

FINAL YEAR PROJECT REPORT
INTERNSHIP AT AAVA 3D ON 3D VISUALIZATION

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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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APPROVAL

This Project titled “**Internship at AAVA 3D on 3D Visualization**”, submitted by Tanjim Akter 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 16th January, 2021.

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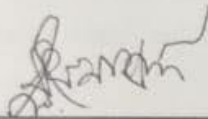
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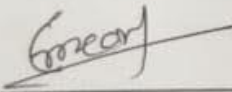
I hereby declare that, this project has been done by me under the supervision of **Mr. Arif Ahmed, Associate Professor, and Department of MCT Daffodil International University**. I also declare that neither this project nor any part of this project has been submitted elsewhere for award of any degree or diploma.

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Finally, I must acknowledge with due respect the constant support and patients of my parents.

ABSTRACT

The manner human beings specific their mind is converting day by day. 3D animation is one of the new versions of those mediums. While my hobby turned into 3D visualization So, I had been selected by the **AAVA 3d** institute for my internship work. It turned into my purpose to articulate the paintings in a dynamic but the entire method from story constructing to modeling, texturing, animation, light setup, rendering, and post-processing. The final output of this mission is video photos that mix all of the paintings this is achieved optimistically expresses the concept at the back of making it.

Though it is challenging, with commercial key features, usability, durability, the appearance of products may be proven to purchasers in the shortest time. Bad commercials Irritate a customer with beside a point and vain facts which destroy the budget and time. The mission is ready to create 3D visualization paintings which can be inclusive of Product modeling, furniture modeling, and architecture visualization work.

Autodesk Max has been Used to create fashions and animation. Vray | Autodesk Max Plugin had been used to create the rendering part. For the architectural paintings, we render in Lumion.

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CHAPTER 1

Introduction

A Center for Research & Development Of 3D Animation. Bangladesh's First Complete 3D Animation & VFX Learning Institute. It is an organization where professionals from both technical and artistic fields group together with an objective of providing appropriate solutions.

3D modelers build 3D characters and environments that are based on the concept art. 3D modeling is a highly specialized field. As such, there is a high demand for 3D Modelers in all industries. According to the Bureau of Labor Statistics (BLS), depending on the specialization, employment in this field had grown by 8-14% by 2018. Modelers also create character skeletons; which animators then control. Modeling is performed using a variety of programs such as Maya, 3DS Max, Pixar's RenderMan, POV-Ray, and many others ^[1].

As it is a 3D institute so we are working here in a group. They give us three category that we need to create those models as they want. They providing us demo which are Product modeling, Furniture modeling and Architecture Visualization work related. We are choosing Autodesk Max as our main software for modeling, texturing, uv unwrapped, animation. For lighting, and rendering, PBR material we are using Vray. And also including Lumion for rendering, lighting, texturing animation. Vray is a plugin that has been used for high rendering in Autodesk max and Lumion is based on architectural rendering software that makes it easy to convey how designs will translate into real-life gestures and emotions. Autodesk Max and Lumion is also compatible with After Effect which is my editing and compositing software.

Basically, it isn't possible to create a whole work alone. And we are assigned as a team. So, we divided our work. Most of the interior model was created by me in the Architecture Part. The rest of the work like lighting, rendering, texturing was covered by the other one.

Several 3D software is there like Autodesk Maya, Blender, and Cinema 4D does the same job as Autodesk Max did. But for architectural work, product modeling such as hard surface, furniture modeling Autodesk max is easy to create shapes with low to a high polygon. And Lumion takes less time than Vray, Arnold, etc. for rendering animation or still images. Definitely Vray contains a higher resolution image than Lumion, Unreal engine, Corona, Red shift and Arnold. And for this, we have chosen Autodesk Max, Vray and Lumion for this entire work.

CHAPTER 2

Background Study:

As I need to did modeling 3d products, furniture and an interior and exterior work I need to study a lot. Find out the present market place situation. As the company give me specific products so it is little bit easy for me to find out how can I make the product output better as they want.

The idea of selecting a pattern and stylizing all the products and decorating the environment according to what they want. For completing this project, we also, ensure visiting's of several architecture workshops and products modeling and watching a lot of showreels worldwide to find out the lacking's and what type of design is currently hyped in the market place. And what should make this sector more preferable to the consumers. By studying all those existing designers' websites, we tried to make the visualization more effective for the company.

As we are working as a team so firstly we decided to make a list first where we selected the first topic which is product modeling then we do our furniture modeling and lastly, we did a huge architecture visualization work which is contains interior and exterior.

AAVA 3D provide us various websites links ^[2] also which help us to organize the art work properly. Which help us to get lot of information about color sense, camera angle, lighting and last but not the list modeling with a medium low poly.

CHAPTER 3

Details of Software

3.1: Autodesk Max:

Autodesk 3ds Max, previously 3D Studio and 3D Studio Max, is an expert 3D pc graphics application for making 3D animations, models, games, and images. It is regularly utilized by online game developers, many TV business studios, and architectural visualization studios. For its modeling and animation tools, the brand-new model[which?] of 3ds Max additionally capabilities shaders (including ambient occlusion and subsurface scattering), dynamic simulation, particle systems, radiosity, everyday map advent and rendering, international illumination, a customizable consumer interface, new icons, and its personal scripting language.



Fig 3.1.1: Autodesk Max Software

The unique 3D Studio product became created for the DOS platform via way of means of the Yost Group and posted via way of means of Autodesk. After 3D Studio DOS Release 4, the product became rewritten for the Windows NT platform, and renamed "3D Studio MAX". This model became additionally at the start created via way of means of the Yost Group. It became launched via way of means of Kinetics, which became at that point Autodesk's department of media and entertainment.

When it became re-launched (launch 7), the product became once more branded with the Autodesk logo, and the fast call became once more modified to "3ds Max" (top and decrease case), at the same time as the formal product call have become the current "Autodesk 3ds Max"^[4]. Basically, it was the main software where we did our work 3D visualization.

3.2: AutoCAD:

AutoCAD is a computer-aided layout software program evolved via way of means of the organization Autodesk. It lets you to attract and edit virtual 2D and 3D designs extra speedy and without problems then you can via way of means of hand.

Here are different experts who use AutoCAD:

Architects: AutoCAD is frequently used to create blueprints and ground plans for homes and industrial buildings. It additionally comes with integrated equipment that could examine and treat weaknesses in a building's layout.



Fig 3.1.2: AutoCAD Software

Interior Designers: Similarly, AutoCAD may be used to assume the indoors of a building, whether or not it's a consuming area for an eating place or a dwelling area in a home.

Fine Artists: The capabilities of AutoCAD are so wide-ranging that even artists use it to draft sculptures, wooden carvings, engravings, and experimental artwork pieces ^[5]. This

software used for create an outline for the architecture visualization. Where we can add measurement easily.

3.3: Adobe Photoshop:

Adobe Photoshop is a raster photos editor developed and posted via way of means of Adobe Inc. for Windows and macOS. In addition to raster photos, Photoshop has confined capabilities to edit or render textual content and vector photos (specifically through the clipping route for the latter), in addition to three-D photos and video. Its characteristic set may be elevated via way of means of plug-ins. Photoshop from the start should shop documents in different formats, which include TIF, JPEG, and GIF. These documents are smaller than PSD documents due to the fact they lack the editable capabilities of a PSD file ^[6].



Fig 3.1.3: Adobe Photoshop Software

This software was using for creating textures, post production work, after render we did color correction on that.

3.4: Vray:

V-Ray is a rendering engine that makes use of worldwide illumination algorithms, consisting of route tracing, photon mapping, irradiance maps, and directly computed worldwide illumination ^[7].



Fig 3.1.4: Vray Plugin

This software used for render in real time image. It takes lot of time to render per frame but the output came out was wondering.

3.5: Lumion:

Lumion is designed to be effortless, transparent, and stress-free. Backed by more than 10 years of development, Lumion comes entire with the whole thing you want for putting your layout in its nearby context. Simply import your model, follow substances and create a placing with people, trees, cars, furniture, and some other context. An unmarried click on offers your venture an enthralling sky. Show a residence at the oceanfront. Lumion makes it smooth to expose your layout in its destiny placing and talking the imaginative and prescient at the back of your venture^[8].



Fig 3.1.5: Lumion

This is the software which we used for our architecture work. As it's a huge animating video so we need to make an output with less time. So, this is the perfect software for this type of work.

3.6: Adobe After Effect:

Adobe After Effects is a virtual visual effect, motion graphics, and compositing software evolved by Adobe Systems and used in the post-manufacturing technique of movie-making, video games, and tv manufacturing. Among different things, After Effects may be used for keying, tracking, compositing, and animation. It additionally capabilities as a totally fundamental non-linear editor, audio editor, and media transcoder ^[9].



Fig 3.1.6: After Effect Software

After finishing all the work in pre-production then we shift to the post production work though after effect were we also added sound to the work and doing some color correction, masking etc.

3.7: Adobe Media Encoder:

Adobe Media Encoder capabilities as an encoding engine for Adobe Premiere Pro, Adobe After Effects, Adobe Audition, Adobe Character Animator, and Adobe Prelude ^[10].

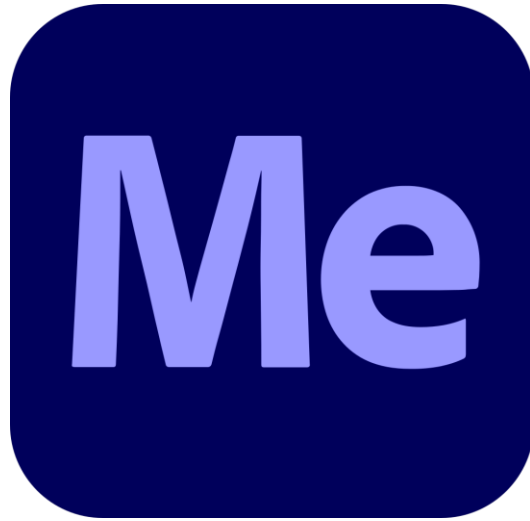


Fig 3.1.7: Adobe Media Encoder Software

For rendering our file from after effect we used media encoder to make the file size smaller with the high quality.

CHAPTER 4

Project Workflow

4.1: Modeling:

3D modeling is the process of creating a 3D representation of any surface or object by manipulating polygons, edges, and vertices in virtual 3D space. You can observe the imaginative and inventive creatures and architecture in movies, animations, and video games. 3D modeling has a variety of consequences. In this project, we've chosen Autodesk Max 2021 as our modeling software. Boxes, spheres, lines, and cylinders are among the standard primitives used in this game. In this modeling technique, adjustments were made to generate multiple models. Adjustment is done via tools like extrude, insert, bridge, combine, and FFDs like bend, lattice, and so forth. When designing all of the models, it is essential that all of the polygons be kept as quads. Here is an overview of all of the models I created, along with their various implications.

4.1.1: Dressing Table:

This dressing table was made by rectangle shapes. So that's why the poly count was less. This was given by the company and told me to create a modern dressing table with a low poly so it's a challenge for me to create an object with details and which contains low poly. Take a rectangle and create shapes as they give me the measurement. Then extrude them, added the part individually and lastly add a chamfer to the edges for softening the sides. Which makes them look like high poly models. And as this was need to be animated the scene so I need to keep each part separated from each other.

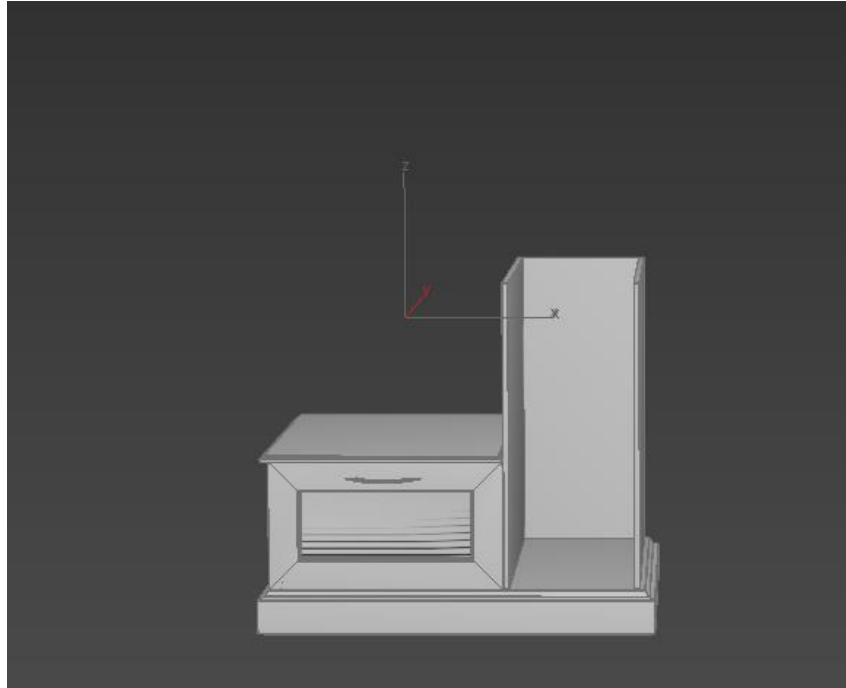


Fig 4.1.1: Dressing Table

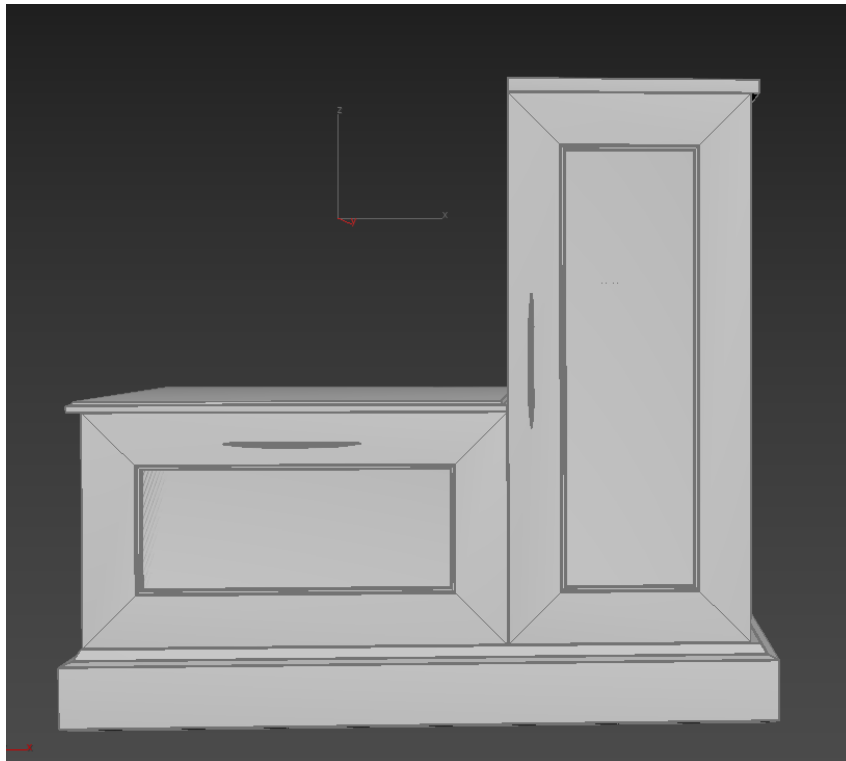


Fig 4.1.2: Dressing Table



Fig 4.1.3: Dressing Table

This picture of the dressing table contains low to medium polygon. All the parts are separated from each other so it can be modified anytime.

4.1.2: Photo frame:

This photo frame was created for decorating the scene. This photo frame was created by the box. Then scale down the height of the box and add some edges. Chamfer the edges and deleted the faces between the frames for shaping. Then apply the chamfer all over the model for the smoothness.

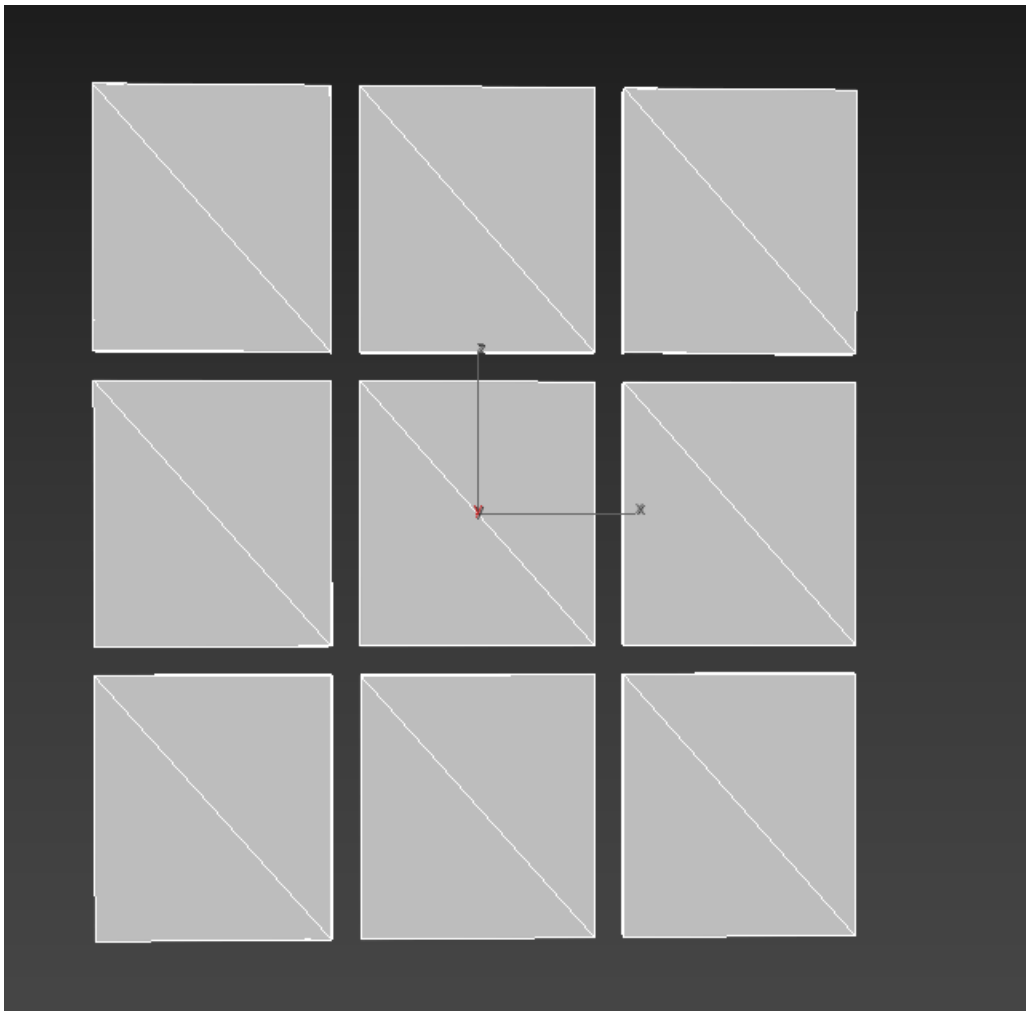


Fig 4.1.4: Photo frame

This photo frame contains low polygon and a nicely chamfered the edge as well.

4.1.3: Tool:

The tool was made by the box. Take the box > go to modifier panel> apply edit poly> select the upper face and scale it little bit. Take another edit poly on it> give more segment on it and take the vertices and make a shape like rounded. Go to modifier panel> apply edit poly modifier> take the middle edges and apply chamfer from the edit poly.

For the base stand take a line> from the shapes> draw half portion as the references> take the middle vertices and apply> fillet on it for the round shape> increase the line segment for smoothness. Then go to the modifier panel once again > apply lathe modifier > adjust the value x,y,z then get the actual shapes. Lastly apply the chamfer> from the modifier panel for smoothness the sides.



Fig 4.1.5: Tool

This tool was maintained quad edges which was modified by line and edit poly. Taking individuals edit poly rather than convert the model to the edit poly is more helpful for the work. It helps to delete the mistake easily so that whenever I want to go back, I can go which is very helpful than Autodesk Maya.

4.1.4: Dining Table:

Dining table was created from the box shapes> from the shapes panel Take a box for the base> apply edit poly> extrude> scale down> insert the face. Then take another box> modifier panel> edit poly> add segment middle of the object> grab the edges and take the outside for making a curve to the center side. Take another edit poly> select the face> insert> extrude> chamfer the edges. Then copy the object and place over the base stand.

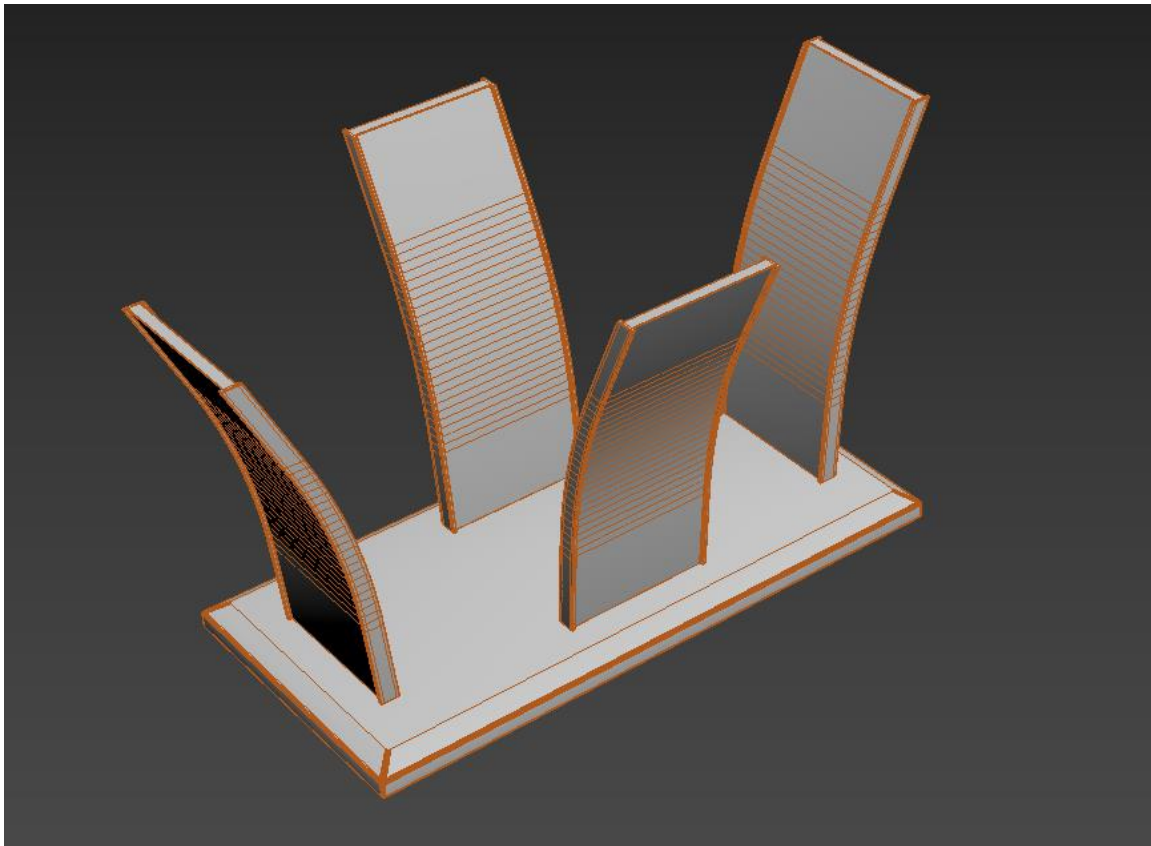


Fig 4.1.6: Dining table

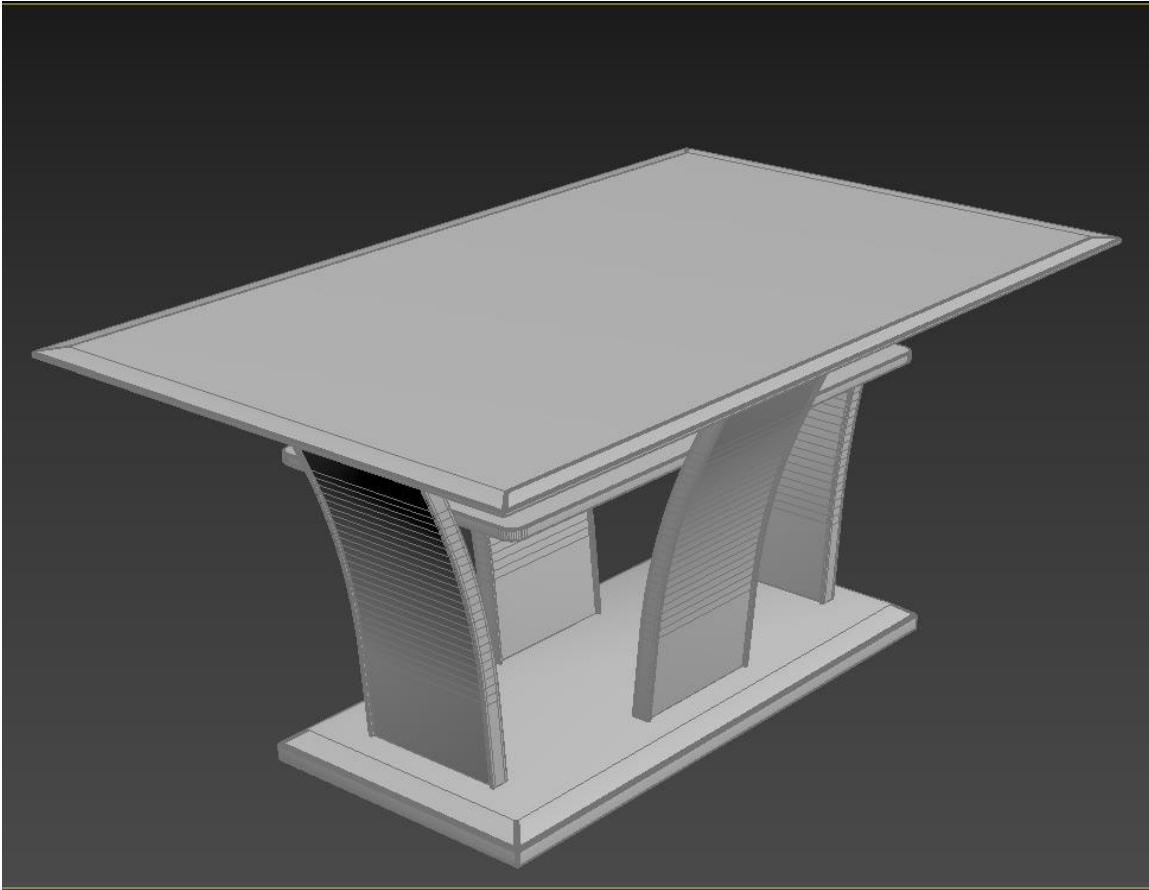


Fig 4.1.7: Dining table

This dining table contains the high poly for the details work. The top was made from a box shape also box> edit poly > face selection > insert> extrude little> chamfer the edges.

4.1.5: Chair:

Chair is essential for the dining table. So, take the plane> edit poly > edges> extrude> back side > connected by the side segments> apply symmetry modifier> FFD 4x4x4> grab the middle portion and make a curve. And for the leg take another edit poly> extrude them> scale the last vertices for shrink them. For smooth add more edges to the chair. Take another box for the leg's supporter.

For the sit take the chamfer from the panel> ffd 4x4x4 and control the shapes.

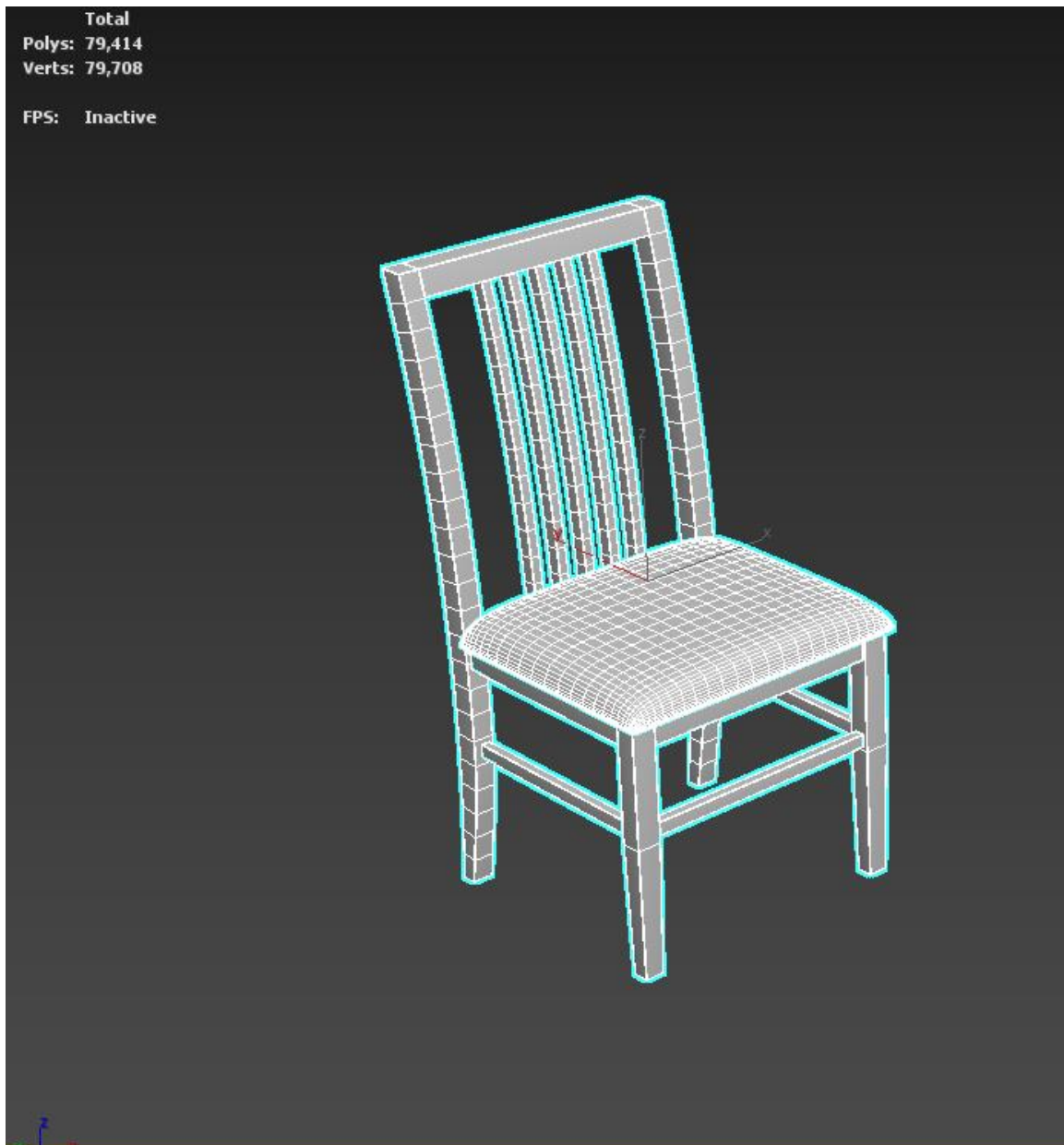


Fig 4.1.8: Chair Wireframe Mode

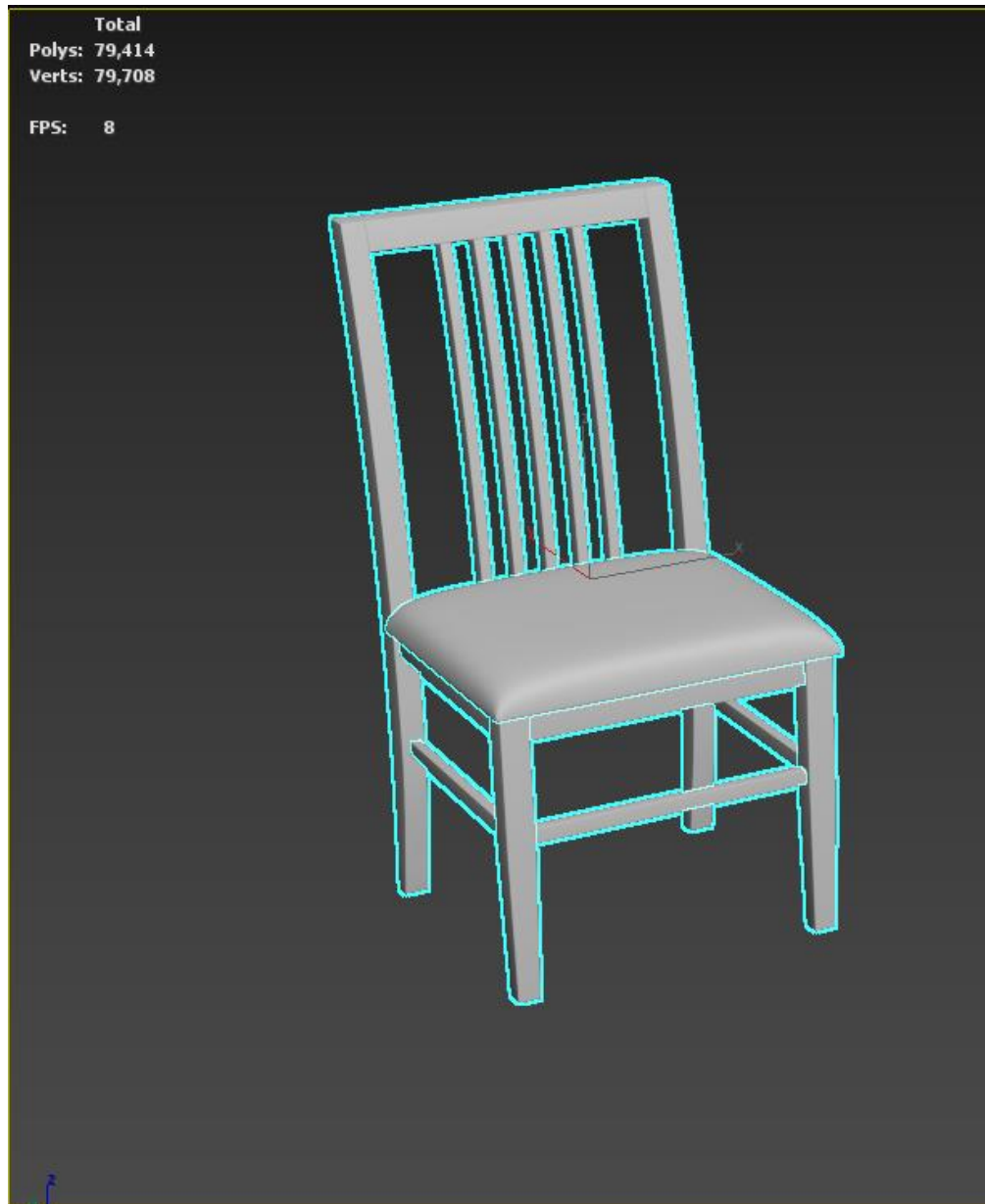


Fig 4.1.9: Chair

As the dining table's leg are curved so the chair also contains the same design. Lastly apply the chamfer modifier all over the model from smoothness.



Fig 4.1.10: Dining Table 3D Modeling

This is the scene after all the objects are put together. Before the animation I was asked to the company for the organization when they approve it then I started to do the key frame animation in Autodesk max.

4.1.6: Bed:

Another model was bed. For this modern bed making, I like to work with rectangle shapes. As is very comfortable to make shapes. Take rectangle >converts spline > corner all vertices >edit poly > extrude down> edit poly take the faces> extrude the legs and the head portion.

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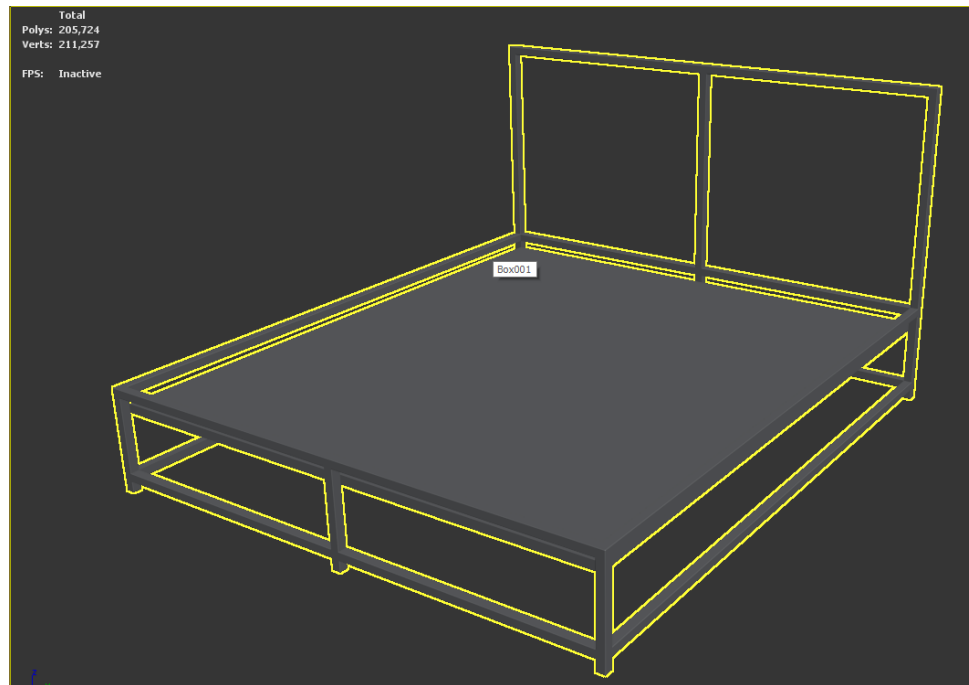


Fig 4.1.11: Bed



Fig 4.1.12: Bed

In the figure 4.1.12 a plane was taken > edit poly connect the edges> edit poly> chamfer the edges> deleted the faces between than go to modifier> apply shell modifier.



Fig 4.1.13: Bed



Fig 4.1.14: Bed Wire frame mode



Fig 4.1.15: Bed 3D Modeling

For the blanket I was taken a plane then modify it thoroughly by adding edit poly> then apply shell modifier> for the thickness> then added ffd4x4x4 and manually pull the vertices where I needed.

4.1.7: Office Desk:

For creating office desk first, I need a box> modify the height and width > take a rectangle > convert to spline > vertices corner> edit poly.

Take another line> convert to spline > corner all vertices > edit poly.

Take another box for the back side. Take cylinder for the table legs and the mirror support.

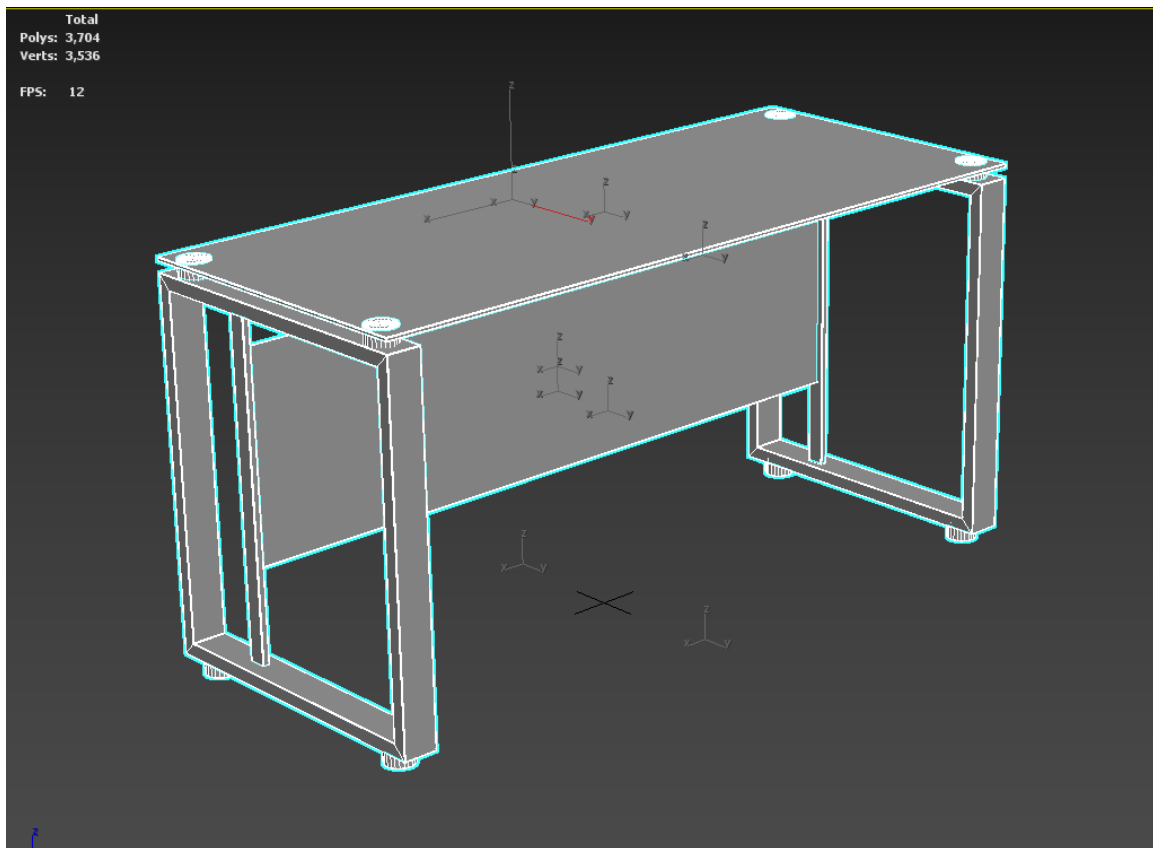


Fig 4.1.16: Office Desk



Fig 4.1.17: Office Table

For this table we took a box for the base and the side part. For the drawer take another box then make several copies. Lastly apply chamfer modifier to the table all over.



Fig 4.1.18: Chair

For the chair modeling we are using a plane > modifier panel edit poly > connect the edges> make the half portion first > apply shell modifier > go-to modifier applies FFD 4x4x4 and select the vertices and make a curve for the back part and then go to modifier > symmetry for the rest of the part. Lastly, apply the chamfer modifier for smoothness.

Doing the sitting part take a box > got to modifier > edit poly> FFD 4x4x4 >chamfer the whole object. For the legs we are using cylinder scale the size> edit poly> delete face> extrude > scale the lower side. And take a sphere for the wheel > edit poly> delete the

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half portion> take the border> extrude> scale the size> copy the object and rotate and join them together. For the upper side take a plane> apply bend modifier> bend the object and connect to the wheel together. This object contains quad topology as much as I can make it a simple standard.



Fig 4.1.19: Office DESK

This is the whole setup of office desk. It looks nice and maintain the slandered as required.

4.1.8: Tv shelf:

Another model was giving me tv shelf also maintain the modern look. Take a box then apply the edit poly > from the modifier then take the side part and middle part as well then take the vertices and make the shape as the given picture or demo.



Fig 4.1.20: TV Shelf



Fig 4.1.21: Tv Shelf

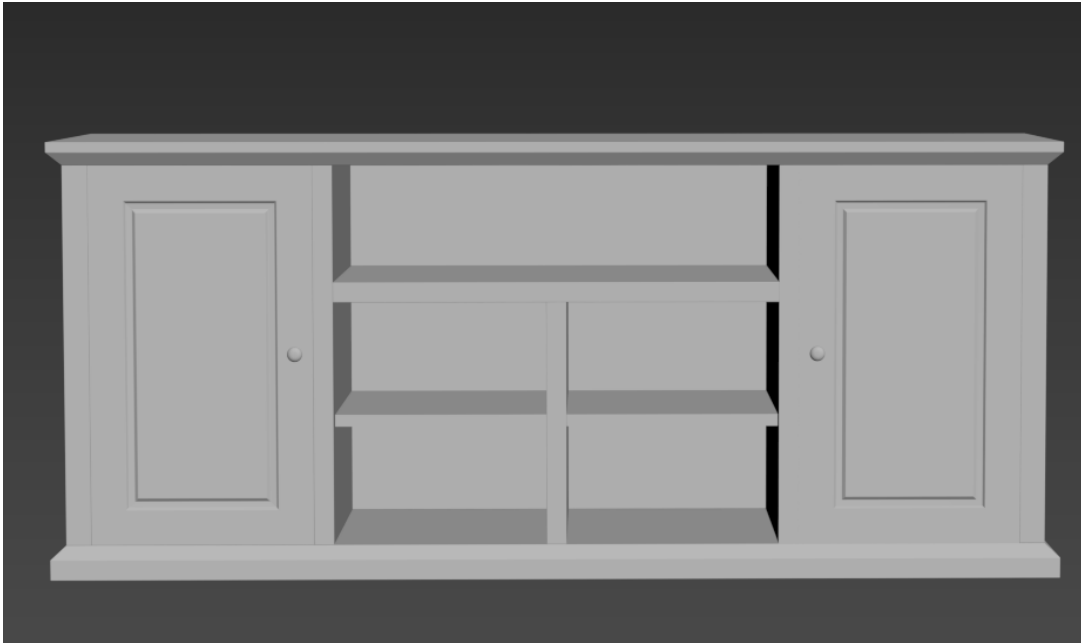


Fig 4.1.22: Tv Shelf

Lastly, add the door to the shelf and apply chamfered all the objects. This desk contains a lot of parts where they can easily keep their books and others stuffed and accessories.

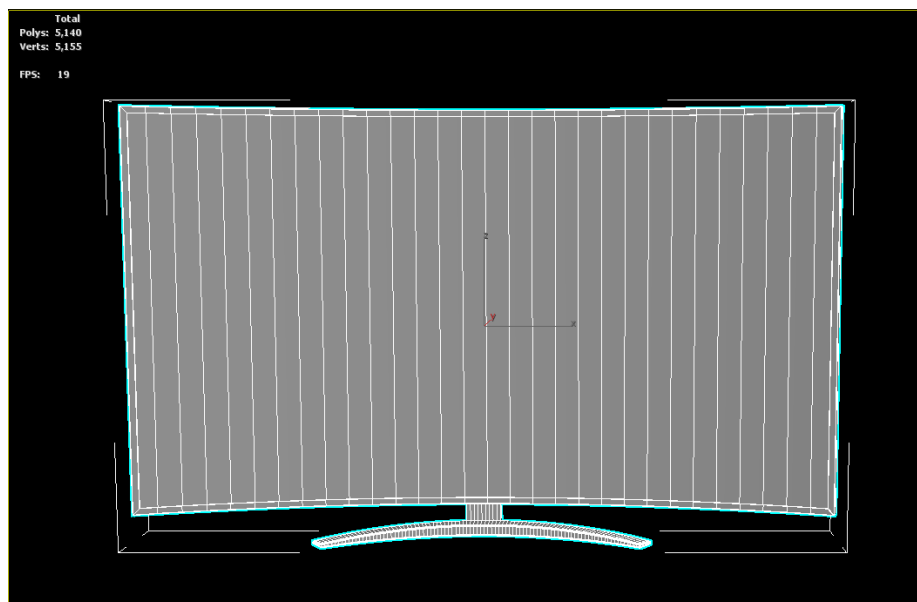


Fig 4.1.23: Tv Modeling

For the tv modeling we are taking a box from the panel> edit poly> connect segment > apply bend and make a nice soft curve. Take the border edges and apply > edit poly> and extrude them to create a border and the legs are created from the box. Take a line and draw a curve> convert to spline> corner vertices > grab the two vertices and apply fillet> apply chamfer to the whole object.

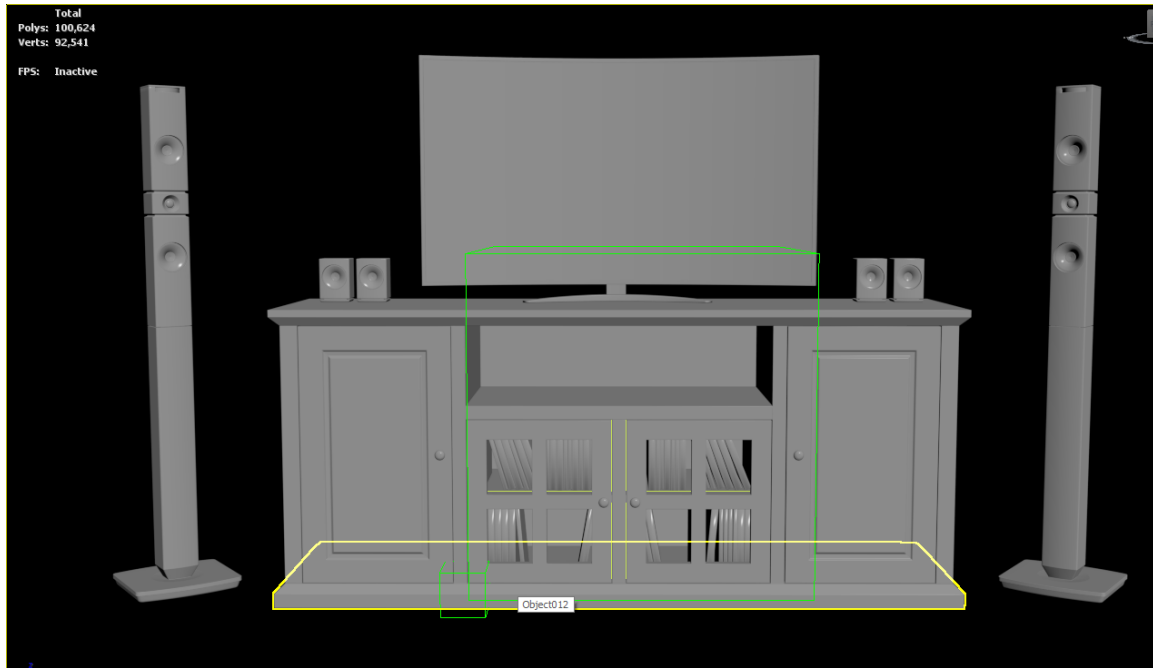


Fig 4.1.24: Tv shelf 3D Modeling

4.1.9: Headphone:

Headphone are made by lines> convert to spline> shell> convert to the edit poly> extrude the face > grab the edges and make a round shape which are setting over the ear. Apply turbo smooth and checking the smoothness and the details.

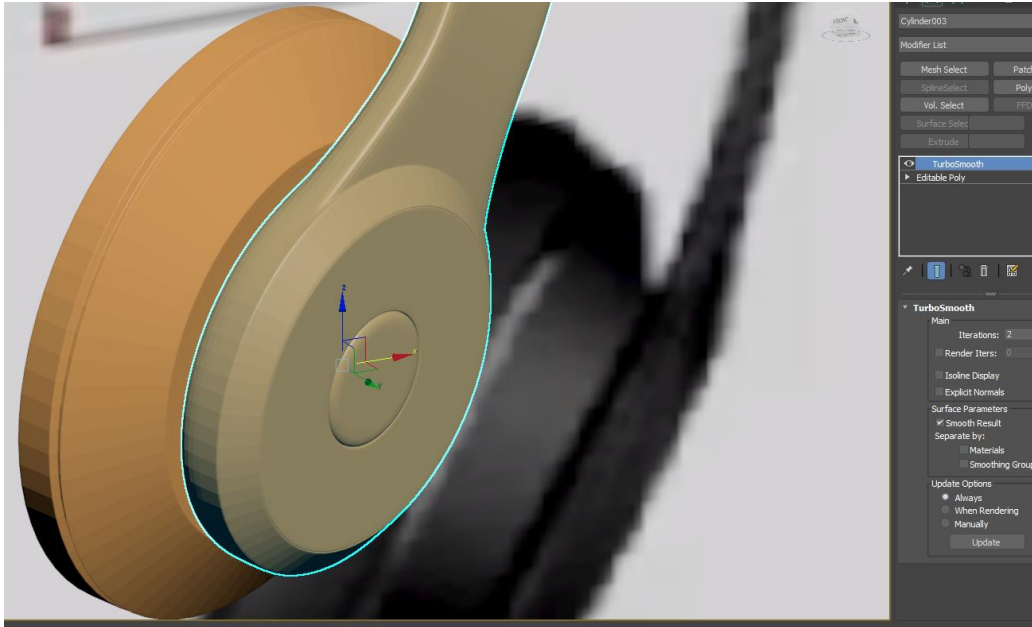


Fig 4.1.25: Headphone Base Modeling

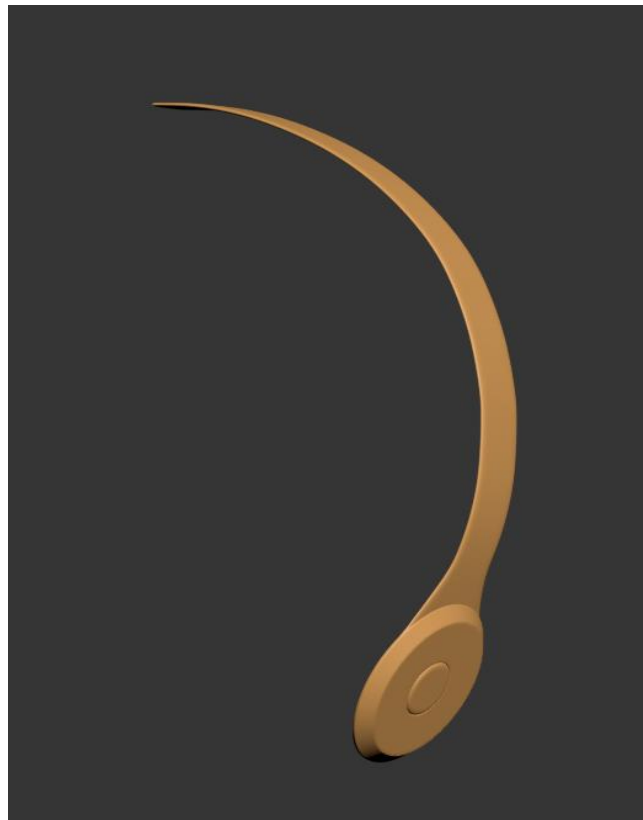


Fig 4.1.26: Headphone Base Modeling

Fig 4.1.25 & 4.1.26 are shown the headphone one side part. Which are created from line shapes.

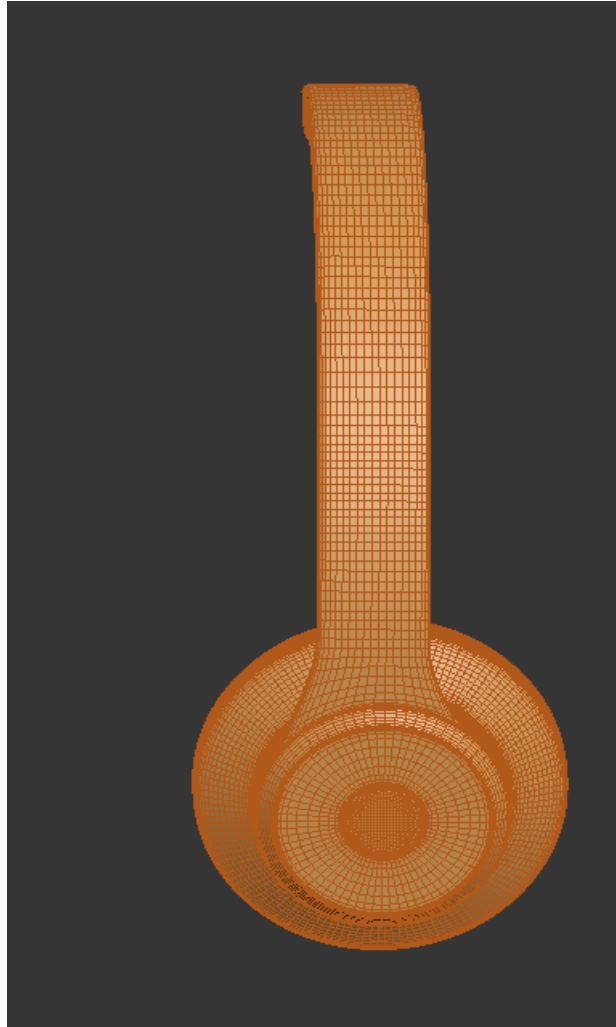


Fig 4.1.27: Headphone Base Modeling Wireframe View

The other side or part copy and go to the modifier panel> apply edit poly > deleted the border edges and take the two objects together and apply the bridge modifier which connect the different parts together.



Fig 4.1.28: Headphone Modeling

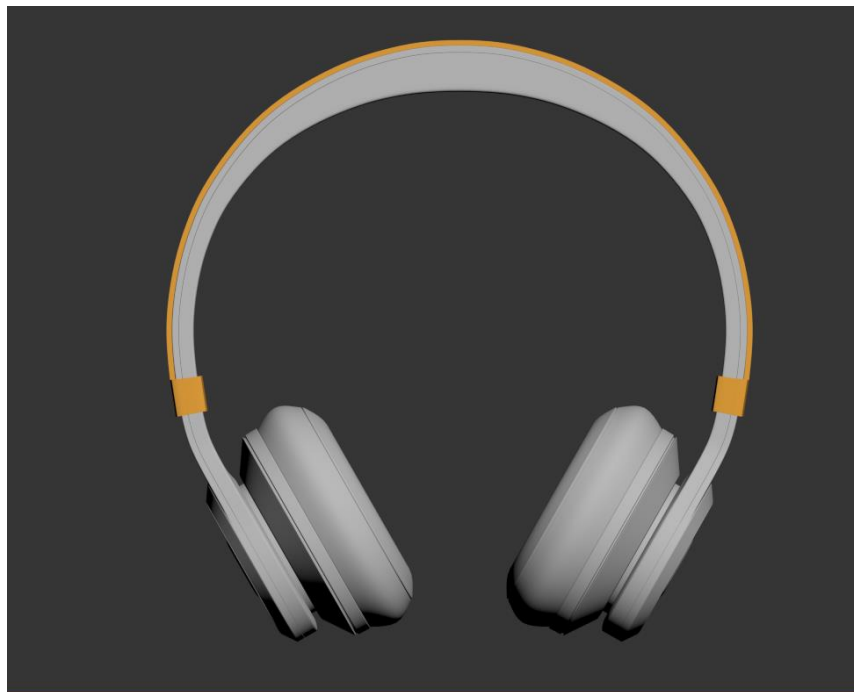


Fig 4.1.29: Headphone 3D Modeling

Figure 4.1.28- 4.1.29 are shown the full model of the headphone. Lastly, apply the turbo smooth >from the modifier panel. For the smoothness and adjust the value.

4.1.10: TV Shelf:

Take a box then apply the edit poly > add more segment the take another box and apply edit poly> from the modifier then make the side part and middle part as well the upper part.

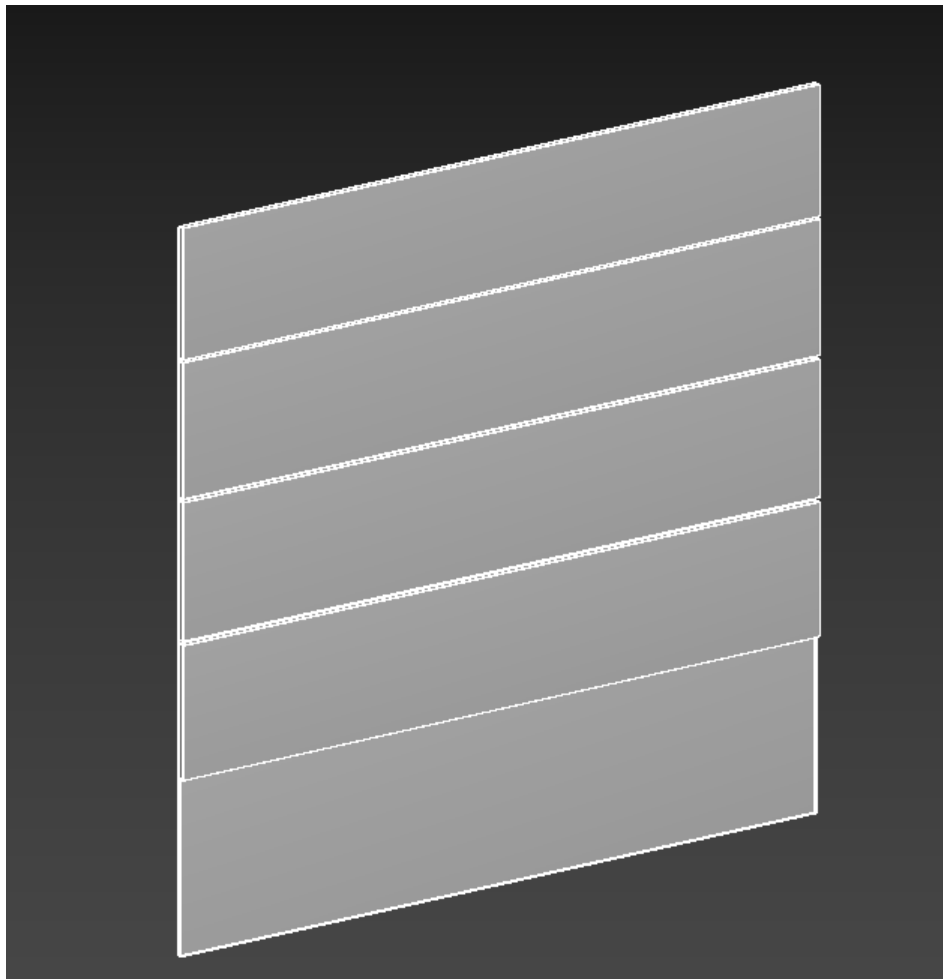


Fig 4.1.30: TV Shelf modeling

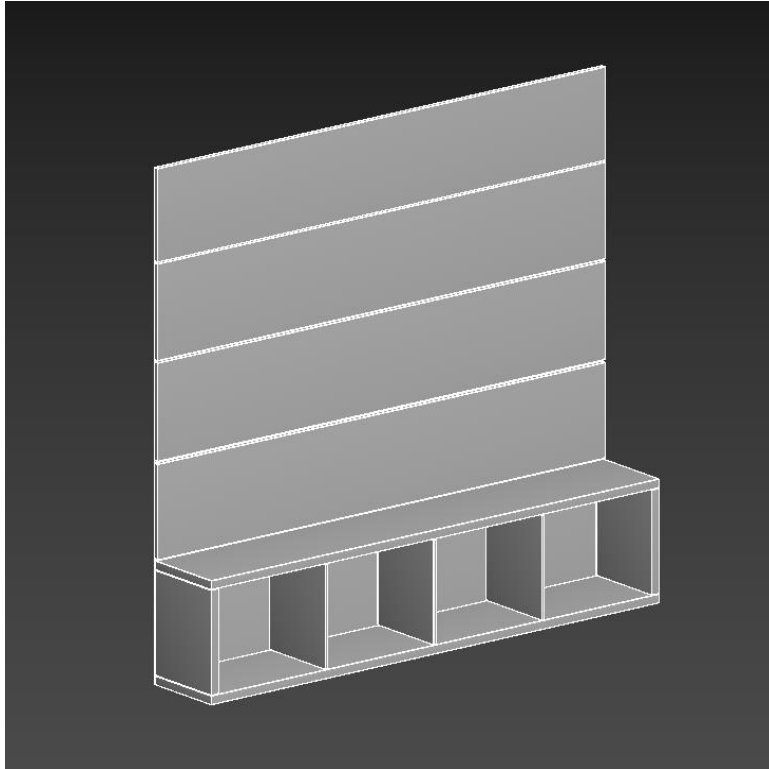


Fig 4.1.31: TV shelf modeling wireframe

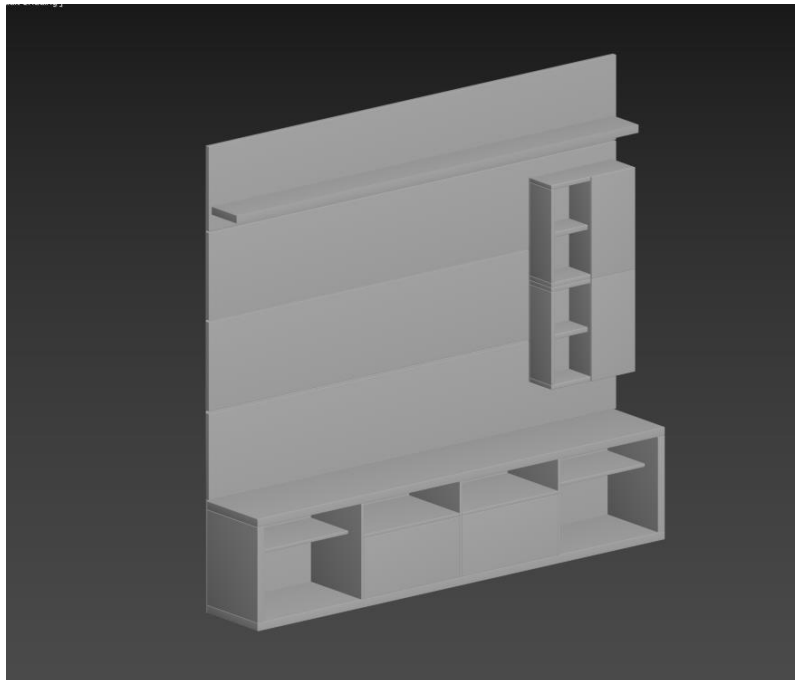


Fig 4.1.32: TV shelf modeling

This tv shelf was model for Architectural Visualization. All those pictures are the step that how this model was created in Autodesk Max.

4.1.11: Almirah Modeling:

The almirah is easy to make. Take a box for the measurement and after that take a rectangle to create the sides. Then convert to spline and take all the vertices and apply the corner method. Add extrude modifier to the rectangle shapes and make the part as needed. Created the side front base back from this rectangle shape.

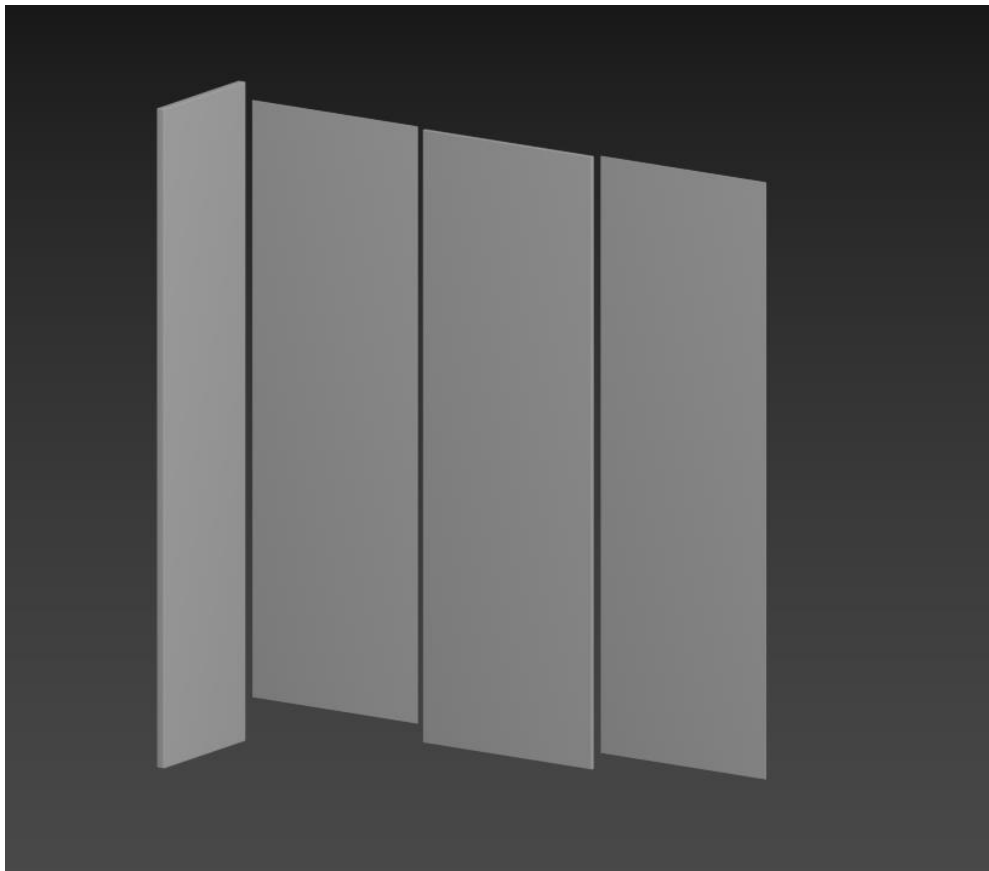


Fig 4.1.33: Almirah modeling

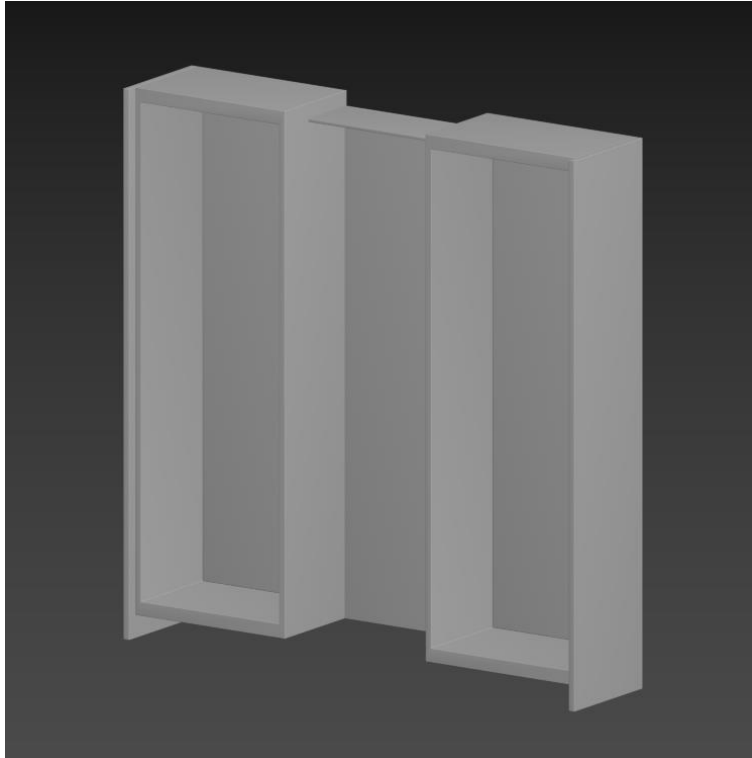


Fig 4.1.34: Almirah modeling

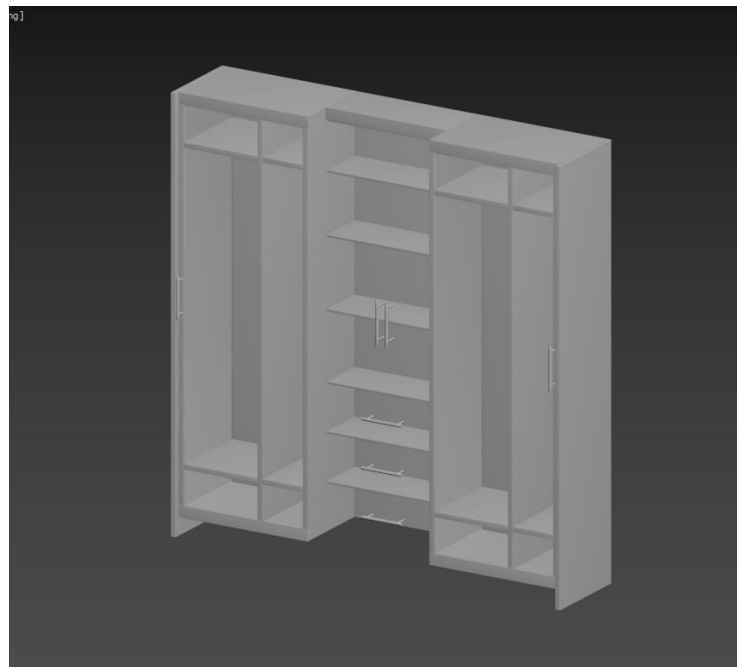


Fig 4.1.35: Almirah modeling



Fig 4.1.36: Almirah modeling

Figure 4.1.36 shown the full model where we added the handle to the drawer for opening the drawer. This model was simple and easy to make. When it created, I keep that in mind it needs to be modern and stylish with low poly figure. Without chamfer it was not completed well.

4.1.12: Bunk Bed Modeling:

Another model was giving me bunk bed for the kids and also maintain the modern type. Take a rectangle> convert to spline> corner all the vertices> then apply the edit poly> from the modifier then take the >vertices and making the side shape as the given picture or demo.

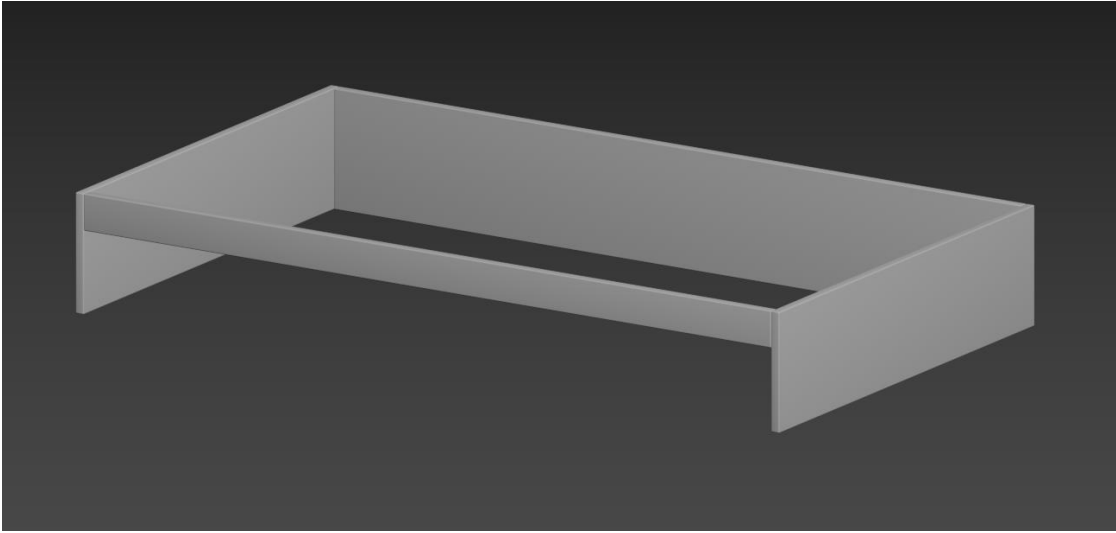


Fig 4.1.37: Bunk Bed

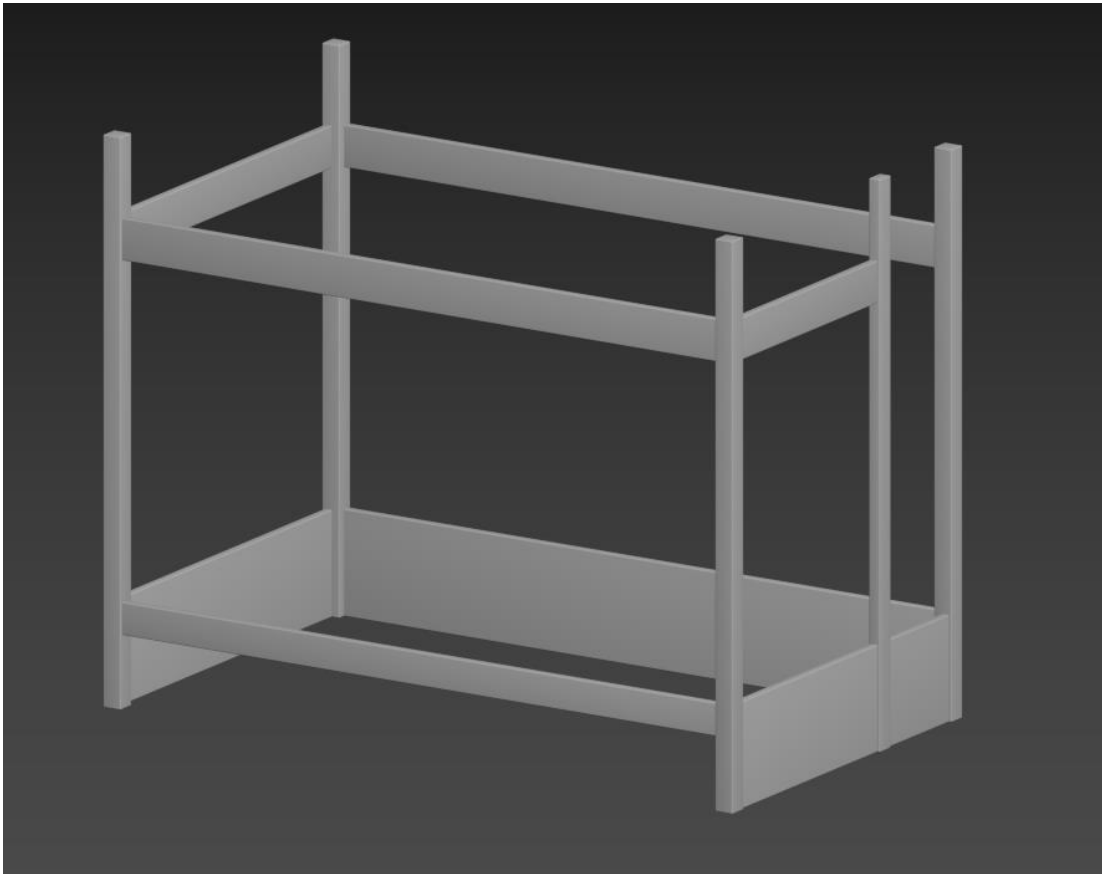


Fig 4.1.38: Bunk Bed

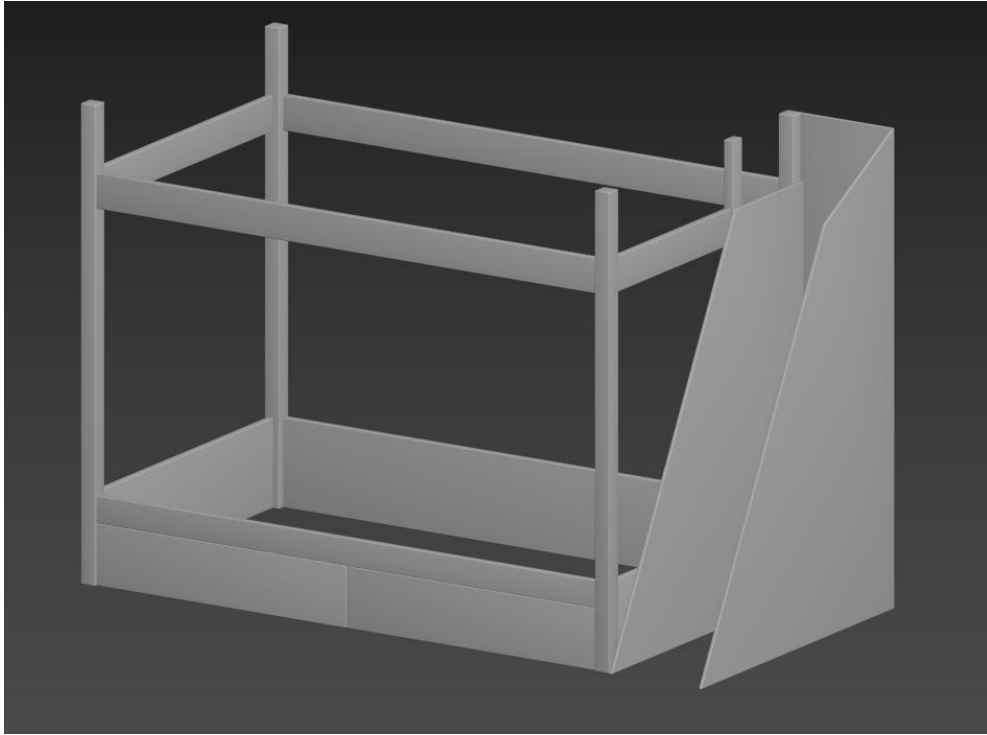


Fig 4.1.39: Bunk Bed

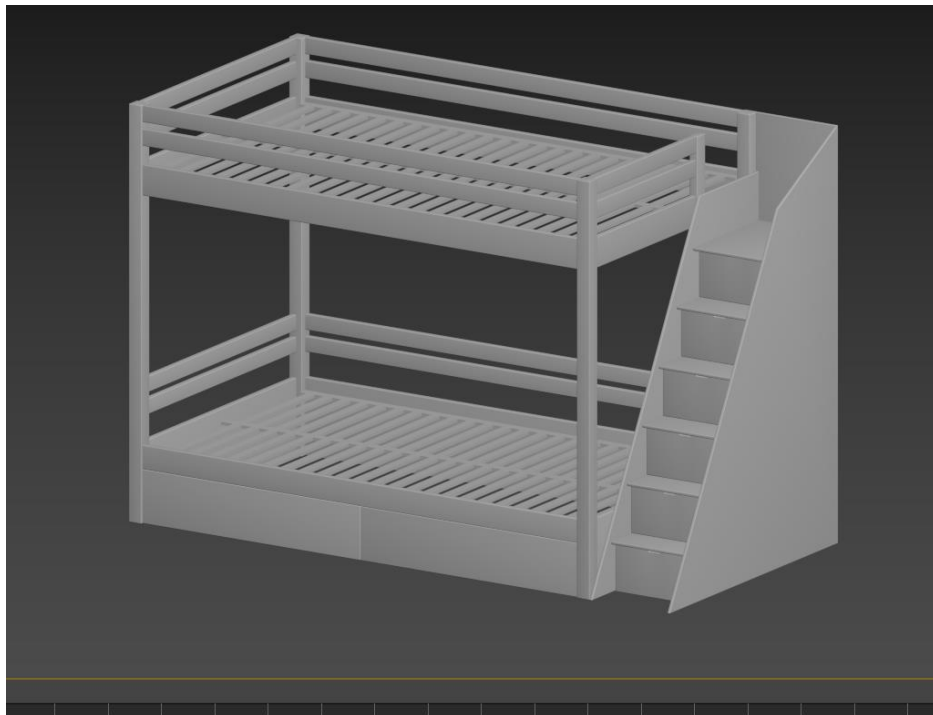


Fig 4.1.40: Bunk Bed

The bed was two parted so firstly, created the lower part and then created the upper part so it will be easy to made. And for the second part we need to add a stair where we were using plane> then apply shell modifier for the thickness.

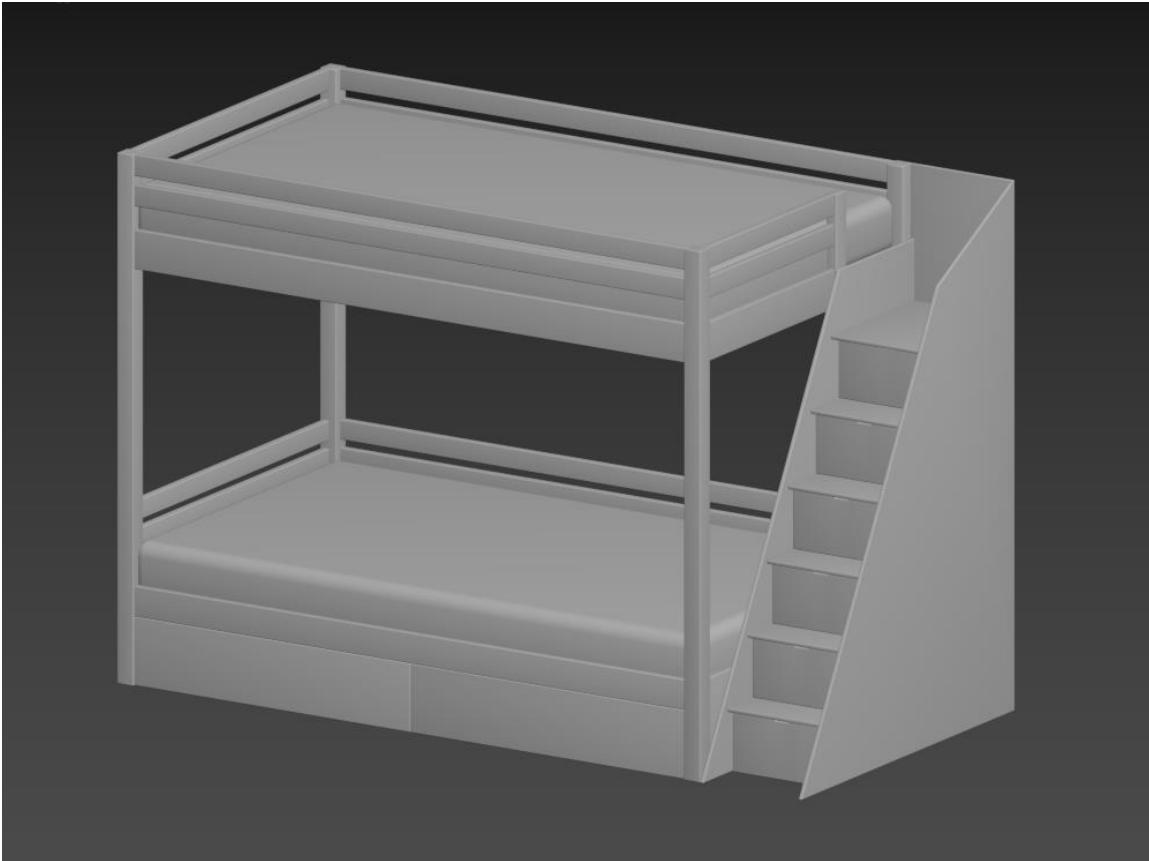


Fig 4.1.41: Bunk Bed

After created the stairs then added rest of the things to the bed. For this we are using chamfer box and set the value as needed. Lastly apply the chamfer modifier to the whole object for smoothing the corner.

4.1.13: Basin Table:

This basin table was made from rectangle shapes. So that's why the poly count was less. This was given by the company and told me to create a modern washroom basin with a low poly so it's a challenge for me to create an object with details and which contains low poly. Take a rectangle and create shapes as they give me the measurement. Then extrude them and lastly add a chamfer to the edges for softening the sides. Which makes

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them look like high poly models. And as this was need to be animated the scene so I need to keep each part separated from each other.

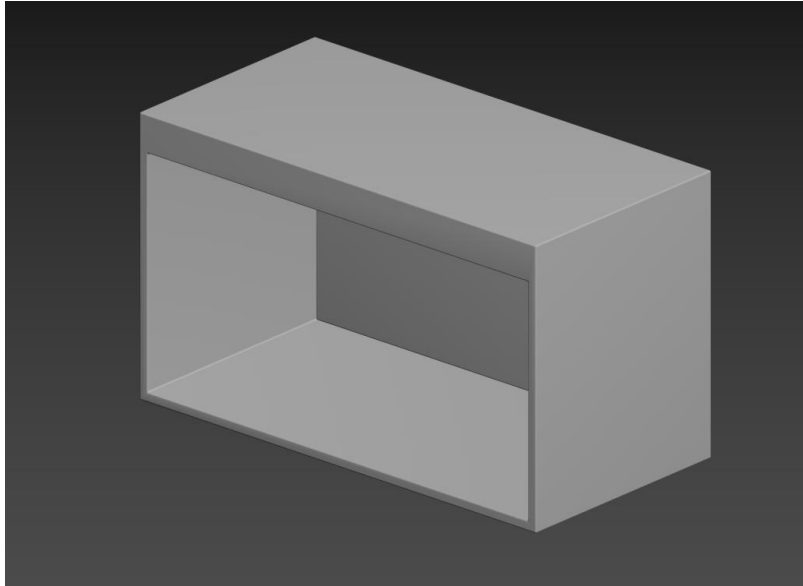


Fig 4.1.42: Basin Table

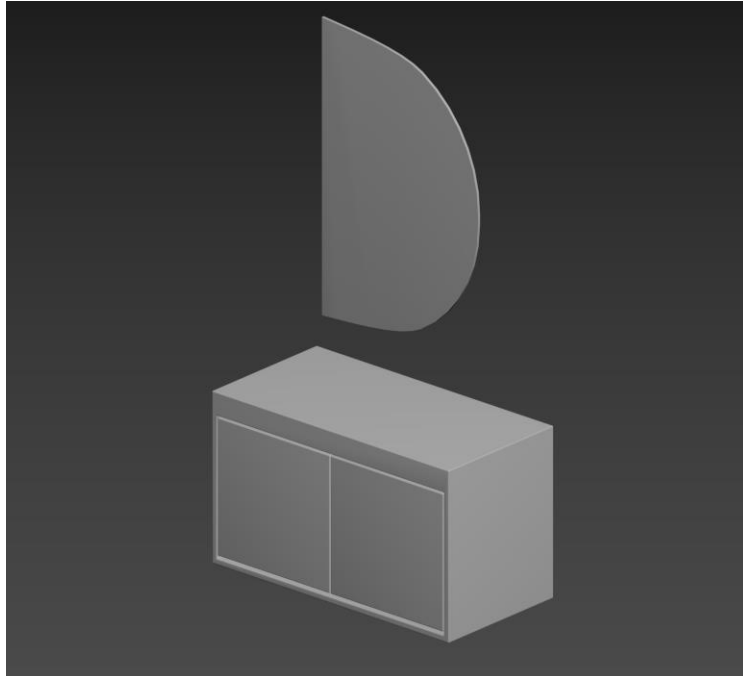


Fig 4.1.43: Basin Table With the mirror

Added the front part to the table as a gate and for the mirror take a line> convert to the spline> corner the vertices> then select two vertices and make the fillet so its look like the half-moon shape.

4.1.14: Chair Modeling:

For the chair modeling we are using a box > modifier panel edit poly > connect the edges> make the base portion first > select the vertices and make a curve for the back part.



Fig 4.1.44: Chair

Doing the sitting part take a box > got to modifier > edit poly> FFD 4x4x4 >chamfer the whole object. For the upper side take a plane> apply bend modifier> bend the object and connect to the wheel together. This object contains quad topology as much as I can make it a simple standard.



Fig 4.1.45: Chair



Fig 4.1.46: Chair

This figure of the chair contains low to medium polygon.

4.1.15: Bottle Modeling:

Firstly, take a line as a reference then convert spline > corner the vertices > fillet the vertices> edit poly deleted the cap faces > apply shell modifier.



Fig 4.1.47: Bottle Modeling

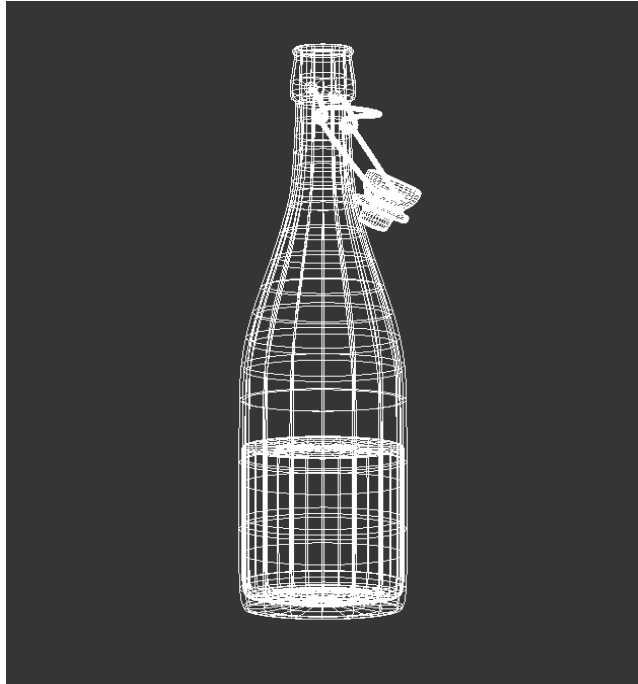


Fig 4.1.48: Bottle Modeling



Fig 4.1.49: Bottle Modeling



Fig 4.1.50: Bottle Modeling

Fig:4.1.37-4.1.40 contains bottles. Which using for the decoration in the kitchen. Applying turbo smooth for the smooth ness. And the wire shape in the crock was created by the line.

4.1.16: Table Modeling:

This table was created for decorating the scene. This table was created from the box. The lower part was created by box > modifier> edit poly>took the vertices and created shapes like the picture. Added another part on the upper side which is the top of this table.

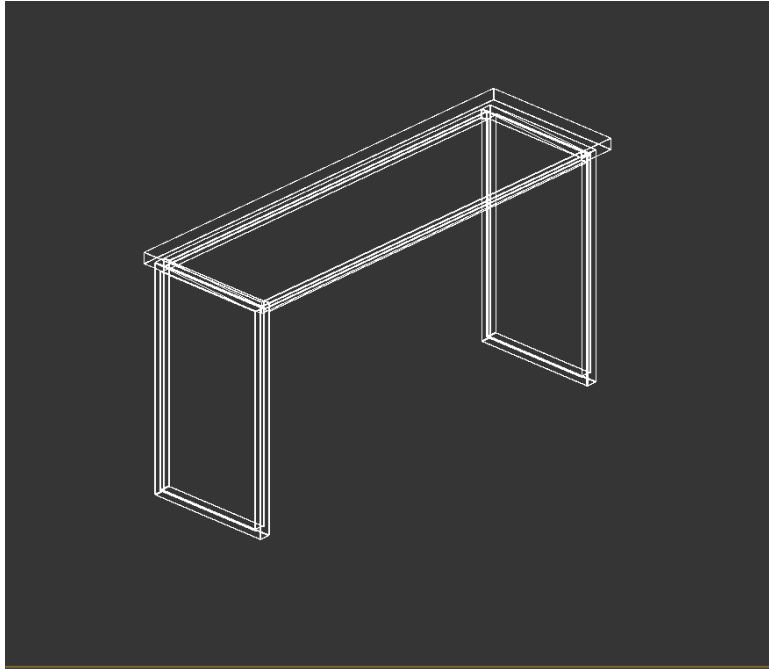


Fig 4.1.51: Table Modeling

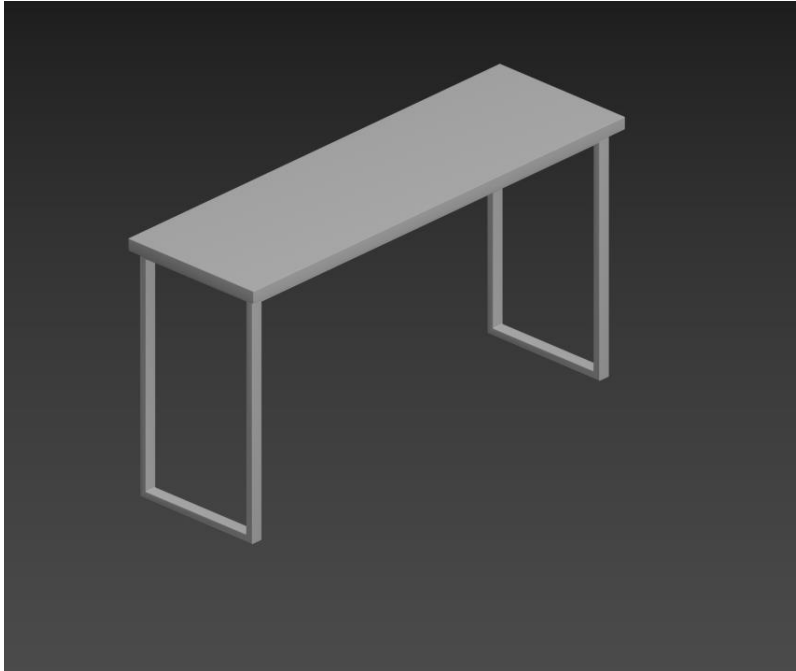


Fig 4.1.52: Table Modeling

Figure 4.1.51 & 4.1.52 contains the 3d modeling of the table. Where all the work done apply the chamfer modifier for the smoothness edges.

4.1.17: Dining Table Modeling:

Firstly, take a box as a reference then > apply edit poly on it then take the vertices from one side and make an angle. Copy and rotate this and make a cross of these two legs. Take cube for the base stand> edit poly> extrude the faces> chamfered. Modifier> box for the top part. After doing this apply modifier> edit poly> increase the segments> and select the edges and apply chamfer> extrude the edges and make a shape as needed. After all, modifier> chamfer all over the object.

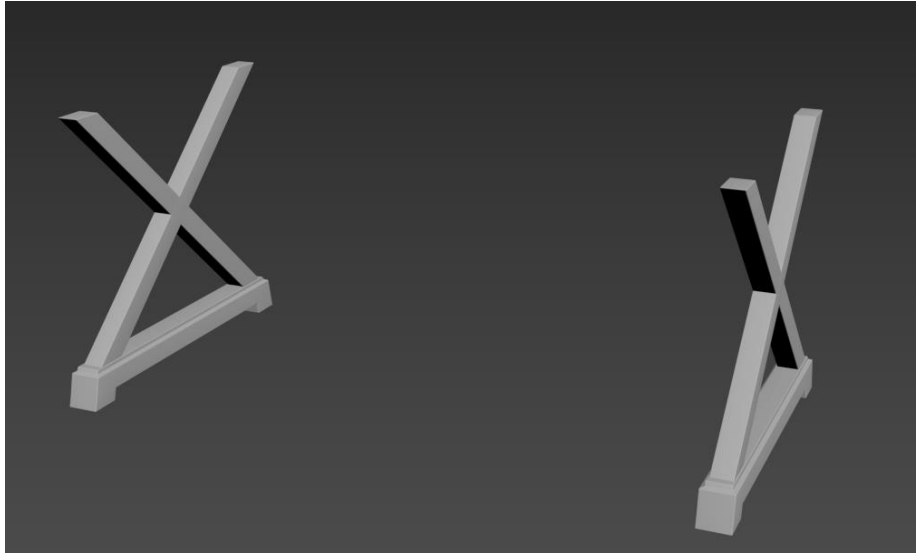


Fig 4.1.53: Table Modeling

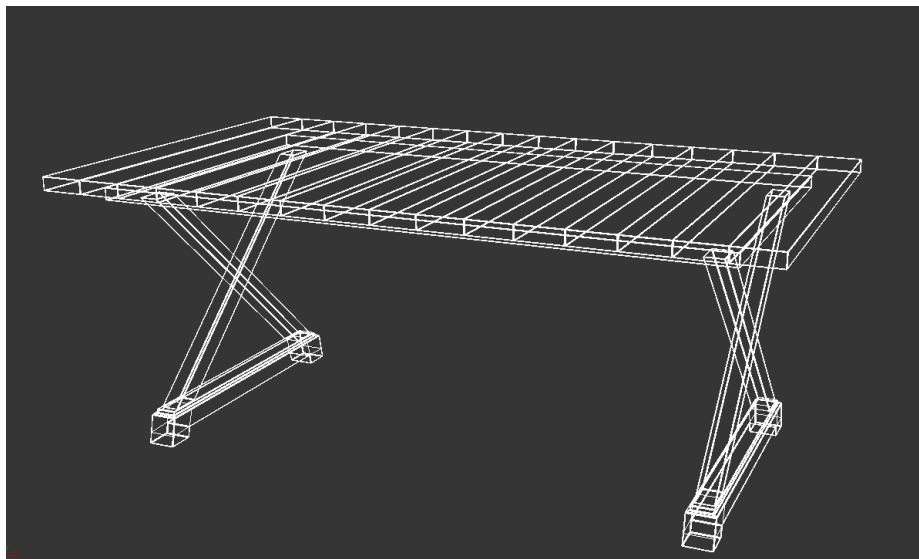


Fig 4.1.54: Table Modeling



Fig 4.1.55: Table 3D Modeling



Fig 4.1.56: Table & Chair 3D Modeling

Fig:4.1.53-3.1.56 contains a Table with the chair. Which are using as a dining table.

4.1.18: Kitchen Setting Set Modeling:

Take a box for the measurement and after that take a rectangle to create the sides. Then Rectangle> convert to spline> and take all the vertices >and apply the corner method. Add shell modifier> to the rectangle shapes. Created the side front base back from this rectangle shape. Add another box for the top part. Grab all the parts> modifier> chamfer.



Fig 4.1.57: Table 3D Modeling



Fig 4.1.58: Chair 3D Modeling

For the chair modeling we are using a box > modifier panel edit poly > connect the edges> make the base portion first > select the vertices and make a curve for the back part. And also, in the chair handle. Make the handle edge shaper to get lot of edges.



Fig 4.1.59: Chair 3D Modeling Wireframe View



Fig 4.1.60: Chair 3D Modeling

Doing the sitting part take a box > got to modifier > edit poly> FFD 4x4x4 > edited the vertices and make it little bit fluffy. Chamfer the whole object.

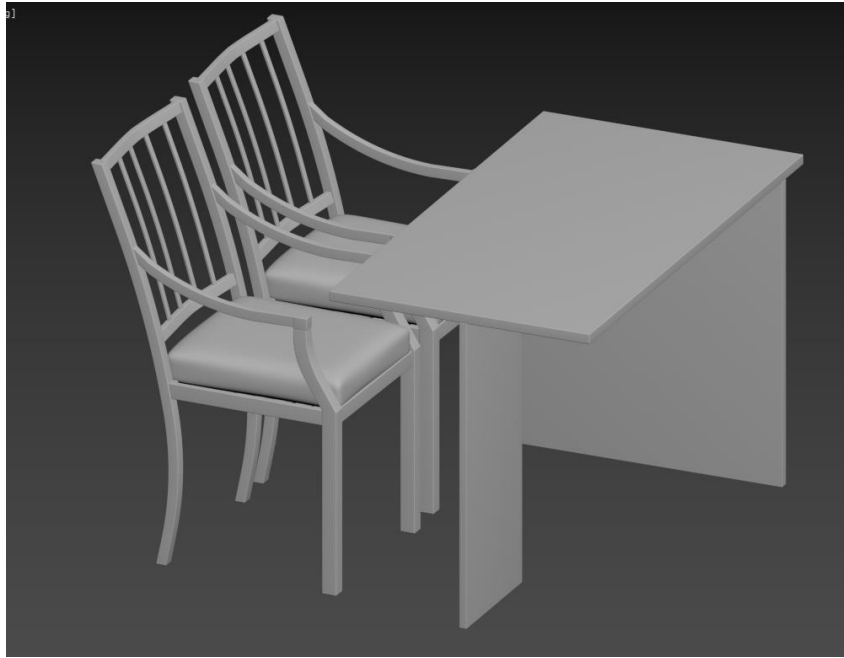


Fig 4.1.61: Kitchen Table Set 3D Modeling

This table are arranging in the kitchen besides the cabinet so that everyone can seat their and doing rest of the work.

4.1.19: Tool Set Modeling:

Rectangle> convert to spline> take the vertices> corner. Copy this and make rest of the legs> apply shell modifier>increase the value>edit poly>added edges to the lower side >select faces> scale it. Take another rectangle> edit poly> vertices> decrease size and stick to the legs in-between.



Fig 4.1.62: Tool Modeling

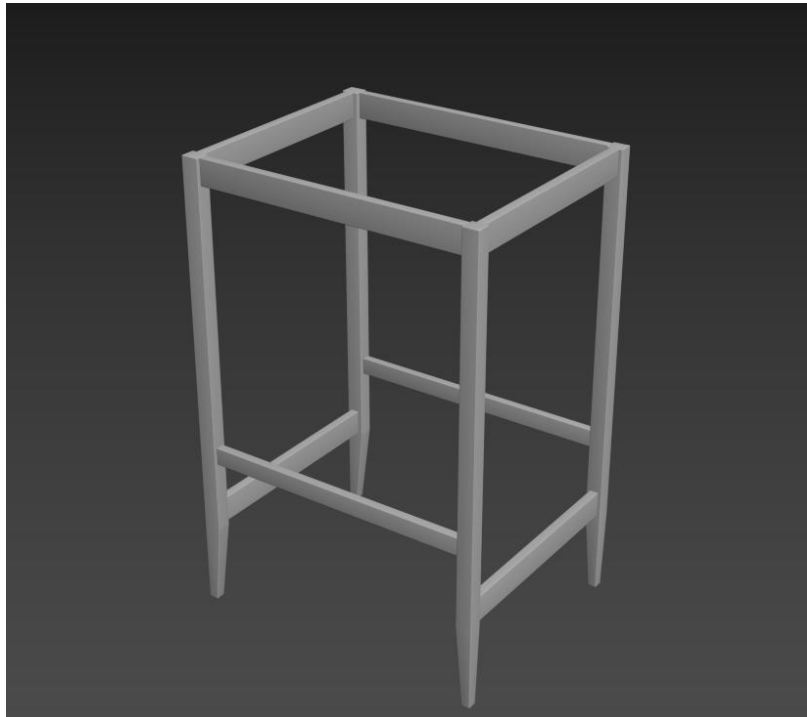


Fig 4.1.63: Tool Modeling

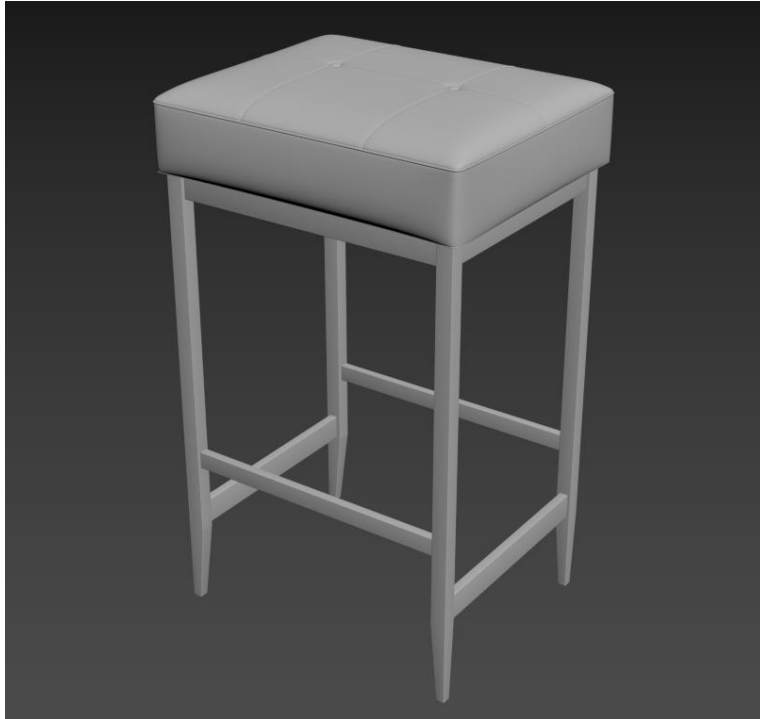


Fig 4.1.64: Tool Modeling

This figure 4.1.61 - 4.1.63 contains the object where using rectangle and make this model easily with a low polygon count. For the seat take a chamfer box to the panel> apply edit poly> increase the edges> select the vertices> connect them make a diamond shape to the object which is called Chester field.

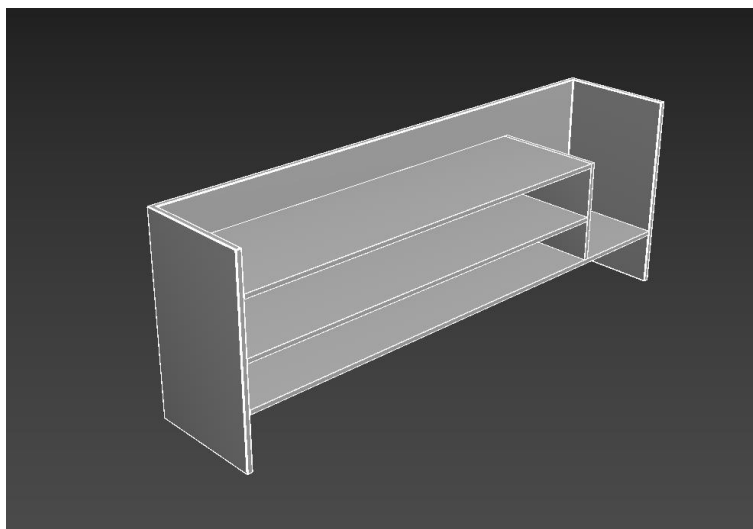


Fig 4.1.65: Table Modeling

This table was created for decorating the scene. This table was created from the box. The side part was created by box > copy> take to another side> copy>rotate to the upper side> modifier> edit poly> modifier> chamfer.

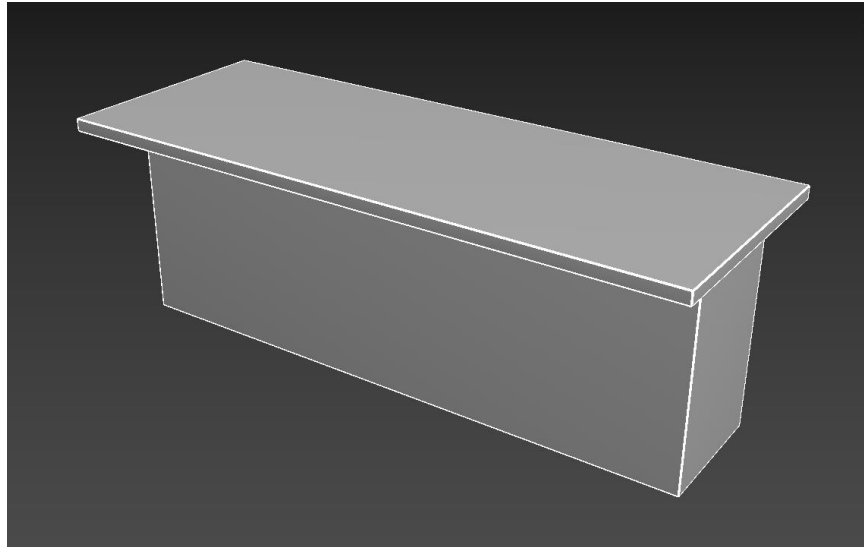


Fig 4.1.66: Table Modeling Front Part

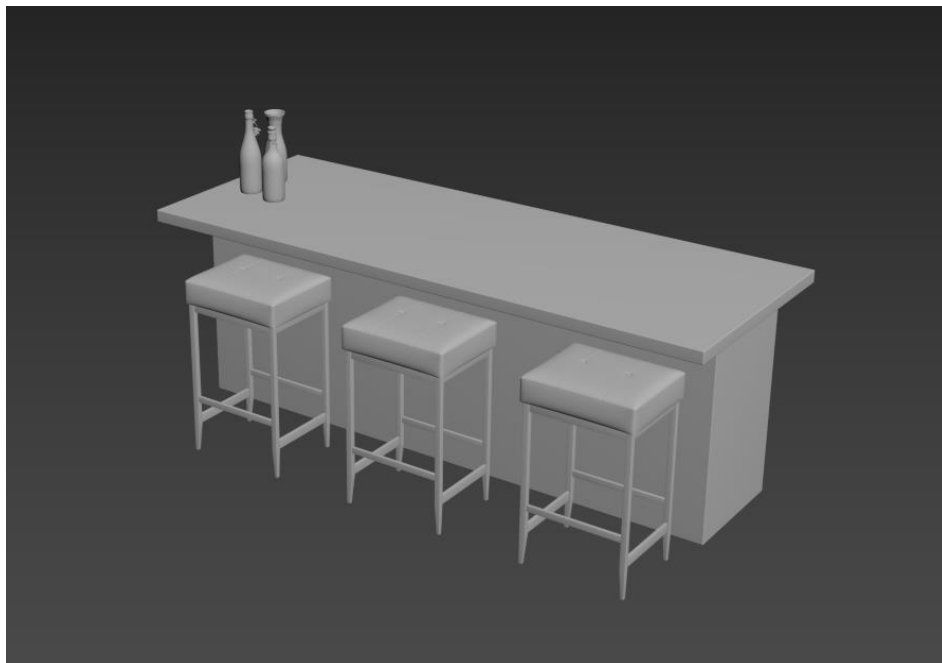


Fig 4.1.67: Tool & Table Modeling

4.1.20: Lamp Table Holder Modeling:

Take a line from the shape > convert to the spline> corner the vertices> take the vertices and apply fillet on it. Apply shell modifier> edit poly> extrude. For the base part take another rectangle and> edit poly> fillet> extrude. Lastly apply chamfer to the whole model.

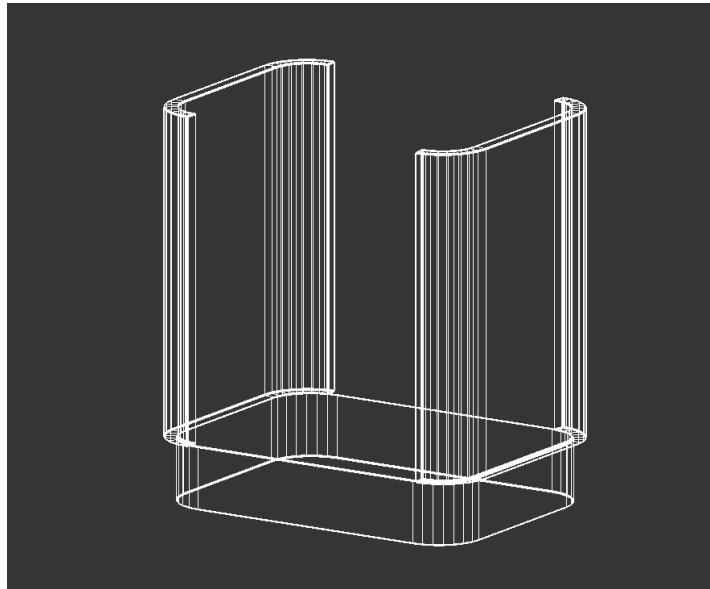


Fig 4.1.68: Lamp Table Holder Wireframe Modeling

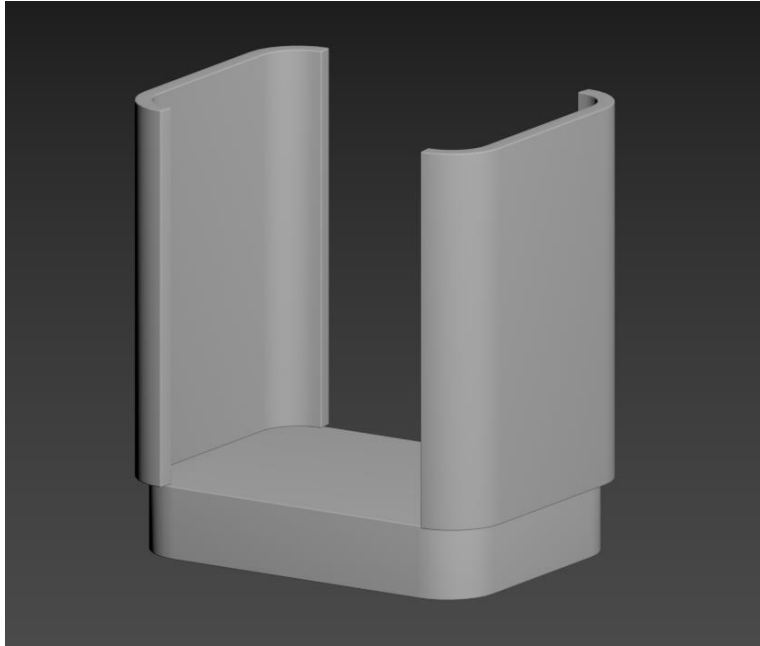


Fig 4.1.69: Lamp Table Holder Modeling

This is a table where we put a lamp in the architecture work.

4.1.21: Exterior Plan:

This is the outside plane which we did in the AutoCAD software. After the layout we export the file in Autodesk max to complete the 3d modeling.

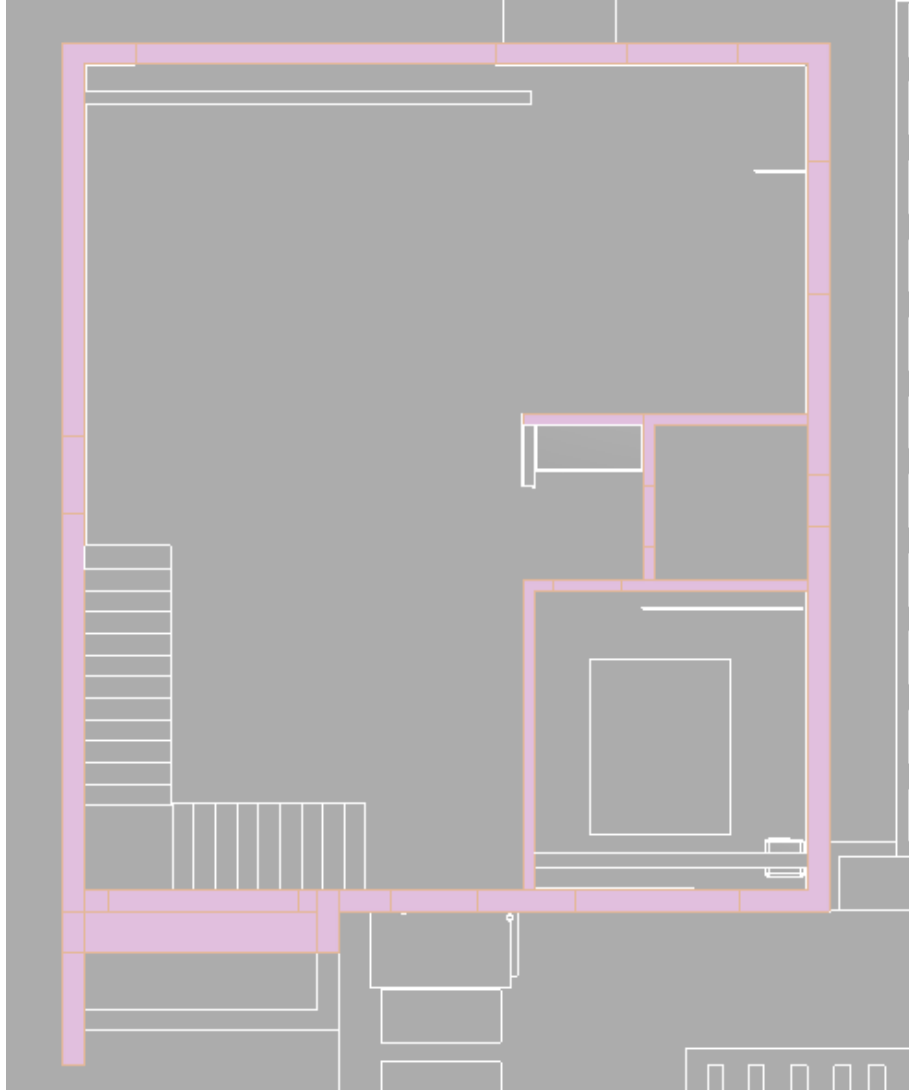


Fig 4.1.70: Exterior Plan Layout



Fig 4.1.71: Exterior Plan Layout

4.1.22: Interior Plan:

This floor plan with the models is imagine in the adobe photoshop. We make a layout first that how we set all the rooms. When our client approves this then we will do the rest of the work.



Fig 4.1.72: Floor Plan Layout



Fig 4.1.73: Floor Plan Layout

This is a setup when we take it to the adobe photoshop for the arrangements of furniture's.

4.1.23: Interior 3D Plan:

Take the reference file which we did in the AutoCAD then import in max and take a line to make the outline form the shape. Draw the shape with out the window and door.

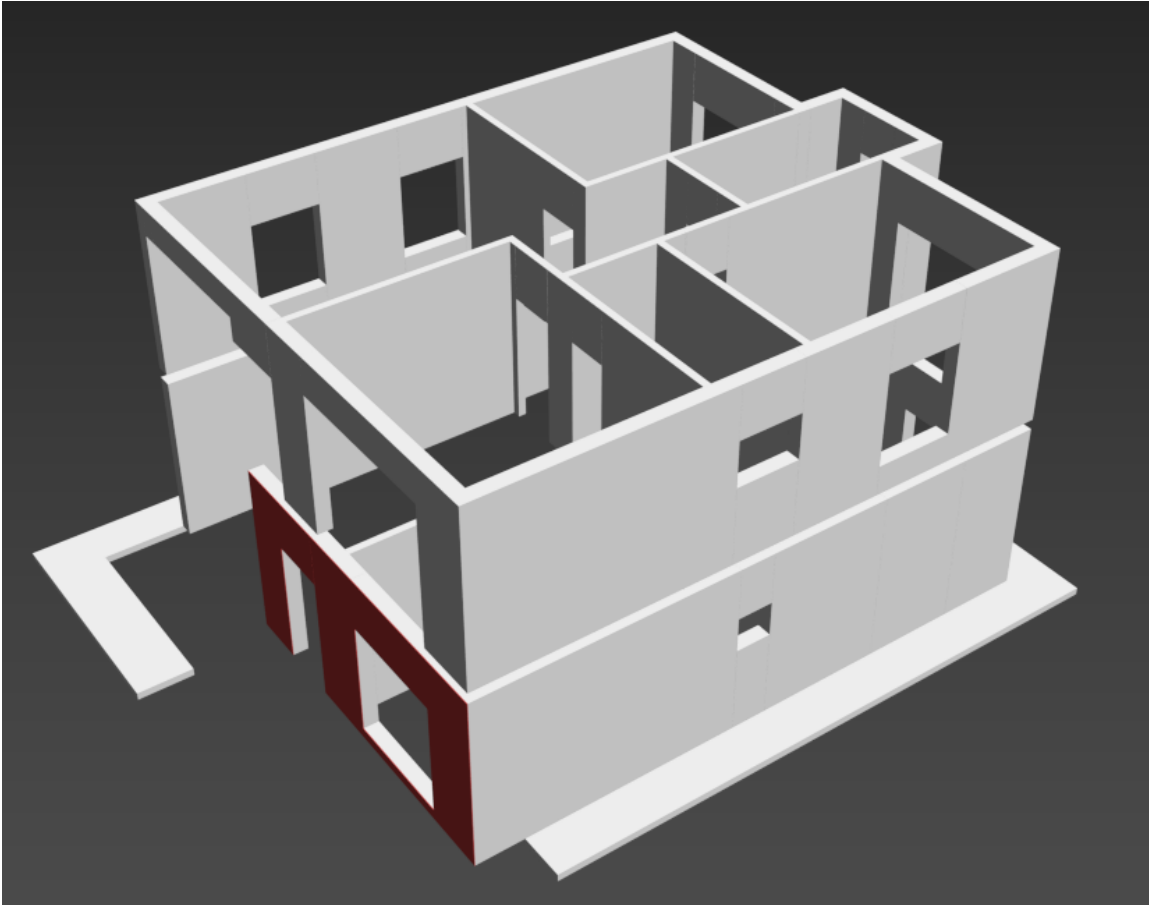


Fig 4.1.74: 3D Floor Modeling

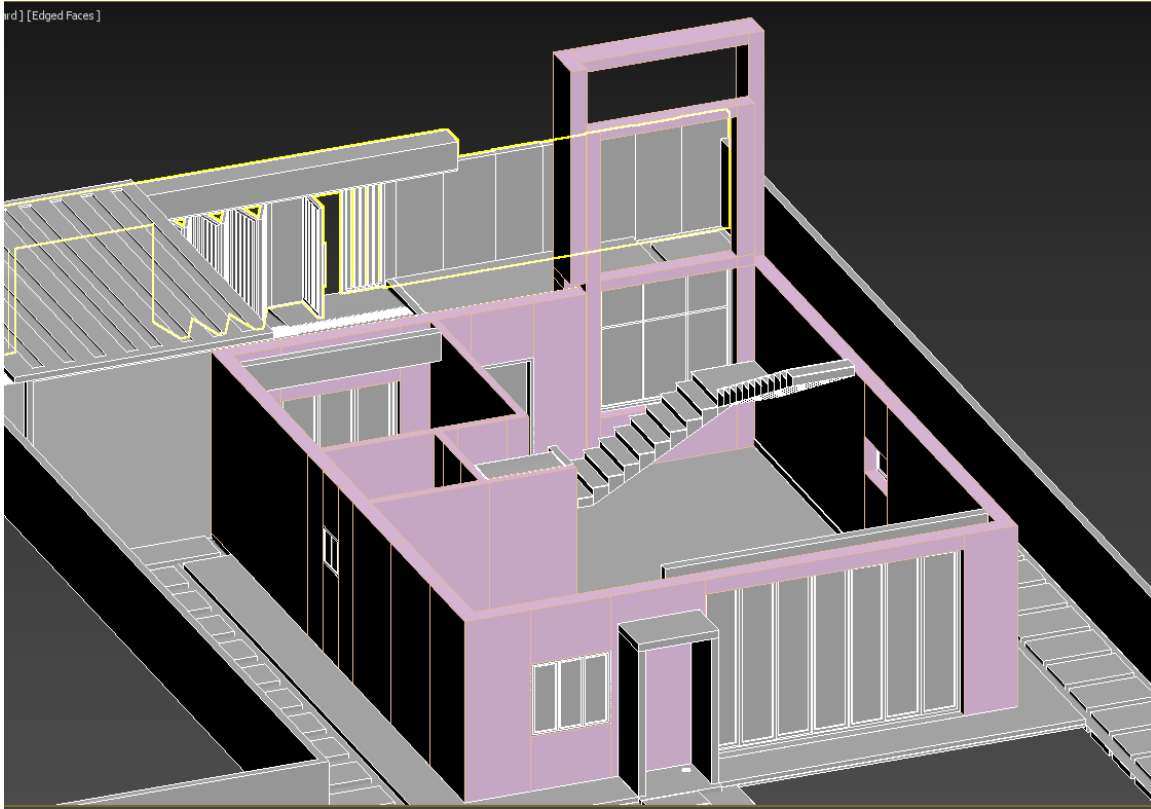


Fig 4.1.75: 3D Floor Modeling

This is the 3D model which is done by the Autodesk max. In these two pictures there are shown the 1st floor 3d design.

4.1.24: Balcony Modeling:

For the door and balcony and another part, I use several boxes to make the shape also resize it with the asked shape I want. In some place's glasses have been used for this I simply use plane material and also apply glass material from the material editor.

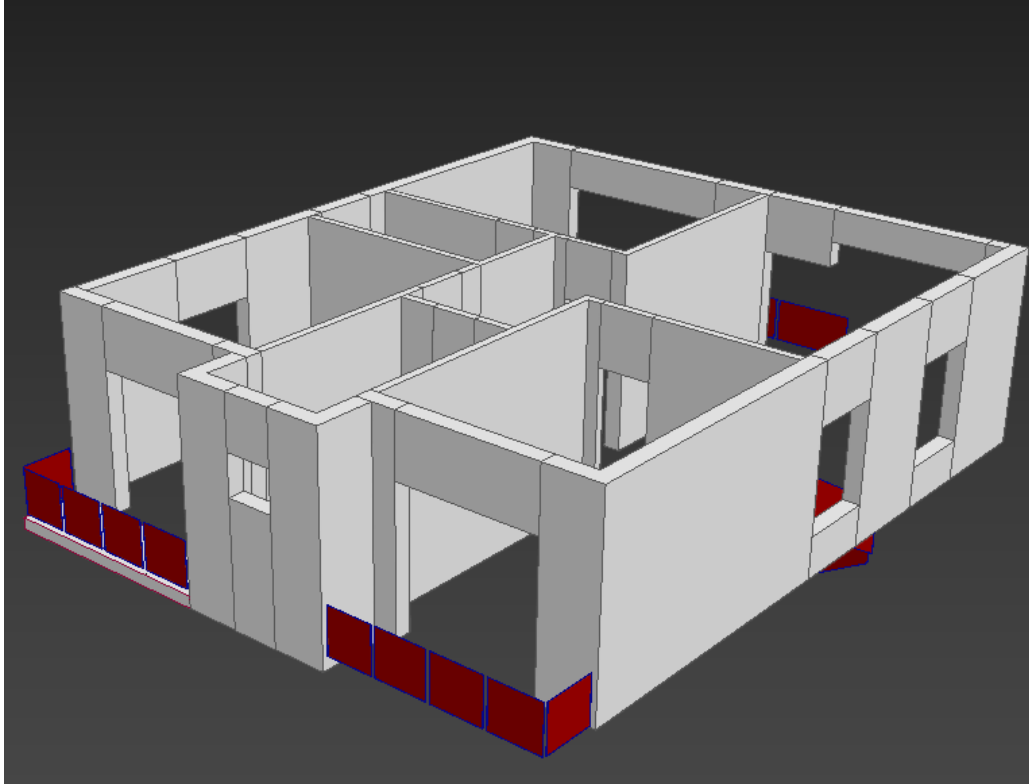


Fig 4.1.76: Floor Modeling with the Balcony

4.1.25: Entrance Gate Model:

I need to model and design a gate for the entrance of the House. To produce this model, I used the rectangle and box shape of the polygon editor. So, I had to model the gate in a particular way part by part as a separate group in order to amp the gate. In some corridor of the gate, I need to produce some pen-type sliced design for that first I used to box. shapes and also, I multiply the parameters of the segment, and also, I applied the chamfer modifier to it.



Fig 4.1.77: Entrance Gate Model



Fig 4.1.78: Front View of the Building

This is the final picture of this model from the front side. After creating the gate then we added the wall or the boundary to the whole building.

4.1.26: Pool Modeling:

It was a part of the design where it was necessary to make a pool for the scene with several specific models as per reference. To create the pool model, I used some box shapes and cylinder shapes. Also, I modeled in several portions like the water part modeled independently as a house by using box and also just editing the edge face and also by deleting the fountain face gives a total of deduction. Also, I modeled the side portion and corner using chamfer boxes. To produce the water visualization, I simply use a plane material.

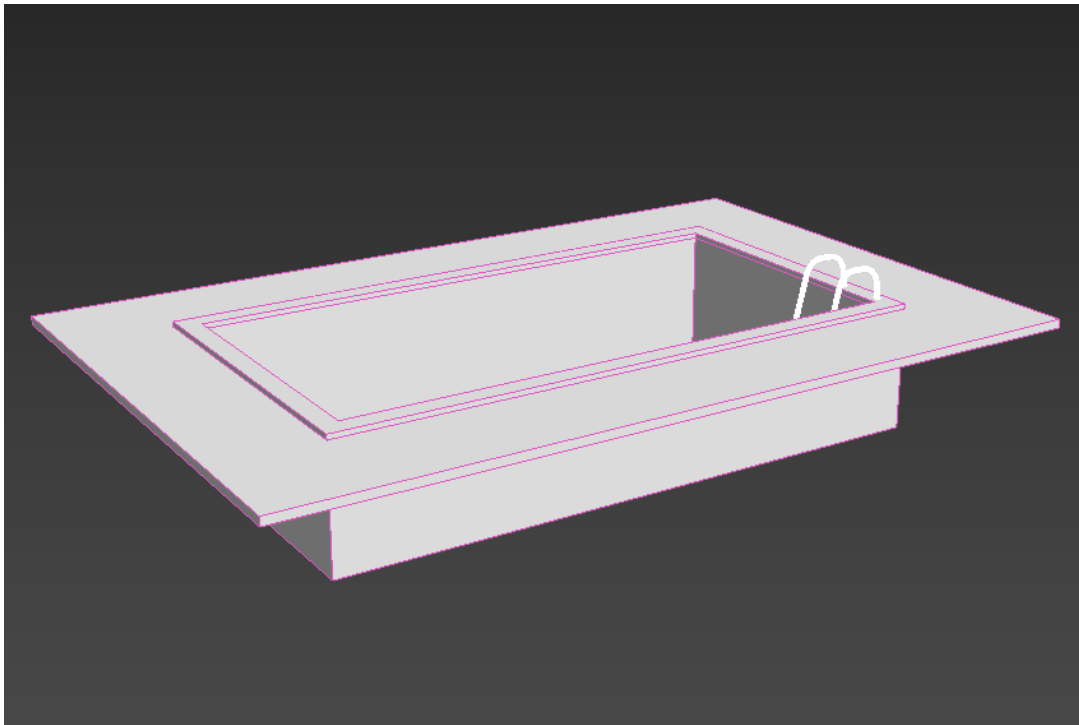


Fig 4.1.79: Pool View

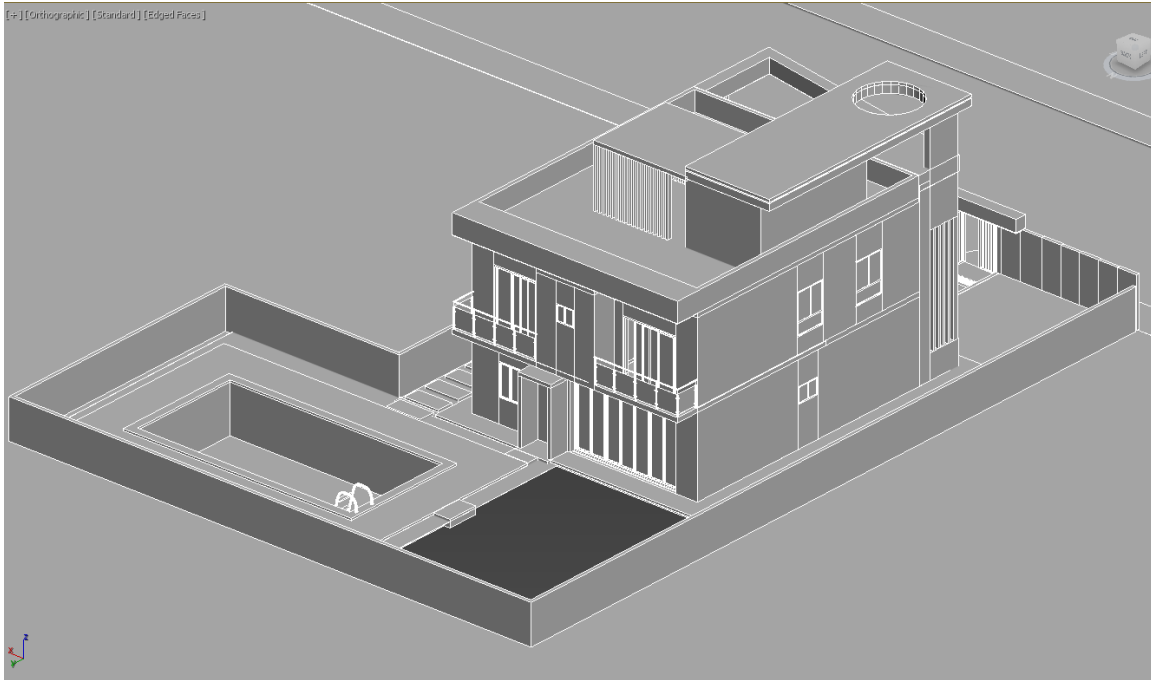


Fig 4.1.80: Swimming Pool 3D View Modeling

To create the stair model, I used a simple cylinder model. Also extend the parameter of the cylinder also start to model through Edge modeling. I used the Bend modifier to curve the shape of the stair. I modeled two of the same design curve shape and also make several cylinders connecting precious shapes.

4.1.27: Car Parking Modeling:

Take a rectangle and draw entire roof above the car parking place> convert to spline > adjust vertices > fillet middle vertices for round the sides > go to modifier> edit poly > then insert > deleted faces > edit poly > select the border and apply bridge to close the gap.

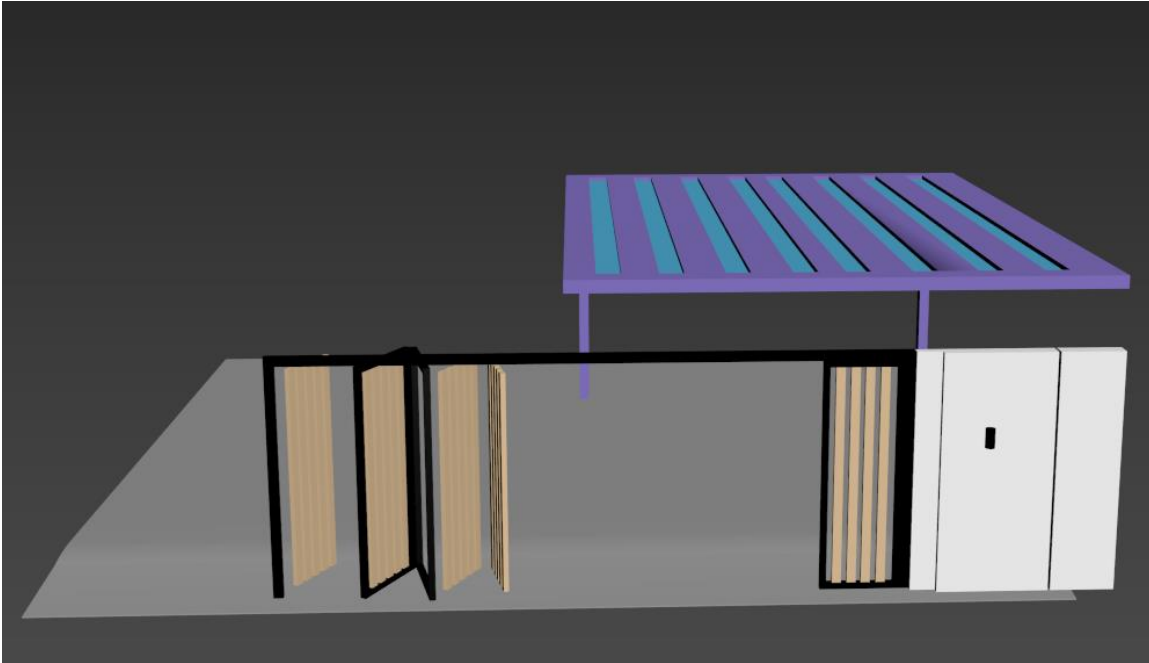


Fig 4.1.81: Car parking Space

For smoothness go to the modifier panel> apply chamfer modifier.

4.1.28: Window Modeling:

A window is some several corridors basically used in several models building. Have to model several windows. I made it simpler for several scenes. Most of them used plan material also applied glass material and, in some scenes, I modeled simple windows using box and rectangle and lattice modifier applied in other scenes. Tried to make an actually lightweight poly cube design model just to make the model lighter to help it from viewport an assembly crash.

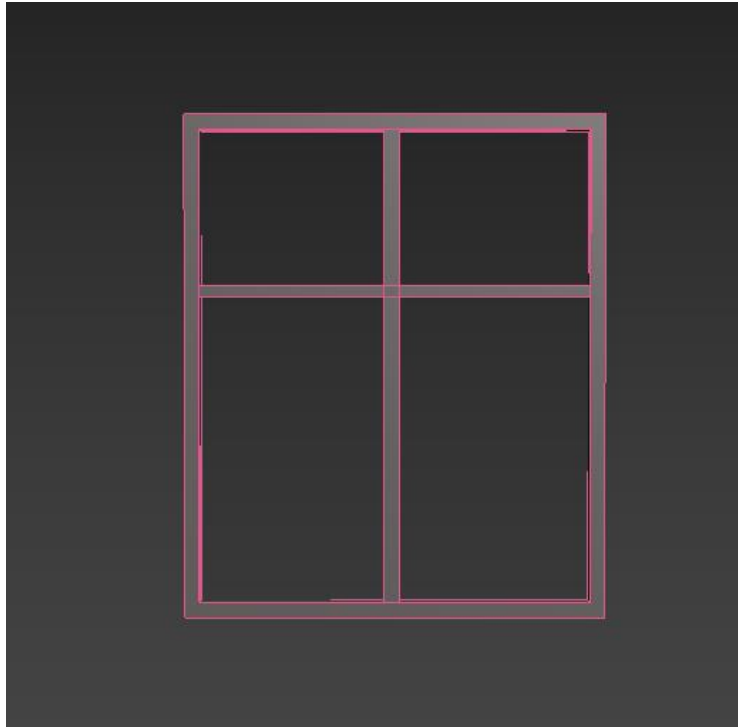


Fig 4.1.82: Window Modeling

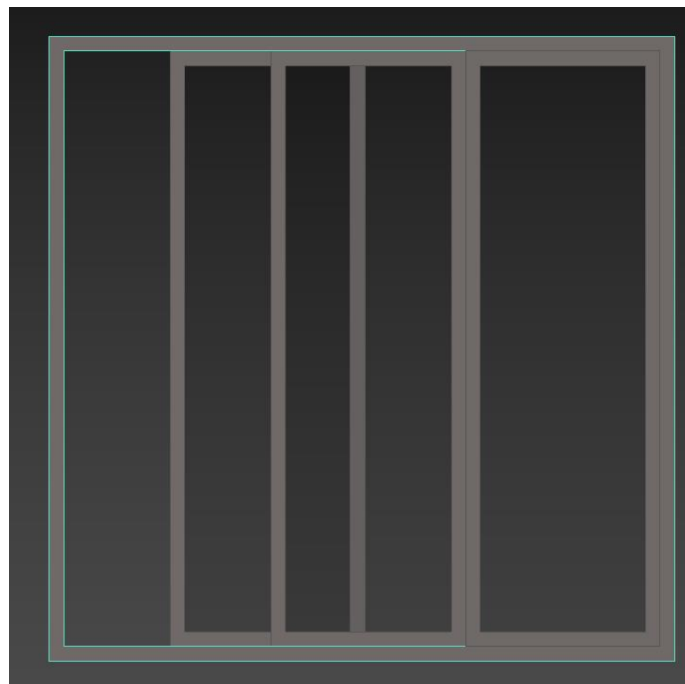


Fig 4.1.83: Window

These two pictures are containing two different types of window where I used chamfer to them for furnishing the edges side for smoothing them.

4.1.29: Interior Plan (Another):

This floor plan was created in the AutoCAD. We make the layout first that how we set all the rooms. When our client approves this then we will do the rest of the work.

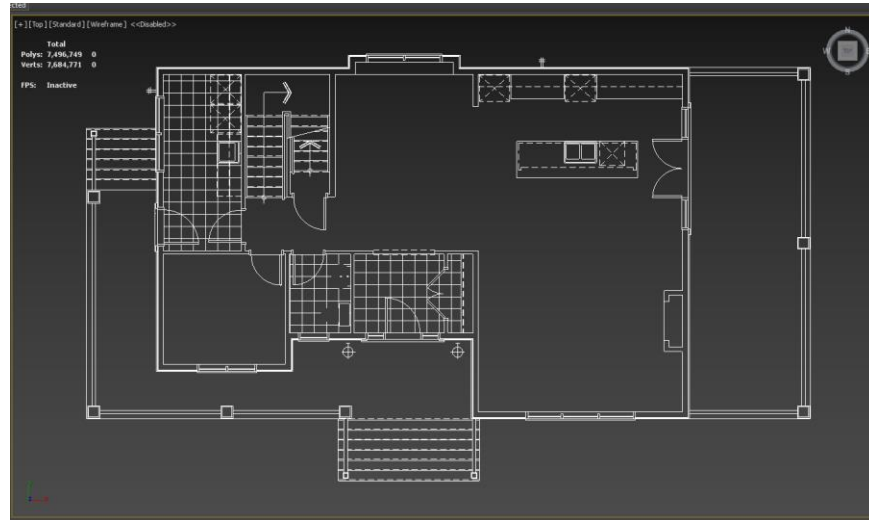


Fig 4.1.84: Floor Plan Layout



Fig 4.1.85: Floor Plan Layout

This figure 4.1.85 are the whole layout of this building which is a duplex building contains three floors one is the basement and the first floor and the second floor.

4.1.30: 3D View of Interior Plan (Another):

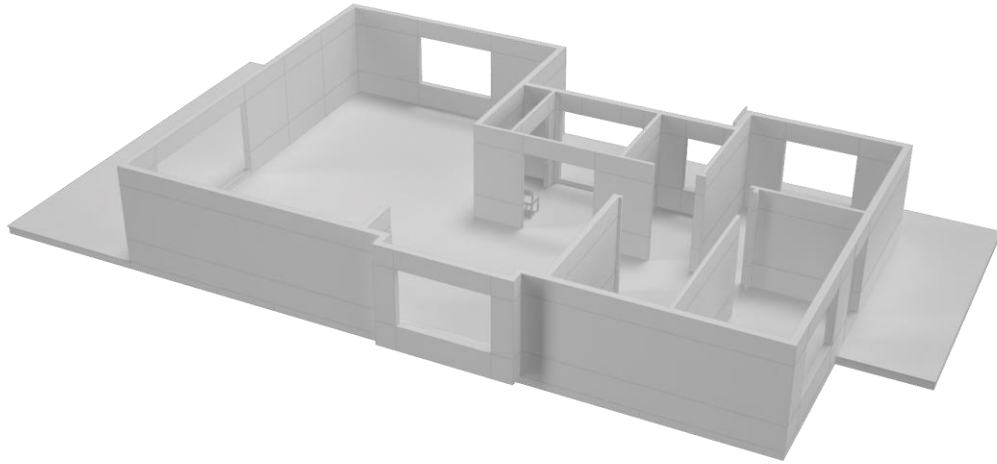


Fig 4.1.86: Floor Plan Layout

Basically, we designed the 2nd floor with the models. As we did intern to the institute so rest of the work done by the other group members.

4.1.31: Chair Modeling:

For the chair modeling we are using a plane > modifier panel edit poly > connect the edges> make the half portion first > apply shell modifier > go-to modifier applies FFD 4x4x4 and select the vertices and make a curve for the back part and then go to modifier > symmetry for the rest of the part. Lastly, apply the chamfer modifier for smoothness. Doing the sitting part take a box > got to modifier > edit poly> FFD 4x4x4 >chamfer the whole object. For the legs we are using cylinder scale the size> edit poly> delete face> extrude > scale the lower side. Make an outline for the chair for the outer edges.



Fig 4.1.87: Chair Modeling

For the legs take cylinder and > edit poly> scale the lower side little bit and make this round shape. And lastly apply the turbo smooth to the legs.

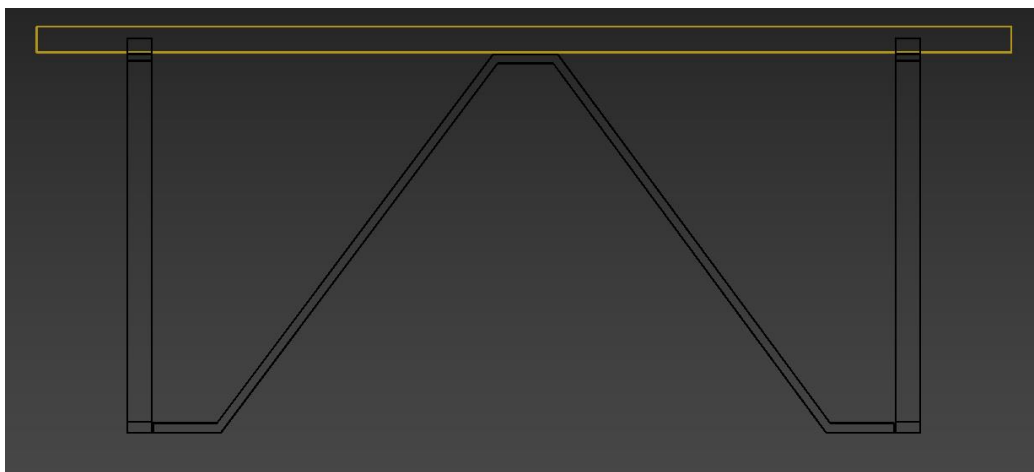


Fig 4.1.88: Dining Table Modeling

Take a box for the table part and apply the chamfer to it for smooth the edges. Then take other boxes for the table legs and also apply the chamfer to them.

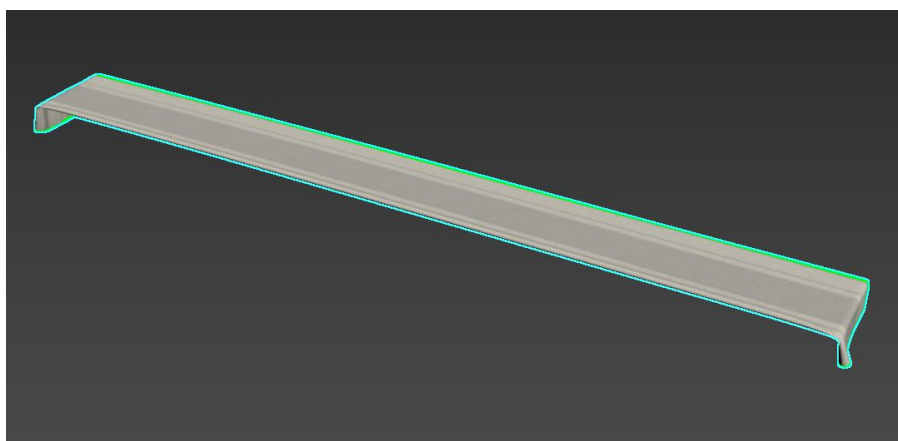


Fig 4.1.88: Dining Table Cloth Modeling

For the cloth modeling we use a plane >and apply cloth modifier > making a realistic cloth. Use edit poly> play with the vertices in smooth mode for the curves.



Fig 4.1.90: Dining Table Modeling

This is the full set up of the dining table. We added some extra models s decoration.

4.1.32: Sofa Modeling:

For the sofa modeling we are using a box. Take a chamfer box for the sit > modifier panel edit poly> go-to modifier applies FFD 4x4x4 and select the vertices and make them fluffy. Lastly, apply the chamfer modifier for smoothness.

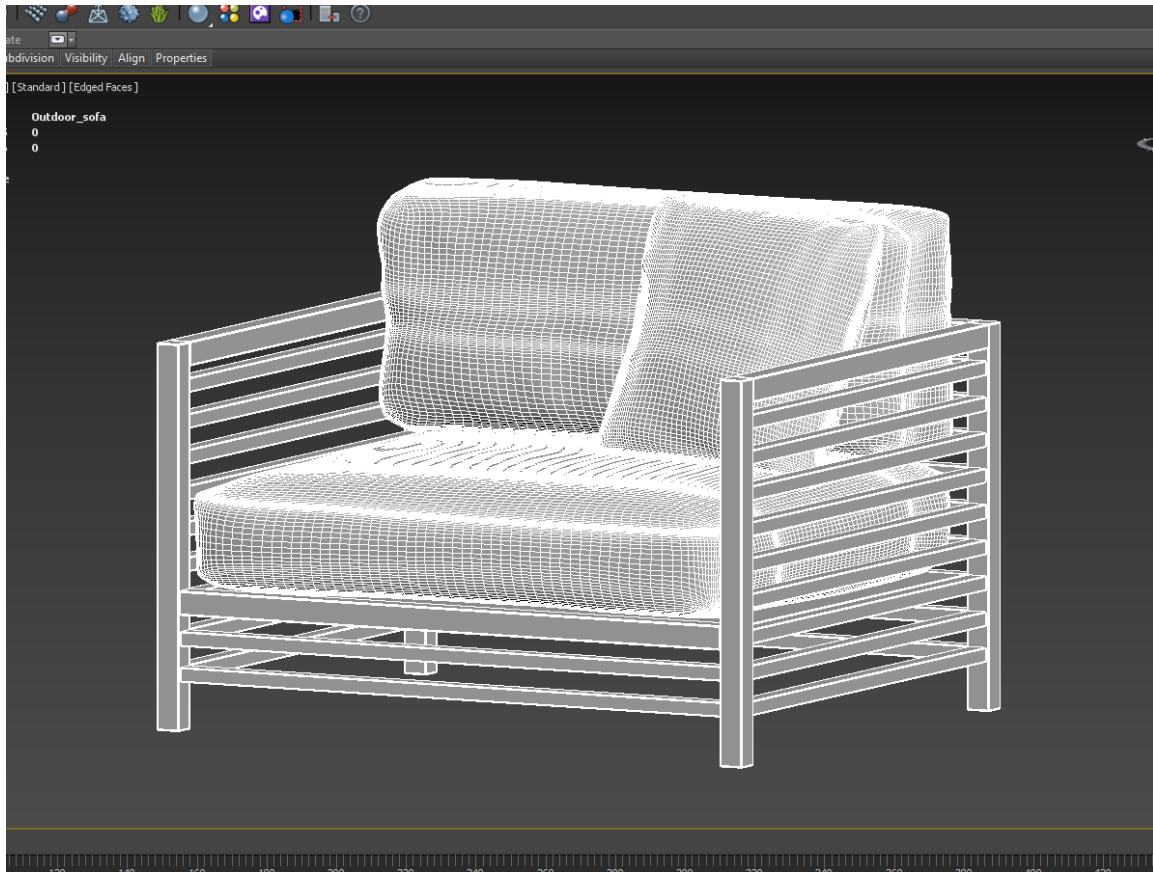


Fig 4.1.91: Sofa Modeling

4.1.33: Kitchen Cabinet Modeling:

Take a box> edit poly>add segment> chamfer each edge> take each face> insert>extrude. For the handle take a line> convert to the spline > corner vitrics> take two vertices and fillet these two sides.



Fig 4.1.92: Kitchen Cabinet Modeling

4.1.34: chandelier Modeling:

Take a line > make the outline first then> convert to spline> go to edit poly> design them as the references. Then take a cylinder > edit poly> delete faces> scale the lower side and increase the size. Take another cylinder for the middle portion and connect them with the cylinder which we make as a light shader and the line. Then take sphere and scale them to reduce the size and bridge them with the whole object. Lastly apply the turbo smooth where needed.

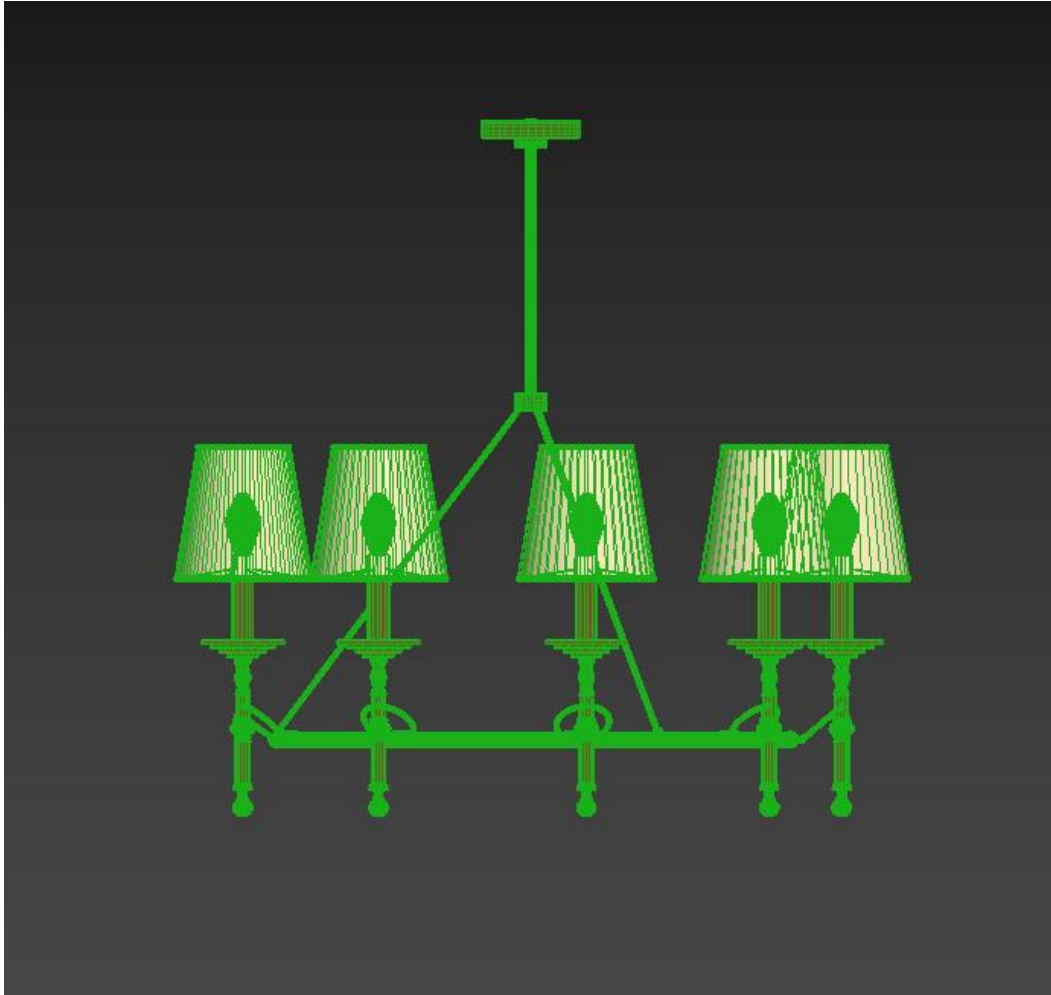


Fig 4.1.93: Chandelier Modeling

4.1.35: Fire Place Modeling:

Take a box > go to edit poly> select face> insert> extrude them down. Take a rectangle for the border and lastly apply the chamfer for smooth the sides. For the low poly modeling deleted the back-side faces.

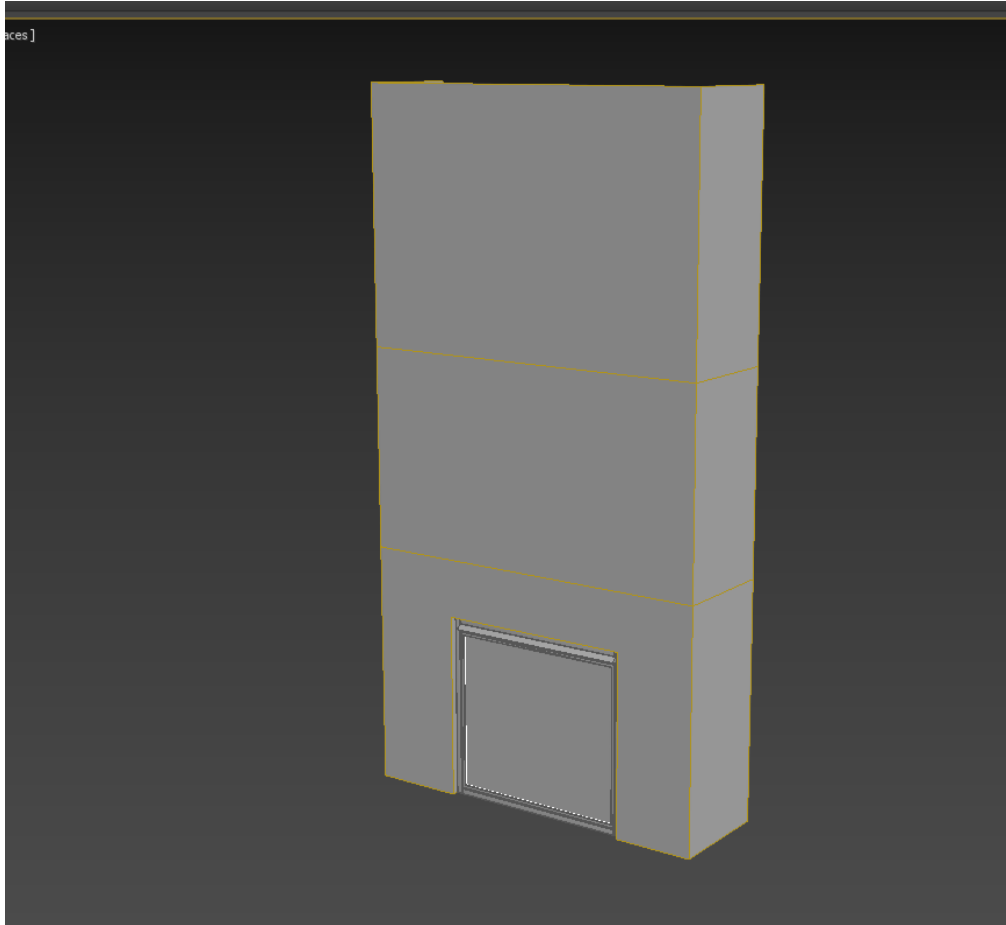


Fig 4.1.94: Fire Place Modeling

4.1.36: Curtains Modeling:

Take a plan> modify the edges > edit poly> take the edges apply loop> press W to move and hold shift and drag them up> shift press and move them again like a fold and after that take a cylinder in the middle of the loop and resize the object. Going to modifier panel> apply cloth modifier> add an object for supporting this and except the upper edges and apply the simulation. Scale them for colliding together.

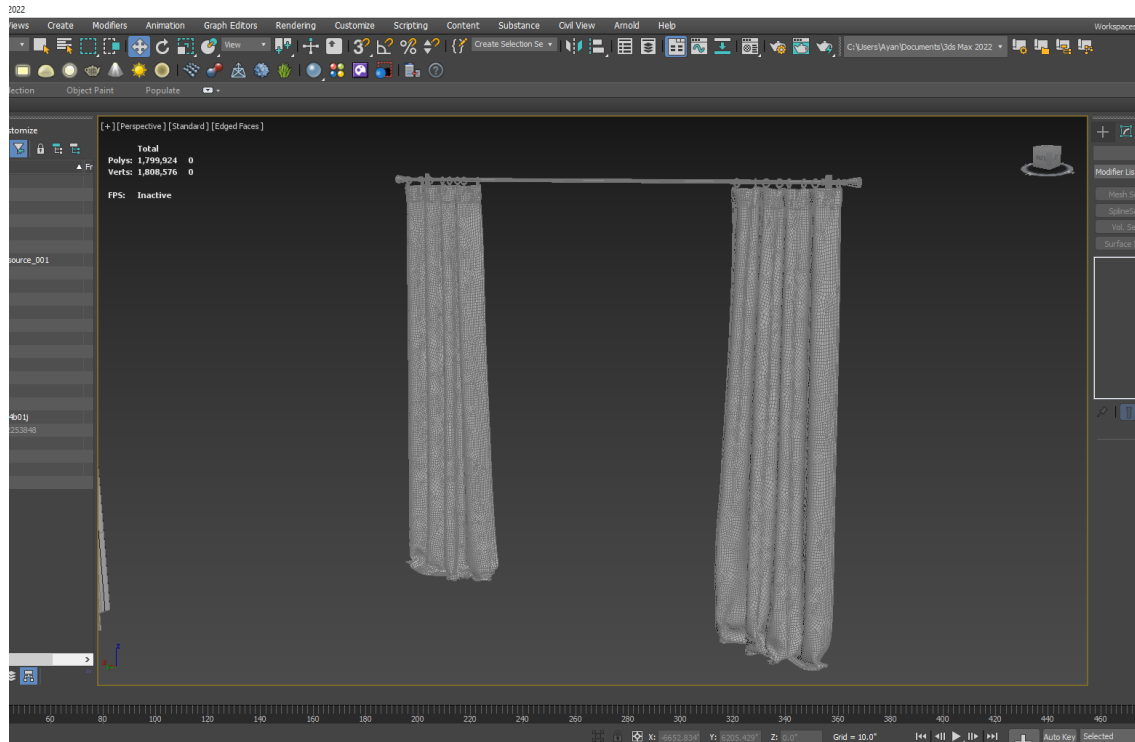


Fig 4.1.95: Curtains Modeling

Copy this and drag this to another side for second one.

4.1.37: Kitchen Hood Modeling:

For this kitchen hood we take a line first then go to the front view and draw the half portion then convert to the spline> corner the vertices> apply extrude modifier from the panel. Then copy this one and rotate it and connect with the other one. Then apply > edit poly> insert edges and grab the faces> extrude them down little bit. Lastly apply a chamfer modifier on it.

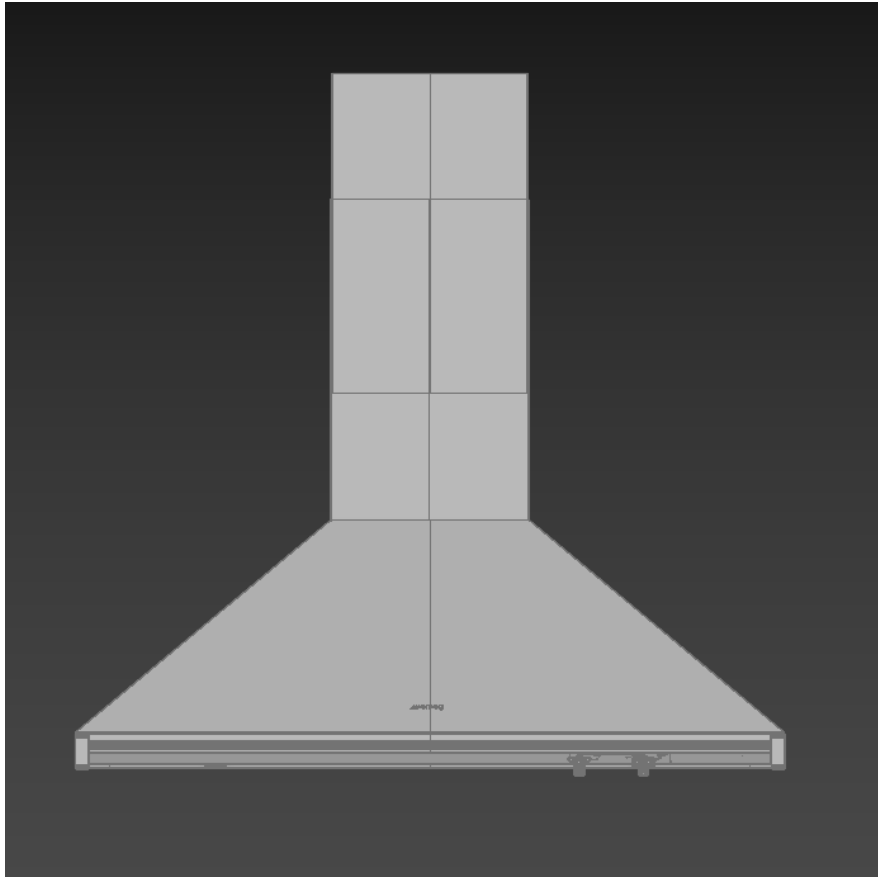


Fig 4.1.96: Kitchen Hood Modeling

This pic is containing the kitchen hood which was modeled in the Autodesk max by the line.

4.1.41: Kitchen Tool Modeling:

Take a rectangle for the legs> convert to spline> take the vertices> corner> edit poly> shell modifier. Copy this and make rest of the legs. Take another rectangle> edit poly> vertices> decrease size and stick in-between the legs.

For the upper part take a box and apply edit poly then apply bend modifier for a curve then apply the chamfer modifier.



Fig 4.1.97: Kitchen Tool Modeling

4.1.38: Rattan Bucket Modeling:

Take a cylinder> increase the edges by width and height> edit poly and chamfer the edges> make liner> on in the render view enable them> deleted the cylinder between. Apply taper modifier to this then make this basket.

For the handle take a line and draw and turn on the render view and the viewport and change the size as needed.

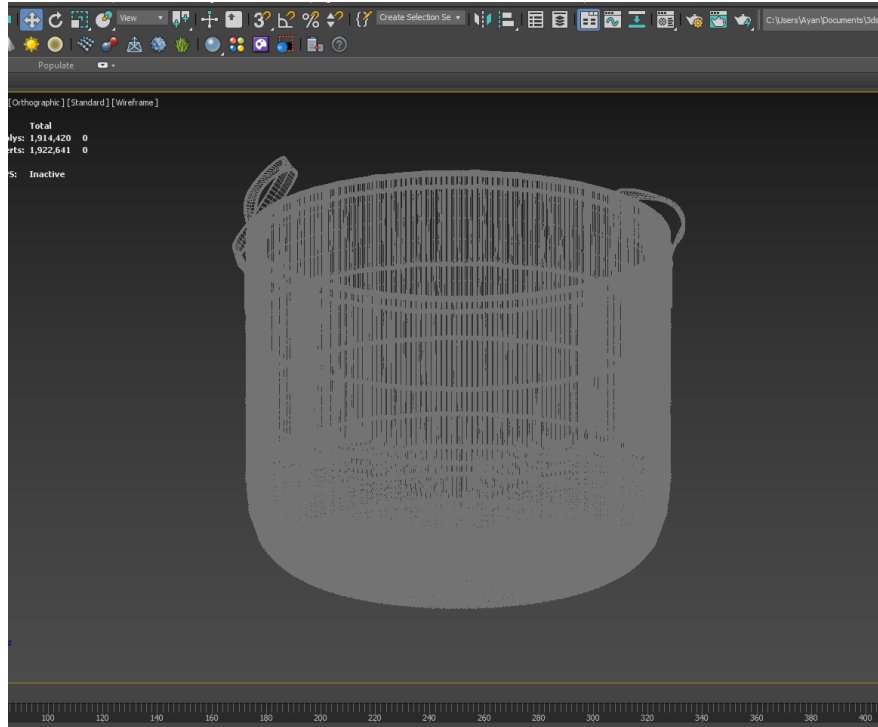


Fig 4.1.98: Rattan Bucket Modeling

4.1.39: Sofa Set Modeling:

Firstly, take a box as a reference then take another box and apply edit poly on it then take the vertices move them forward. Edit poly > select face > extrude. Take cube for the base stand> edit poly> scale> chamfered. Modifier> chamfer box for the sitting part. After doing this apply modifier> FFD 4x4x4 and select the vertices as needed. After all, modifier> chamfer all over the object.

For the shrug take a plan> edit poly> shell modifier> apply ffd 4x4x4 and change the vertices as per needed.

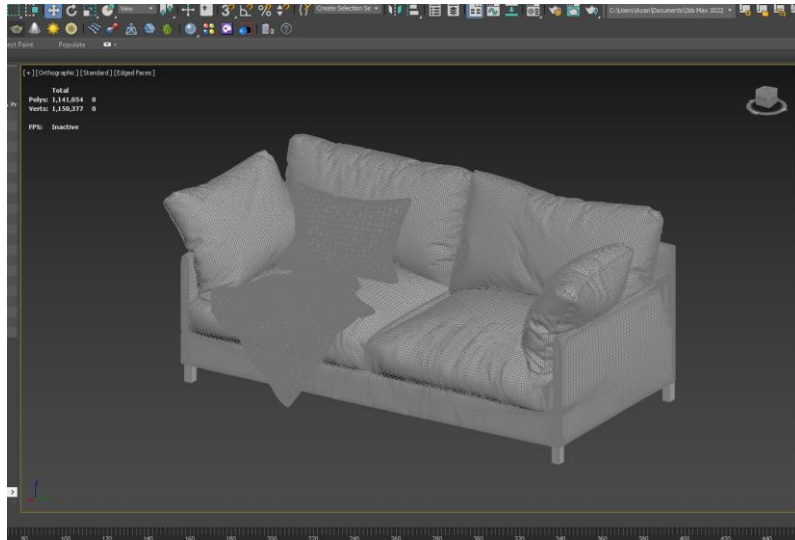


Fig 4.1.99: Side Sofa Modeling



Fig 4.1.100: Sofa Modeling

This figure 4.1.98-4.1.99 contains the sofa set. One is two seated and the other one is three seated.

4.1.40: Sitting Tool Modeling:

Take a box> edit poly> chamfer> for the upper part take a rectangle> convert to the spline> corner> extrude.

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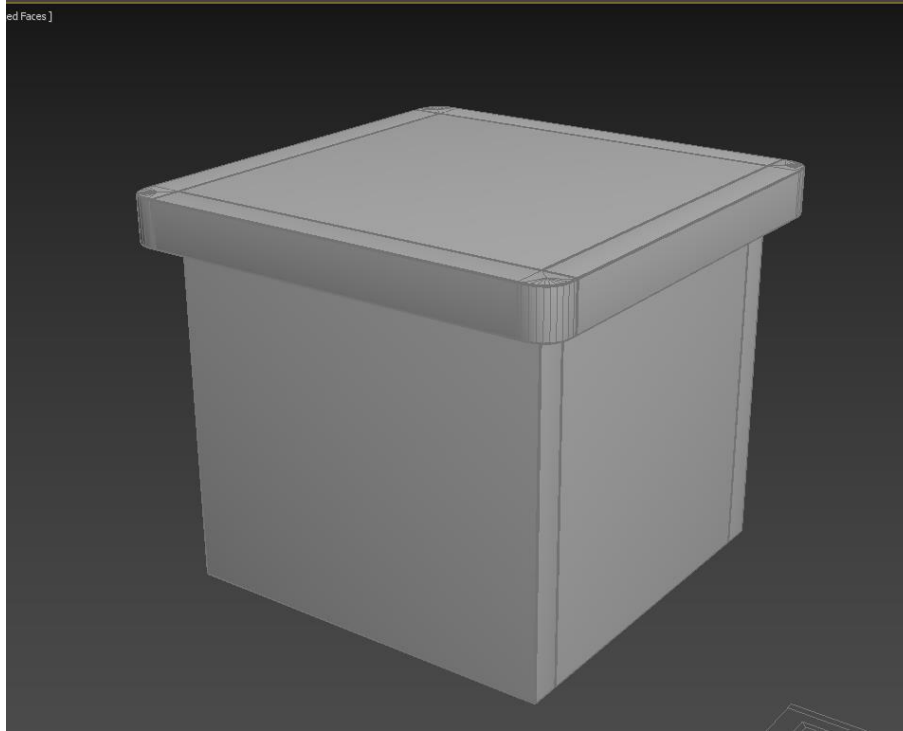


Fig 4.1.101: Tool Modeling

4.1.41: Sitting Tool Modeling (Another):

Take a box> edit poly> chamfer the side edges and middle edges > take them and apply shape which should be linear > apply ffd4x4x4 and take the middle vertices and make it look fluffier. Lastly apply the turbo smooth for the smoothness.

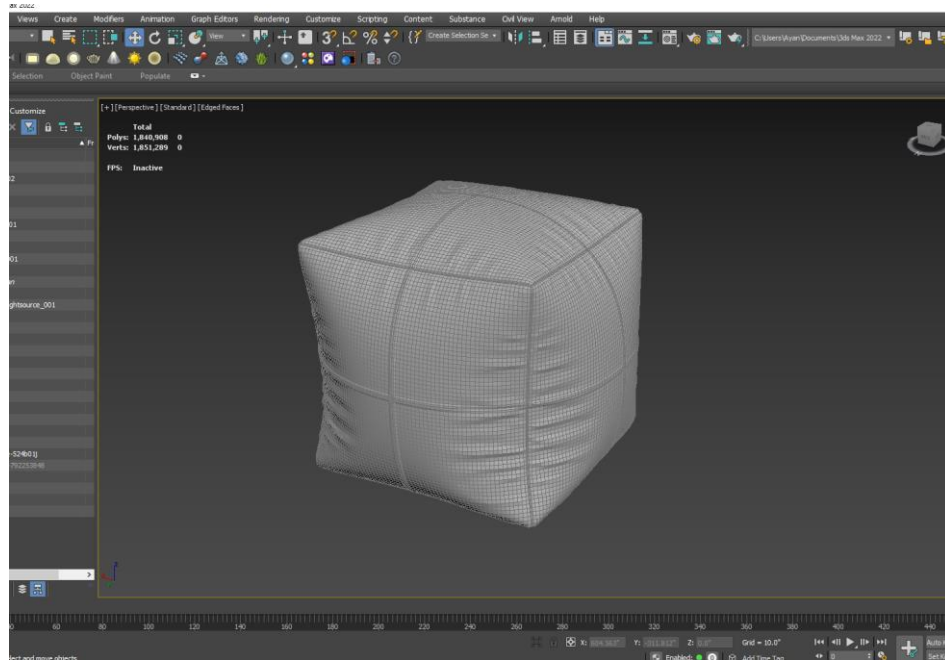


Fig 4.1.102: Tool Modeling Wireframe

4.1.42: Door Modeling:

Take a rectangle> extrude> edit poly> insert edges> take face and insert the faces> extrude faces> insert edges connect them together> chamfer the side edges> for the outer part create shapes from line> convert spline> corner vertices> make it outline and increase the value> which is called the door base.

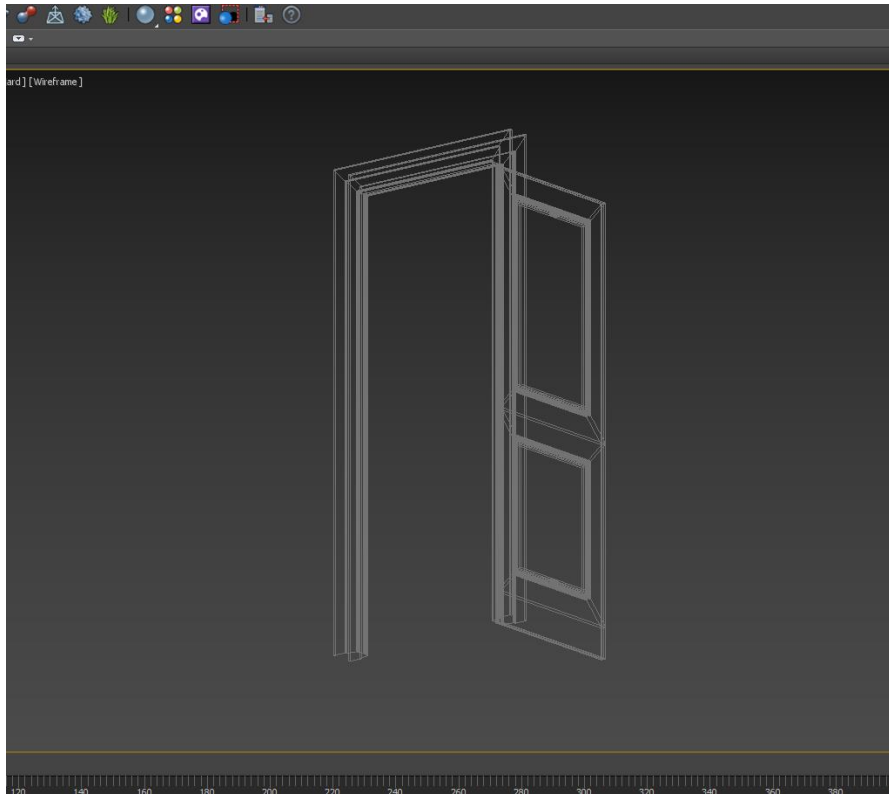


Fig 4.1.103: Door Modeling Wireframe

4.1.43: Washroom Modeling:

Take a sphere> edit poly> delete the half portion> shell> ffd4x4x4 > convert to edit poly> deleted the middle face> take e cylinder and insert edges> move the towards by pressing W. Take another cylinder for the little gap do the process again>chamfer the side edges. For the lower part take a cylinder apply the ffd modifier and make a shape half rounded and lastly apply the turbo smooth to the whole model.

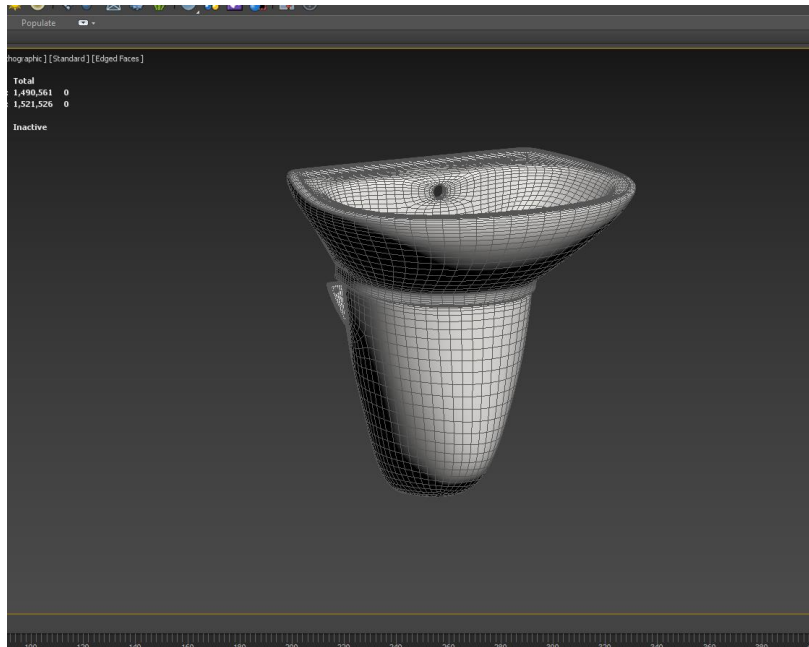


Fig 4.1.104: Basin Modeling Wireframe

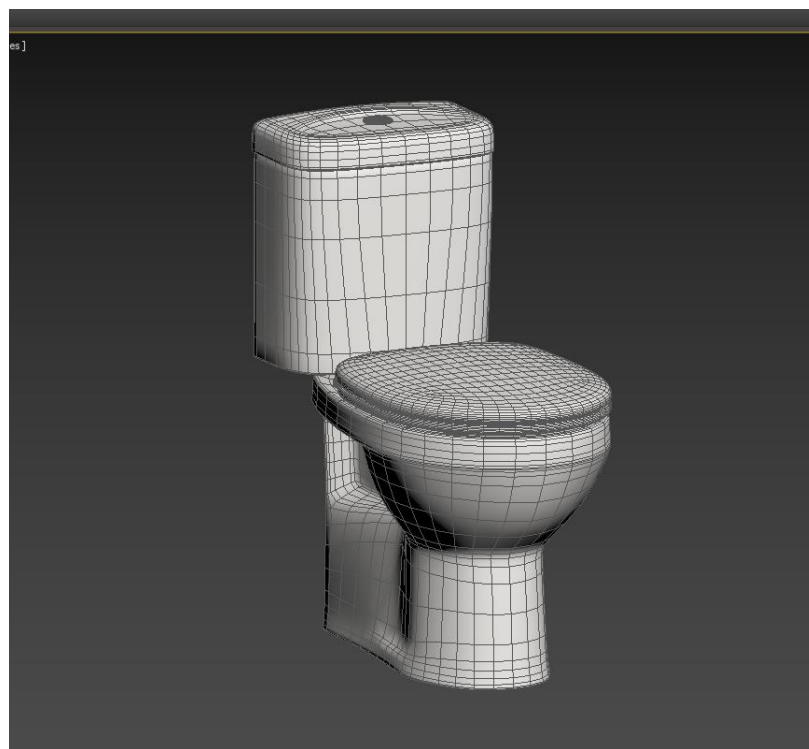


Fig 4.1.105: Commode Modeling Wireframe

For the commode part take a box> edit poly>make the shape as the product looks like> edit poly again then selected the upper face and delete all them> extrude faces> scale down> edit poly then take the faces over then apply detach> apply shell modifier> apply turbo smooth all over the object for smoothness.

4.1.44: Bed side Table Modeling:

For the table take a box for the base > edit poly> select one of the faces for extrude> apply chamfer on this. Secondly for the legs take another box apply edit poly> select vertices and make corner it then joins them with the table.

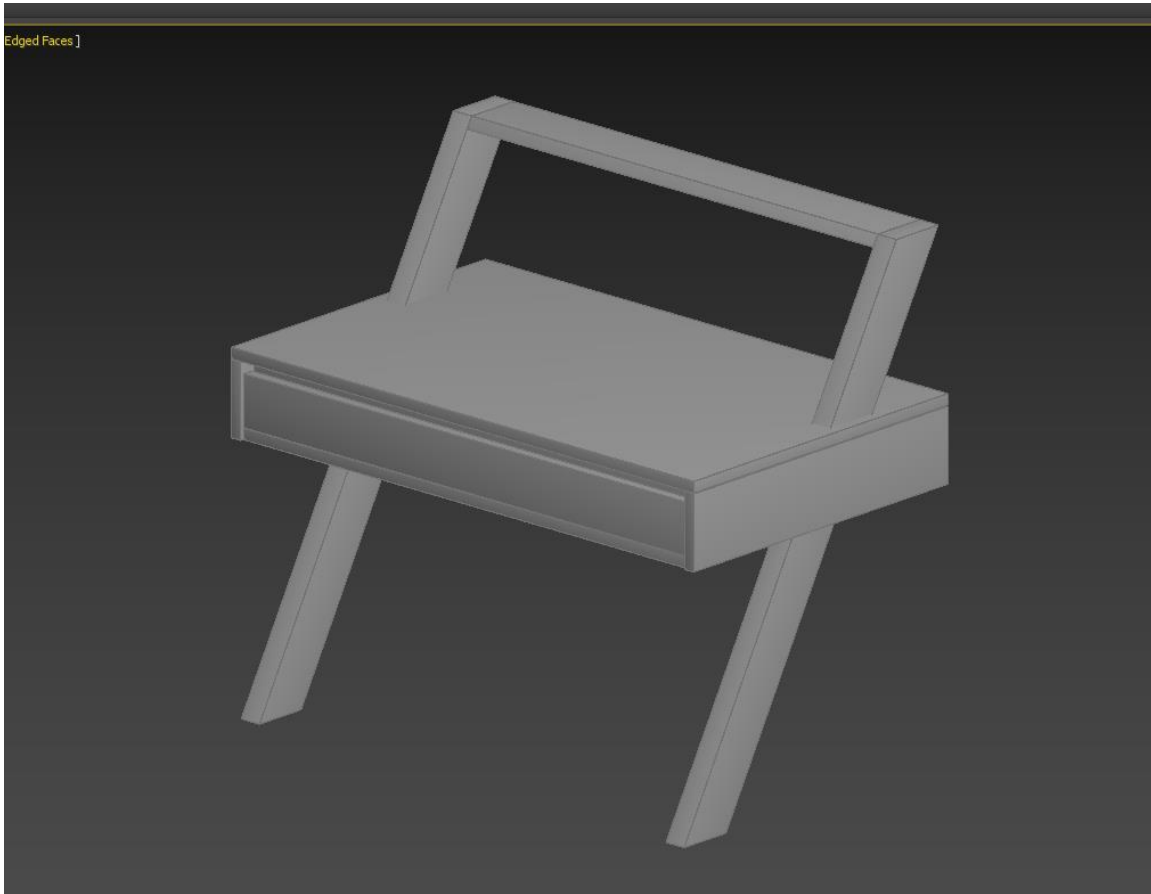


Fig 4.1.106: Bed Side Table Modeling

Lastly join them by bridge modifier and apply chamfer to all over the object for smoothness.

4.2: UV Unwrap:

Unwrap is one of the popular methods for doing UV of any 3d object. UV means representing a 3d object's face with a flat 2d face. It's used to texture 3d objects smoothly. This process of creating a UV map is called UV unwrapping. Then the U and V represent two axes of the 2d space. And in the 3d space, there are three (X, Y, Z) axes represent 3 different directions.

4.2.1: Chair:

For this object I am using UV Unwrap Map. This object contains lots of edges or faces so which is quite difficult to make it unwrapped. Firstly, take an edge which defines in the center then cut> unfold> again cut the side faces then apply unfold.

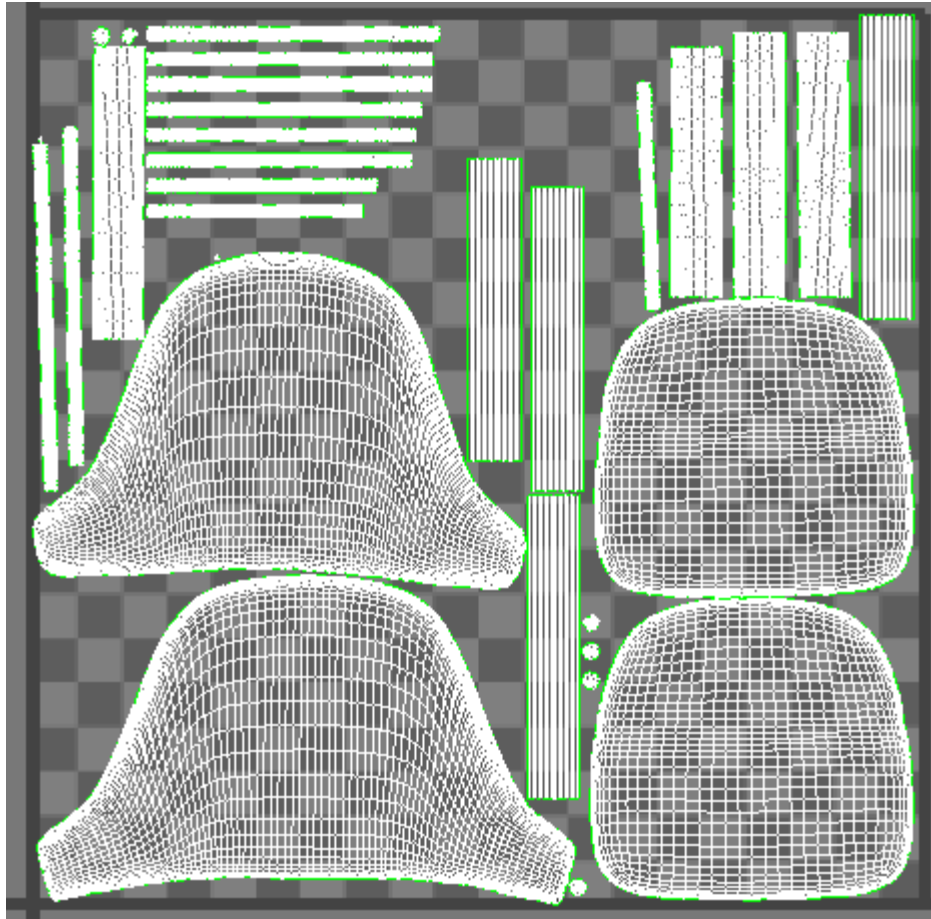


Fig 4.2.1: Bookshelf Unwrap

Basically, make those parts separated where the textures are not going to be same. Do this reputedly cut and unfold. Doing all this in Autodesk max.

4.3: Rendering:

Rendering or picture synthesis is the manner of producing a photorealistic or non-photorealistic picture from a 2D or 3-d version by laptop software. The ensuing picture is called the render. Multiple fashions may be described in a scene record containing gadgets in a strictly described language or statistics structure. The scene record incorporates geometry, viewpoint, texture, lighting, and shading records describing the digital scene. The statistics contained with inside the scene record are then exceeded to a

rendering software to be processed and output to a virtual picture or raster picture record. The term "rendering" is similar to the idea of an artist's effect on a scene.

4.3.1: Bed:

We render the product in Autodesk max by Vray plugin. For the bed texturing we are using pbr based material. At first collect a script for this and then to the Autodesk max panel> run script> load textures. After all the texture done then I did the render.



Fig 4.3.1: Bed Texture in Autodesk Max

For the rendering we test several times changing the lighting, material etc. then we take the main image. For the furniture rendering we used same light setup and same render setup.

4.3.2: Dining Table:

We render the item in Autodesk max by the Vray module. For the bed finishing, we are utilizing PBR-based material. From the get-go, gather content for this and afterward to
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the Autodesk max panel> run script> load surfaces. Later all the surface was done then I did the render.



Fig 4.3.2: Wear drop Texture in Autodesk Max

For the delivery, we test a few times changing the lighting, material, and so forth then we take the principal picture. For the furniture delivery, we utilized a similar light arrangement and same render arrangement.

4.3.3: Dressing Table:

For the dressing table render I am using the same method as before using for the others object.

Take the book and press Alt+Q for selected the upper part and hide rest of the parts of this dressing table and apply the texture from the load texture. Then clicking the mouse right side and unhide all and apply the other material on the object. For mirror part we make the material separately.



Fig 4.3.3: Wear drop Texture in Autodesk Max

As I can customize the material through the material slot so I am changing some roughness glossiness manually. Increasing the glossiness for the mirror. When everything set up then we did the render.

4.3.4: Headphone:

For the headphone render I am using the same method as before using for the others object.

Take the headphone and press Alt+Q for selected the upper part and hide the ear part of this headphone and apply the texture from the load texture. Then clicking the mouse right side and unhide all and apply the other material separately.

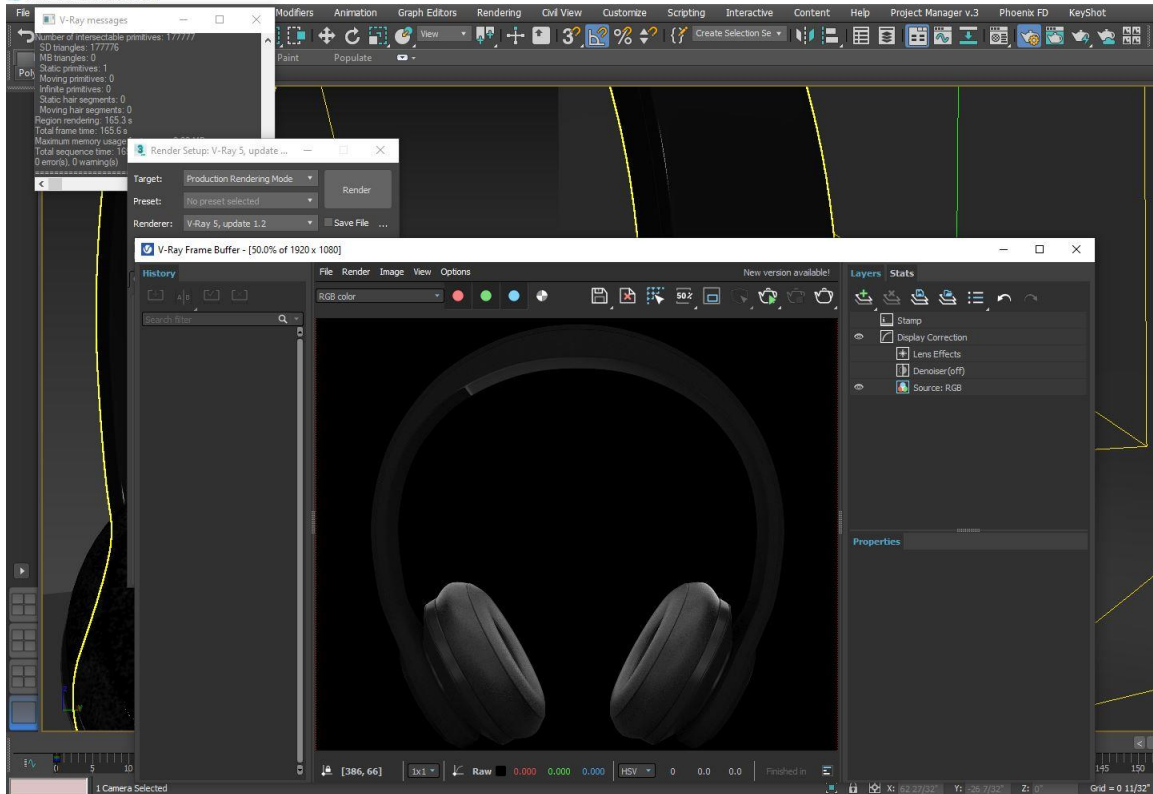


Fig 4.3.4: Headphone Render View in Autodesk Max

For the delivery, we test a few times changing the lighting, material, and so forth then we take the final picture.



Fig 4.3.5: Headphone Render view Autodesk Max

4.3.5: Office Desk:

For the office table render I am using the same method as before using for the others object. As I can customize the material though the material slot so I am changing some roughness glossiness manually. When everything set up then apply the render.



Fig 4.3.6: Office Desk Render view Autodesk Max

4.3.6: Tv Shelf:

As I can customize the material through the material slot so I am changing some roughness glossiness manually. When everything is set up then apply the render. For the render we are using vray 5 in Autodesk Max.



Fig 4.3.7: Tv Shelf Render view Autodesk Max

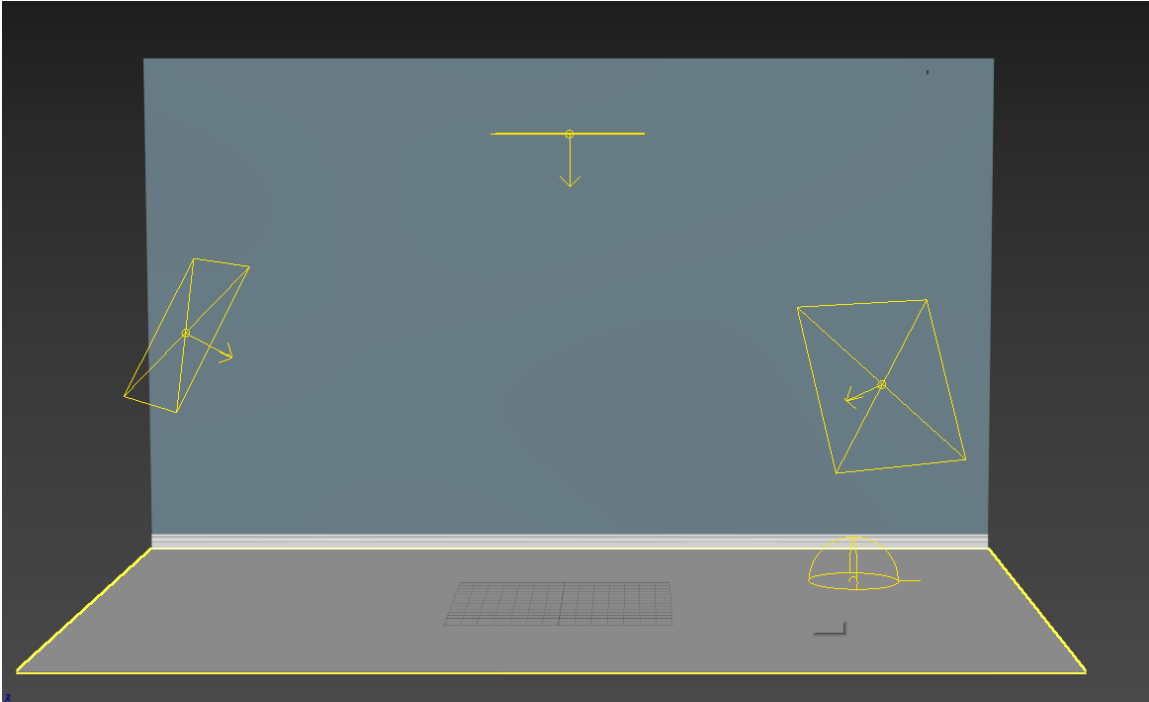


Fig 4.3.8: Light setup for the product modeling

This figure contains the lighting how we set up the lights for render all the product in max using vray for the quality full rendering.

4.3.7: Apartment Render with Lumion:

This is the Lumion interface. After completing all the work in max then export the work in Lumion for fast rendering as we have a time shortage. For this Lumion, we give all the object standard material first which is useful for Lumion so we can differentiate the parts in the Lumion easily.

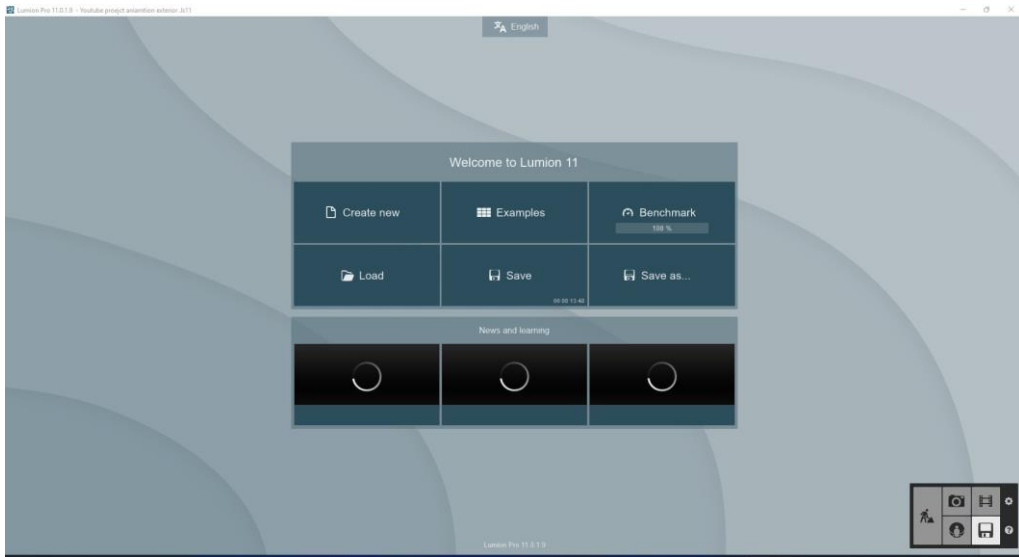


Fig 4.3.9: Import Scene to the Lumion



Fig 4.3.10: Front View in Lumion



Fig 4.3.11: Adding Decorating Tool to the Scene

Those figures contain Lumion lighting environment setting etc. We take some props from Lumion like trees, cars etc.



Fig 4.3.12: Lumion Light Setup Front View

This image shows the light which we take from the Lumion library. We take lots of light and test the environment and the interior for the best output.



Fig 4.3.13: Interior View Render

4.3.8: Post Production Work:

As referenced over that from the 3d stage and from the rendering motor we got just 2d pictures of the handled picture. To complete the result, I post-delivered the delivered yield in a few programming's. Fundamentally, for this venture yield, we really want to make the last video result of the situation and that has been utilized for an additional show like applications and others. For making the last result, I had utilized 2 software's.

Those are:

1. Adobe After Effects CC
2. Adobe Media Encoder

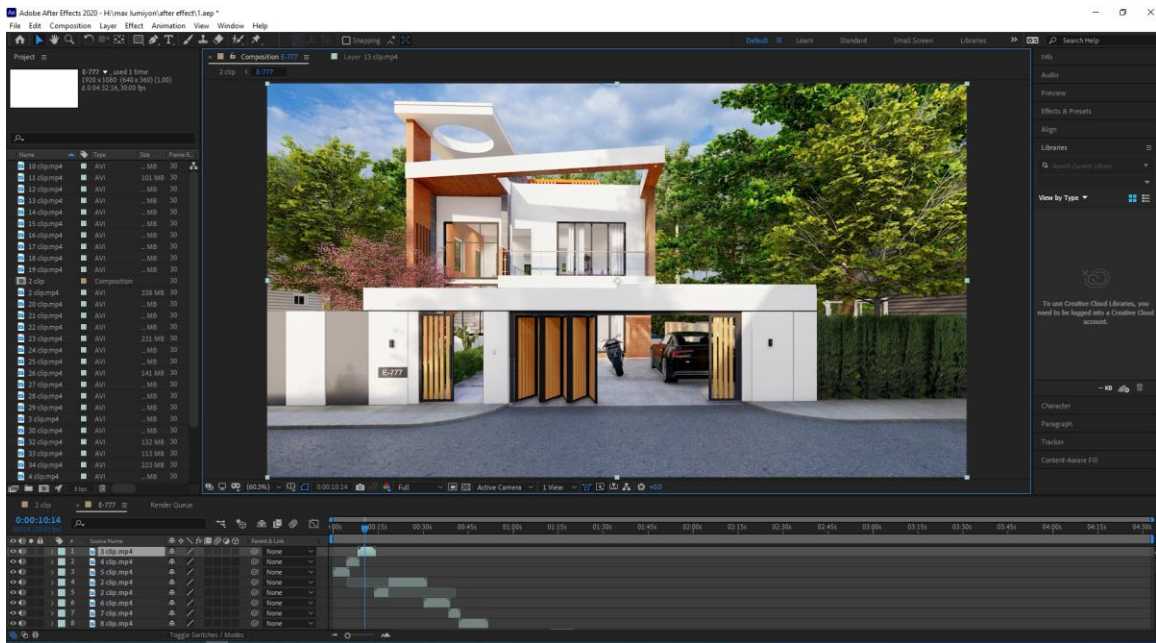


Fig 4.3.14: Post-production View Working Process

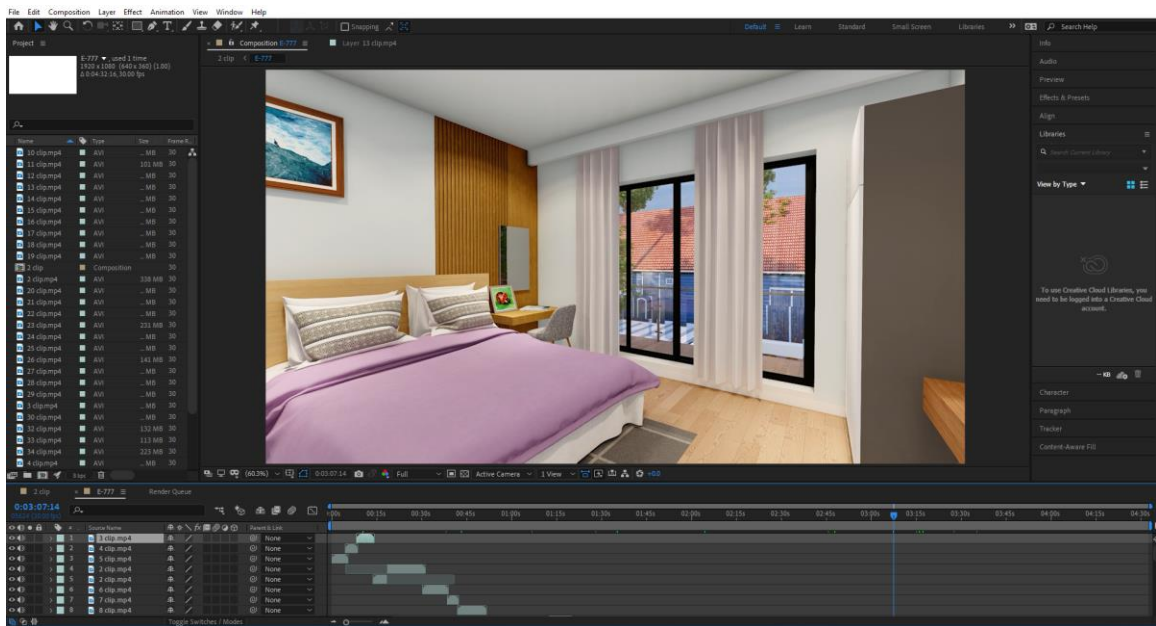


Fig 4.3.15: Layer Management

Figure 4.3.13-14 contains the post production work in after effect after then we render the output in adobe media encoder for make the file size small.

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CHAPTER 5

Limitations and Challenges

5.1 Limitations:

Every mistake is an opportunity to learn something new. Materializing an idea isn't as easy as planning. Giving form to my idea wasn't much easy. There I had to face several problems, confusion and error in my design. Some problems happen due to my mistake and ignorance in the workflow. Though every problem killed my time and

energy I come suitable to break and avoid them coming time. In this chapter challenges, I had faced and the results will be discussed. A lot of impalpable limitations were faced while working on this design. These limitations affected the affair of our design in one way or another. Some of these are discussed below. The most impalpable limitation was the lack of experience. There were some gests in all the way in this process but the proper channel was no way followed. Also, the compass of skill perpetration was also limited. When it came to such a big design with a proper channel was to be followed, we fell suddenly on the experience which affected time operation and chancing results to problems faced.

A 3D vitality is a form of art that combines a lot of other forms of art. For initiating a design like this a lot of effects from the cultural angle need to be considered. Similar to the color palette

of the film, the aesthetics of the models, camera angle, camera movement, a sense of composition, etc.

5.2 Challenges:

As this is a group project it was important that all the members work together with close propinquity so that whenever any member faces a problem they can reach out to other members.

This makes problem- solving much easier and carrying blessing faster. As of now, we've a big issue that's the Corona virus time so we did our work in the home as a home office. Living in different homes at first there were no fixed spots where we could work together.

All the software used for 3D vitality and picture requires high configuration computers. In this case the higher the configuration the better the quality. But for our average quality computers, we faced a lot of challenges to work with. Personally, me who has no graphics card so I cannot run the render work. Lots of times my PC got crash for the poly count. The software kept crashing or getting wedged. Occasionally they came slow and couldn't read the commands and execute them properly. These kinds of problems wasted a lot of time which would not have been an issue if there were better quality computers available. Computers with advanced configurations can drop render time exponentially.

Render time is a big factor when it comes to producing any computer graphics. Keeping computer limitations in mind sufficient time places demanded to be allocated for the picture member. In order to produce the asked labors, a many new software and commands from known software were demanded to be learned in a veritably short time. As the knowledge of this software was limited so problem- solving came a big issue.

When I was imported some object with mirror effect that doesn't show in Lumion. Light set and the camera movement are different from the other 3D softer like Autodesk max and Autodesk maya etc.

Also, they have a shortage of time so we need to minimize the quality of some work and give the output in the given time schedules. For the large work, we need a lot of patience and time management because the animation needs a lot of time to render a frame. Per frame needs 2-3 minutes some are more than needed which is very annoying for us.

CHAPTER 6

CONCLUSION

This task has given us the possibility to take a look at a few new software program programs, greater widely the software program programs we already know. Challenge Workflow, modeling techniques, and UV unwrapping texturing are defined with inside the Challenge document. In this challenge, we found a brand-new method with UV.

As a financial factor, this picture helps to get the buyer`s interest via way of means of displaying the right characteristics of the product with inside the shortest possible time. An organization or producer can convey it to the marketplace with a much shorter length of spin-off visualization at a mile decrease cost. 3D visualization work offers producers sufficient room to innovate and gift to consumers in the space. Instead of searching out engagement via banner commercials and movies on mobile devices, from the marketing and marketing era, the organization has used 3D commercials to permit producers to have interacted with and interact with their audience. It may be tough to create good general product animations that draw colors, brainstorm, and draw the visitor's interest to the whole ad.

The is the most important general and precis shape up to now for developing consumers with miles better go back on investment. The concept of 3D product modeling for commercials is virtually modern in our country, however, developing superb 3D commercials isn't a smooth task. With 3D commercials, consumers can experience locating products more than still images. Our intention is to offer an entire 3D visualization of hard surface modeling such as product modeling, furniture modeling, and different architectural artwork on tough floors. As the client requires, we did our work with a high quality within a short time. As they are satisfied, we are glad to work with them and also with the Aava 3D Institute.

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