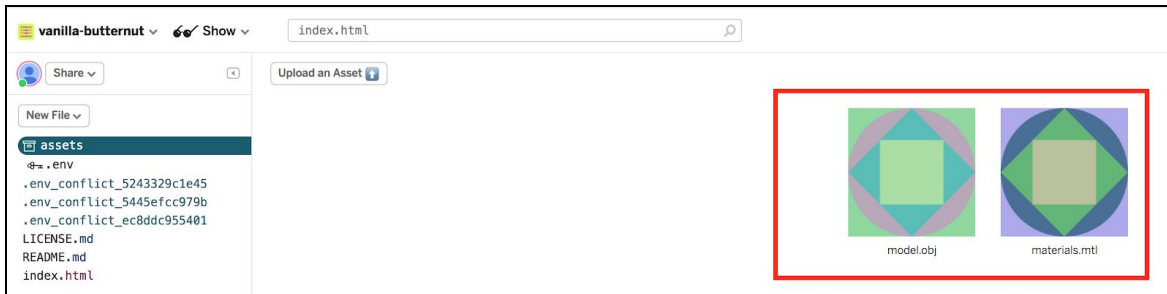
Now that we have a basic code, next we will try inserting 3D models into our project. First we have to import a 3D model file into our project. Find a model to download on <https://poly.google.com>. You may also choose any other 3D model site or personal 3D model file you would like to put into AR, as the process is the same. We chose a 3D model of a x-wing (<https://poly.google.com/view/100p3RNw-5Q>). Below the image of the 3D model, there is a download drop down button. Download the OBJ file.



Once downloaded, open the zip file by double-clicking it. A folder will pop up with an OBJ file and an MTL file. The OBJ file is the actual object model. The MTL file is the texture/color/lighting that covers the object. Once you see your OBJ and MTL files have been unzipped, return to your glitch project page. In the same sidebar where your index.html tab is located, there is an **assets** tab. Click on the assets tab.



Drag and drop your OBJ and MTL files onto the page. This ensures you may use them in your project, and they should automatically load and appear like this:



Adding Object (OBJ) Models

Now that we have our assets loaded onto glitch. We can start to type in the code that will bring our 3D model into AR. Go back to your index.html tab and copy the text below, in between the `<a-scene></a-scene>` tags.

```
<a-scene>

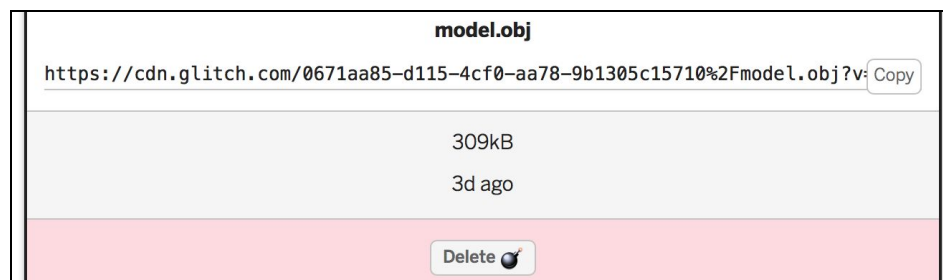
<a-assets>
  <a-asset-item id="obj" src="url"></a-asset-item>
  <a-asset-item id="mtl" src="url"></a-asset-item>
</a-assets>

<a-entity obj-model="obj: #obj; mtl: #mtl"></a-entity>

<a-sky
src="https://cdn.glitch.com/dc8aeff0-ef3e-4740-befa-2b3a2371bdbb%2FPrattCampus3
60_17_small.jpg?v=1569609495132">
</a-sky>

</a-scene>
```

Go back to your assets tab. Click on your OBJ file, a smaller window will pop up on the web page with a url.



Copy the url, go back to the index.html page. To put your OBJ file in AR, paste your url into the quotations of the first `<asset-item>`. **DO NOT COPY THE URL FROM THIS WORKFLOW PACKET.** Because everyone will be using different files, urls will vary person to person, simply copy and paste the url from your assets.

```

<a-scene>

<a-assets>
  <a-asset-item id="obj"
src="https://cdn.glitch.com/0671aa85-d115-4cf0-aa78-9b1305c15710%2Fmodel.obj?v=
1571160407881"></a-asset-item>
  <a-asset-item id="mtl" src="url"></a-asset-item>
</a-assets>

<a-entity obj-model="obj: #obj; mtl: #mtl"></a-entity>

<a-sky
src="https://cdn.glitch.com/dc8aeff0-ef3e-4740-befa-2b3a2371bdbb%2FPrattCampus3
60_17_small.jpg?v=1569609495132">
</a-sky>

</a-scene>

```

Now do the same for your MTL file. Go back to your assets tab. Click on your MTL file, and a smaller window will pop up on the web page with a url. Copy the url, go back to the index.html page. Paste your url into the quotations like below. This will allow your MTL file to appear on your 3D model

```

<a-scene embedded arjs>
<a-assets>
  <a-asset-item id="obj"
src="https://cdn.glitch.com/0671aa85-d115-4cf0-aa78-9b1305c15710%2Fmodel.obj?v=
1571160407881"></a-asset-item>
  <a-asset-item id="mtl"
src="https://cdn.glitch.com/0671aa85-d115-4cf0-aa78-9b1305c15710%2Fmaterials.mt
l?v=1571160523644"></a-asset-item>
</a-assets>

```

Your code should look something like this:

```
<html>
  <head>
    <meta charset="utf-8">
    <title>Hello, WebVR! • A-Frame</title>
    <meta name="description" content="Hello, WebVR! • A-Frame">
    <script src="https://aframe.io/releases/0.9.2/aframe.min.js"></script>
  </head>
  <body>
    <a-scene background="color: #FAFAFA">

      <a-assets>
        <a-asset-item id="obj"
src="https://cdn.glitch.com/dc8aeff0-ef3e-4740-befa-2b3a2371bdbb%2Fmodel.o
bj?v=1569614150424"></a-asset-item>
        <a-asset-item id="mtl"
src="https://cdn.glitch.com/dc8aeff0-ef3e-4740-befa-2b3a2371bdbb%2Fmateria
ls.mtl?v=1569614151725"></a-asset-item>
      </a-assets>

      <a-entity obj-model="obj: #obj; mtl: #mtl" position="0 0 -10">
</a-entity>

      <a-sky
src="https://cdn.glitch.com/dc8aeff0-ef3e-4740-befa-2b3a2371bdbb%2FPrattCa
mpus360_17_small.jpg?v=1569609495132"></a-sky>

    </a-scene>
  </body>
</html>
```

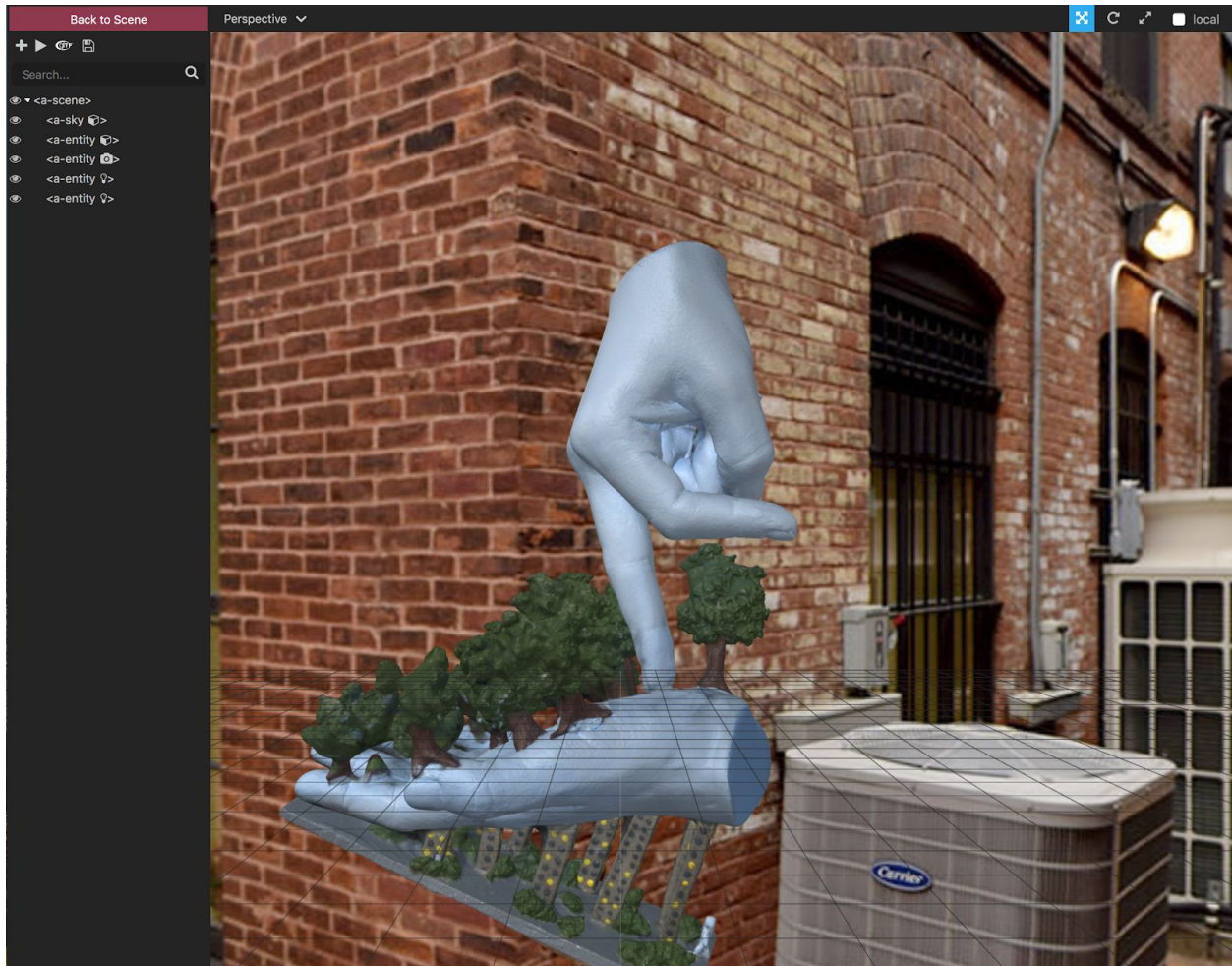
Then click on the drop down “Show” button and checkout your 3D model in it’s Virtual Reality environment! If the model is too big for the view, play with it’s position and scale in the code via the “x y z” coordinates. Your Show View (in Another Window) should look something like

this



Use the inspector tool to scale and position the model to a value that suits you (Press **“Ctrl + Alt + i”** all at once). This function won't save your values, so be cautious, you will need to just remember the values and input them back into the attributes area in the a-entity tag.

Now once you have your scene up after pressing show live, you can start to use the url on your phone's browser and see what your VR scene looks like.



Make sure that you are logged into your glitch.com account so that the code will be accessible and automatically save itself on the platform. The project can be shared with others to edit or view your project via the share button on the upper left-hand corner of the page.

Congrats you are done!

Animation:

The animation component lets us animate and tween values including component values (e.g., position, visible) and component property values (e.g., light.intensity).

We can also tween values directly for better performance versus going through .setAttribute, such as by animating values on the object3D (e.g., object3D.position.y, object3D.rotation.z) and directly within a component (e.g., components.material.material.color, components.text.material.uniforms.opacity.value),

For example, translating a box:

```
<a-box position="0 1.6 0" animation="property: position; to: 5 1.6 0;
dur: 1500; easing: linear"></a-box>
```

Or orbiting a sphere in a 5-meter radius:

```
<a-entity rotation="0 0 0" animation="property: rotation; to: 0 360
0; loop: true; dur: 10000">
<a-entity position="5 0 0"></a-entity>
</a-entity>
```

MULTIPLE ANIMATIONS:

The component's base name is animation. We can attach multiple animations to one entity by name-spacing the component with double underscores (__):

```
<a-entity animation="property: rotation"
  animation__2="property: position"
  animation__color="property: material.color"></a-entity>
```

FOR MORE ON ANIMATION & A-FRAMES OTHER FEATURES, CHECK OUT THE COMPLETE DOCUMENTATION AT:

<https://aframe.io/docs/0.9.0/introduction/>

Alternative Way to Add Texture/Materials:

In some cases, it may be more beneficial to use a PNG file instead of an MTL file. Both of these file types will be able to bring color, light, texture, and shadow to your OBJ, but the code for using a PNG as a material file is a little different.

Below is what your code should look like if you were to use an MTL file as your material. The highlighted areas of the code are the areas in which the code will be tweaked to accommodate using a PNG file.

```
<html>
  <head>
    <meta charset="utf-8">
    <title>Hello, WebVR! • A-Frame</title>
    <meta name="description" content="Hello, WebVR! • A-Frame">
    <script src="https://aframe.io/releases/0.9.2/aframe.min.js"></script>
  </head>
  <body>
    <a-scene background="color: #FAFAFA">

      <a-assets>
        <a-asset-item id="obj"
src="https://cdn.glitch.com/dc8aeff0-ef3e-4740-befa-2b3a2371bdbb%2Fmodel.o
bj?v=1569614150424"></a-asset-item>
        <a-asset-item id="mtl"
src="https://cdn.glitch.com/dc8aeff0-ef3e-4740-befa-2b3a2371bdbb%2Fmateria
ls.mtl?v=1569614151725"></a-asset-item>
      </a-assets>

      <a-entity obj-model="obj: #obj; mtl:#mtl" position="0 0 -10">
    </a-entity>

    <a-sky
src="https://cdn.glitch.com/dc8aeff0-ef3e-4740-befa-2b3a2371bdbb%2FPrattCa
mpus360_17_small.jpg?v=1569609495132"></a-sky>

  </a-scene>
</body>
</html>
```

Delete the above section of your code that is highlighted in yellow. In the same space, Copy + Paste the code below. Make sure to replace the url's with your own assets

```
<a-assets>
```



```

        <a-asset-item id="obj"
src="https://cdn.glitch.com/dc8aeff0-ef3e-4740-befa-2b3a2371bdbb%2Fmodel.o
bj?v=1569614150424"></a-asset-item>
        <a-asset img id="mtl"
src="https://cdn.glitch.com/dc8aeff0-ef3e-4740-befa-2b3a2371bdbb%2Fmateria
ls.mtl?v=1569614151725"></a-asset-item>
    </a-assets>

    <a-entity obj-model="obj:#obj" material="src:#mtl" position="0 0
-10"></a-entity>

```

Below is what your completed code for using PNG with your OBJ should look like:

```

<html>
  <head>
    <meta charset="utf-8">
    <title>Hello, WebVR! • A-Frame</title>
    <meta name="description" content="Hello, WebVR! • A-Frame">
    <script src="https://aframe.io/releases/0.9.2/aframe.min.js"></script>
  </head>
  <body>
    <a-scene background="color: #FAFAFA">
      <a-assets>
        <a-asset-item id="obj"
src="https://cdn.glitch.com/dc8aeff0-ef3e-4740-befa-2b3a2371bdbb%2Fmodel.o
bj?v=1569614150424"></a-asset-item>
        <a-asset img id="mtl"
src="https://cdn.glitch.com/dc8aeff0-ef3e-4740-befa-2b3a2371bdbb%2Fmateria
ls.mtl?v=1569614151725"></a-asset-item></a-assets>

        <a-entity obj-model="obj:#obj" material="src:#mtl" position="0 0 -10">
      </a-entity>

      <a-sky
src="https://cdn.glitch.com/dc8aeff0-ef3e-4740-befa-2b3a2371bdbb%2FPrattCa
mpus360_17_small.jpg?v=1569609495132"></a-sky>
    </a-scene>
  </body>
</html>

```