

FINAL YEAR PROJECT REPORT

ANIMATED SHORT FILM LIGHT OF NATURE

BY

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This Report Presented in Partial Fulfillment of the Requirements for the Degree of
Bachelor of Science in Multimedia and Creative Technology

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DAFFODIL INTERNATIONAL UNIVERSITY

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APPROVAL

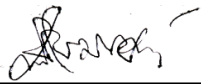
This Project titled “**ANIMATED SHORT FILM LIGHT OF NATURE** ”, submitted by Md Mamun or Rashid to the Department of Multimedia and Creative Technology, Daffodil International University, has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of B.Sc. in Multimedia and Creative Technology and approved as to its style and contents. The presentation has been held on **26 December, 2019**.

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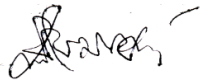
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DECLARATION

We hereby declare that, this project has been done by us under the supervision of **Arif Ahmed, Associate Professor, Department of MCT** Daffodil International University.

We also declare that neither this project nor any part of this project has been submitted elsewhere for the award of any degree or diploma.

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ABSTRACT

I create a 3d animation short film about save the nature where Fireflies are the role model of the story. 3D Animation is the craft of utilizing movement to bring characters, vehicles, props, and more to life inside TV shows, movies, and games. Animation is important because it makes us be able to tell stories and communicate emotions and ideas in a unique, easy-to-perceive way that both small children and adults can understand. Animation has helped connect people throughout the world in a way that sometimes writing and live-action films cannot. As an animated character, the character feels like their own being. Idea making is first step of building story and story is the base of 3d Animation production. At the beginning of the project, I follow full 3d animation pipeline and prepared the story board for the first key to visualize the story. Then I start draw character design and environment design. After design all element I start modeling, UV mapping, rigging using Autodesk Maya. After finishing all model and UV mapping then I start texturing in Photoshop. Then I animate my animation in Maya and render it in Arnold. After finishing my render I composite it in Adobe after effects and premier pro. So, My 3d Animation short film project aware people to create a social awareness about save natures.

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CHAPTER 1

Introduction

Fireflies are the beautiful creature of God. They communicating with their light, each blinking pattern an optical signal to a potential mate. But sadly, as with so many of the Earth's creatures, fireflies are disappearing all over the world. The clearing of forests, the destruction of wetlands, the use of toxic chemicals in agriculture and on residential lawns and gardens are all to blame. Adult fireflies live only long enough to mate and lay eggs. Catching fireflies in glass jars is a nostalgic pastime for children on a summer's evening, but how sad it is to waste one precious moment of a firefly's brief existence trapped in a glass prison.

Nature and ecosystem in nature are in perfect concord where every residing and nonliving component has a role to play in making the atmosphere and surroundings work perfectly so that all animals, plants, microorganisms, and nonliving things can coexist creating a perfect stability amongst them. We, the humans have caused several imbalances in the nature for numerous thousands of years and now, it is the time we turned round and fixed a number of the negative impacts at the globe

Fireflies also one of the creature of nature. In my 3d animation project aware the people to save the wildlife ecosystem. This project consists in the realization of an Animated Short, combining 3D techniques to achieve a professional quality product. One of the objectives of the project will be create a professional visual piece, which will help me to demonstrate my skills to the professional world when looking for job in this field of the industry.

This project provide a animated 3d Animation film. The Visual are based on, Fireflies and a girl character.

CHEPTER 2

Software and 3D Animation Pipeline

2.1 Software I used for this animation project.

1. **Adobe Photoshop:** I used Photoshop cc for design and texturing for this project.
2. **Adobe Illustrator:** I used Adobe Illustrator cc for Title design and texturing.
3. **Autodesk Maya:** I used Autodesk Maya (17,18,19) for modeling ,UVmapping Rigging, Animation, Lighting and Rendering.
4. **Adobe Premiere Pro :** I used Adobe Premiere Pro cc for Post production , Editing And Color Correction.
5. **Hardware Configuration :** I used my personal desktop computer for this project .
 - Processor : Intel core i5-6500 ,3.20 GHz
 - RAM : 16 GB DDR4
 - 1 TB Hard Drive

2.2 3D Animation Pipeline.

I follow the full animation pipeline process:

1. Pre-Production

- **Idea :** An animation is really just a moving story. So you need to have a story idea before you can begin.
- **Story:** Story making based on your idea .When I develop the idea, then I write the story.
- **Script:** A screenplay, or script, is a written work by screenwriters for a film, television program or video game. So, I write script for my animation project.
- **Story Board:** A storyboard is a graphic organizer that consists of illustrations or images displayed in sequence for the purpose of pre-visualizing a motion picture, animation, motion graphic or interactive media sequence.
- **Animatic:** Like storyboards, animatic are utilized for pre-picturing the film before creation begins. Animatic are critical for making an enlivened motion picture, since they let you see what the motion picture may resemble just because. This is when you first get a sense of the pacing, the rhythm and the progression of your film.

2. Production

- **Modeling:** In this part we have to all 3d models and props design and environment.
- **Texturing:** After complete all 3d models .Then we have to do all UV mapping and texturing to get the perfect color of all models.
- **Rigging:** rigging is the process of creating a skeleton for a 3D model so it can move. Most commonly, characters are rigged before they are animated because if a character model doesn't have a rig, they can't be deformed and moved around
- **Animation:** 3D movement. Energizing items that show up in a three-dimensional space. They can be pivoted and moved like genuine articles. 3D activity is at the core of games and computer generated reality, however it might likewise be utilized in introduction designs to add style to the visuals.
- **Lighting:** A point light throws beams toward each path from a solitary, little source in 3D condition. It has no particular shape and size. Point lights can include "fill lighting" impact to a 3D scene.
- **Rendering:** 3D rendering is the 3D computer graphics process of converting 3D models into 2D images on a computer. 3D renders may include photorealistic effects or non-photorealistic styles.

3. Post-Production

- **Compositing:** Compositing is the mix of numerous layers of pictures or video components to render a last still or moving picture. The mix of layers can be a physical or programming based activity.
- **Sound Editing:** We depict sound altering as a specialty of delivering extraordinary quality sounds for blending, usage and preparing. In more straightforward words, sound altering is a relentless undertaking of making boisterous and lousy accounts sound great. It is one of the procedures that make the video entirety.
- **Color Correction:** Color correction alludes to changing white and dark levels, presentation, difference, and white parity to give you look with accurate, unprocessed-seeming colors.
- **Final Output:** After complete editing go to video render output in MP4 or other video format.

CHAPTER 3

Pre – Production

3.1 Idea and Story Building:

From the thought of doing something helpful for our awareness through my work, I started to think about this project which will not only fill my goal but also will be helpful for our awareness about save the wildlife nature.

My story is based on an Adventure of a Fireflies and a girl character. Once she reading on table at a village house. Suddenly the electricity is off and a fireflies come inside by window. Then she see closely and she dream that go outside and see the moon light and beautiful environment and go forward behind the fireflies. Suddenly she stopped and the moon hide by trees then see look a fireflies on her hand, and fly from her hand. And lots of fireflies come to the frame. See feeling very charming and great. Suddenly see woke up and realize that it was dream with beautiful fireflies. Then see free the fireflies from the Glass jar. That mean see realize that Catching fireflies in glass jars is very bad for natural ecosystem and how sad it is to waste one precious moment of a firefly's brief existence trapped in a glass prison.

3.2 Script:

Any film/Video production project appears with the script/screenplay. It is the Bible of the film that everyone working with the script on the shooting of the film. After developing the story our next step was to establish a complete screenplay. Script contains detailed of shot & camera direction for every single scene.

Script For animated short film

×

"LIGHT OF NATURE"

FADE – IN :

EXT : গ্রামের একটা টিনের বাড়ি – রাত ।

ঝিকি পোকাকার ডাক । আধো আলোয় দাঁড়িয়ে আছে একটা টিনের বাড়ি । [tilt down]

জনালার পাশে টেবিলে একটা মেয়ে (মায়া) বই পড়ে । [Long shot]

INT : মায়ার রুম – রাত ।

মায়া চেয়ারে বসে ঝিমায় বই পড়তে থাকে । [close shot]

হটাৎ বিদ্যুৎ চলে যাবে [mid shot]

একটি জোনাকি জানালা দিয়ে ঘরে ঢুকে [mid shot]

মায়া চোখ খোলে । [close shot]

মায়া অবাক হয়ে তাকায় । [mid shot]

মায়া জোনাকি ধরতে হাত বাড়ায় । [close shot]

জোনাকি উড়ে যায় । [mid shot]

EXT : মায়া বাড়ির বাইরে – রাত ।

মায়া জোনাকি ধরতে যায় । [long shot]

হাত বাড়ায় জোনাকির দিকে । [mid shot]

মায়া র মুখ । [cose] { চাঁদ দেখে ফেসিয়াল এক্সপ্ৰেশন}

আকাশে চাঁদ । চাদ মেঘে ঢেকে যায় । [long shot]

মায়ার মুখ । মুখ থেকে লাইট কমে যায় । [close]

নিচে হাতের দিকে তাকায় । [close]

হাতে একটা জোনাকি বসে । [extrim close]

মায়া হাতটা মুখের কাছে নিয়ে আসে । [close shot]

খুশি হয়ে জোনাকি দেখে । [close shot]

জোনাকি উড়ে যায় । পিছনে ঘরে দেখে চারিদিক থেকে আসংখ্য জোনাকি আসে । মায়া নাচে । [mid + dolly]

FADE IN : মায়ার রুম – রাত ।

মায়া হটাৎ ঘুম ভেঙ্গে যায় চোখ খোলে । [close + zoom out]

কাঁচের পাত্রে ওপর একটা জোনাকি জ্বলতে থাকে ।

মায়া পাত্রটি হাতে নিবে [mid shot]

পাত্রটি খুলে দিবে [mid shot]

জোনাকিটা উড়ে চলে যাবে জানালা দিয়ে [close shot] + [mid shot]

EXT : ঘরের বাহিরে জানালা থেকে জোনাকিটা বের হবে – [long shot]

কেমেরা জুম্ অটুট হবে অনেক জোনাকি দেখা যাবে ঘরের চারিপাশে [long shot]

Figure 3.2.1 : Scan Copy of Script.

3.3 Story boarding:

A story board is a realistic coordinator that furnished the watcher with an elevated level perspective on a task. After finished my script writing I began to make a storyboard. I work in subtitle with the drawing .I try my best to create a good and detailed story board for the goal.



Figure 3.3.1 : Scan Copy of Story Board

CHAPTER 4

Production

4.1 Character design

At first, I required character Design for my animation project. I draw girl character in front and side views by sketching.



Figure 4.1.1 : Character Drawing of Girl

4.2 Modeling

Modeling is very important to look of the character and all props and environment .After character design completed. I start modeling in Autodesk Maya. I also describe my modeling technique.

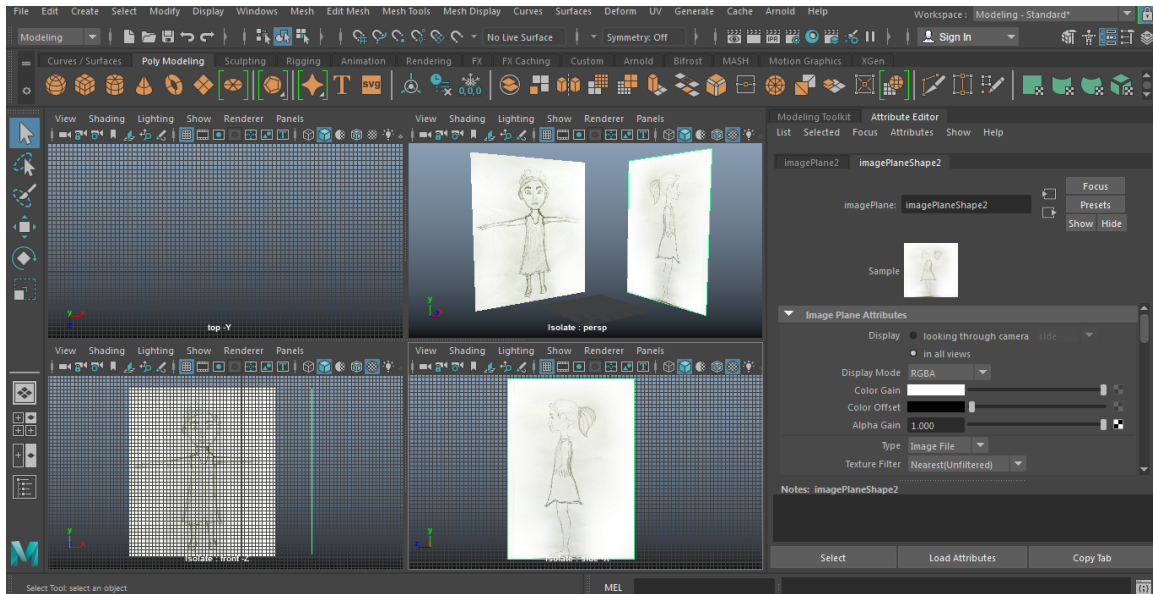


Figure 4.2.1 : Import the drawing image reference

Step 1 : At first I import the drawing image for reference . It is very easy to modeling of character design . Front view > Image Plane> select image front in Z axis and Side view > Image Plane> select image front in X axis .

Step 2: Then Create new polygon Cylinder for body which edge subdivision is (12).Then go to vertex and make a body shape with reference image . And increase the edge loop by Insert edge loop tool .Then again select vertex and make a perfect shape .

adjust the vertex to the face reference image . Then make it to perfect shape of face and body part .

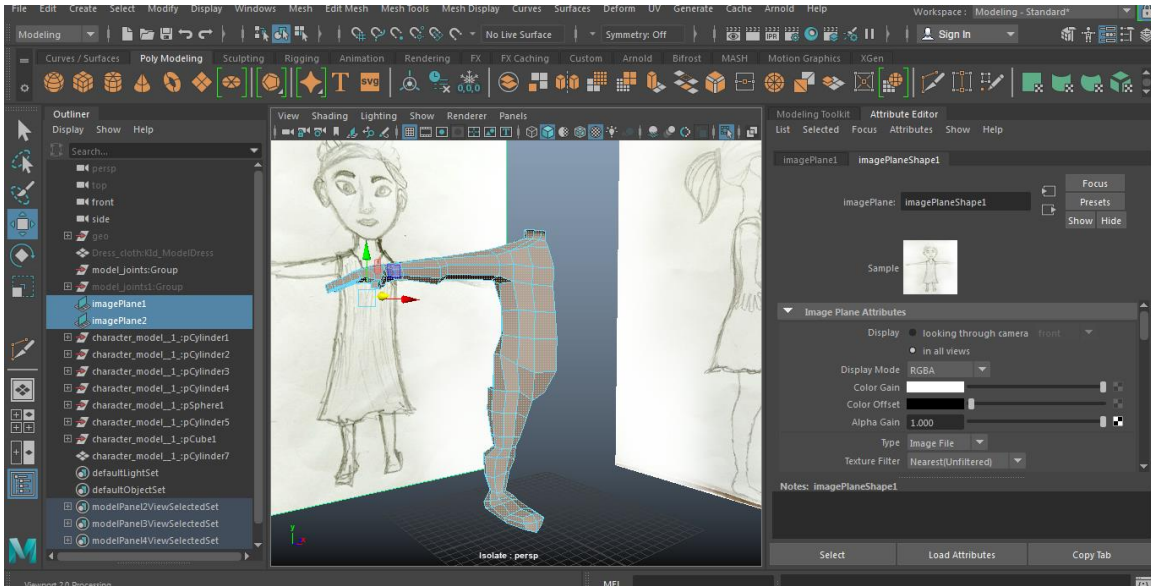


Figure 4.2.2 : Create body part by image reference

Step 4: When complete the body shape then create new cylinder for hand > leg which edge subdivision is (8) . Then go to vertex and make a hand and leg shape .Press 3 for smooth mesh .

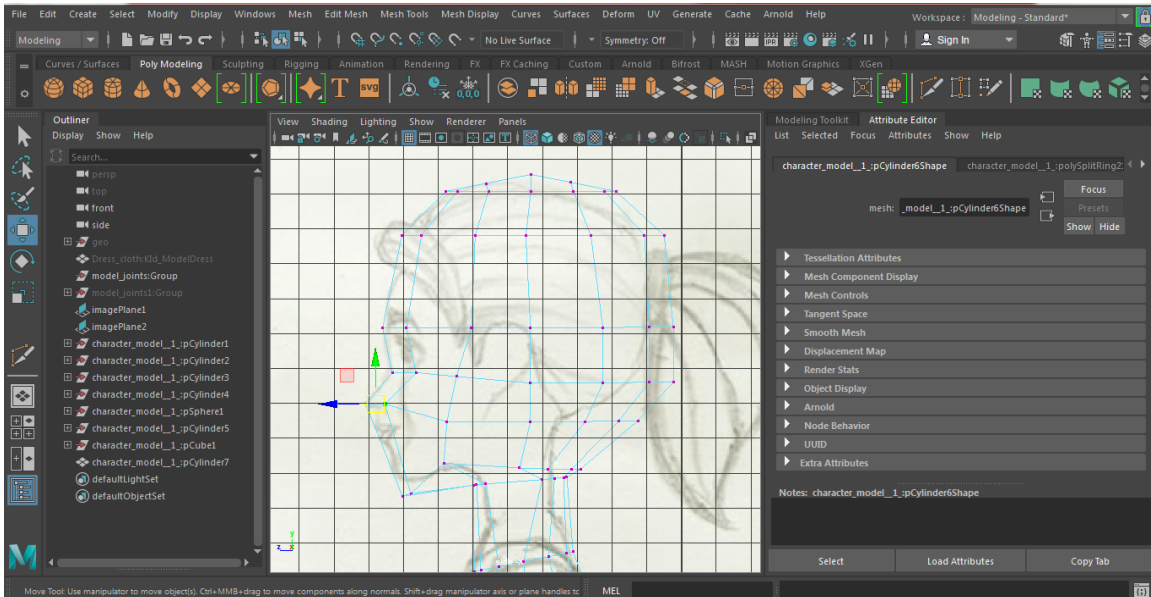


Figure 4.2.3 : Create head part by image reference

Step 5: Then bridge the edges from body >hand and leg .Then create new sphere and subdivision (12) for head part. Select vertex and crate shape by the head reference.

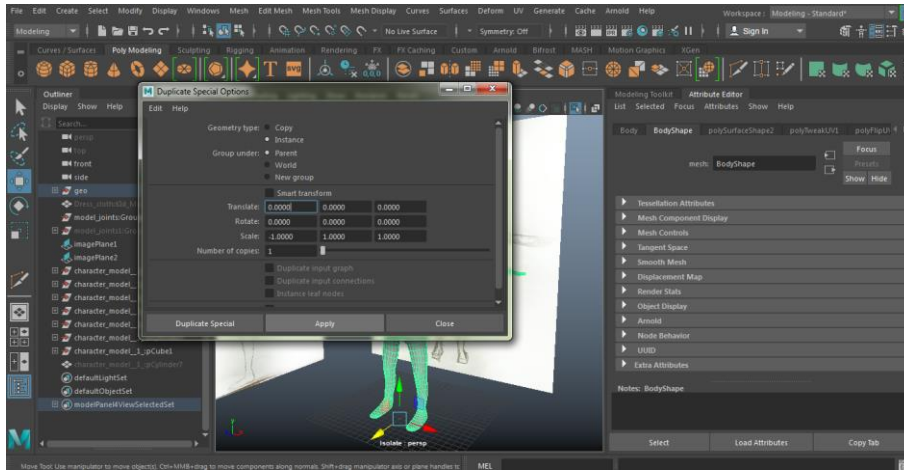


Figure 4.2.4 : Make duplicate special body part .

Make sure when we duplicate special the pivot point of body must be in center of grid. Press (d and v) and adjust with mouse left button for move pivot point to middle last vertex of body . Then press x and mouse left button , then move pivot point to center of grid .

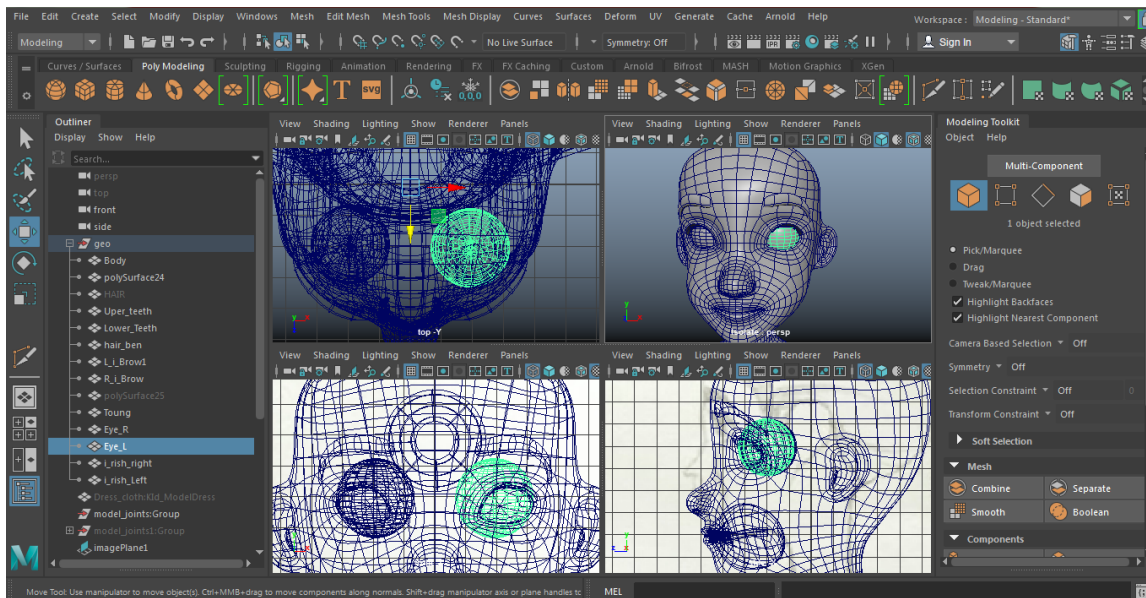


Figure 4.2.5 : Create eye, eye brow ,teeth, tongue part .

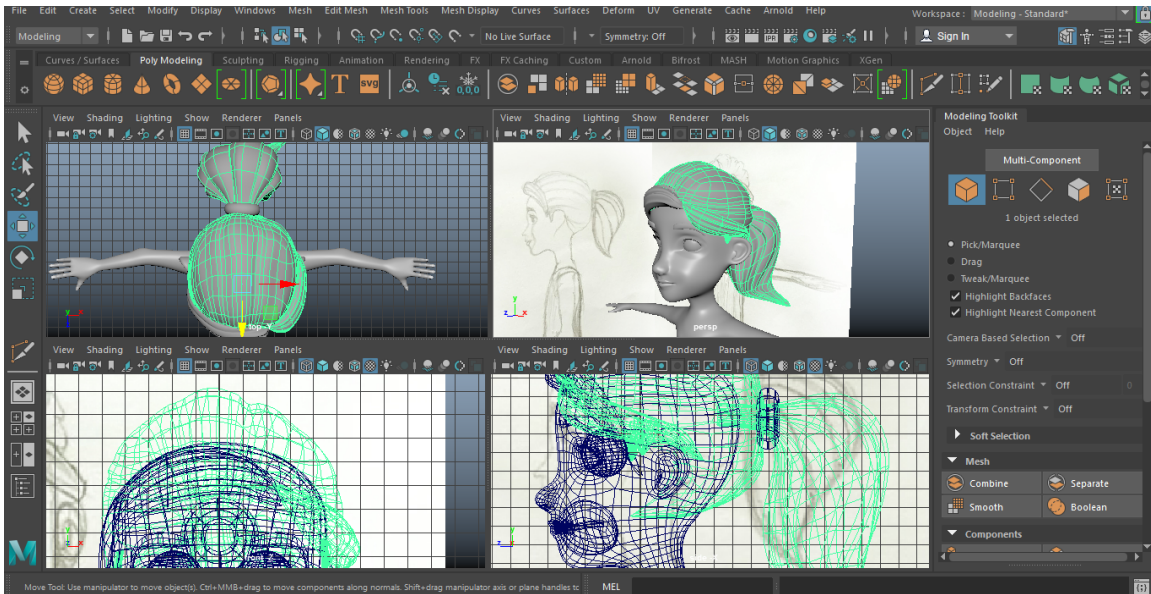


Figure 4.2.6 : Create hair by image reference .

Step 6: When I complete the full body then create the eye by sphere ,eye brow,teeth and tongue by poly cube.

Step 7: Then create the hair by sphere .It was so hard to create the perfect shape .But finally I do the hair part .Then create the dress by copy body and delete the other faces . And make dress shape by adjust vertex point .

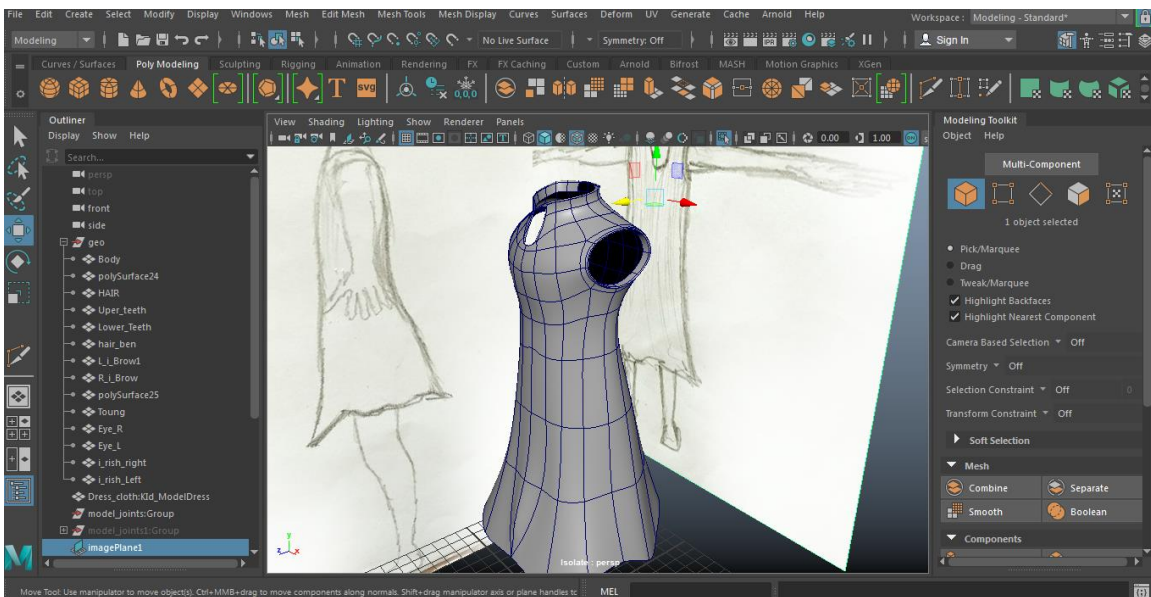


Figure 4.2.7 : Create dress by image reference .

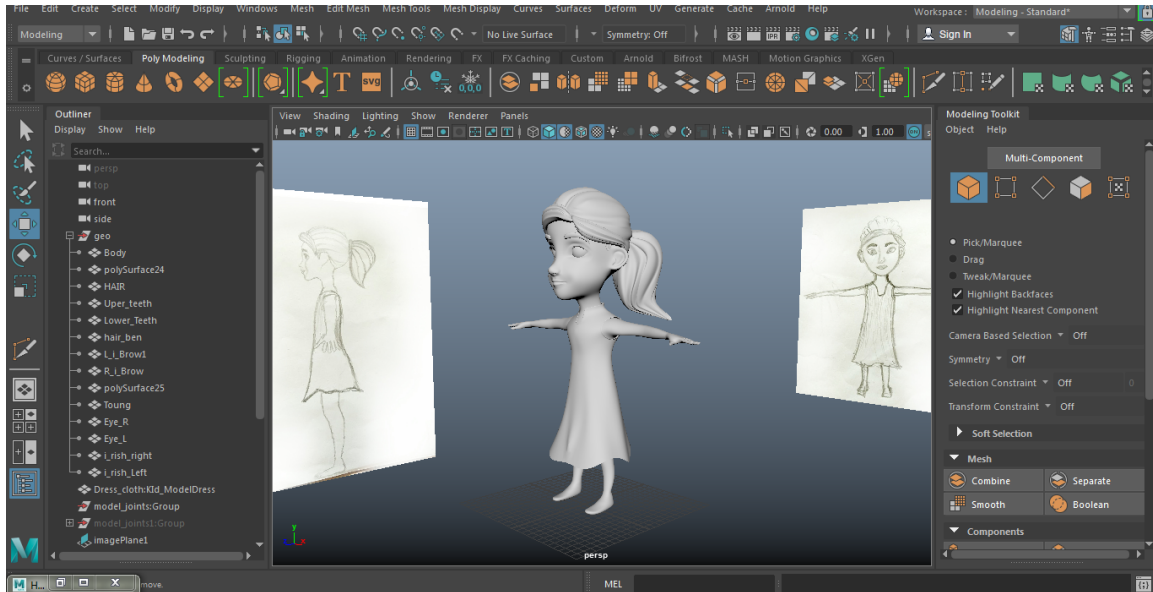


Figure 4.2.8 : Complete modeling of character.

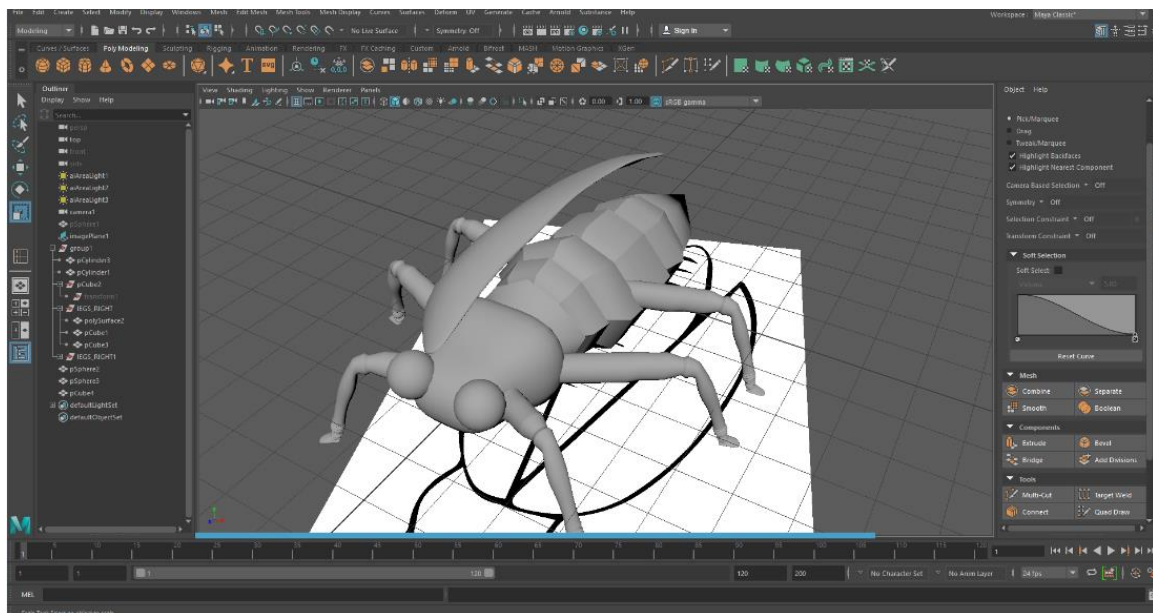


Figure 4.2.9 : Create Fireflies modeling by image reference .

I applied same technique for other all modeling like the firefly. Firstly I import reference image of firefly .Then create new cylinder for body and cube for head and leg.

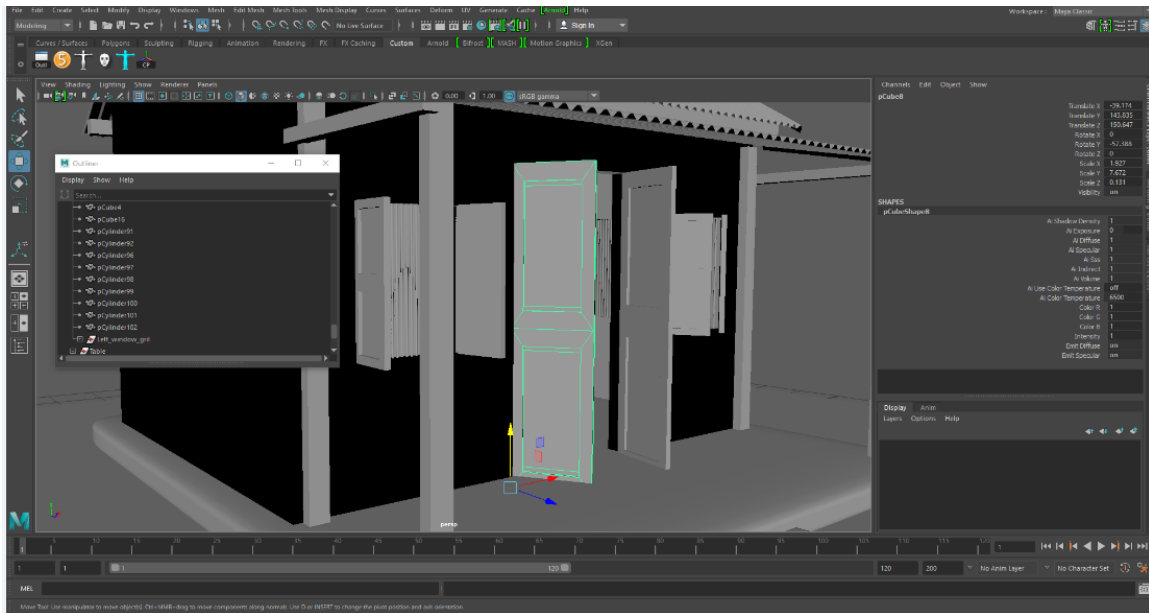


Figure 4.2.10 : House modeling

I applied same technique for other all modeling of house, chair, and table. I create this part by poly cube. Then applied extrude and insert edge loop tool. And all other trees and environment create Maya content browser.

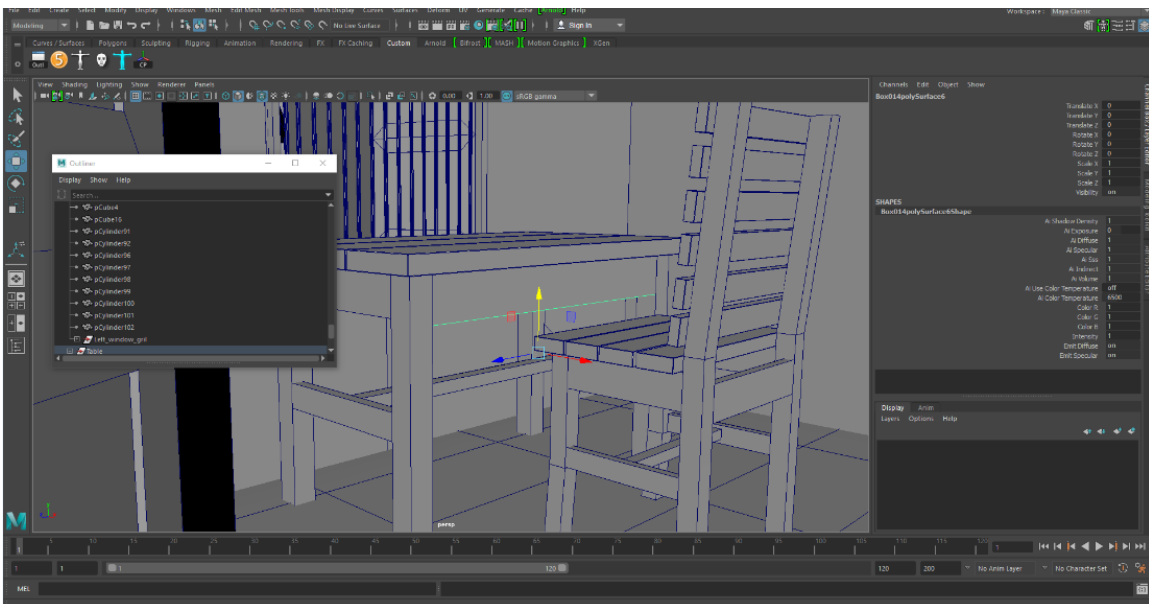


Figure 4.2.10 : House Interior modeling

CHAPTER 5

Texturing

5.1 UV Mapping

When complete all modeling next step is UV mapping for perfect texturing in all 3D models. Following steps are given below.

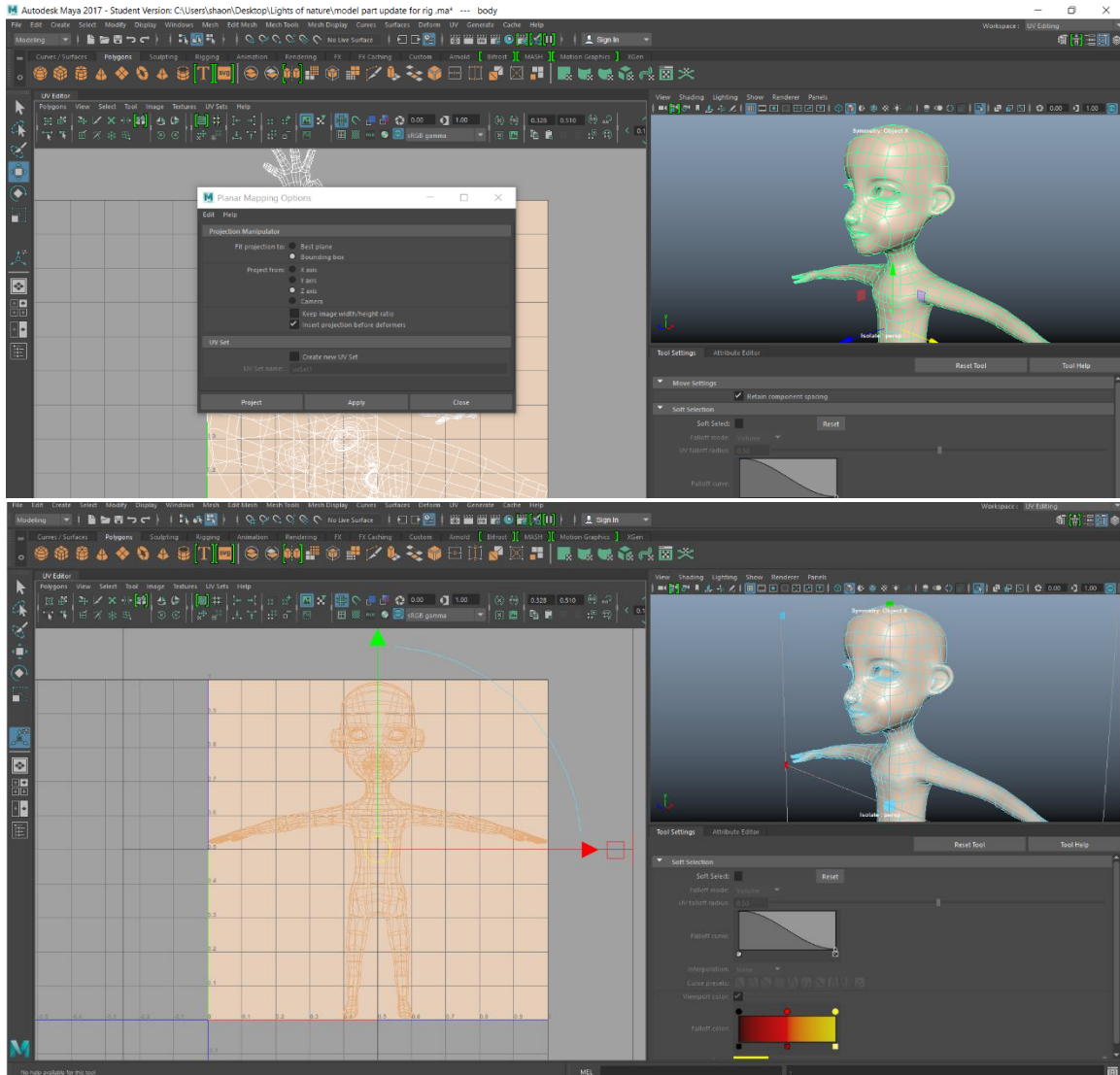


Figure 5.1.1: Planner Mapping Options

Step 1 : Select Object > Workspace: UV Editing > UV Editor > Planner Mapping options > Select (Project From: Z axis) cause the character front is in Z axis.

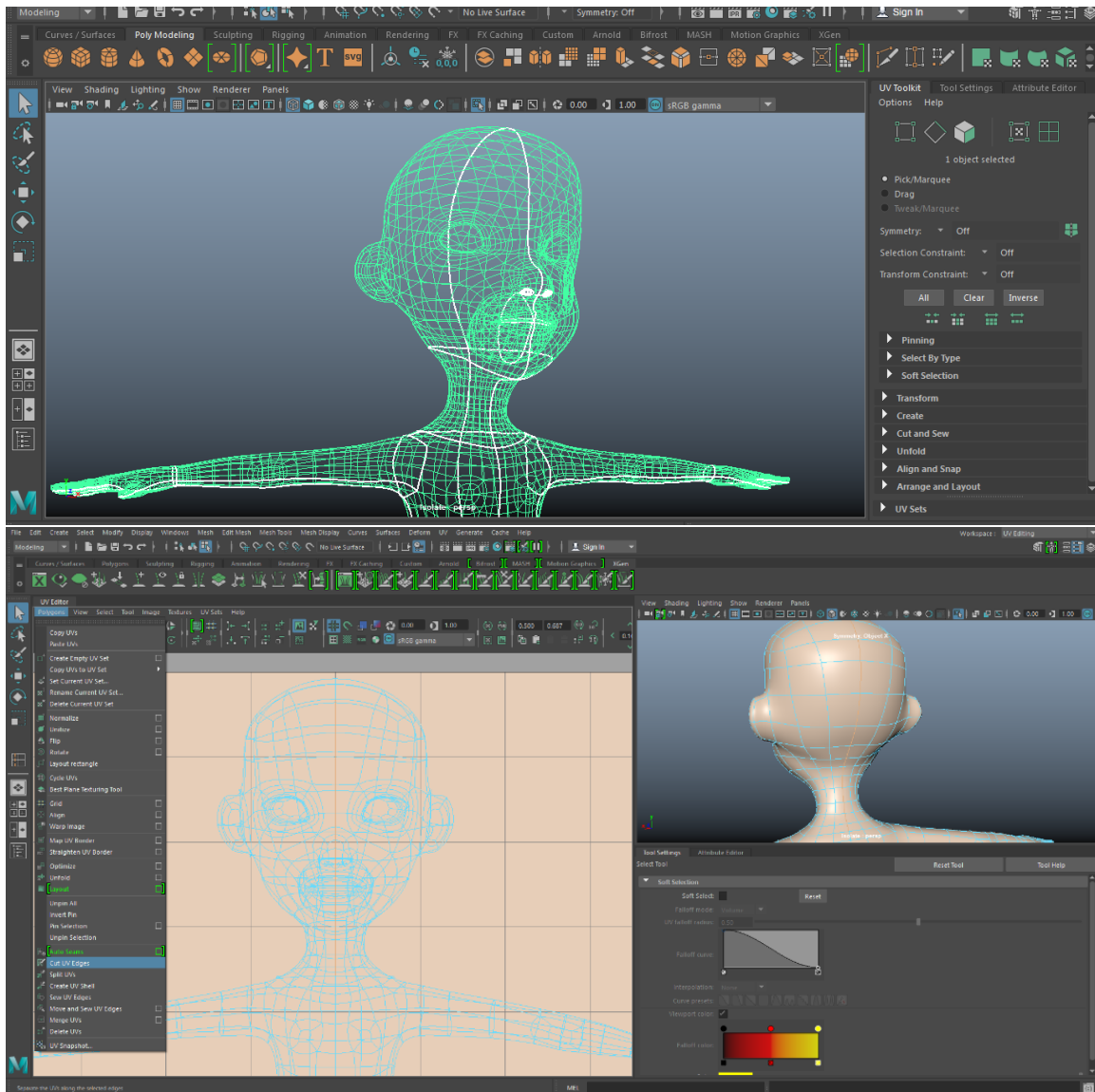


Figure 5.1.2: Cut UV edges

Step 2 : Select Edges > Cut UV edges (to all edges showed in the screen shot)

Step 3: When complete Cut all the UV edges. Then > Select UV shell > Unfold (Unfold the UV shell for unwrap the skin).

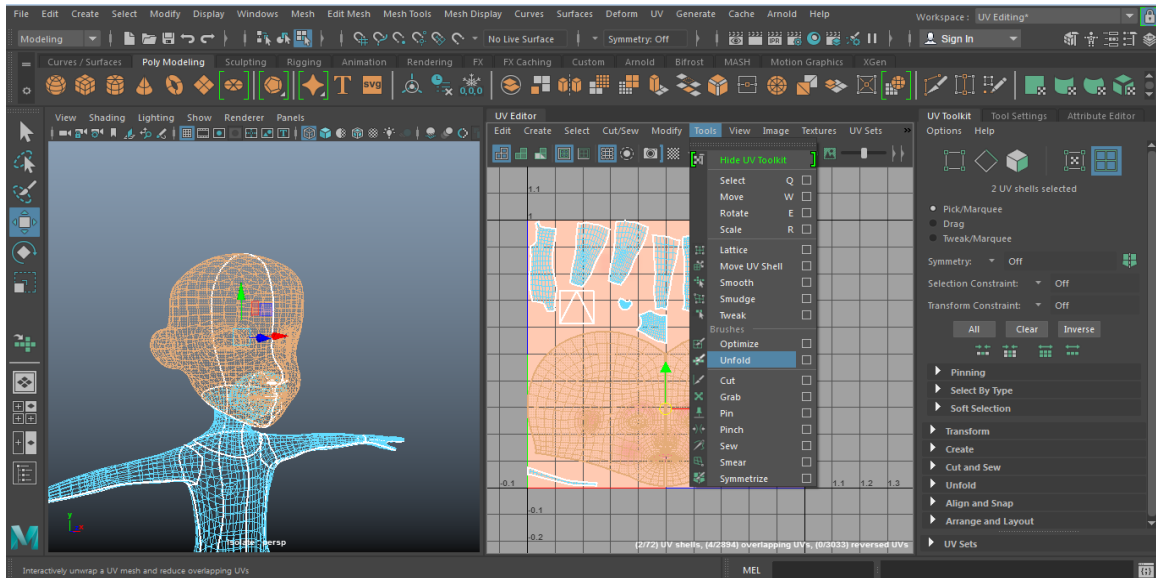


Figure 5.1.3: Unfold UV shell

Step 4: After Unfolding all UV Shells .Then select all UV shells > apply: Layout [key short: Ctrl + L]

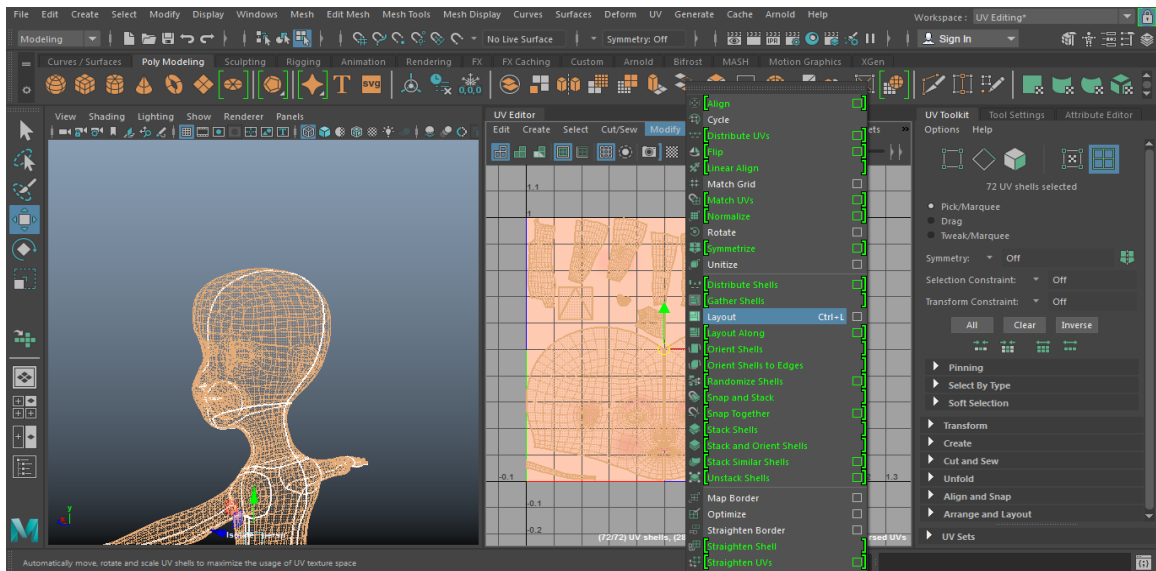


Figure 5. 1.4: Layout UV shell

Step 5: Select all UV shells > UV Snapshot Options > Size X(px) & Y(px) : 2048 >Image Format : Targa > Then Brows.: name and select the folder where you want to save the snapshot file.

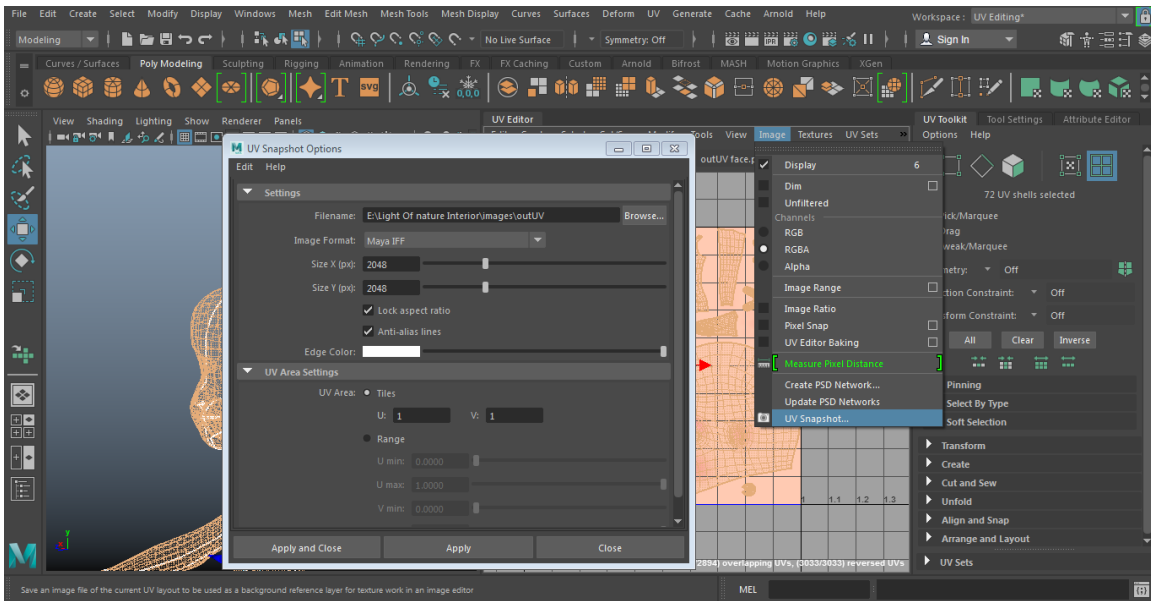


Figure 5.1.5: UV Snapshot Options

I apply same UV mapping technique in all others models and props need on my project.

5.2 Texturing

After completing perfect UV mapping .I import the UV snapshot in Photoshop. Then drawing the perfect color on skin, eye shadow and lip.

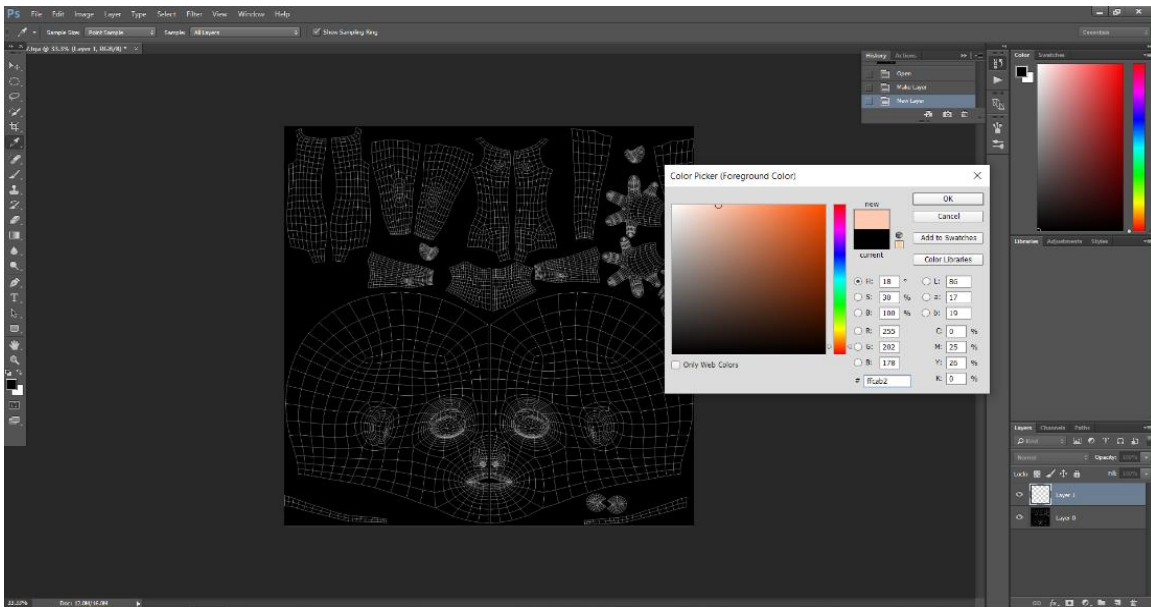


Figure 5.2.1: Import UV Snapshot in Photoshop

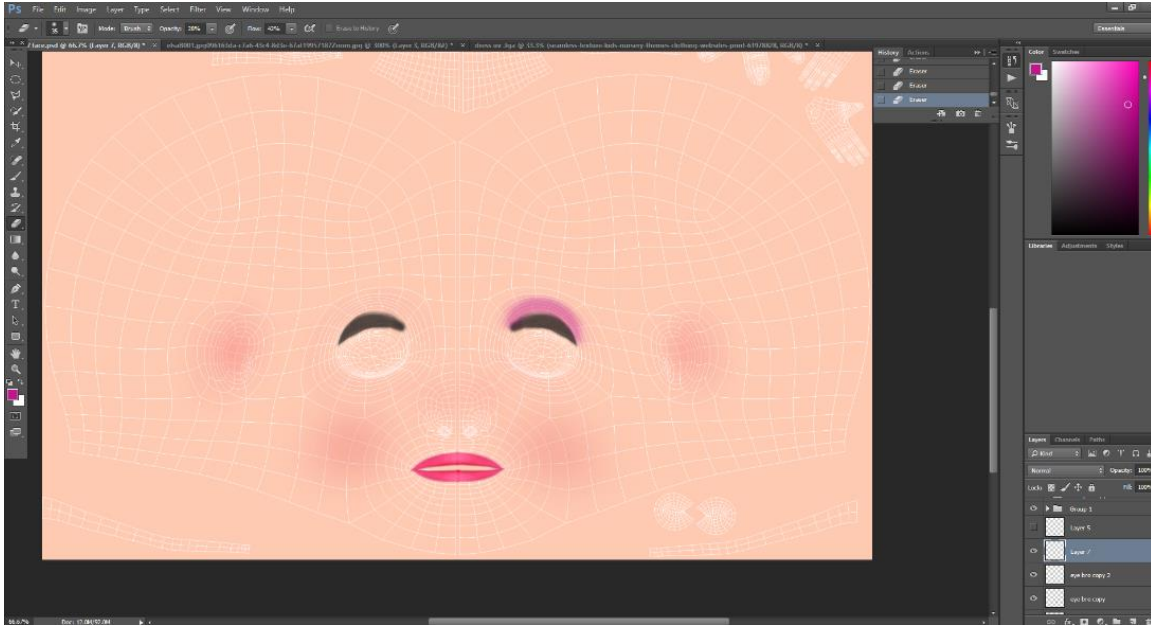


Figure 5.2.2: Painting color in Photoshop

I create a new layer for body fill color. Then 3rd layer for eye shadow and 4th layer for cheek color . Then 5th layer for lip color .

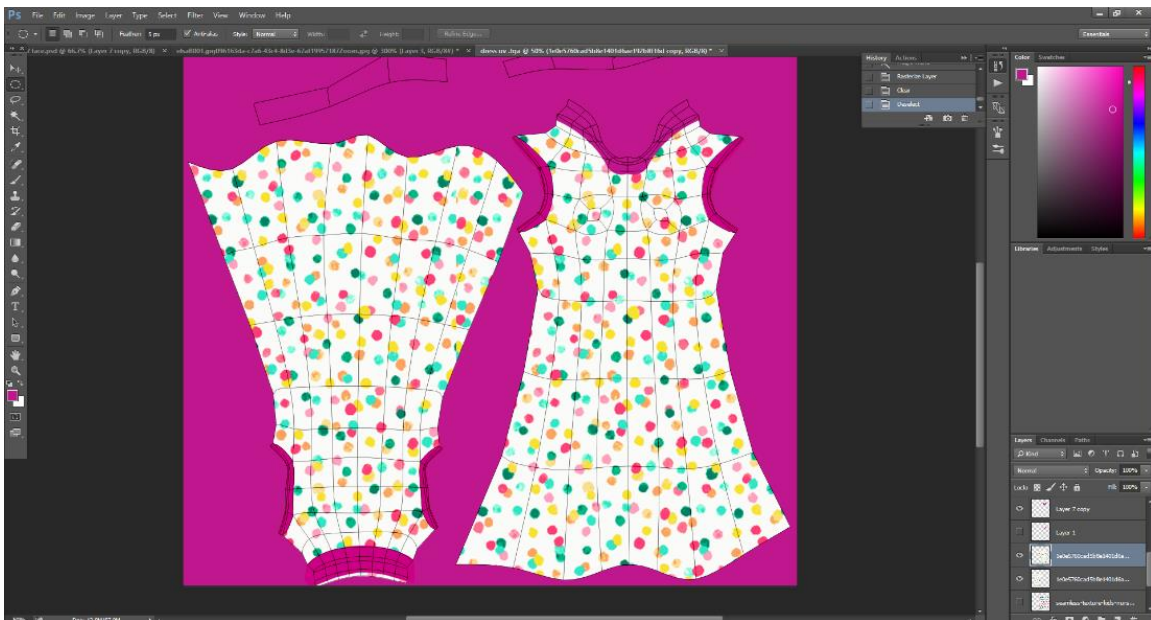


Figure 5.2.3: Dress Texturing in Photoshop

I apply same technique for dress and others models texturing . Then save the file in Name.ps format or jpeg format .

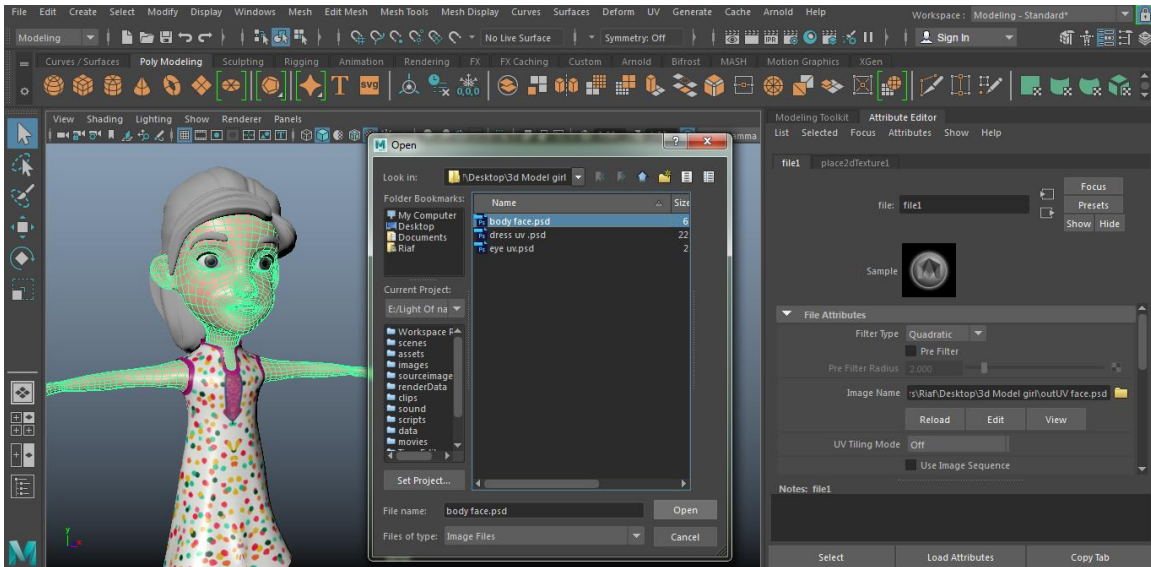


Figure 5.2.4: Import and Applying Texture

Then import the texture file in maya material . Select object > Assign new material > maya>blinn : Color > File attributes : Image name > Click Folder > Select the Texture file > open. I applied same technique for all model texturing.

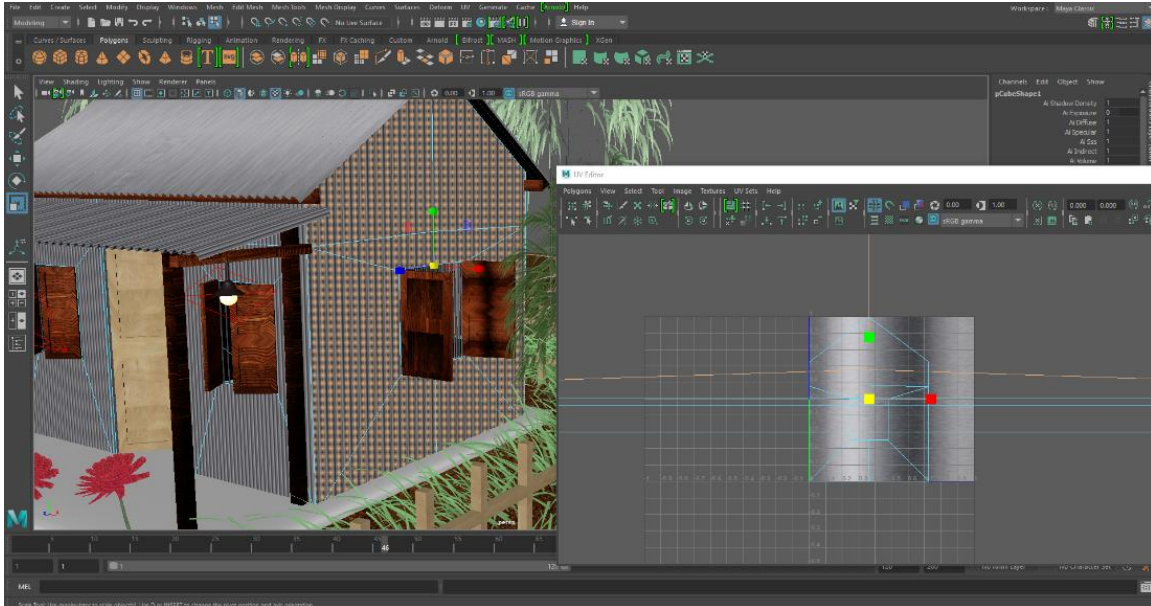


Figure 5.2.5: Import and Applying Texturing on house

CHAPTER 6

Rigging

6.1 Rigging Process

Rigging is the process of creating a skeleton for a 3D model so it can move. Most commonly, characters are rigged before they are animated because if a character model doesn't have a rig, they can't be deformed and moved around Camera animation.

6.2 Body Rigging

I used advanced skeleton for my character rigging. It is a FREE Maya rigging plugin: “Advanced Skeleton can create rigs with unlimited body configurations, 3 heads, 5 legs, 100 fingers, & anything goes. Not only creatures, but you can also rig props, vehicles, and just about anything.

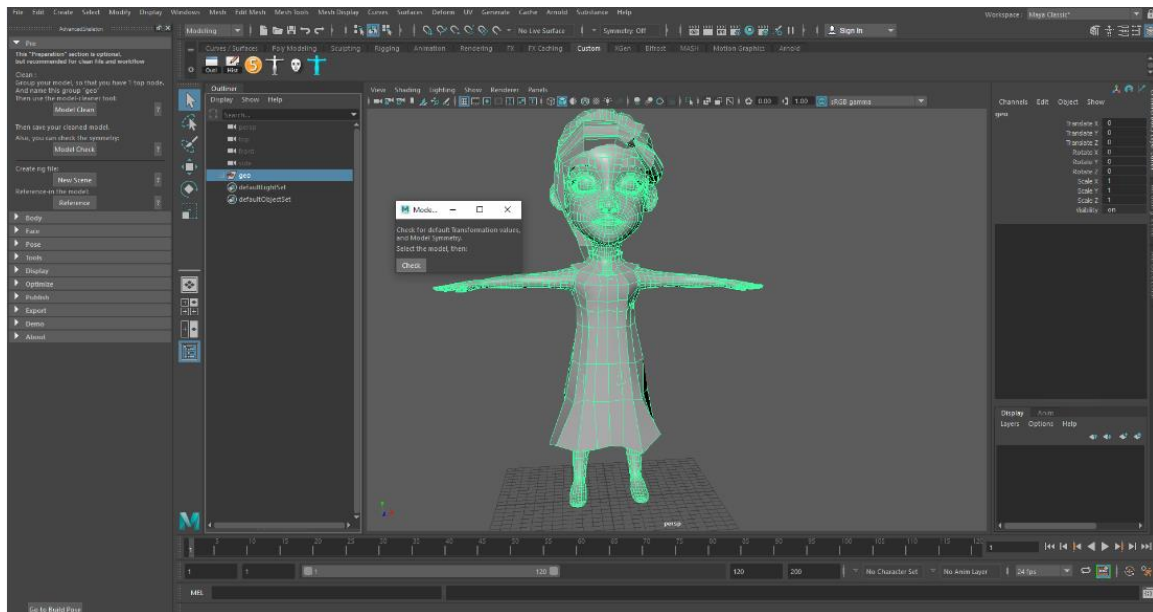


Figure 6.2.1: Model clean and models it is semetric

Step 1: At first just drag the install file in Maya scene. Then click the advanced skeleton option. Now, Select model > Model Clean option > Model check > If the model symmetric now go for rigging.

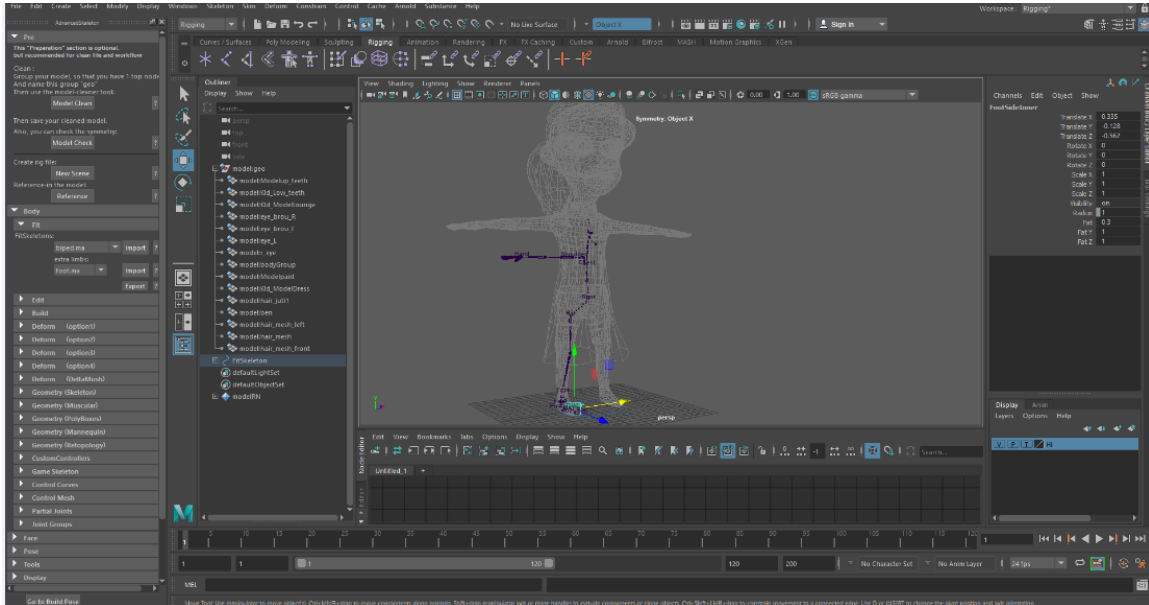


Figure 6.2.2: Import model reference and import biped

Step 2: Then click: New scene> reference > Open the Maya model file. Click > Body > Import (biped.ma).

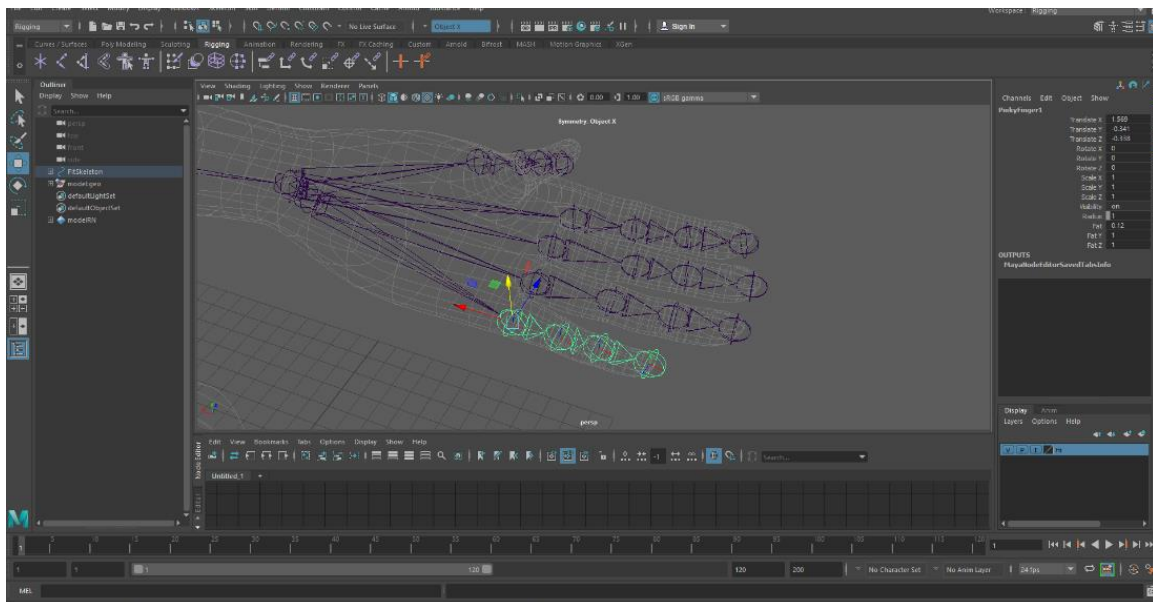


Figure 6.2.3: Fit the joints inside fingers

Step 3: Then select parent and child joints from skeleton and fit inside the body's all parts. Root joint in in the middle of body.

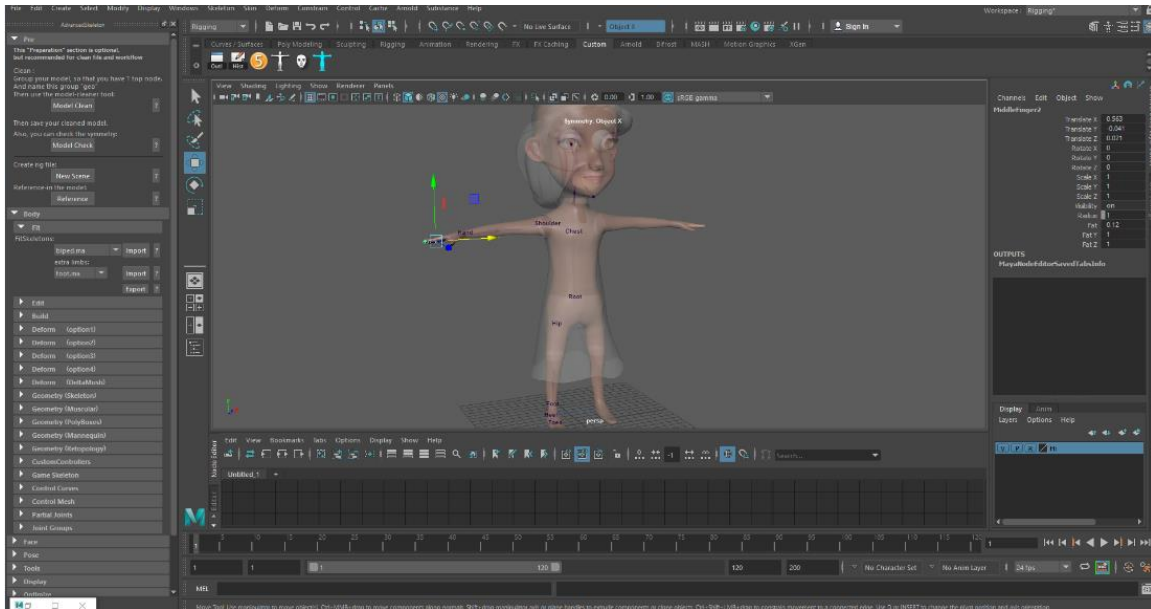


Figure 6.2.4: Fit the all joints inside left side of body

Step 4: When complete all joints fit inside the body. Then go to build section and Click: Build Advanced Skeleton. All joints and controller will create automatically.

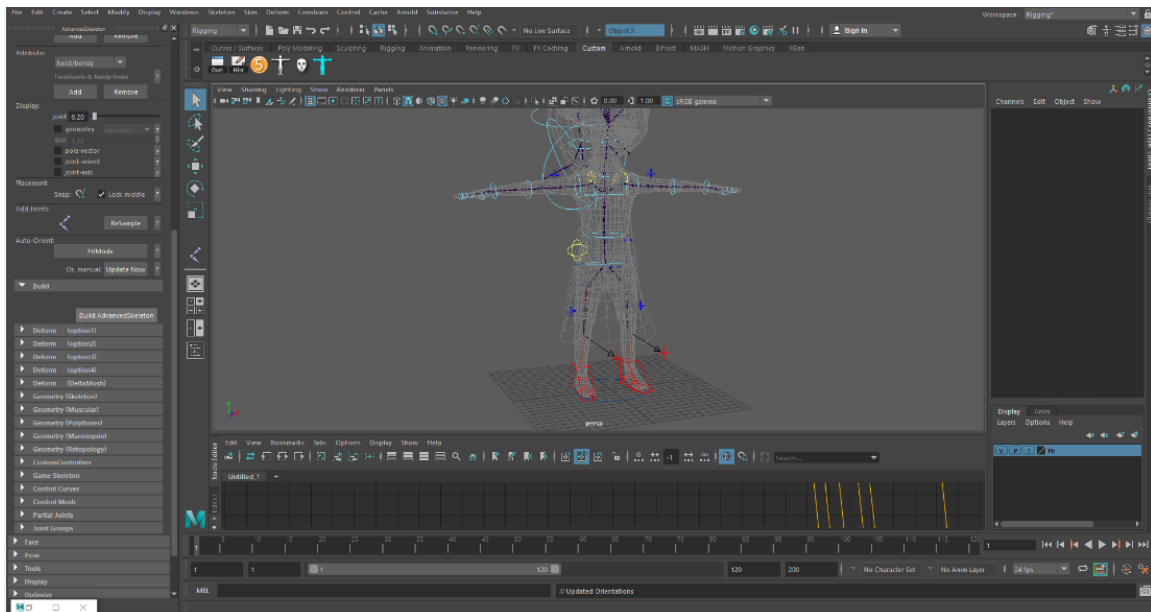


Figure 6.2.5: Build skeliton and controllers

Step 5: Then checked all controller in perfect position . If need to controller size to big .Go vertex of controller and select the vertex and change to right position.

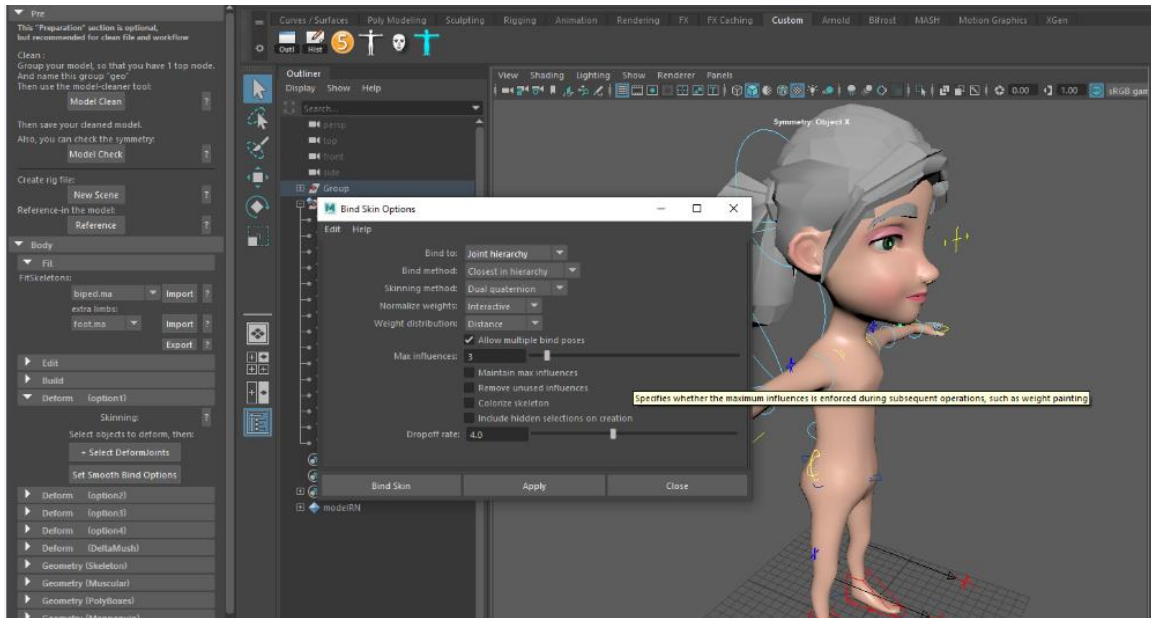


Figure 6.2.6: Bind skinning options

Step 6: Select Deform option1> + Select deform joints > Set smooth bind options > Edit > reset settings > Bind to : Joint Hierarchy > Bind method : Closest in hierarchy > Skinning method : Dual quaternion > Max Influences : 3 > Apply.



Figure 6.2.7: Rotate the controllers and check the Bind skin

Step 7: Then Rotate the controllers and check the Bind skin is perfect . If any problem on skin deformation . Then Deform (DeltaMush) : Harden weights > Apply Delta Mush.

6.3 Face Rigging

When complete the body part rigging. Then next step is to face rigging.

Step 1: Go to Advanced Skeleton face options > At first create: Face Fit Skeleton Node. Fit it lower circle under the character's jaw and upper circle just above the character's head.

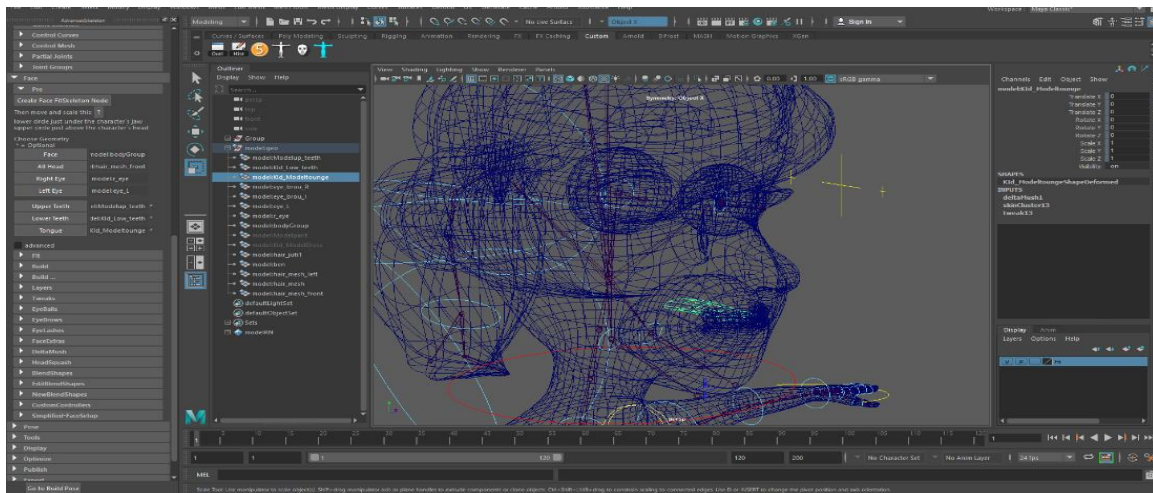


Figure 6.3.1: Create face skeleton

Step 2: Now select the face geometry from the Outliner > Click the option: Face . Select body and all inside head part: Click the option: All Head. Apply same technique for Right eye, Left eye, Upper Teeth, lower teeth and Tongue.

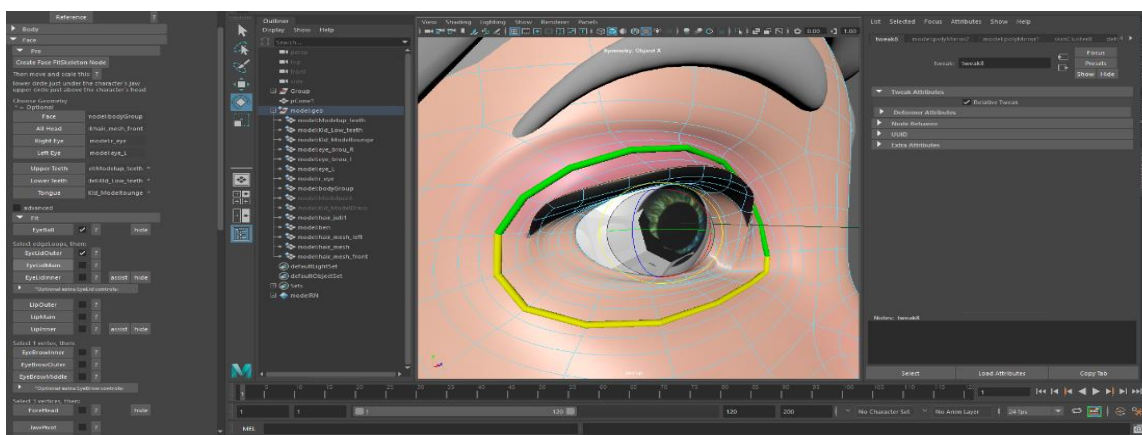


Figure 6.3.2: Edge loop of Eye lid

Step 3: Fit > Press: Eyeball. Then, Click The (?) Question mark of Eye lid outer .It is face help image to show that which edge loop outer to select .Then press the Eye lid outer option. Then apply the same technique for Eye Lid Main, Eye lid Inner, Lip Outer, Lip Main, Lip Inner.

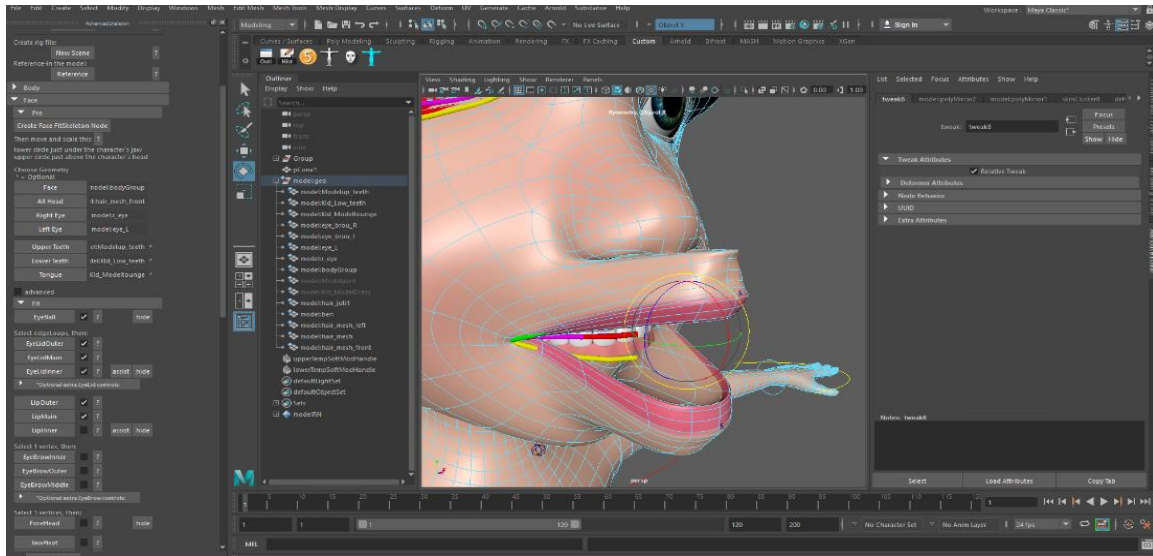


Figure 6.3.3: Edge loop of lip

Step 4: Then, Click The (?) of Eye Brow inner .It is show that which vertex to select. Then select the vertex and press the Eye Brow inner option. Then apply the same technique for Eye brow Outer and eye brow middle.

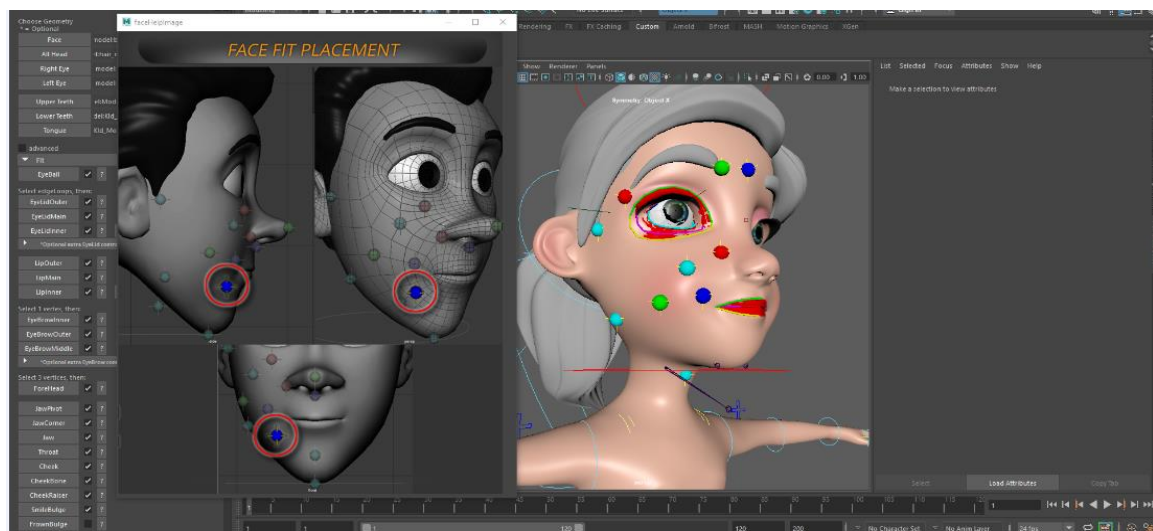


Figure 6.3.4: Face help image for face rigging

Step 5: Then, Click The (?) face help image of Fore Head. It is show that which 3 vertex to select. Then select the 3 vertex and press the Fore head option. Then apply the same technique for Jaw pivot, Jaw corner, Jaw, Throat, Cheek, Cheek bone, Cheek raiser, Smile Bulge, Frown bulge, Nose, Nose under, Nose corner. And no selection needed for (Jaw curves and Tongue) just press the option.

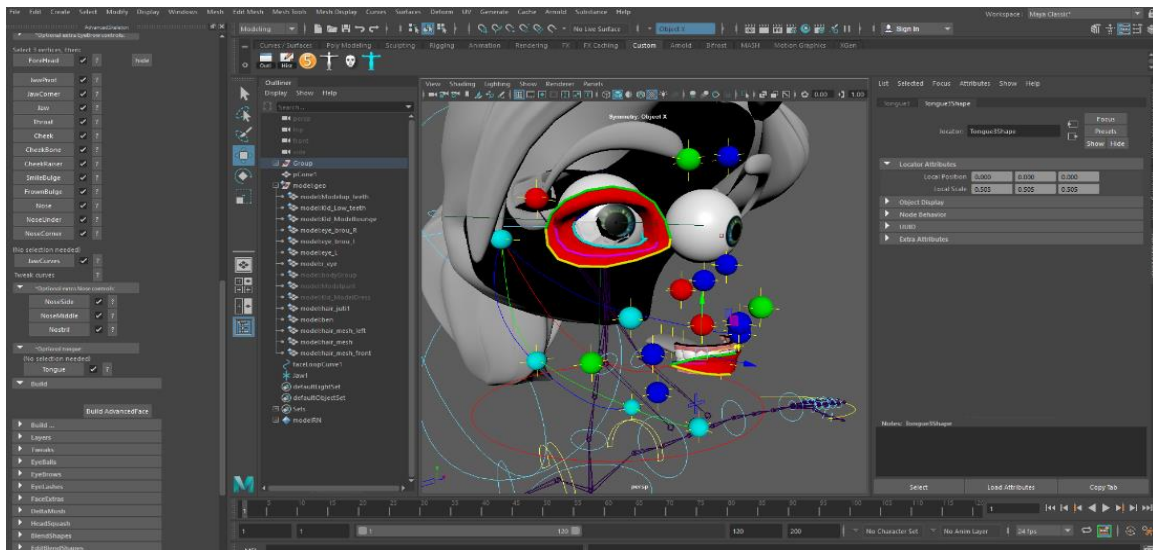


Figure 6.3.5: Build advanced face rigging

Step 6: Then apply: Build Advanced Face .It will automatically rigging the full face with controllers. Then select body > Skin > Paint skin weights tool > Select hierarchy> Then skin paint operation by smooth and replace until the perfect movement of joints.

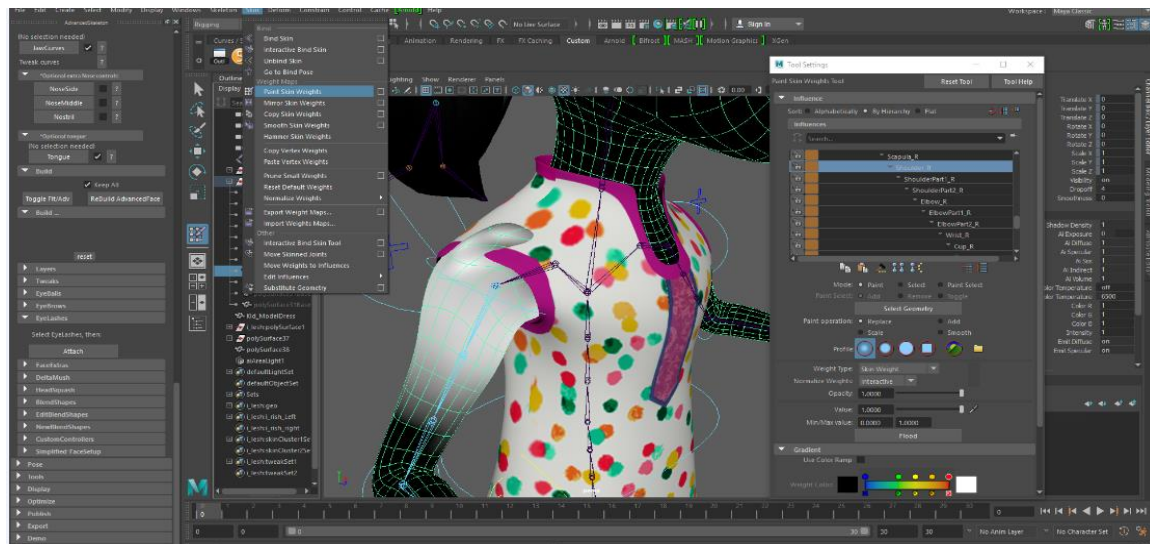


Figure 6.3.6: Paint skin weights tool

CHAPTER 7

Animation

7.1 Animation Process

3D Animation, Energizing items that show up in a three-dimensional space. They can be turned and moved like real articles. 3D movement is at the center of games and PC created reality, anyway it may in like manner be used in acquaintance structures with add style to the visuals.

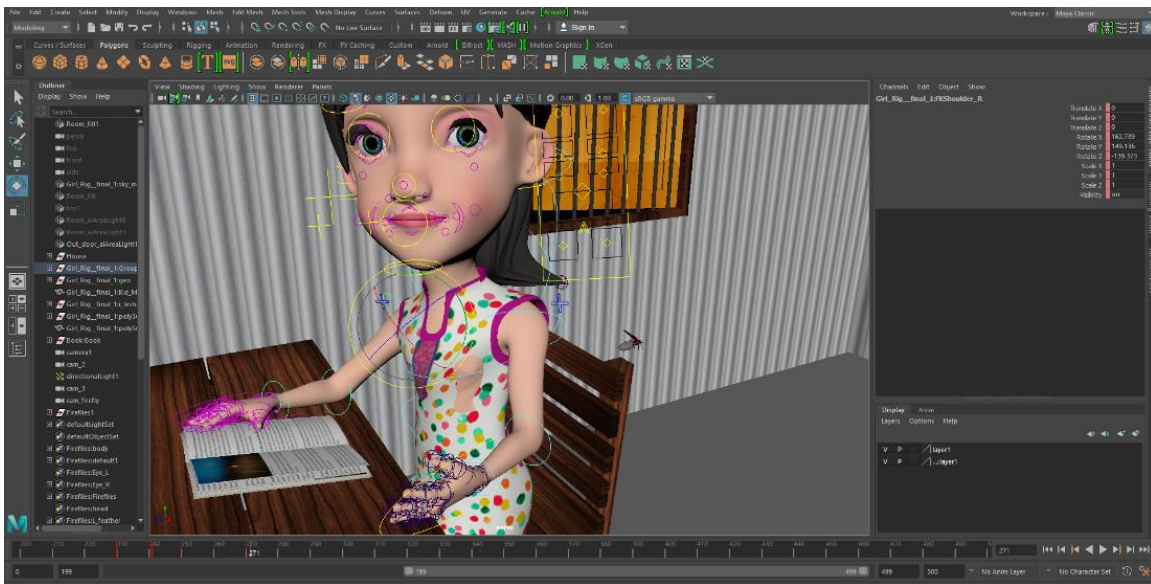


Figure7.1.1 : Key animation in time slider

At First I import the character file in various scene in maya. Then adjust with the scene.

Step 1: Select the controller > Then Rotate that how I want > Go to time slider > Press key to : s to save the selected key. Also we can selected key by channel box.

Step 2: Then go to the Graph editor. Then adjust the vertex point for perfect animation play.

Step 3: If any wrong key in the time slider. Then select the key by Shift+ drag by left key mouse. Now mouse right click > then you can cut , copy, paste delete any one just click the command.



Figure7.1.2 : Adjust animation by graph editor

7.2 Cycle Animation

I used the animation cycle in firefly feather. At first it's pivot point position to head joint. Then animate two feather in same frame. I used 0 to 4 frame to open and close the feather. Then Go to graph editor > Keys > Post infinity > Select the :Cycle

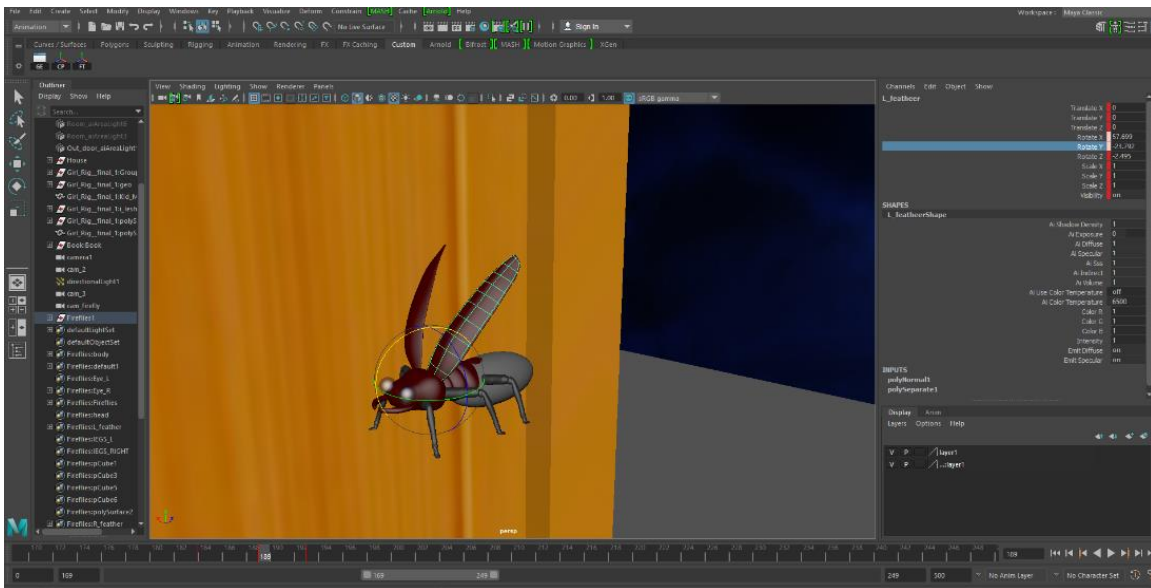


Figure7.2.1 : Firefly feather cycle animation

7.3 Constrain

Constrain animation is to move the object by another object. I used constrain animation for free the firefly from the jar. First Select the hand controller then select the object > Animation > Constrain > Parent.

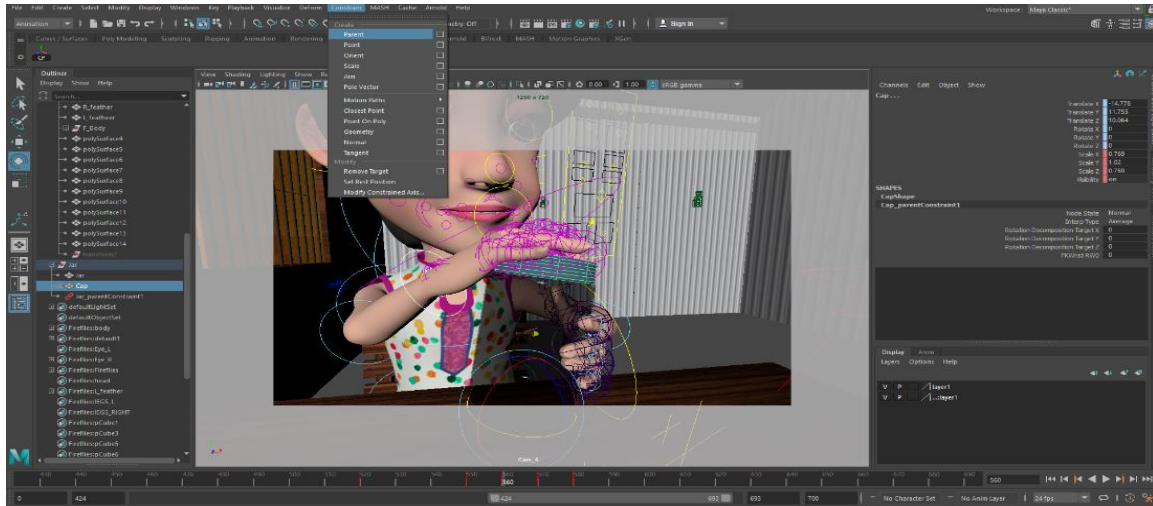


Figure7.3.1 : Constrain animation for jar opening

7.4 Camera Animation

When complete the character animation. Then create the camera and animation key animate in time slider and apply cinematography. I follow the camera shot division.

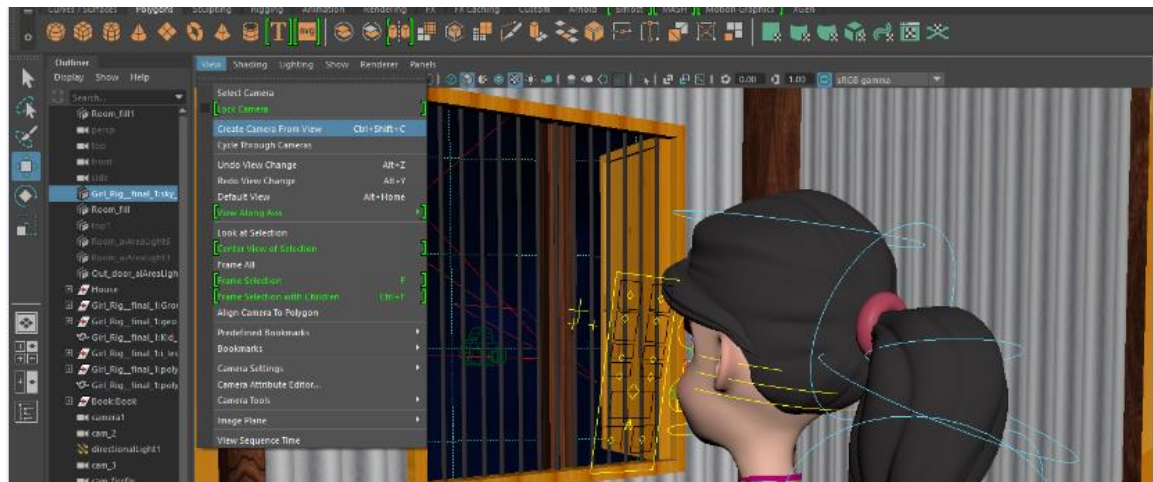


Figure7.4.1 : Camera animation

CHAPTER 8

Lighting & Rendering

8.1 Lighting technique

A point light tosses shafts toward every way from a singular, little source in 3D condition. It has no specific shape and size. Point lights can incorporate "fill lighting" effect to a 3D scene. Lighting and rendering define visual look of production. I have used Maya Arnold for lights and as a render.

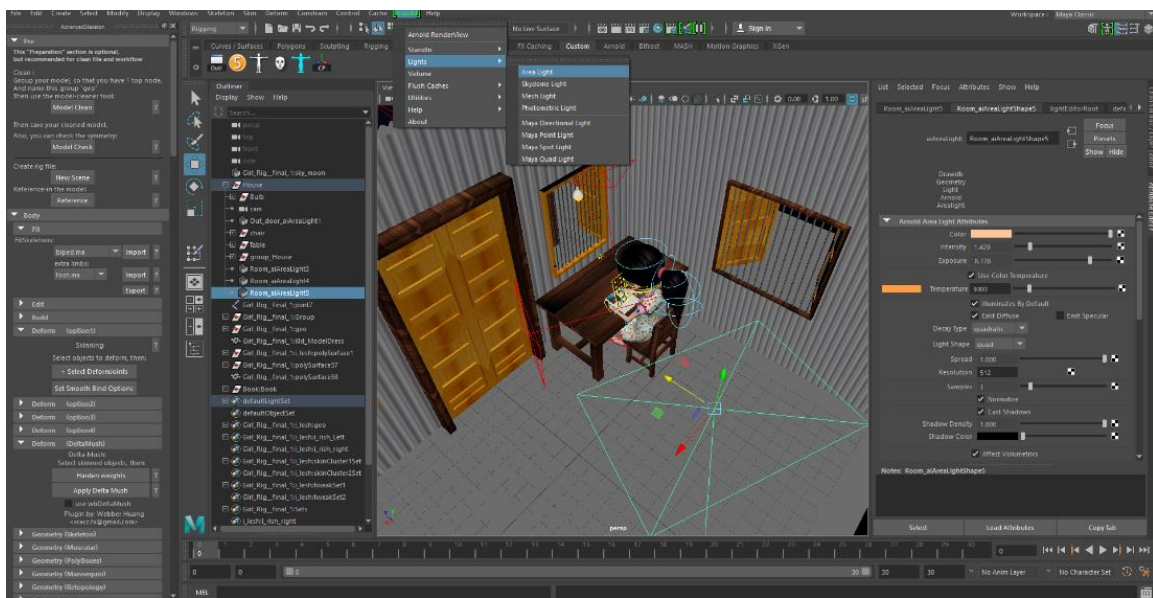


Figure 8.1.1 : Create area light from arnold

Step 1: I used 3 point lighting technique. Firstly Create light from: Arnold > Light > Area Light. Now position it front of the character as a fill light. Again create another light for key light. Then another for back light.

Step 2: Select the area light > Attribute Editor > Arnold light attribute > select color which I want > intensity: 1 – 5 (depends on render look) .Exposure : 1 -14 (depends on render look) . I used Arnold render view then adjust the light intensity and exposure.

Step 3: I also used for color temperature in area light to create night scene with electric bulb.

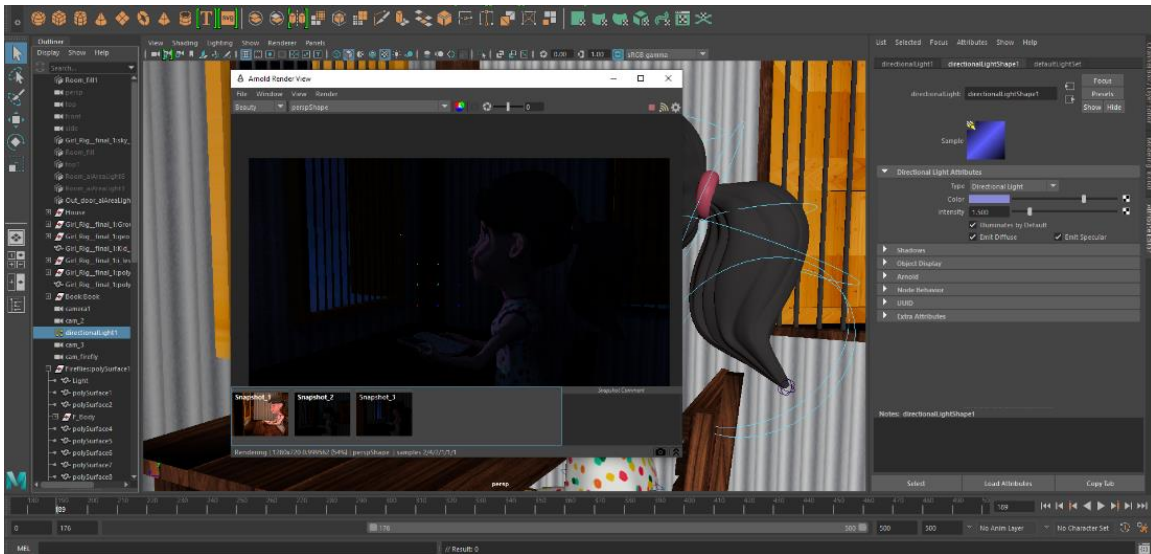


Figure 8.1.2 : Directional light to create moon light effect

Step 4: Create Directional light from Arnold. This light for create moon light effect. Select directional light attribute > Color: Light blue > intensity: 1.5

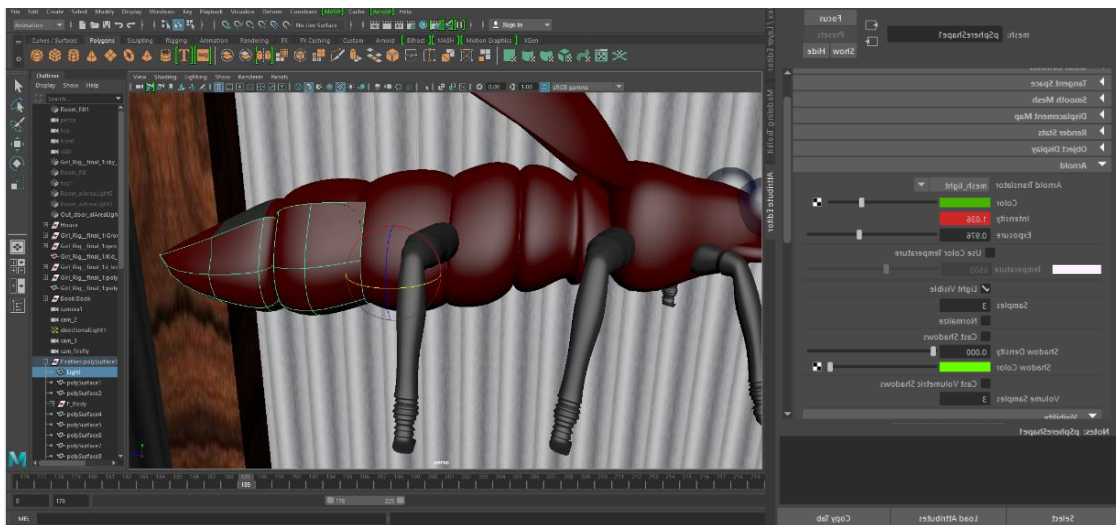


Figure 8.1.3 : Mesh light to create firefly light effect

Step 5: I used a sphere on firefly group . Then Go to Arnold Translator: Conver to mesh light > Intesity: 1 > Exposure : 1 > open : Light visible option> Sample: 3 for all light in arnold.

8.2 Rendering technique

3D rendering is the 3D computer graphics process of converting 3D models into 2D images on a computer. 3D renders may include photorealistic effects or non-photorealistic styles.

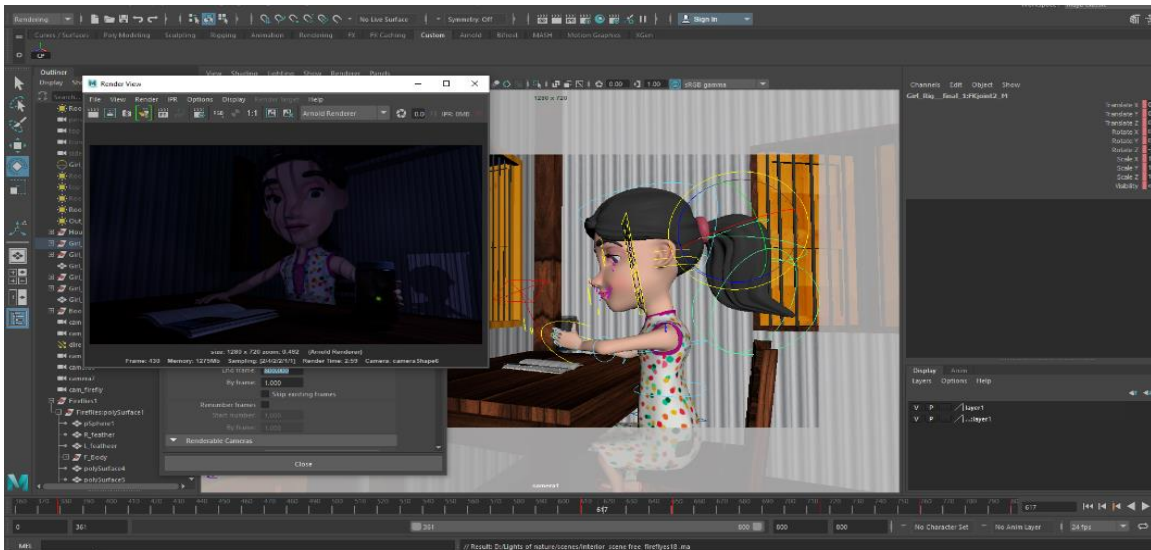


Figure 8.2.1 : Arnold render view

Step 1: Select Arnold > Arnold render view > Then see the look what I want and adjust the lighting intensity and exposure.

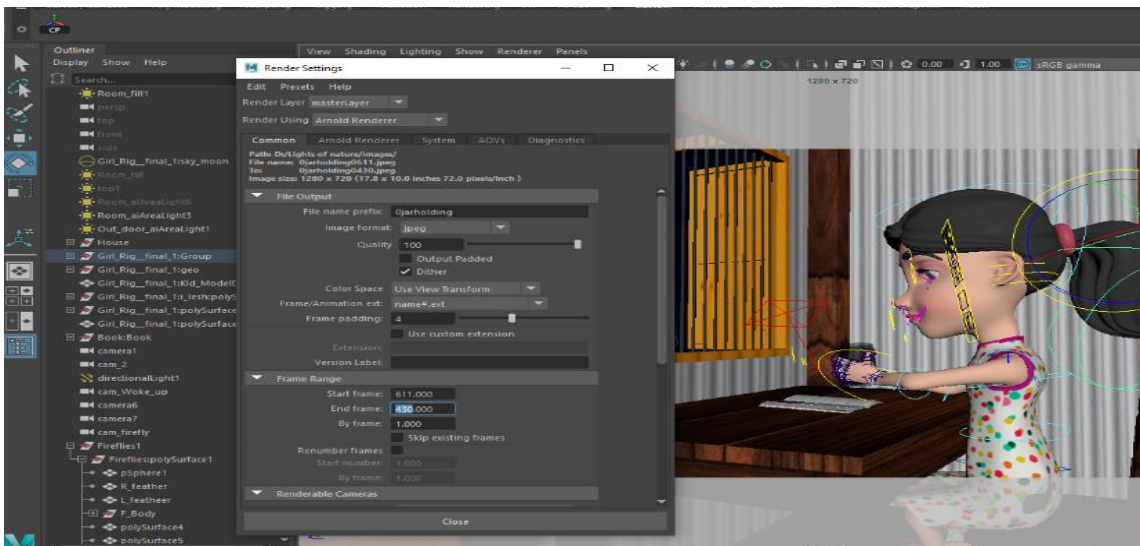


Figure 8.2.2 : Common options of render settings

Step 2: When I get the perfect look on render view. Then go for final render. Render Settings > Select render using : Arnold renderer > Common : Use file name > Image format: jpeg > Color space > Use view transform>frame /animation ext: name#.ext > write: start and end frame > by Frame: 1

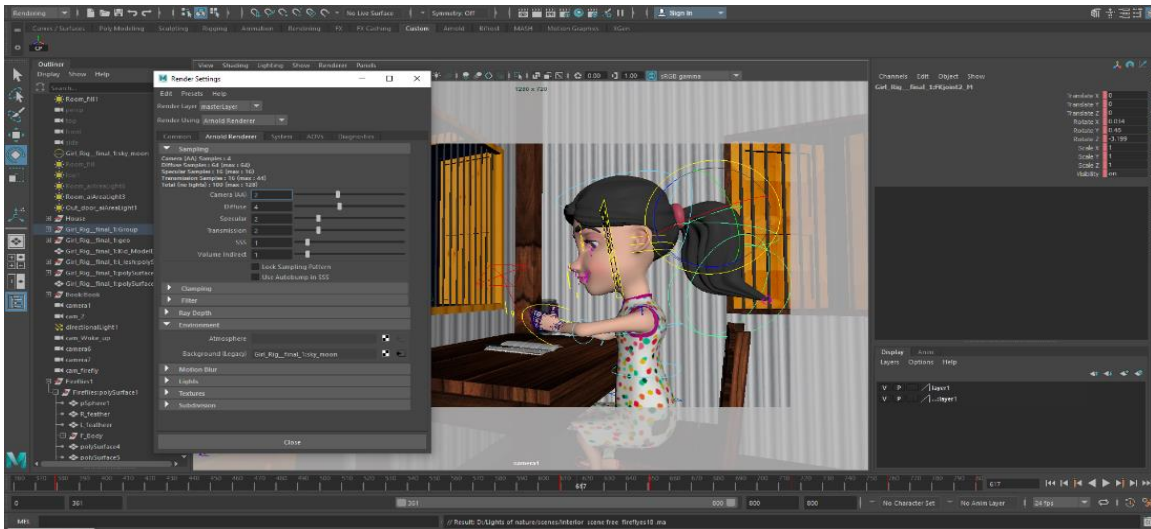


Figure 8.2.3 : Arnold renderer settings

Step 3: Arnold Renderer :Sampling> Camera: 2 >Diffuse: 4 >Specular : 2 >Transmission: 2> SSS: 1 > Volume indirect: 1>

Step 4: Menu Set : Rendering > Render > Render Sequence options > Select the camera > and select file location to save the images .

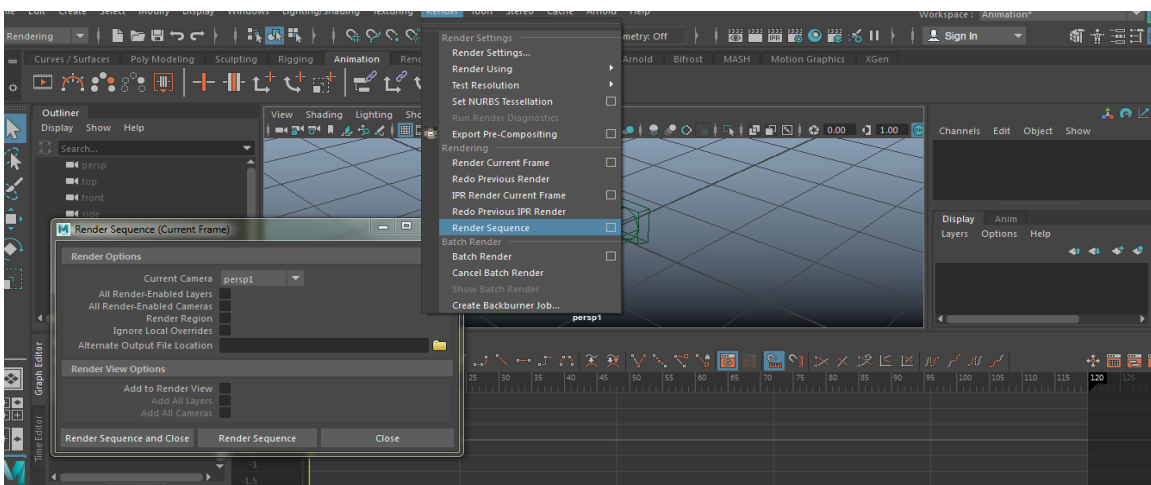


Figure 8.2.4 : Render Sequence options

CHAPTER 9

Post-production

9.1 Compositing

For getting the output of the total project animation I start compositing in Adobe Premiere pro .Adjust color and effects for the perfect visual look.

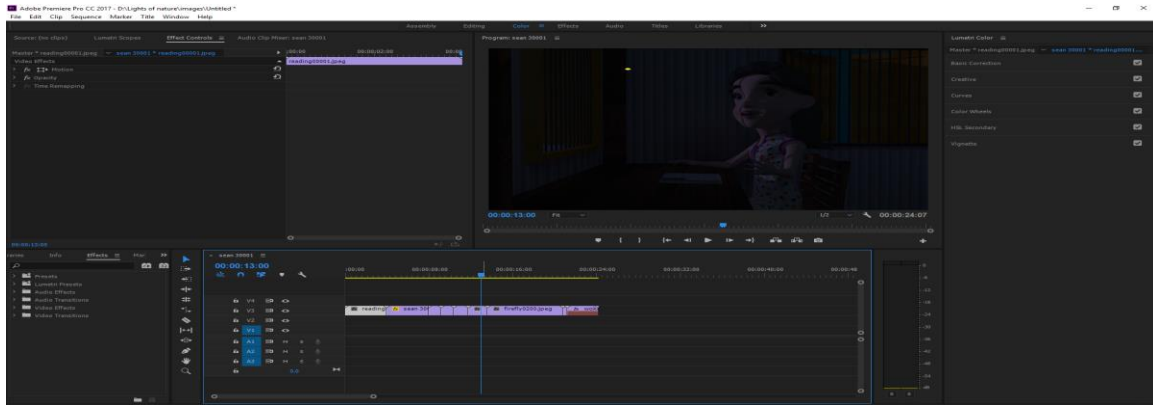


Figure 9.1.1: Compositing in Adobe Premiere pro.

9.2 Sound mixing

I add background sound music from free music in Adobe Premiere Pro 2017. Sound editing is the essential piece, and sound blending is assembling each one of those pieces to make a last, consistent item.

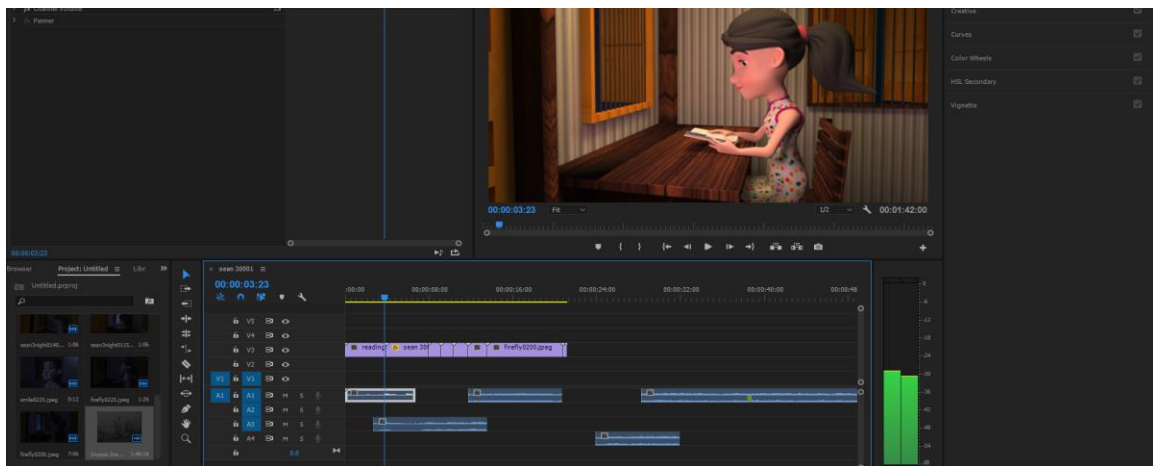


Figure 9.1.1: Sound editing in Adobe Premiere pro

CHAPTER 10

Conclusion

For this project I have watched many animated short films, among them more than anything were 2D and some were 3D Animation. I was motivated from this visuals of the movies I watched.

With the visualization of this project I have tried to let the people aware about save the nature and ecosystem. I tried to show my skills in 3D animation sector and experiences during our university life. In this department I have learned and realize about motion and all graphics and Animation etc. I also thinking that I will make more animated short film in future. We also believe that our short film has a good morality and meaning which can make increase the awareness among the people. Through this Report I represented the complete and appropriate pipeline and work process of complete 3D animation.

Refference

- 1.[last accessed on 10-11-2019 at 12:00pm.]
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