Team 3176 White Paper

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Abstract:

The purpose of this paper is to sort of "show the ropes" to those new to Blender and to provide a sort of instruction manual without having to go and look up tutorials on YouTube. Everything within this paper is simply instructions to make everyone's life easier.

Items and Manipulation:

Start by placing the basic item shape that you want to manipulate. When opening Blender, it will provide you with a basic 1 by 1 by 1 cube, but if you would prefer a different shape, then look to the left side of the screen. Click on the "Create" tab, then select the shape you want to work with, and the shape of your choice will appear. If you want the cube out of the way, delete the original cube by pressing "x".

When your shape appears, if the original size of the object is not what you want, you can change the size one of two ways. If you just want the object to change size all around, then look to the left side of the screen and click "Scale". Move your cursor towards the object, and it will decrease in size, move away from it, it will increase. If you need/want the object to have specific dimensions, then look to the right side of the screen and click on the "object" tab. Under the

"scale" section, type in the dimensions you want the object to occupy. Make sure to *pay attention* to the key in the bottom left of the object viewer that shows where X, Y, and Z are.

An object will usually have a strange almost pixel-y square texture to it. If you wish to change this, simply go to the "tools" tab on the left hand side and under "shading" choose "smooth". If you wish to sculpt/design your own shape, go to the "object mode" on the bottom left of the screen, click "sculpt mode". Once you click on "sculpt mode" click on the image on the top left under the "tools" tab. After you click on the image an array of brushes will come up. Select the brush of your choice and begin sculpting your masterpiece! The bar "rad" controls the size of your sculpt tool, while "str" controls the strength of your brush. Under the "tools" tab in sculpt mode you can find the options "add" and "subtract". "Add" acts like a normal brush, and is the default setting. However, "subtract" does the opposite, and almost erases the shape, or grinds it down.

To change the color of your object, look to the right side of the screen. Then, select "material" and click on the "new" tab. Select the item and then the white bar under the "diffuse" tab, and adjust the color accordingly. Keep in mind that this will color the *whole item* the color that you diffuse it to, so if you want to have something be different colors, make sure to color the parts *before* joining them.

When joining objects together, find the top right of your screen. Under "Scene" you will find all the shapes that are on the grid. Right click on the shape name and click "select". That shape will be highlighted. Then, right click on the next name of the shape you wish to join with the previous shape, and click select. Both shapes should now be highlighted. Now find the top

left menu on your screen, and under "edit" click join. Your objects should now be joined together to make one shape and the two objects can now be moved together and sized together.

If you need to import another blender object, all you really need to do is copy and paste. There are two ways to do this, you can either go to the top right corner of the screen and select every object name that you want copied and then use Control C/V accordingly (we recommend this for small amounts of objects). Or if you have a lot of objects you want to copy and paste - you can hold down the control key and left click button of your mouse, and draw a line over everything you want highlighted and use Control C/V.

Animation

At the bottom of the screen find the key image and next to it should be a pull/down thing. Click on that and select "LocRotScale." then click on the object you want to move, move the green bar to where you want the key frame then click the key image. To remove a key frame, click the key image with the red cross over it.

If you want to watch your animation the way that it will appear when the final rendering is complete, go to the bottom of the screen. Select "View" in the right hand corner and then select "Cameras". Then, hit "Set Active object as Camera". Finally, go to the bottom of the screen and hit the play button to watch your animation through the Camera's eyes.

Rendering

To render, look to the right side of the screen. Find the category labeled "Output." Click on the folder and find a safe spot to save the final project. Be careful, it is better to have a

seperate folder to save the pictures to. Find the pull down arrow and click on JPEG and then towards the top of the strip it will say "Animation." After you click that it will start to take pictures of every frame this will take a while. If you see black and not your animation then you did something wrong. Once that is done go to the top where it says default then click on the arrows and find video editing. There will be a weird wave thing you don't have to worry about that. Towards the bottom of the screen click on add then image. Find where you saved the pictures. Now this is why you want a seperate folder for the pictures. Once you find where the pictures are hit "A" key and "add image strip." Make sure it starts at "0." Go to the top of the screen where it says video editing and click Default. Then in the output category, find a different safeing place. Then click where it says JPEG and switch it to a "AVI JPEG" and hit Animation for the final time. Now it should be in your folders. Click Here to watch the teaching video that shows you step by step on how to render.

If an object within your animation will not render, then click on the object that you want to render and hit Control Alt H

A guide for you during animation

Since no one would actually want to have to go back and reread this over and over, using Control F to try and find the instructions to every function that they needed, and probably some that we didn't even know about, we have included a link to the original Blender Instructions Google Sheet. Please feel free to add to it as the year goes on and you learn more things!

https://docs.google.com/spreadsheets/d/1NG-TVXRiYbevkhNdzcG_4KaciF8KJdMo1AbuQNSuIKQ/edit?usp=sharing