

# FINAL YEAR PROJECT REPORT

## “Branding and 3D Visualization of Real Estate Company”

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

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**DAFFODIL INTERNATIONAL UNIVERSITY**  
**DHAKA, BANGLADESH**

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## APPROVAL

This Project titled “**Branding and Visualization of real Estate Company**”, submitted by Koushik Kallol Biswas 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 7 February 2021.

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## DECLARATION

We hereby declare that, this project has been done by me under the supervision **Arif Ahmed, Adjunct Associate Professor & Head, Department of Multimedia and Creative Technology**, 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.

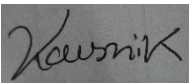
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I would like to express my heartiest gratitude **Dr. Shaikh Muhammad Allayear, Associate Professor and Head**, Department of MCT for his kind help to finish my project and also to other faculty member and the staff of Multimedia and Creative Technology department of Daffodil International University.

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

## ABSTRACT

Real estate development is a land and construction business activity which provides value-adding services through the development of residential, commercial, institutional, industrial and integrated projects and associated infrastructure. People are getting interested in real estate sector for their living. As Bangladesh has faced extreme housing shortages as one of the world's most heavily populated countries, as a result people are moving to real estate, housing etc. real estate developments main perspective is ensuring maximum place for living within shortest land. Branding and visualization of real estate is very essential because people are keen to know about the service and facilities which has been offered to them by the companies. The way people thinking is changing day by day. In this era of modern technology there are lot of mediums to express features and facilities. Among them 3D visualization is in the peak position. Here in this project our target is to ensure entire branding about the facilities and features by any company to the consumers. In this project we created the 3D visualization of multiple interiors, exteriors accordance with proper planning and design. We also provide very user-friendly app that can used by the consumer people or company for their multiple views of queries.

It is our goal to give any consumer about the entire 3d visualization with realistic views and features. For this entire visual of planned or proposed project has been modeled in 3d according to the planning through storyboarding and realistic animation of 3d visualization

As outcome is that people can experience any property by the visualization and also can know about the detail's procedures through our app. The final output of this project is multiple visualization of real estate property along with the features and branding details. We hope this project will redefine a new way of visualization to the real estate sector in this country.

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# CHAPTER 1

## Introduction

### 1.1 Backstory:

Basically, the method of animating/moving objects in a 3-dimensional digital space is called 3D Animation. Using the art of motion, these 3D models or objects can be moved and rotated like actual objects. Right now, this is the height of animation. 3d animation spreading its position on the higher peak because of its visualization power. People can get the realistic feel and experience in 3d animation so they are getting more interest in this segment.

Our project is basically branding and visualization of Real Estate Company. Real estate Company basically contains the properties, residential space, flats, residential apartments etc. In this project 3d visualization contains a great impact because most of the properties are planned or proposed as a result local consumers or user can't see the properties physically. Here 3d visualization can give the realistic feel to them.

Our project is basically to ensure the entire branding about the all features and service provides by a company. Keep that as goal we worked in several steps like 2d visualization and 3d visualization of multiple properties. Here in this project, we designed several properties through realistic planning design and then make it as realistic as possible through 3d visualization.

Before developing this project, we research about the real estate sector in Bangladesh. And their supports and other logistics support provided by them. We try to find out the lacking's and consumer supports for that we followed some renowned company app like 'Bproperty', "Bdhousing", "Turil" etc.

Our project outcome will be as entire branding and visualization of Real Estate Company as per several 3d visualization of multiple properties and also an app through that consumers or company can verify about every details of their concern

## **1.2 Motivation:**

Nowadays Scenario of real estate sector changed rapidly in Bangladesh. As Bangladesh is one of the most densely populated country in the world. Population growing in heavily rate but the living land is very limited accordance with their demand so that people are interested in real estate development. Developer companies are building multistoried buildings with maximum capacities of living spaces.

In this era of modern technology people are referring technology most. Keep in mind we develop a platform where people can visit properties and features and services provided by several companies.

It is our main motivation to provide all the facilities in a single platform. People has different tastes and demand. It varies from one people to another, so we try to provide multiple visualization with several features of properties

## **1.3 Objectives:**

Several objectives of this project are defined below.

1. Entire branding of real estate company
2. 2d designing of features and provided services
3. Proper planning design of property with accordance of measurements
4. Create 3D visualization for multiple properties
5. Interior 3D modeling with realistic furnishing and decorations
6. Creating multiple models of properties and finishing with realistic texturing
7. Creating multiple exterior environments for showing properties
8. Proposed construction projects demo visualization
9. Creating exterior environment with realistic views
10. Texturing several models with realistic UV mapping
11. Lighting environment with realistic existence
12. Animation of basic realistic movements for viewers better experience
13. Rendering multiple properties such as interiors and exteriors with maximum view
14. Developing a user-friendly app to provide the details and query about property
15. Color grading of the visualization with logistic viewpoints
16. Give clear briefings about current situation of real estate sector to the consumers

All over this project contains basically entire brandings and service facilities of real estate sector or company. Every classes of people can experience this without any hesitations. People of several interest of buying or selling both can visit or experience this project outcome for their desires

#### **1.4 Literature review:**

Bangladesh's real estate sector has been running for four decades, a time during which it has fluctuated significantly. The sector plays a major role in the national economy today, contributing up to 7.08% of national GDP in the 2013-14 fiscal year (BBS, 2014). In addition, through linkage industries such as MS bar, cement, brick, sand, ceramic tile, pa, the sector has also contributed to the national economy.

The real estate industry is the growth center for any economy's progress. Bangladesh has been facing great housing shortages as one of the world's most heavily populated nations. With the huge of the population in the middle and low-income classes, it is impossible here to guarantee accommodation for everyone. A significant percentage of the national was met by private sector housing developers.

There are several well-known companies are situated here in Bangladesh such as “Bashundhara group of companies”, “Jamuna Housing”, “Bproperty”Ltds.” Etc.

They are providing huge facilities and services to the consumers. For developing this project, we also ensure visiting's of several architecture farms and companies to find out the lacking's and what should make this sector more preferable to the consumers.

By studying all those existed developers' website and app we tried to make the visualization more effectively to the consumers by several property visualization through 3d and 2d visualization.

## CHAPTER 2

### Storyboarding & Element Modeling

In this chapter some primary parts of the 3D animation Pipeline is going to be discussed in detailed.

#### 2.1 Story boarding:

Basically, A storyboard is the script's visual representation. It's a document that depicts the animation or video's narrative flow, scene by scene. Storyboards are most frequently produced from hand-drawn drawings and notes scribbled in the margins.

Storyboard works like a map.

Storyboarding is a vital aspect of making an animated video because nothing shows better than a storyboard whether a design works or not.

Storyboard makes the work smoother and easier as per the thinking of planning visually drowned primarily in storyboard.

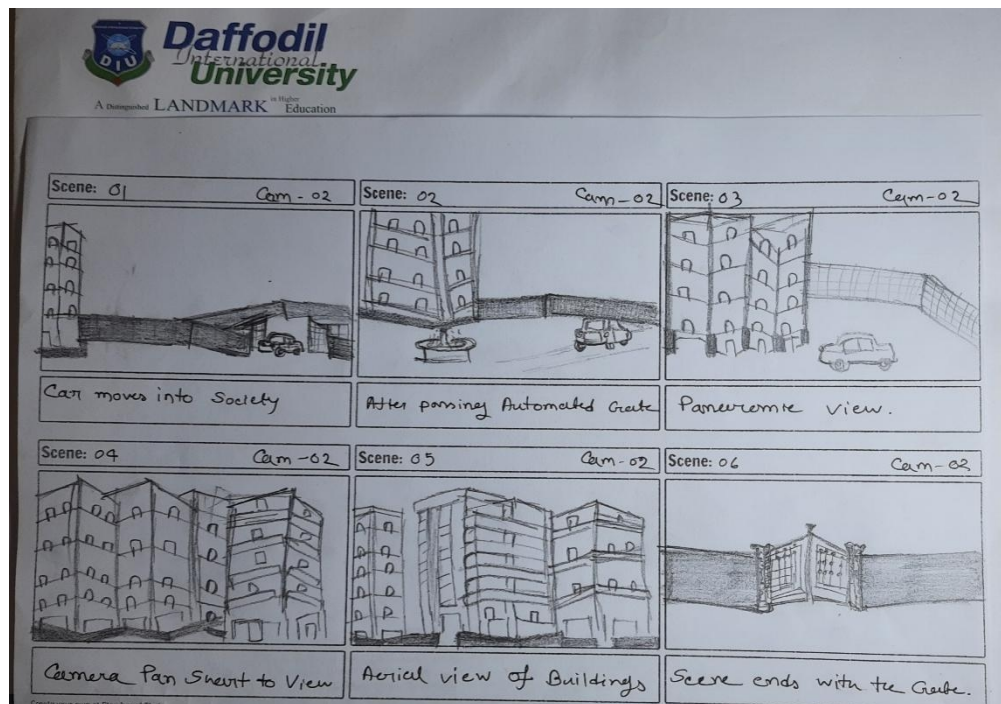


Figure 2.1.1 Story board page 1

In the mentioned above picture it has been shown how one scenes camera should roll on frame to frame with movement. Some notes have been given to define some clear idea about the shot. How the figure car entered into the society gate entrance has been shown by some rough drawing.

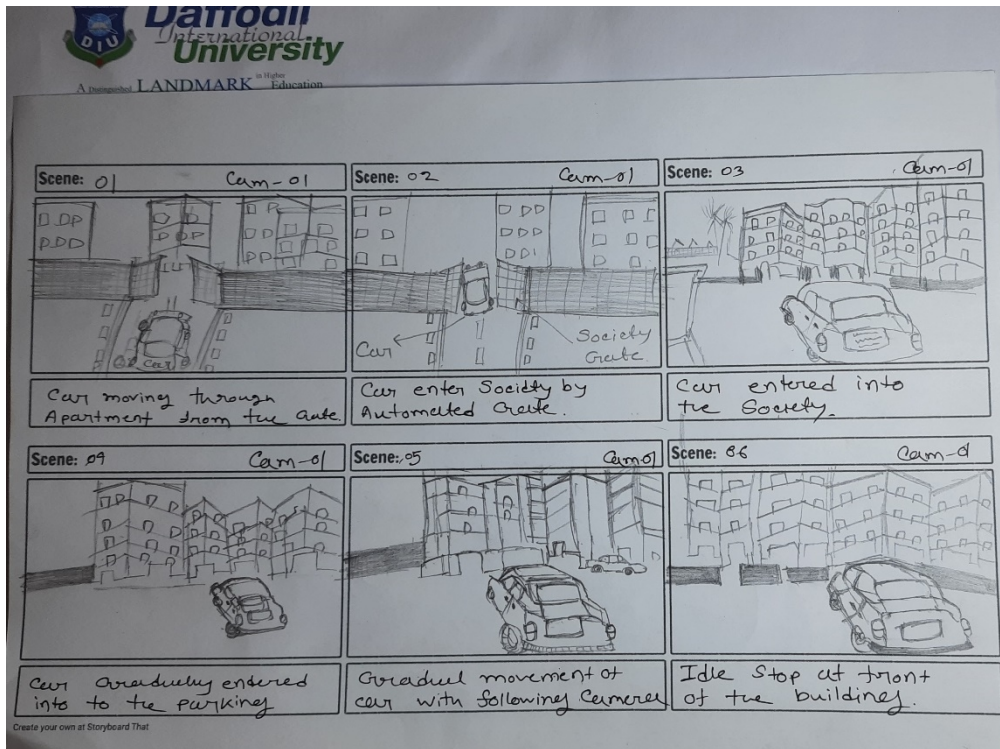


Figure 2.1.2 Story board page 2

In the above given picture is about another shot description with some short notes. The automated gate of the apartment society set with the movement of the car and a scenic vision of follow through camera will roll on with the constraints path of the car. It will follow until it reaches to the society basement ground.



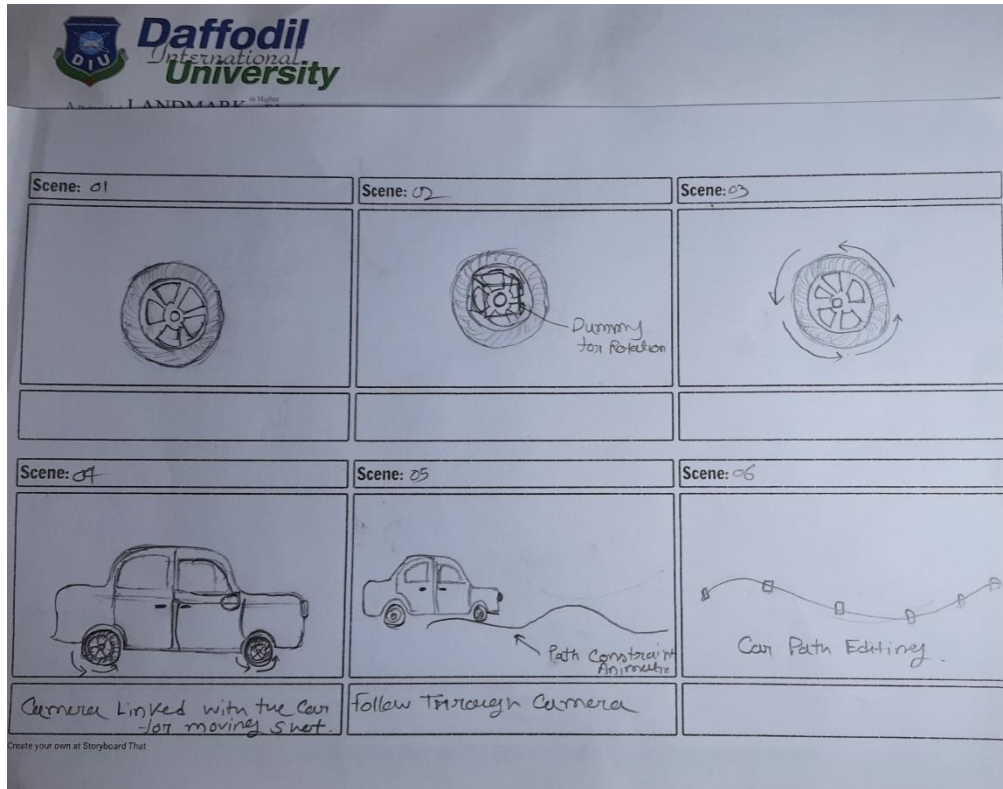


Figure 2.1.3 Story board page 3

This is the minimal drawing of rotation animation for the car wheel. This shot is basically done in order to create the flow spinning motion of the wheel rotation. With some minimal drawing and rough sketches is helps a lot to create the automation process in software

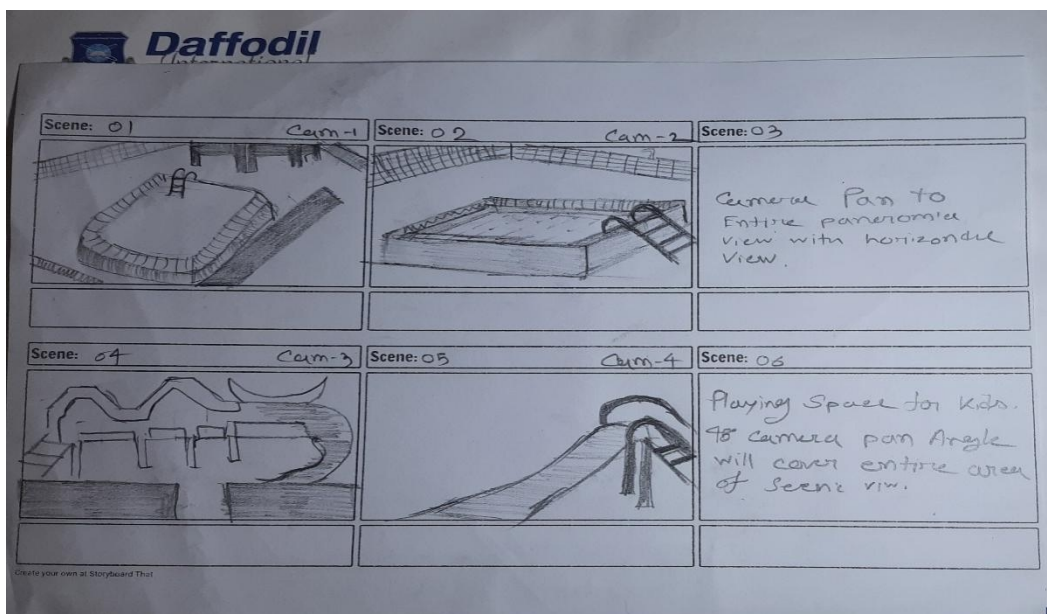


Figure 2.1.4 Storyboard page 4

Here in this project, we are working on some real estate projects, here in this picture some elements of modeling for a real estate housing society are situated and shown on the story board with multiple angles of views. Several cameras will roll on through mid-angle shots to show the entire process of camera animation.

This storyboards basically used to create films or documentary. Though it's a 3D visualization project it is necessary to set up some targets and mind mapping for role the process of animation

## 2.2 Modeling:

3D modeling is the method of producing, by manipulating polygons, edges, and vertices in virtual 3D space, a 3D representation of any surface or object. In movies, animations, and video games packed with fantastical and inventive creatures and structures, you can see the effects of 3D modeling. Here in this project We select Autodesk Max 2017 as our modeling software. In this Standard primitive, such as boxes, spheres and cylinders, are used and adjusted to construct different models in this modeling process. Tools such as extrude, bridge, combine, and deformers such as bend, lattice, etc. are used for adjustment. It is strictly followed that all the polygons should be in quads when designing all the props and characters. The All over view of all the models I generated is given below with several significances.

### 2.2.1 Planning and Layout:

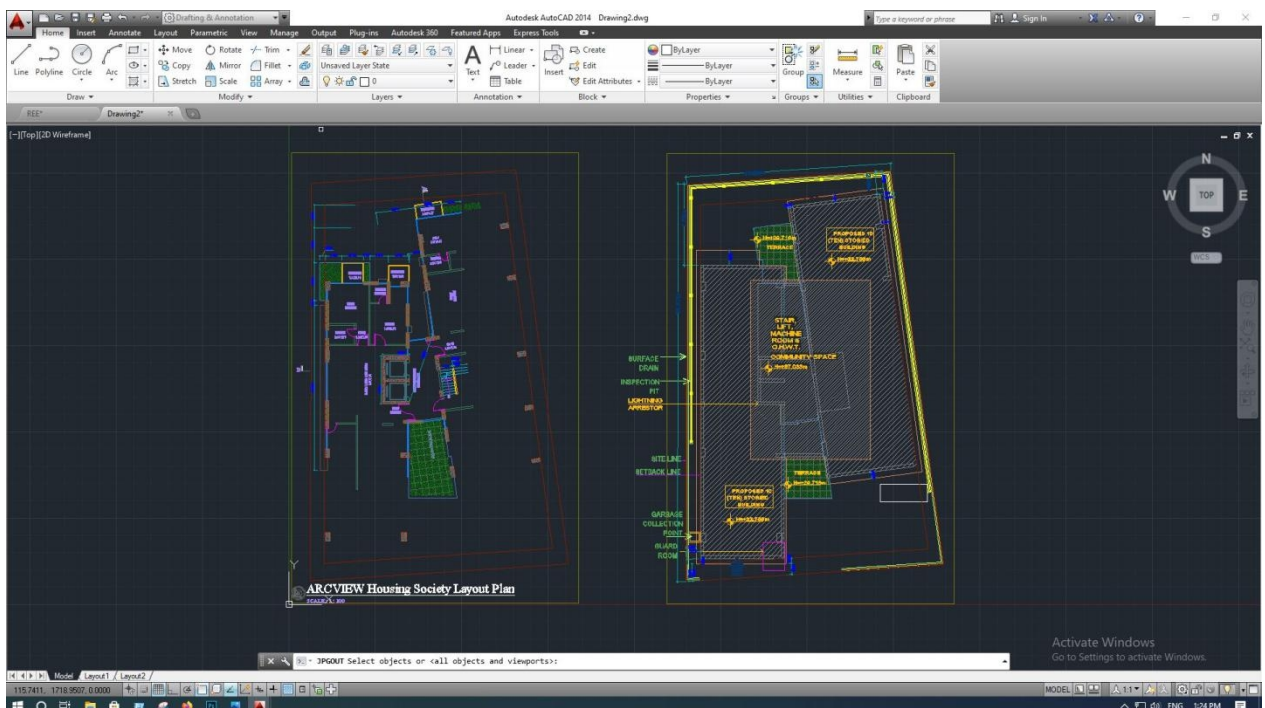


Figure 2.2.1.1 Layout of plan

### **2.2.2 Apartment Building (1):**

For this project it was my task to create several exterior scenes of residential building

The series of buildings create a housing society, for that purpose I need to model several numbers of buildings.

To create the model, I use Boxes and polygon modeling using very simplified box shapes and the poly cubes. Moreover, the bottom portion of cubes are also being isolated empty because it will not visible in the exterior rendering.

In every sphere of modeling, I tried to make the model as light and simple as possible because an exterior scene contains a lot of building and other elements so that scene may be becoming very heavy models and also the scene assemble may become so hard and it causes software crashes several times.

The basic windows were produced utilizing low-poly cubes. The cubes had loop support so that when it is mapped, they do not lose shape. The glasses are also comparable to and plane. Some windows have glass creases. With the same add-edge loop and extruding process, they were developed.

In the same way, doors were also made. There had been balconies in some buildings. The balcony's floor is a rectangle.

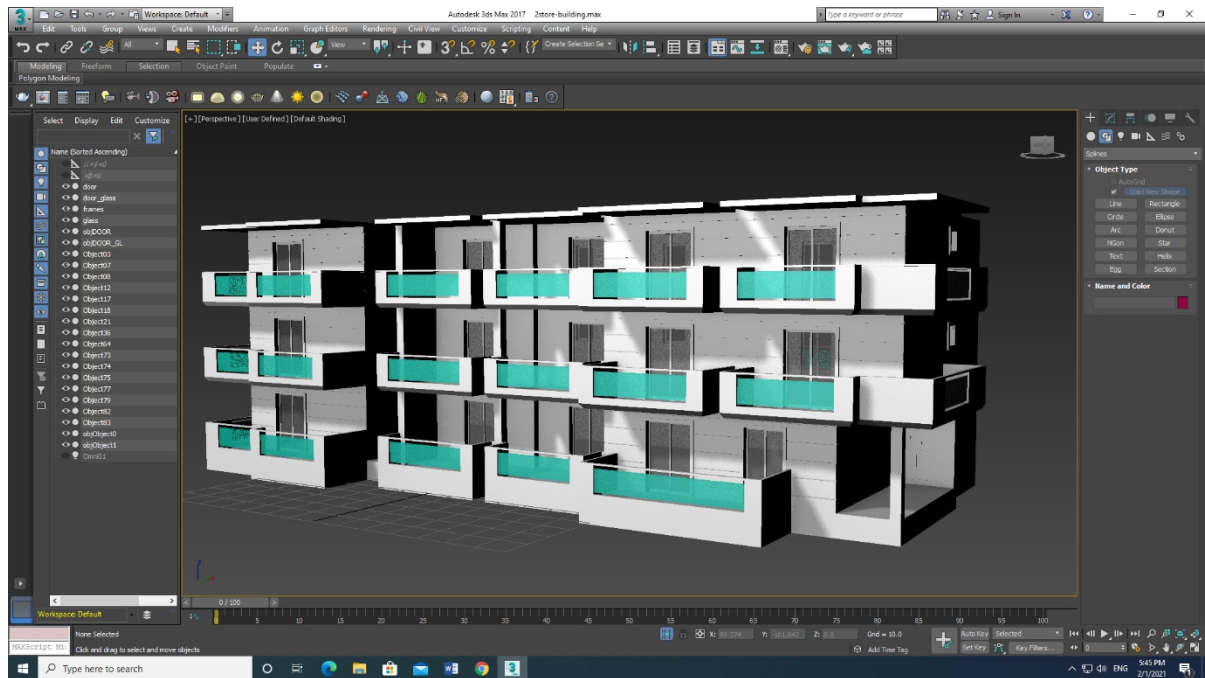


Figure 2.2.2.1 building model

For door and balcony and other part I use several boxes to make the shape then resize it with the desired shape I want. In some places glasses has been used for this I simply use plane material and then applied glass material from material editor.

### 2.2.3 Apartment Building (2):

This building also modeled as like previous way using box shapes and other rectangle then manipulate it to my desired shape.

But this time this building is a multistoried building, to create this model I applied some duplicate command in max. firstly I modeled some square beam pillar for the base foundation of the building then I modeled a single floor according all shapes, for that I basically use Max modifiers like bend, and to create and sliced surface I use Lattis.

To make it more effectively I firstly increased the segments of the polygons, Then after I modeled severally basic using in poly mode.

After that completing I used duplicate special command in max to create multiple number of floors as per my wants. It can be done in any numbers. After duplicating to several numbers of floors adjusting some rather space between floors through transformation command.



Figure 2.2.3.1 Building model



Figure 2.2.3.2 Building model Layout

To create the multi stored building I also followed the model layout that make clear measures about the scales of building. And it has been modeled with the realistic scale of real-life projects building in accordance with the layouts.

#### **2.2.4 Apartment Building (3):**

This specific model is a very simple model. Ai just uses several numbers of rectangle shape of boxes then added several flat boxes for the roof of the building, and to create the door and window whole I used poly modeling and increase the number of parameters zone and then deleted the specific poly. To create the surveillance, I used to connect edge command and then severally deleted to make the portion. In some round shaped place of model, I used Turbosmooth command to maximize the task.

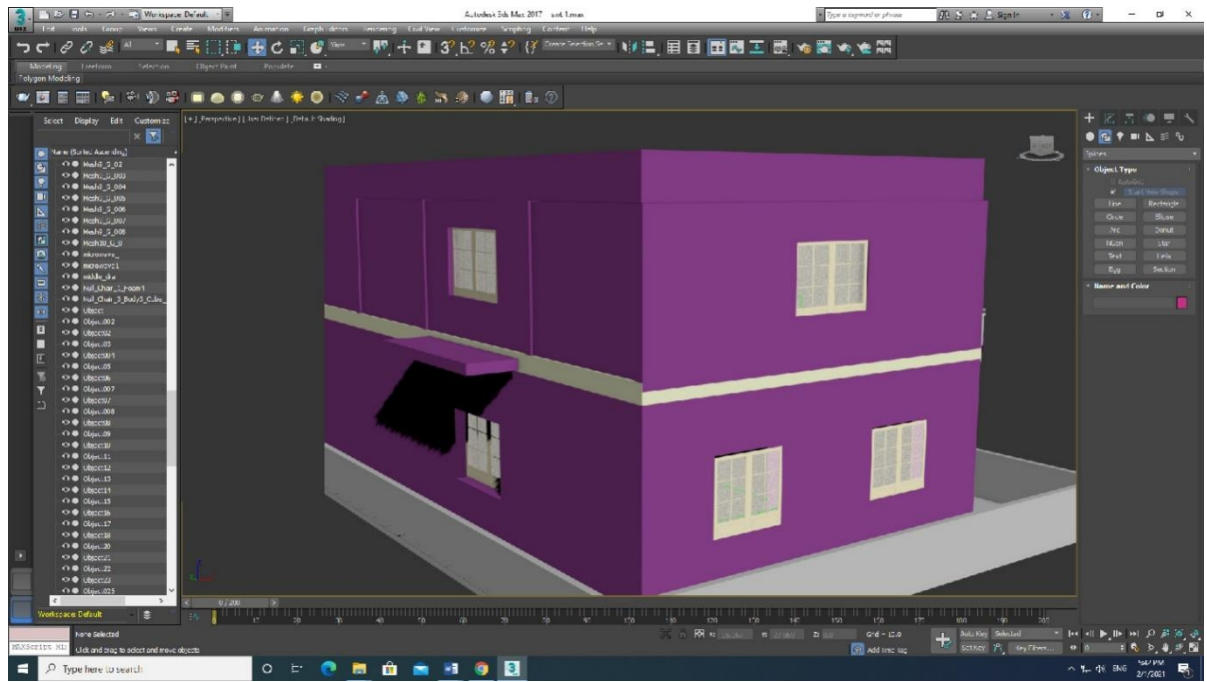


Figure 2.2.4.1 Apartment Building model

This Building is basically been used for creating a simple villa scene of outer exterior property, for this very lightly this model has been modeled and due to maintain the light file very simple material has been applied to this model to make it accordance with the standards.



## 2.2.5 Wall:

For this project we need to create a housing society for that that is need to create a wall that cover surround the society. It basically works as fence for the residential area.

To model this, I used very simple way to create the wall. I took several rectangular box in flat shape then increase the parameters segment of that polygon properties and make it spectacular like shape of bricks as per the model looks like similar to real life bricks.

I used another horizontal box in flatter shape to make the upper part of the fence wall.

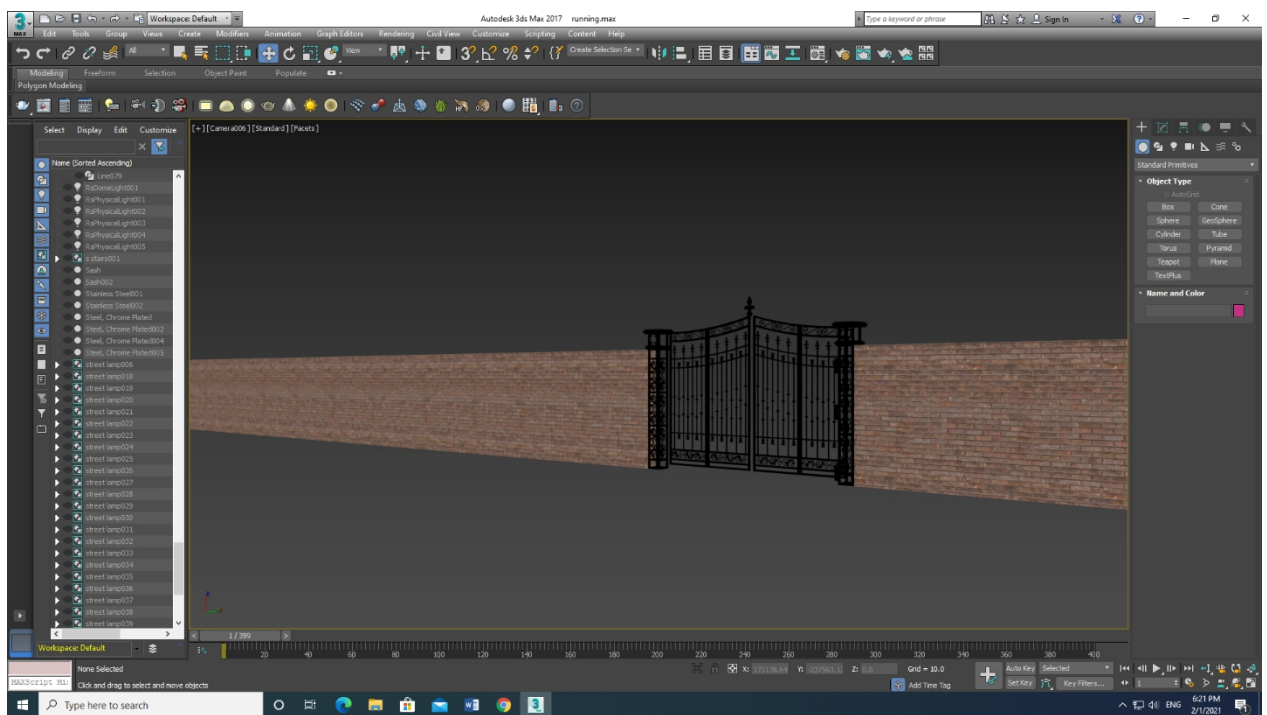


Figure 2.2.5.1 Apartment Society Wall

I need to model several walls to cover all sided of the area. For that I modeled many of the walls in different sizes. I repeated the same way just to customize scaled the size and length of the wall according to the accrue measurements.

## 2.2.6 Entrance Gate Model:

I need to model and design a gate for the entrance of the Housing society. To create this model, I used poly cylinder and box shape of polygon editor. It was planned in storyboard that the gate should be automated and will open and close with the presence of resident's vehicles. So I had to model the gate in a particular way part by part as separate group in order to animate the gate. I used round cylinder sticks and the to make it round and curved shape I used bend modifier of max to create the curve shape of the gates sticks. I resize the cylinder shapes by creating edge and then by using connecting edge command I made the usable shape and resize it. In some part of the gate, I need to create some cage type sliced design for that first I used box shapes and the I multiply the parameters of segment and then I applied Lattice command to it. And then I Used Turbosmooth modifier to soften the sharp edges and edit it in the modify portion.

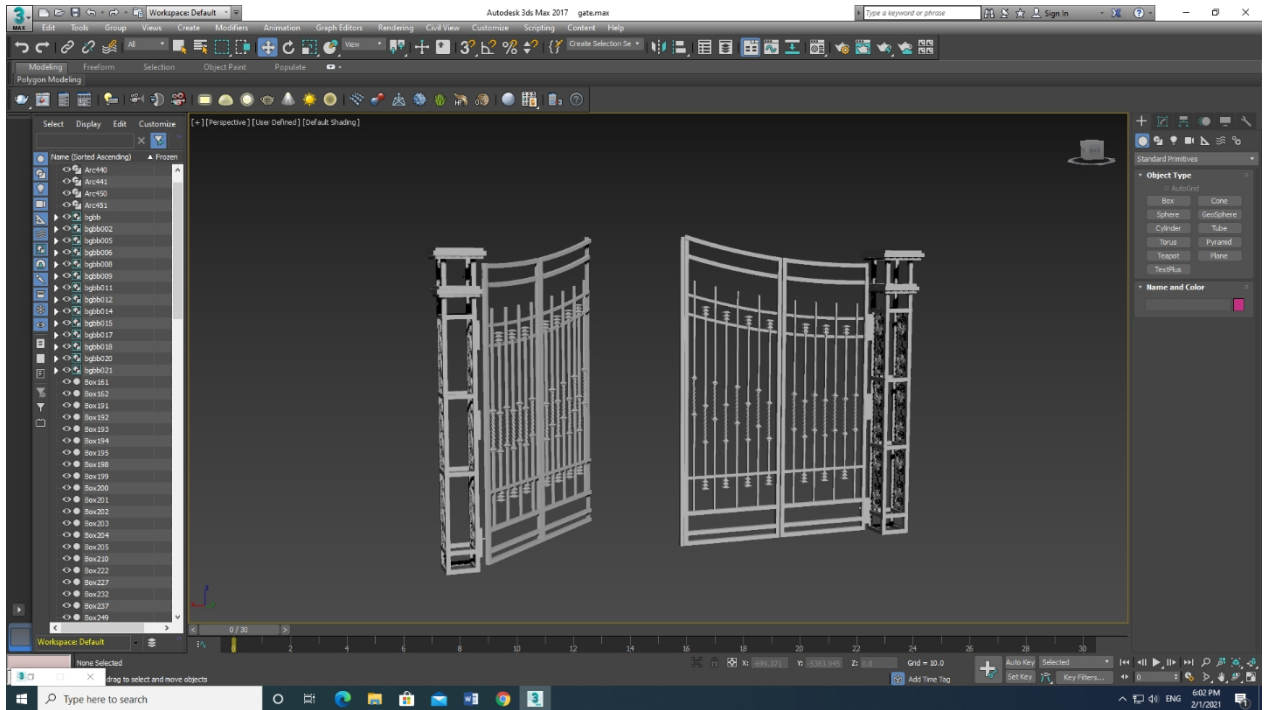


Figure 2.2.6.1 Apartment Entrance Gate

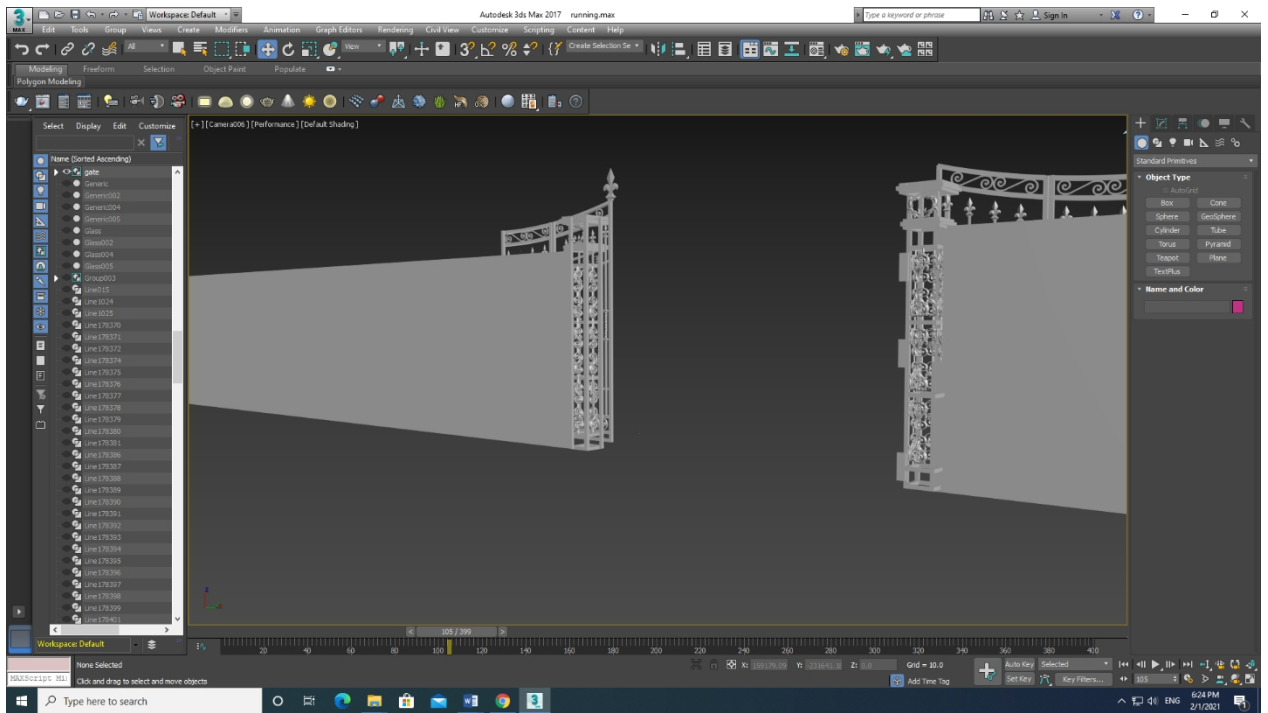


Figure 2.2.6.2 Apartment Entrance Gate

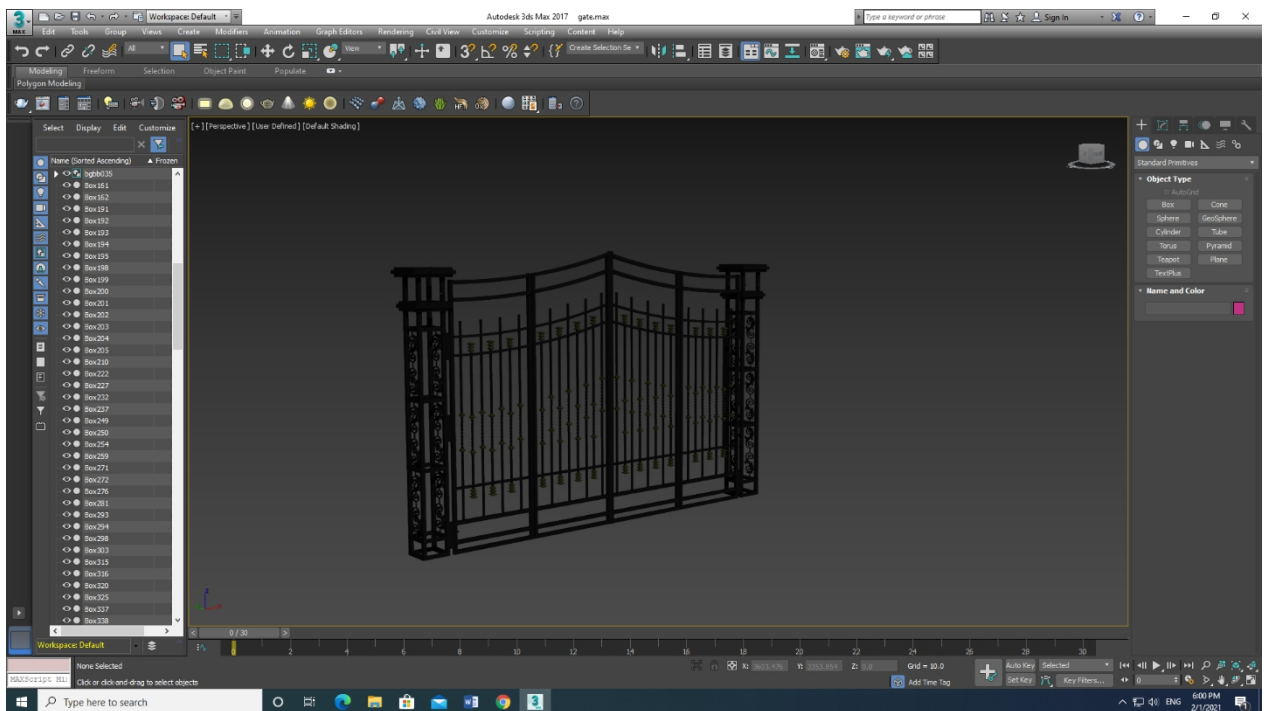


Figure 2.2.6.3 Apartment Entrance Gate

### 2.2.7 Car:

For this exterior visualization we need a scene where we need to show the moving vehicle enter to the Housing society area.

For this we modeled a car. Because we just need to show the exterior views of the scene so I didn't model whole car entirely. In that I just re modeled the external shell of the car and make some artistic view of the car entirely.

I took some image as reference for the car. Then it was provided as sample car is some basic polygonal model where I created the outer shell model with the car by Nurv modeling, portion wise the shell been curved by the Bend modifier then I applied Turbosmooth to smoothen the cars frequencial outer shell to get the car done.

Agter that I put windshield and other glasses to the outer shell by using glass material from redshift renderer and use it to complete the sequence.

And finally create a constraint path to moving the car and then I linked it with the car for the following movement.

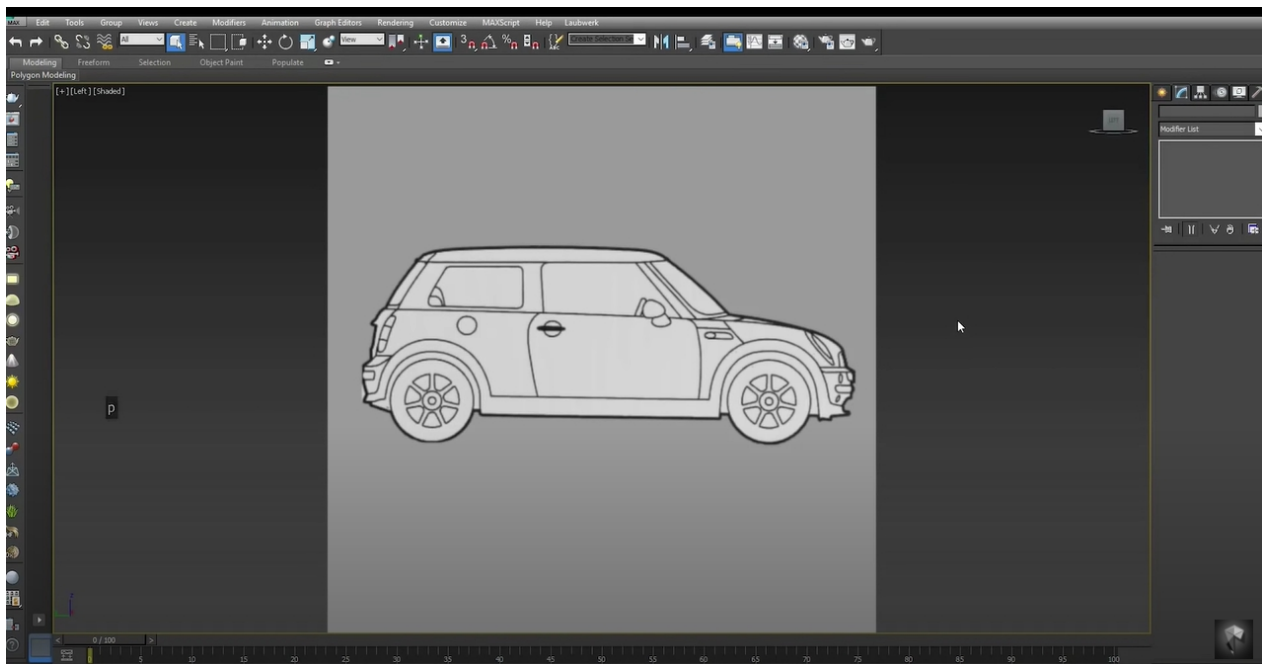


Figure 2.2.7.1 Car Reference

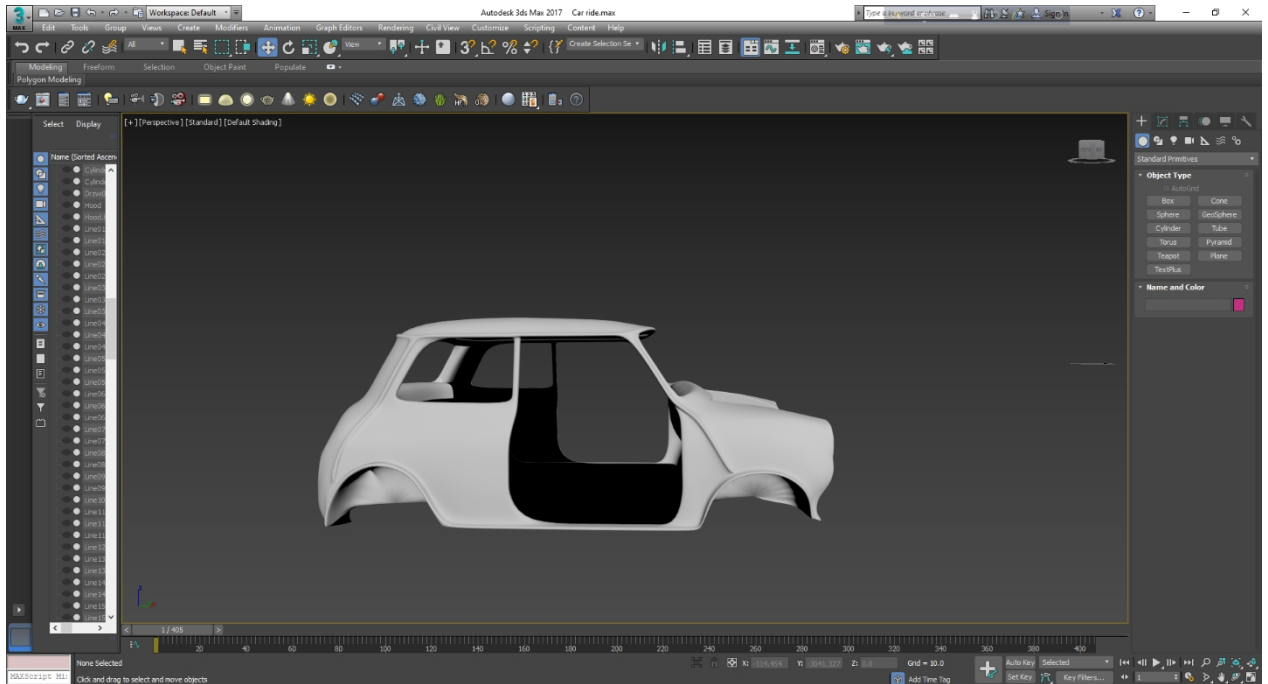


Figure 2.2.7.2 Car Model Outer Shell

To create this outer shell after taking the reference I modified it with thoroughly with the nurb editing. Severally portion of polygon is modified. Then I applied turbosmooth to smoother the outer shell and ready for it texturing.

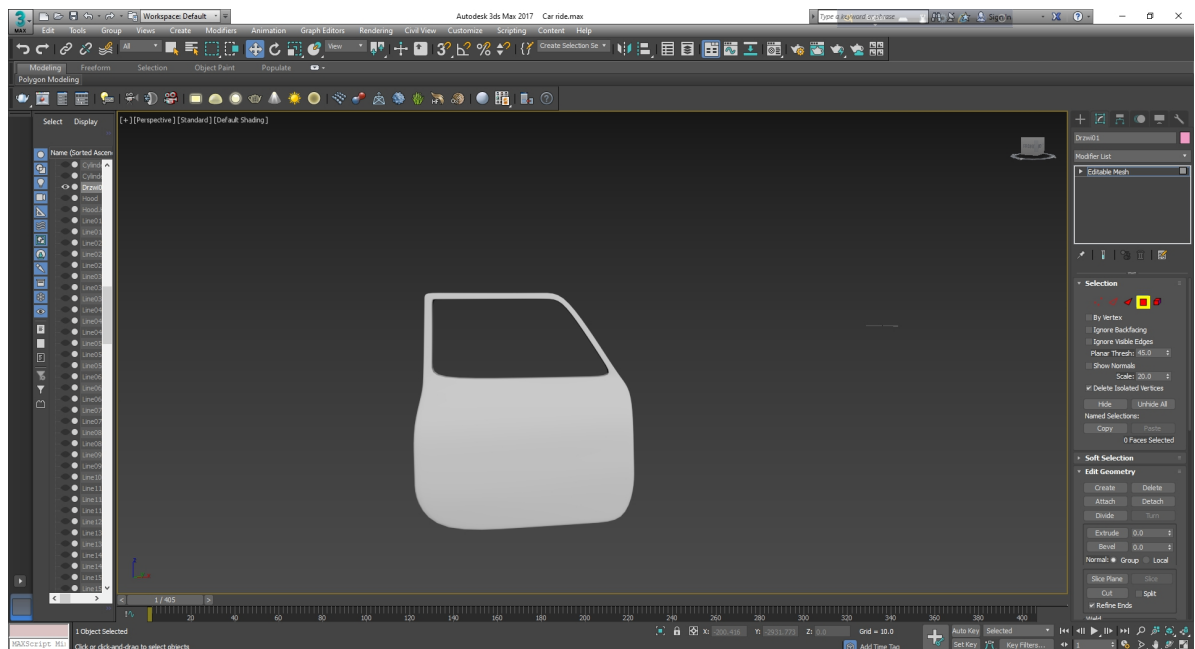


Figure 2.2.7.3 Car Door model

As earlier mentioned here in this project I modeled only the outer part of this car. For this I took simple box shape polygon then modified it by creating sub primitives the n creative sub connected edge to make separation. Whole then using bend command to make the curve shape then applied turbosmooth.

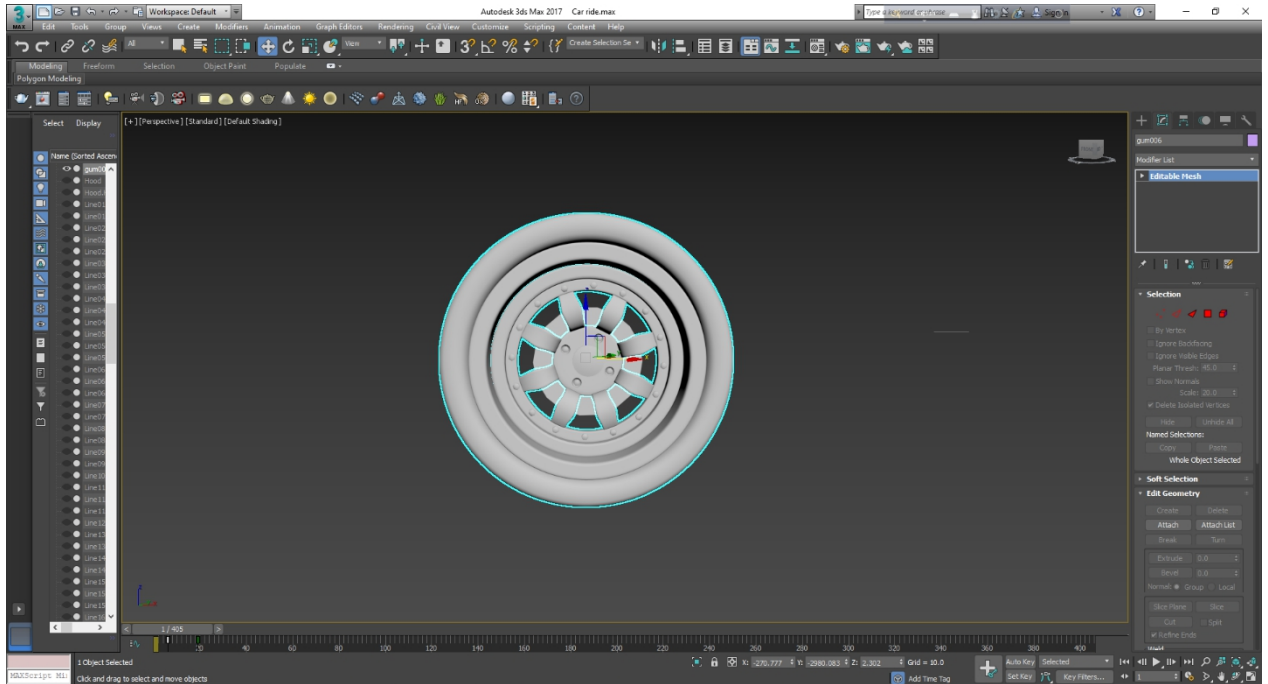


Figure 2.2.7.4 Car wheel model

To creating the wheel model, I used several cylinders then and donut shape then applied connect edge to edit the polygon modeling. Tire portion and the rims portion are modeled separately the align with own primitives.

To create the rims model I Used lattice modifier the modify it unit according the reference model.

And grouped the wheels entirely for further rotation spinning animation.

### 2.2.8 Water Fountain:

The water fountain is planned to set on the center outer area of the housing society. It's a decoration part of the housing model.

To create the fountain model I tried it to make as simple as possible because of the large size of file also keep in mind of heavy rendering time. I used simple cylinder shape cubes then model it in edge nurb modeling and the make the outer portion with chamfer box and the

applied turbosmooth command.

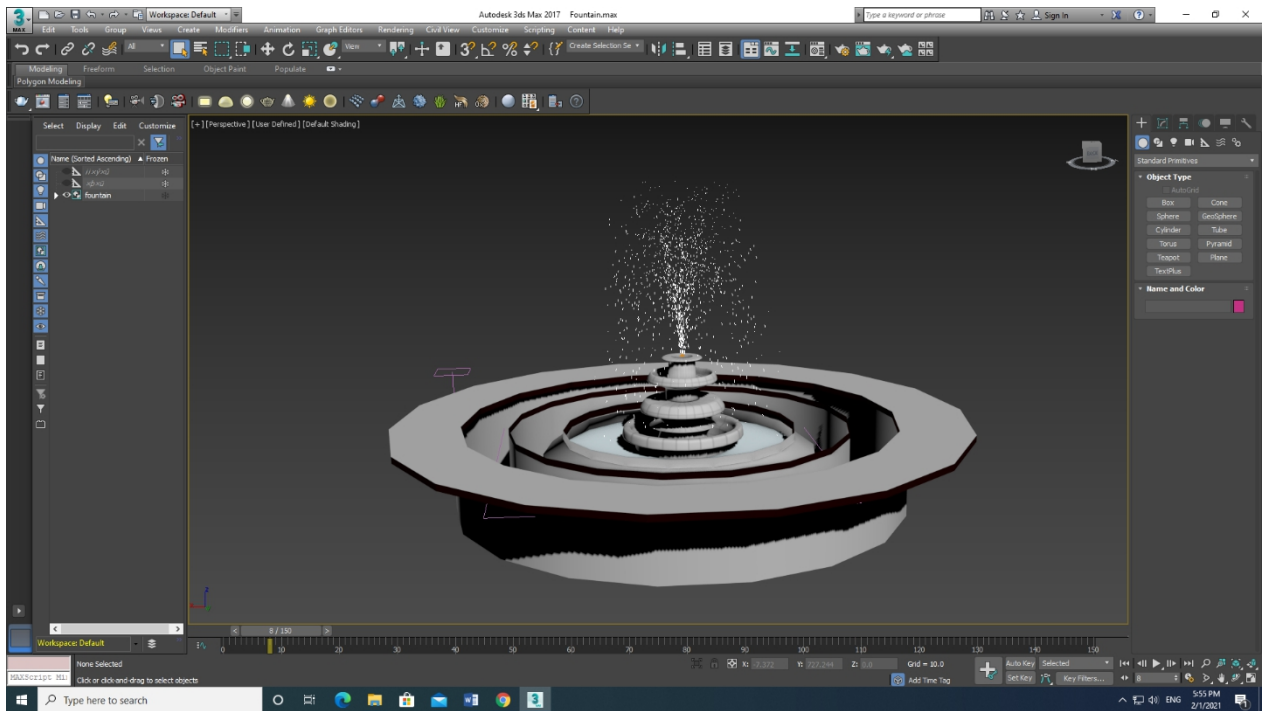


Figure 2.2.8.1 Fountain model

I also tried water simulation effect using spray and gravity. That create a great simulation effect gravity down put the water spray to the ground.

### 2.2.9 Wall lamp post:

The Lamp post was made with a cylinder and several box shapes. I modeled in face and edge modeling. To create the curve option, I have used bend modifier. After that the faces were selected here and extruded in wards or in wards to make them look like the reference model. After completing the main post is a cylinder is taken, It took place where the cylinder that holds the light should be. Then it is selected to nurb by burb by edge loop editing and modify it through reference.





Figure 2.2.9.1 Wall lamp model

For further lighting I modeled the light portion separately and apply glass material for purpose lighting. In different place several lights post have been used. Those are different in size but all made by following the same process.

## 2.2.10 Road:

To create the housing society, It was necessary to create some road like entrance road, Inside road, Walking way etc.

I make very simple way to make the model as lighter as possible because an exterior model contains a lot of elements. I took several planes to create the surface of the road. And then used box shaped rectangle to create the division oof the road. I applied bump map to create the roughness like reference.

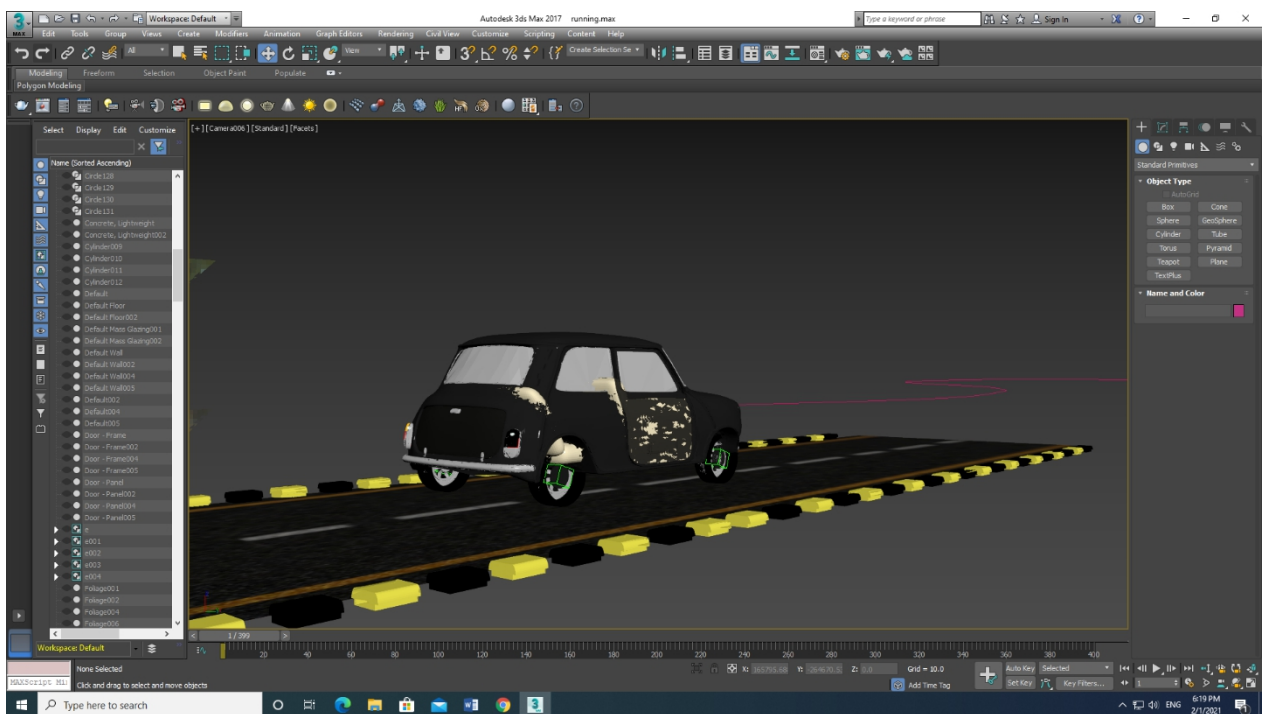


Figure 2.2.10.1 Road model

## 2.2.11 Pool

It was a part of storyboarding plan where it was necessary to make a pool for the scene with several specific model as per reference.

To create the pool model, I used some box shapes and cylinder shape. Then I modeled in several portion like the water part modeled separately as house by using box and then just edit the edge face and then by deleting the front face gives a whole of sub traction.

Then I modeled side portion and corner using chamfer boxes.

To create the water visualization, I simply use a plane material and then apply redshift water material for further materialization.

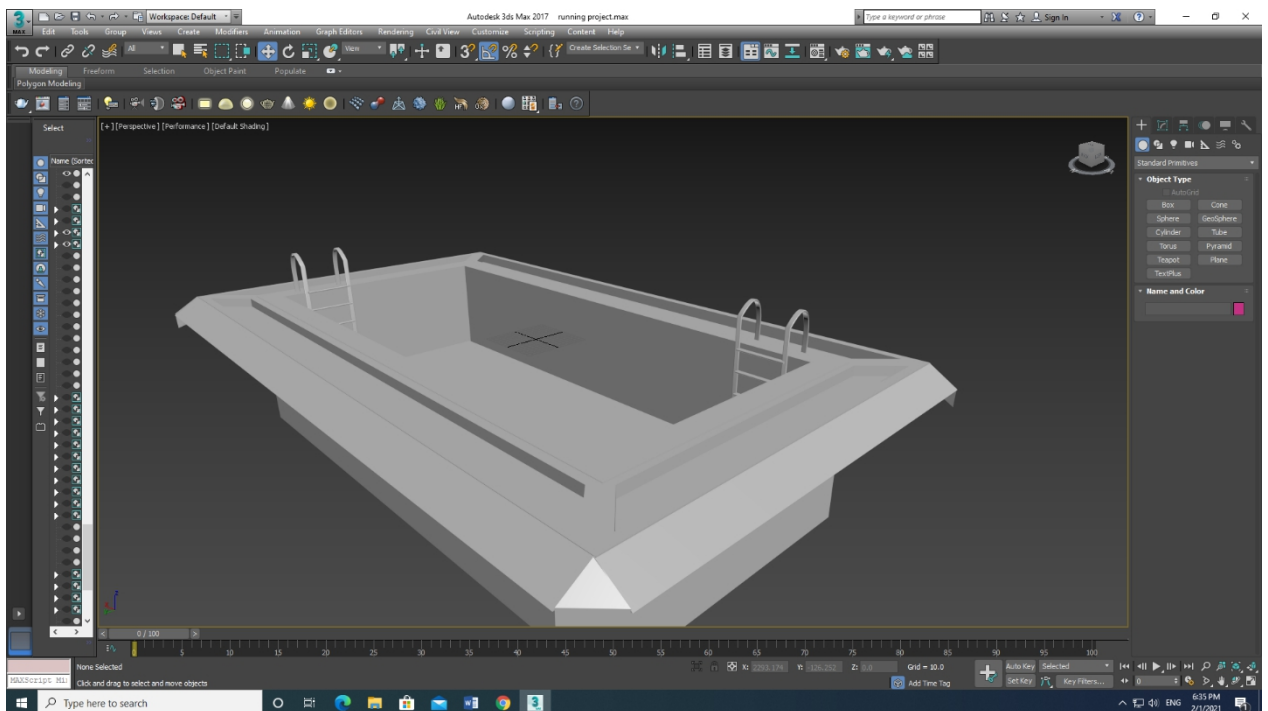


Figure 2.2.11.1 Pool model

## 2.2.12 Pool Stair:

To create the stair model, I used simple cylinder model. Then extend the parameter of cylinder then start to model through Edge modeling.

I used Bend command to curve the shape of stair.

I modeled two of same design curve shape and then make some several cylinders connecting precious shapes. That create the stair feeling similar as reference. After modeling I duplicated it two model for scene purpose.

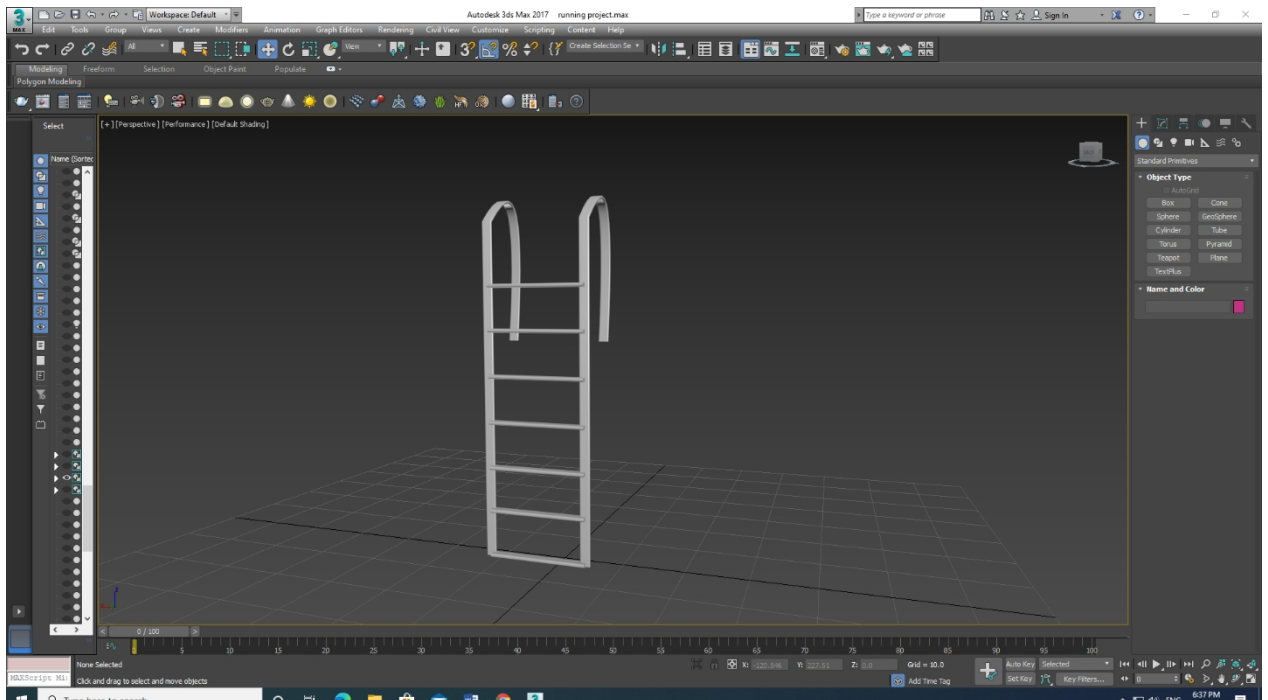


Figure 2.2.12.1 Pool Stair

### 2.2.13 Window:

Window is some several parts mostly using in several models building. Have to model several windows. As it's an exterior project there is lot more building with several windows.

I made it simpler for several scene. In most of them used plan material then applied glass material and, in some scene, I modeled simple window using box lane and lattice modifier applied in other scene.

Tried to make very lightweight poly cube design model just to make the model lighter t prevent it from viewport assemble crash issue.

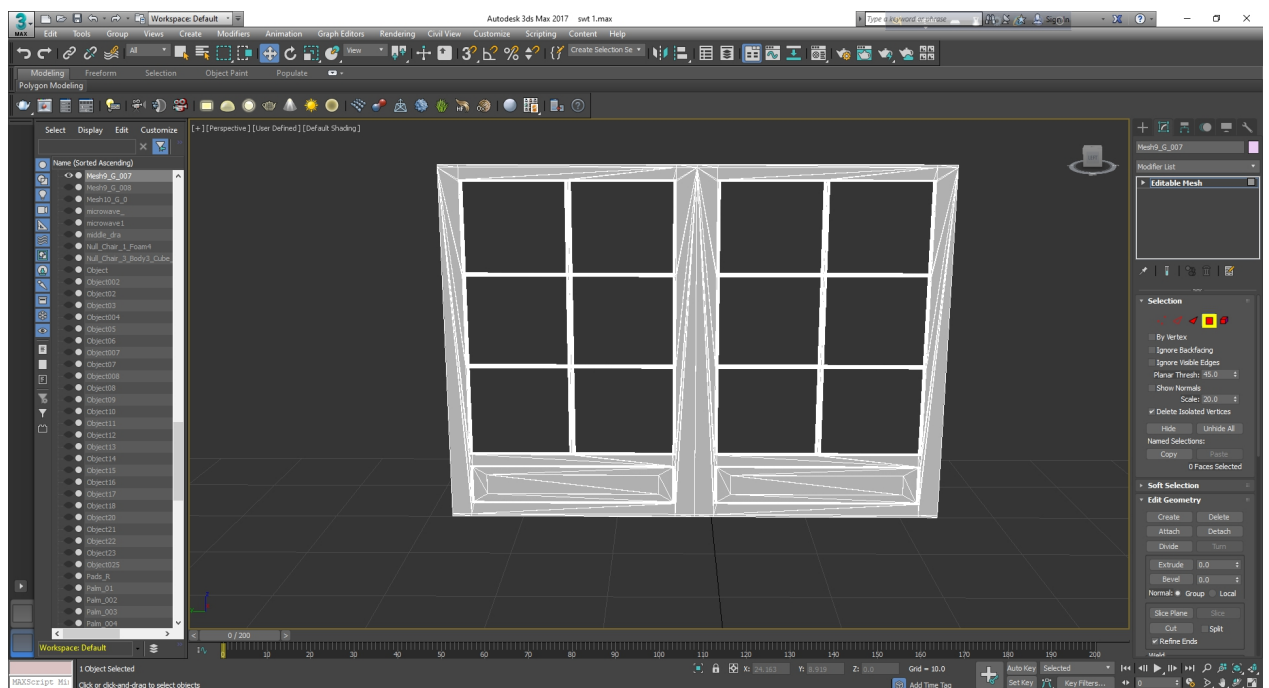


Figure 2.2.13.1 window

### 2.2.14 Kids Swing Set:

The swing set was created outside of this project for the Society. Three sections, such as stands, chains and chairs, are divided into the whole model.

The stands are constructed from cylinders of polygons. With the bend deformer tool accessed from linear deformers in the Deformers dropdown menu, they are bent in the middle when Modeling is selected in the shelf menu. The bent cylinder uses a further cylinder

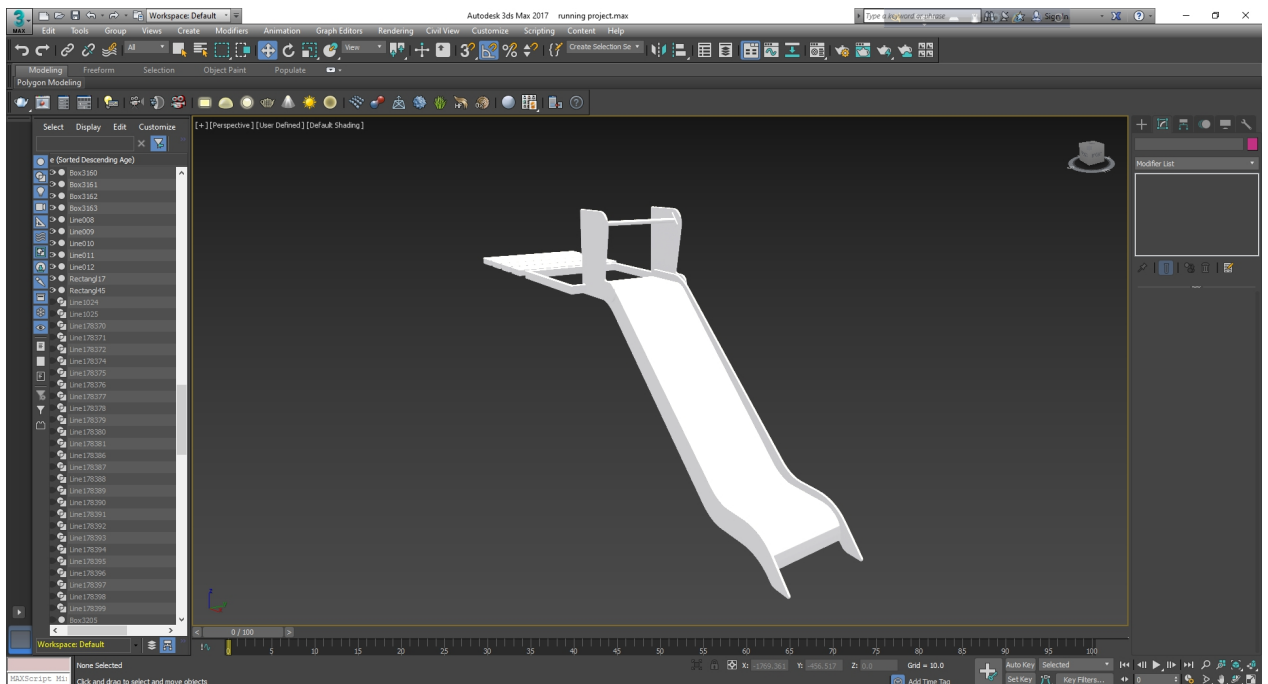


Figure 2.2.14.1 Kids Swing Set

## CHAPTER 3

### Texturing, Animation, Lighting & Rendering

After completing the modeling process, it time to complete the texturing and then animate the process and planning that planned in the storyboard. IN this project I basically worked on creating exterior environment where I used several buildings and a vehicle movement to the entrance point with flow motion.

#### 3.1 Texturing

The method of applying graphics to a polygon object is called texture mapping in 3D. Such graphics can vary from images to original designs. Textures will help the object age and give it more interest and realism. Here in this project I use 3ds Max for modeling whole mode. In there I modeled several polygonal model that make simply surface wise model. To make the models of visualization looks more realistic I have to use real life texture samples.

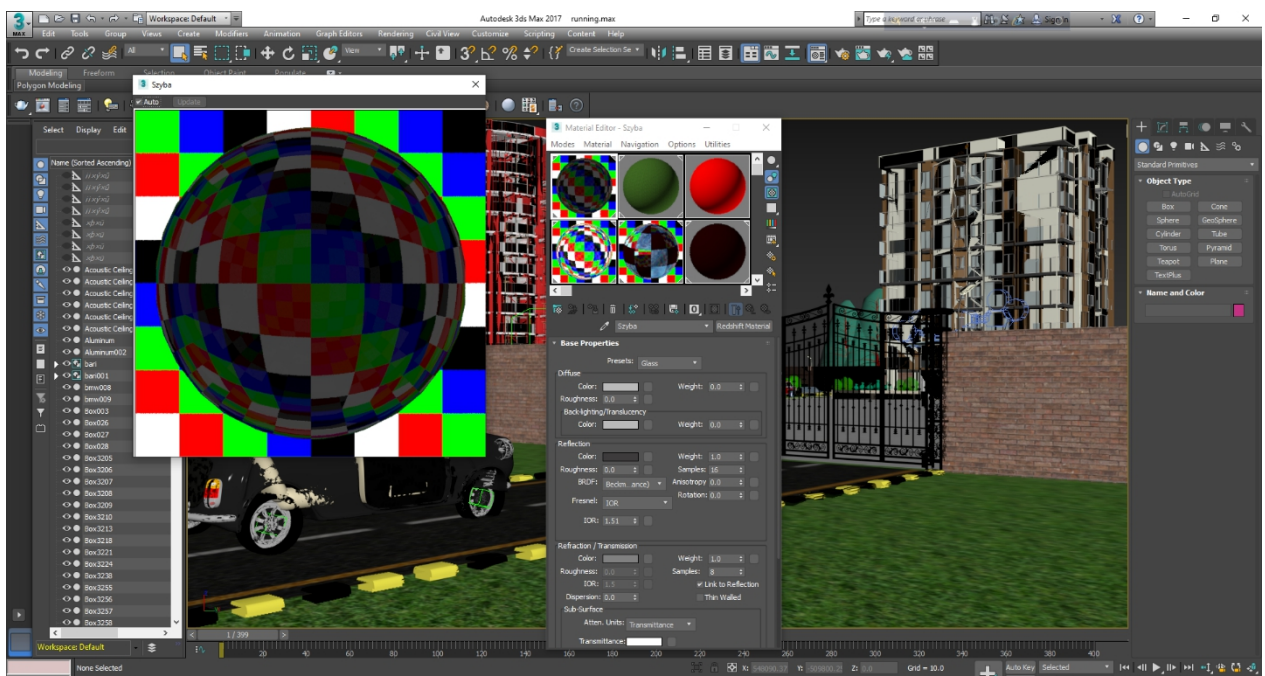


Figure 3.1.1 Texture and material In 3Ds Max

### 3.1.1 Texture in material Editor:

This step is basically that process of materializing the models. I have used content from Redshift in this project. From the toolbar, press the Material Editor tab (Shortcut-M)> Click the Material slot > Choose Normal and choose Redshift Mtl from the Material/Map Browser

The usual content will be transformed into Redshift's stuff. Next to the diffuse button, press a tiny box and select a bitmap. Choose the map that you want to place in the dialog box for the object. Also important for research are the properties of the material. For example, to create a material for the doors, I selected a white paint color as a bitmap. I have now given a reflection of Value 25 and Gloss 0.1.

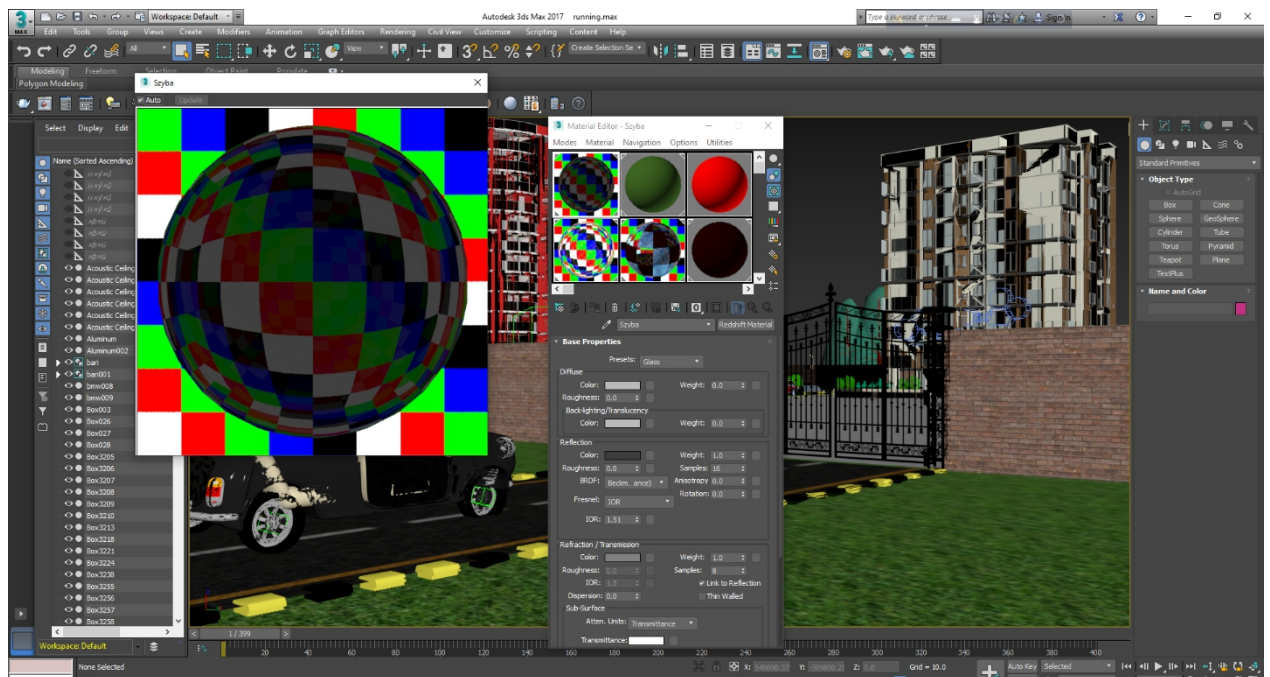


Figure 3.1.1.1 Material Properties 3Ds Max



### 3.1.2 Redshift Material Editor:

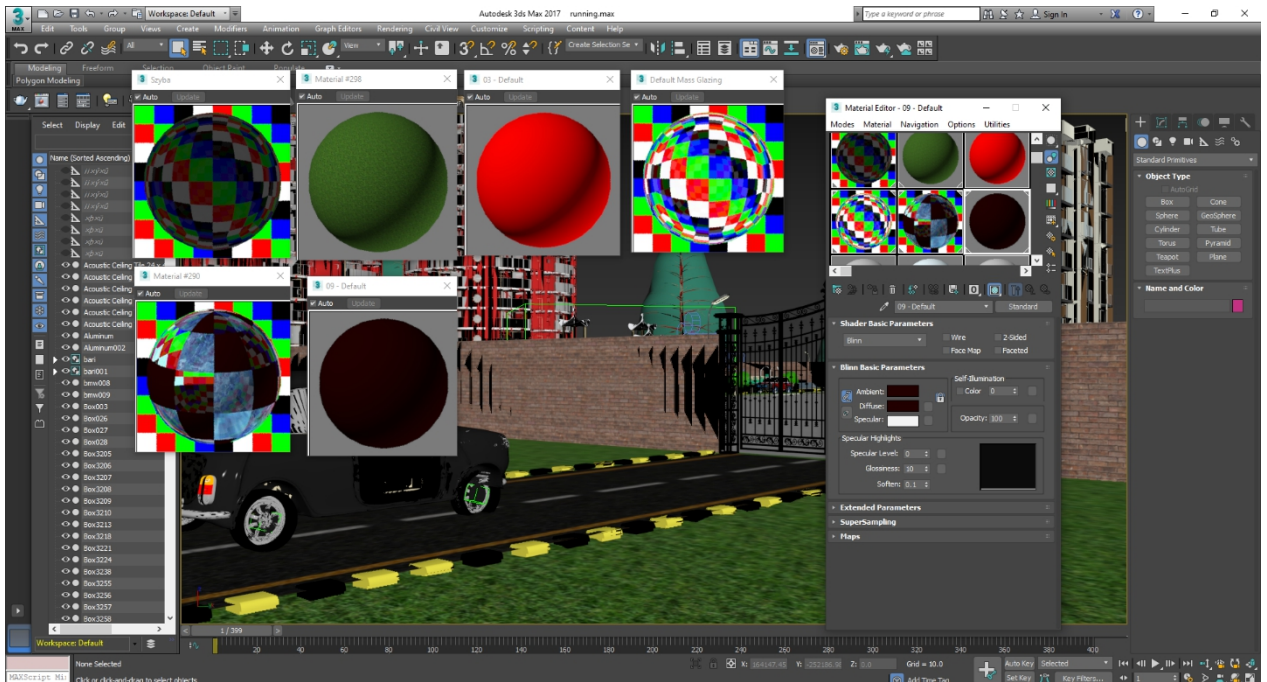


Figure 3.1.2.1 Texture Properties 3Ds Max (Redshift)

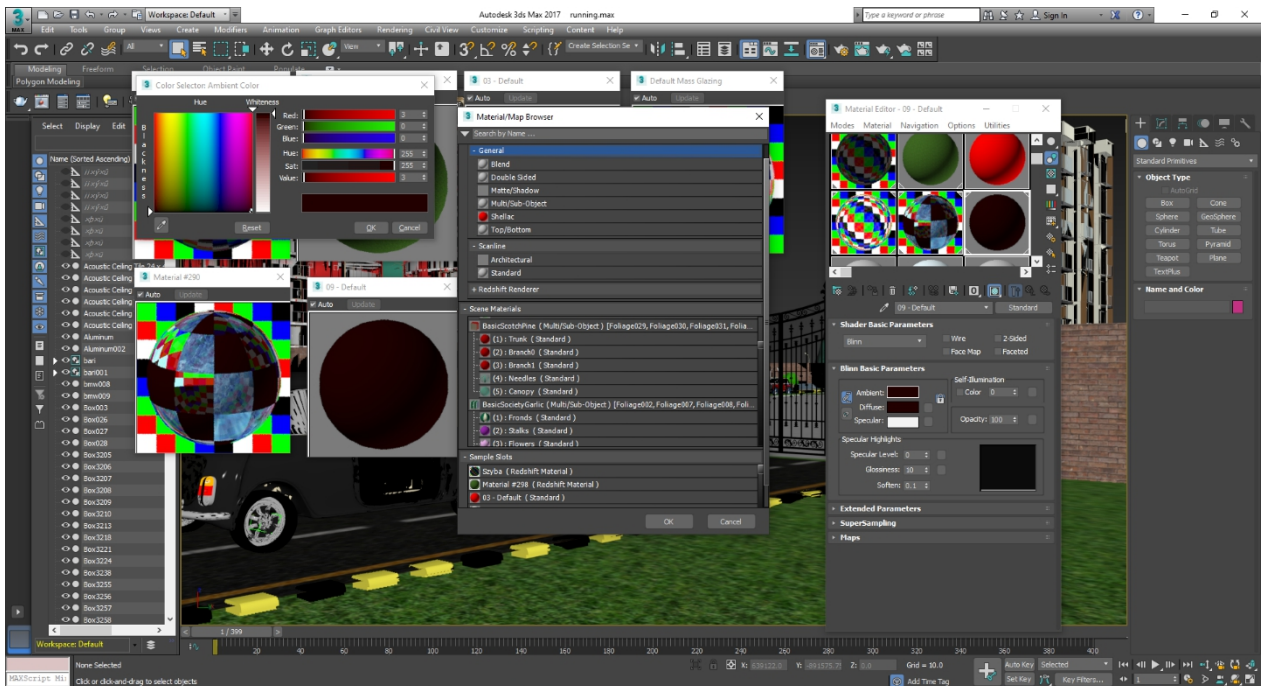


Figure 3.1.2.2 Texture Importing (Redshift)

### 3.1.3 Bitmap Properties:

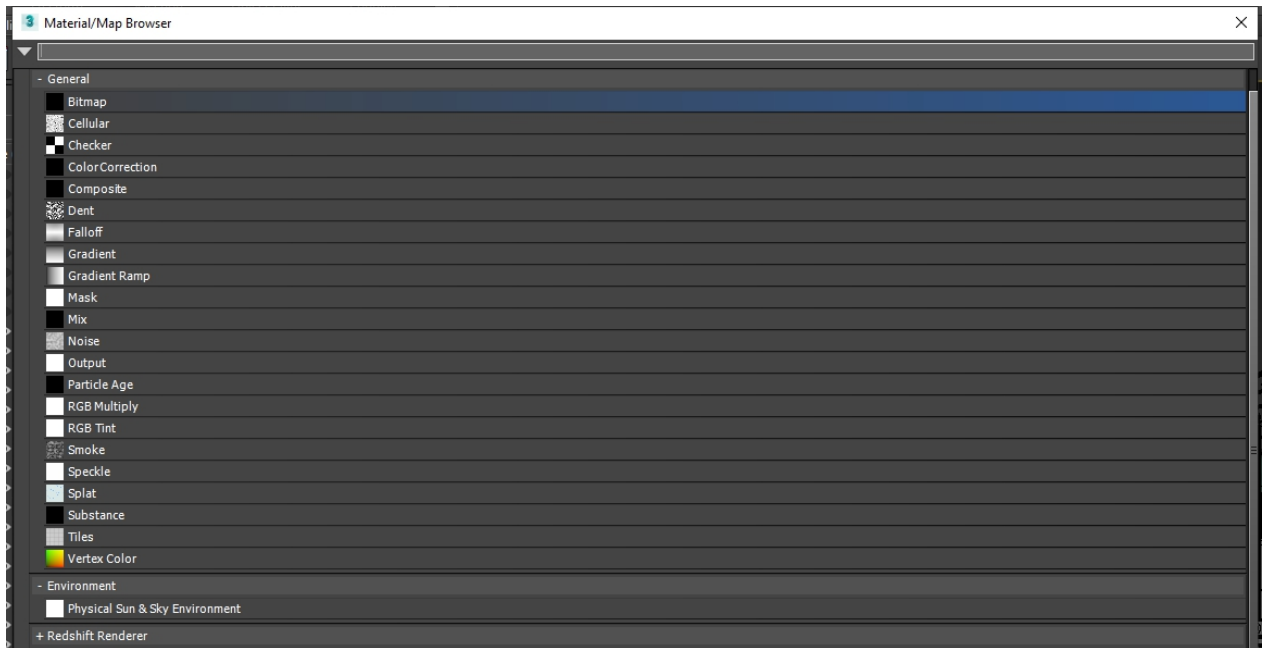


Figure 3.1.3.1 Texture Importing Bitmap properties (Redshift)

Provide a UVW Map from the modifier list to get the correct scale of the text. Below are some of the examples of the material and its properties that I used in this project.

UVW Maps are assigned through the command of modifier used in 3ds Max. The true feeling of something in between is texture: smooth, rough, soft, slimy, and lots of textures. It has a gritty, raw feel to the sandpaper and is very rough. Texturing is very important to track the overall look of your landscape and thus plays a major role in making an architectural visualization effective.

Here in Bitmap properties, we can use texture resource image of Jpeg or Png file easily.

### 3.1.4 Redshift Render able properties:

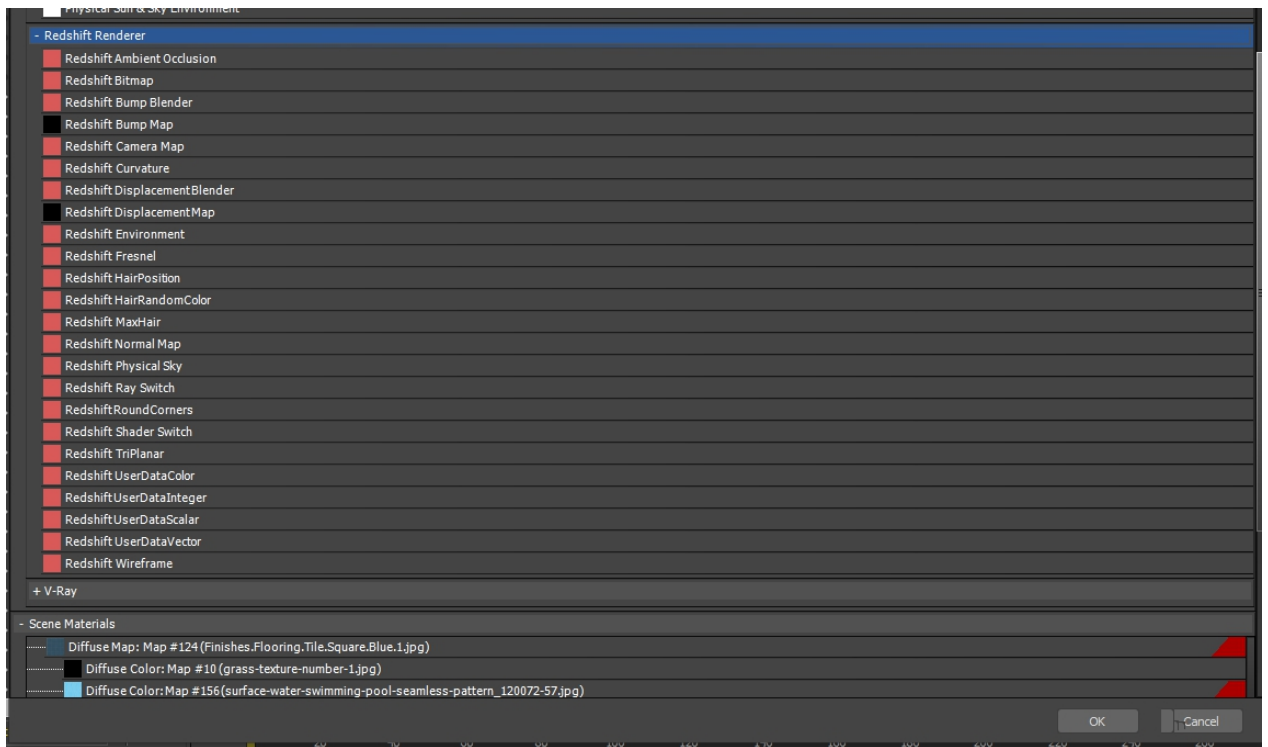


Figure 3.1.4.1 Texture Properties 3Ds Max (Redshift)

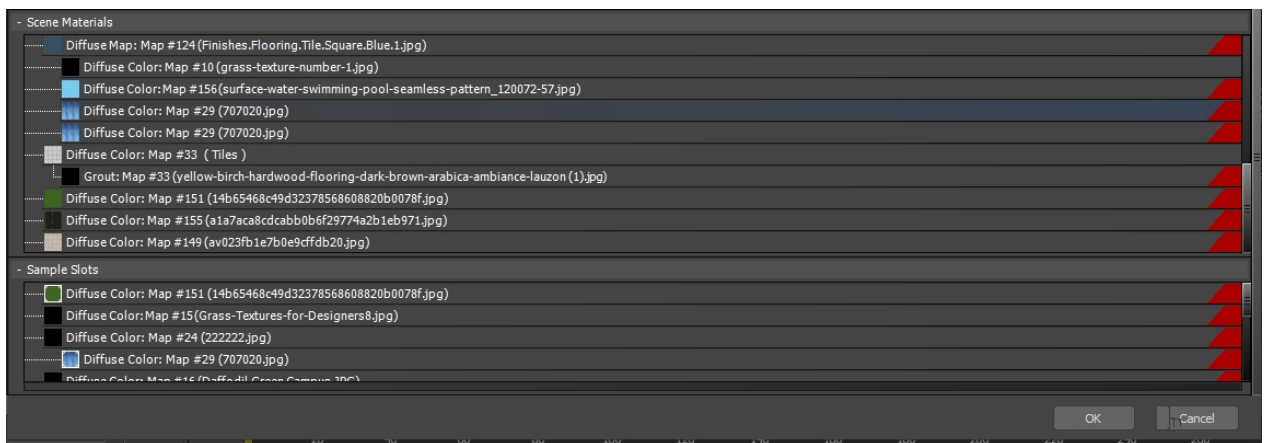


Figure 3.1.4.2 Texture Diffuse Map (Redshift)

### 3.1.5 Texture Making (Photoshop) :

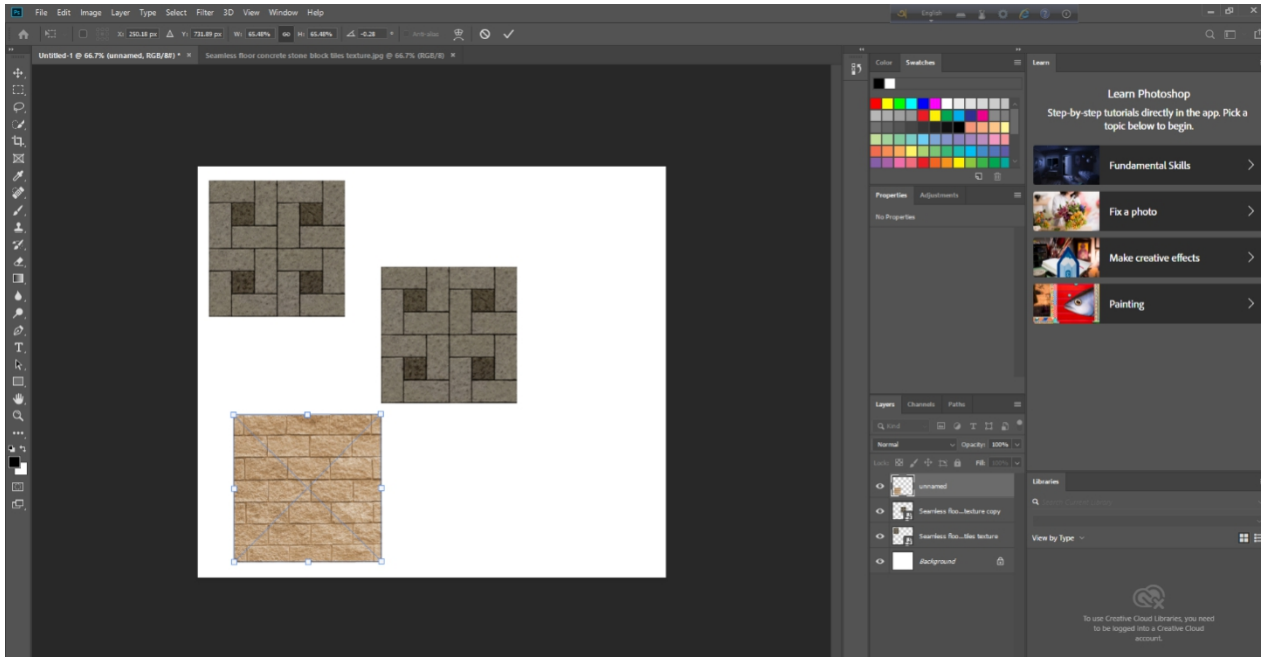


Figure 3.1.5.1 Texture Creating (Adobe Photoshop Ai)

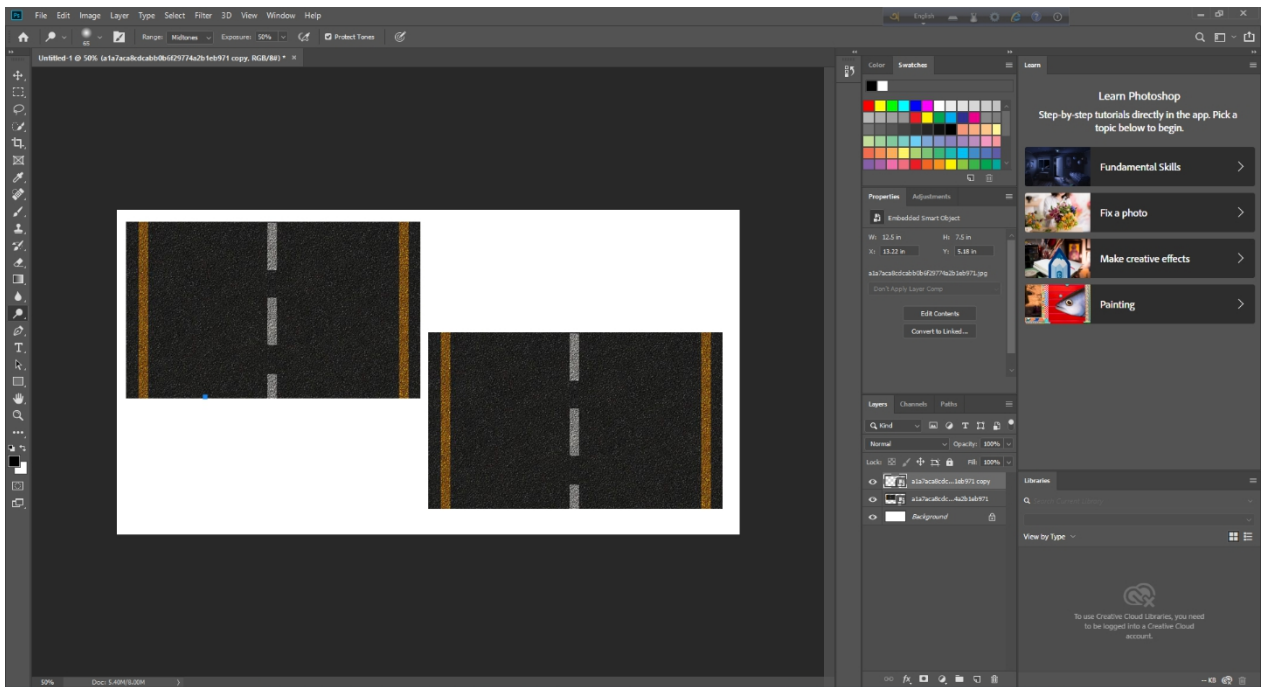


Figure 3.1.5.2 Texture Creating (Adobe Photoshop Ai)

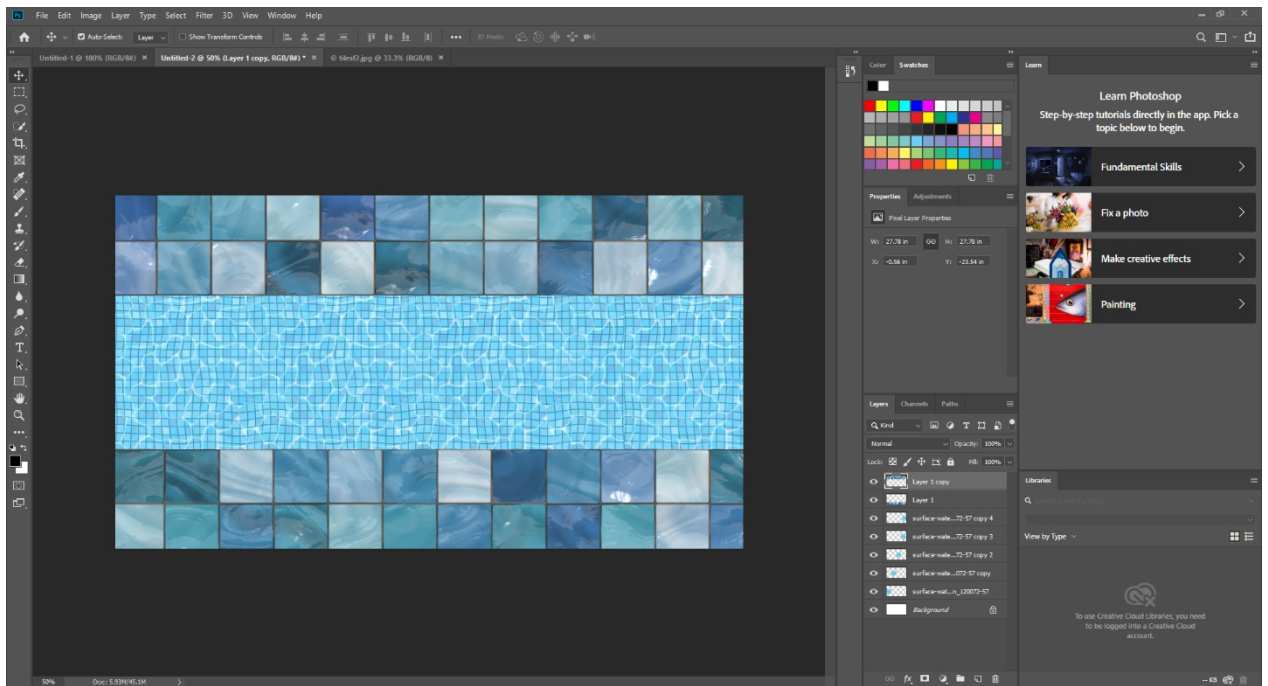


Figure 3.1.5.3 Texture Creating (Adobe Photoshop Ai)

To texturize several models gradually in according with real views and texture I need to edit the texture for that in this project I use

### 3.1.6 Several Textured Models:

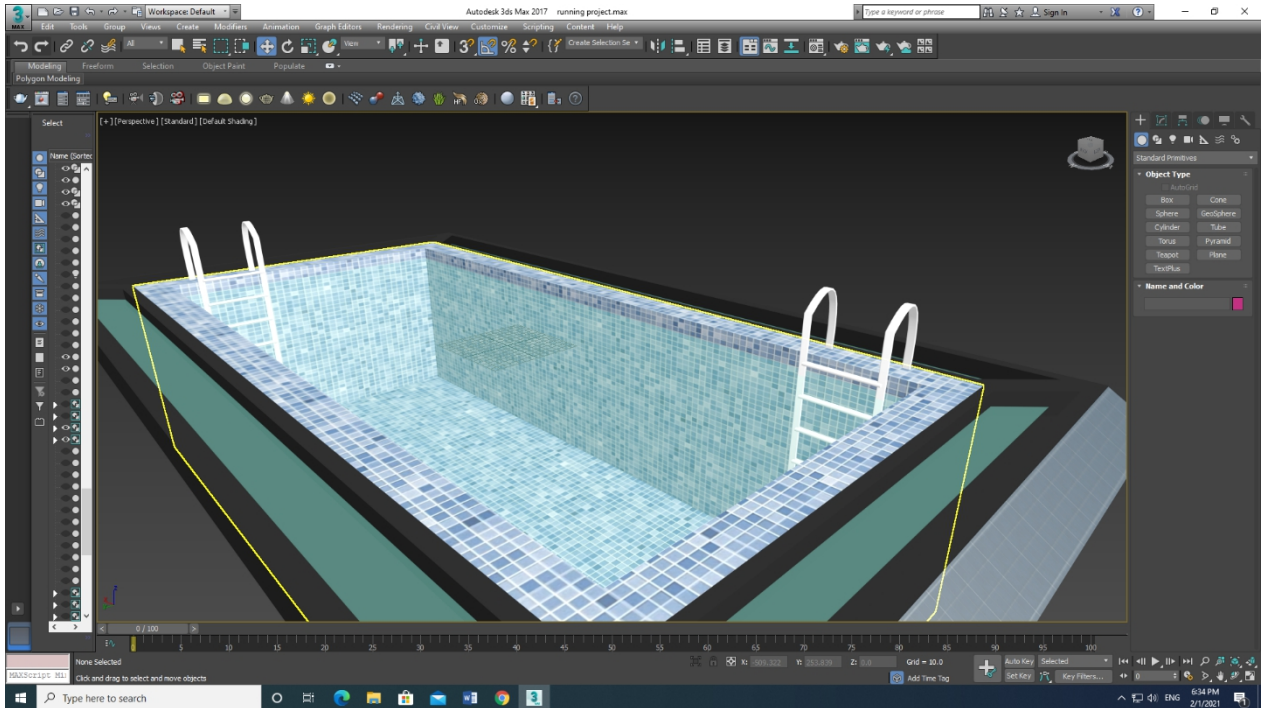


Figure 3.1.6.1 Textured Pool

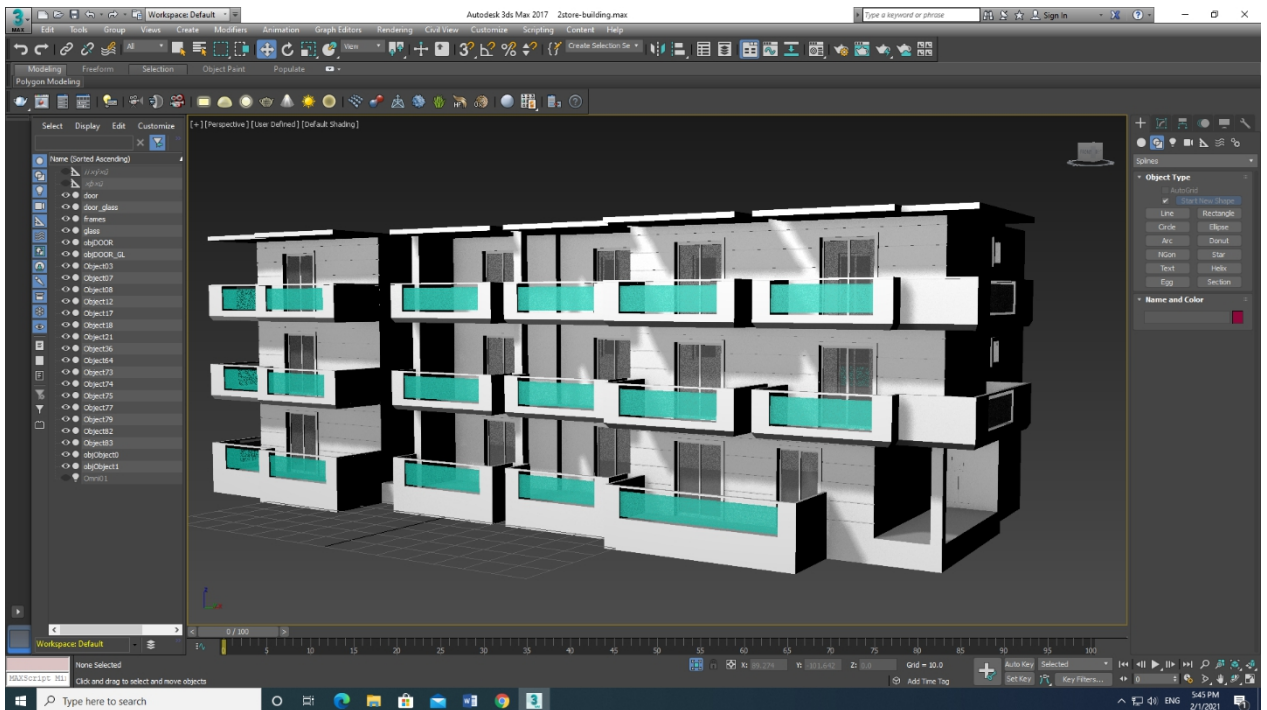


Figure 3.1.6.2 Textured Building

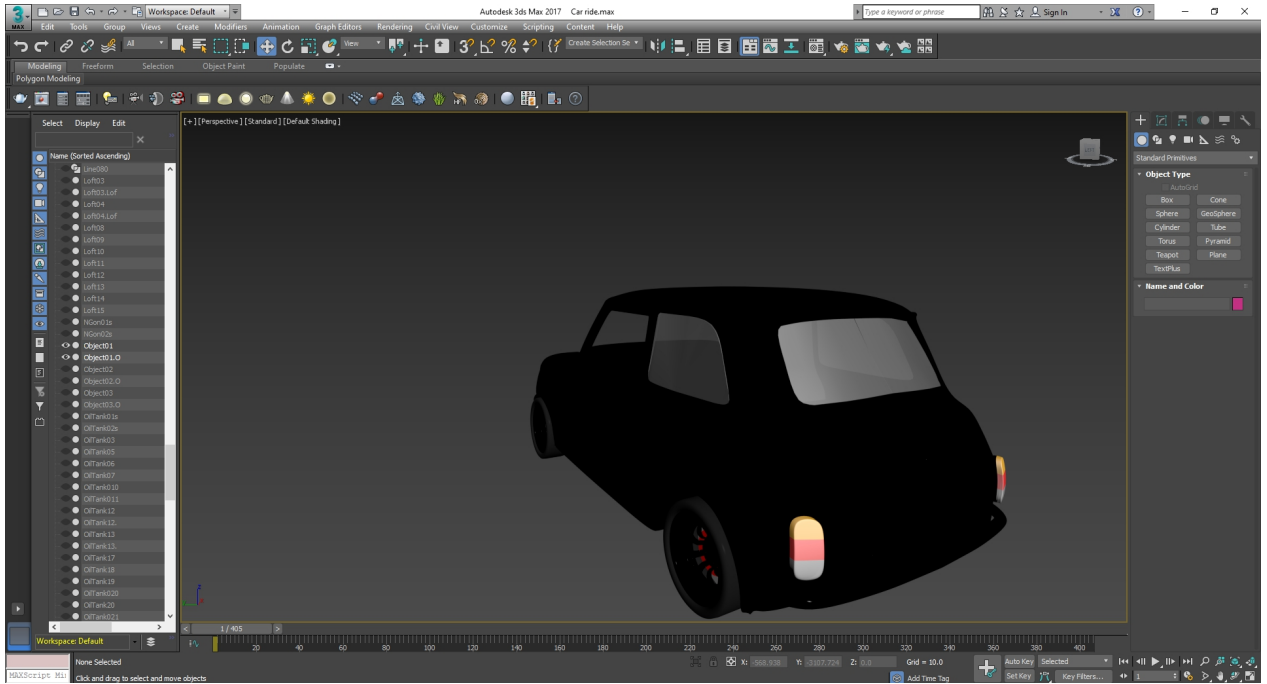


Figure 3.1.6.3 Textured Car

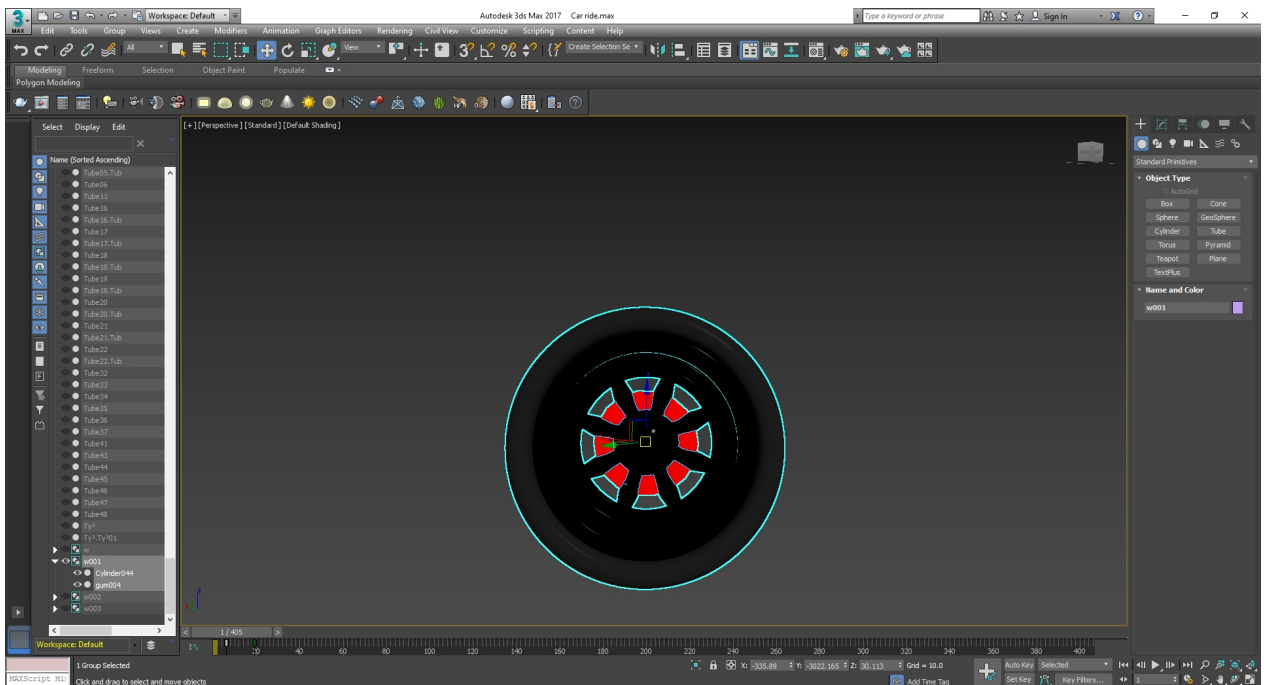


Figure 3.1.6.4 Textured Car Wheel

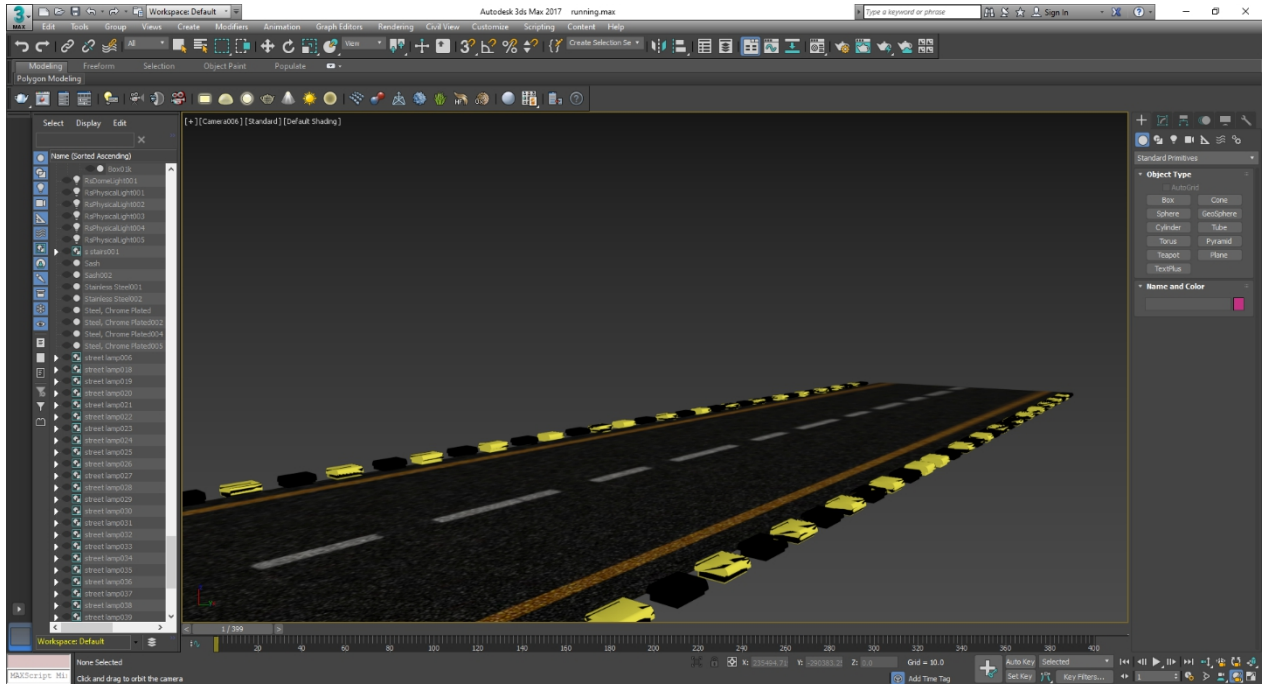


Figure 3.1.6.5 Textured Road

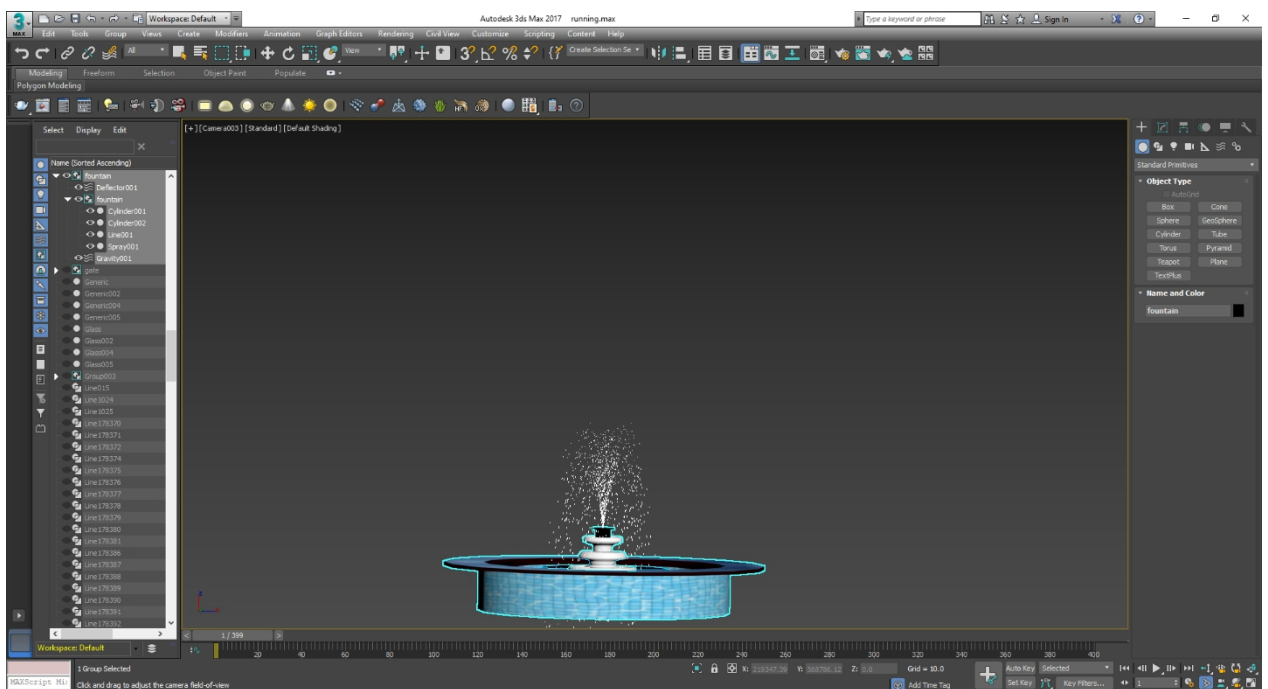


Figure 3.1.6.6 Textured Fountain



## 3.2 Animation:

3D Animation is the animation/movement method of objects in a three-dimensional digital environment. Using the art of motion, these 3D models or objects can be shifted and rotated like true objects. Right now, at least at the moment of writing this article anyway, this is the height of animation.

### 3.2.1 Car Moving:

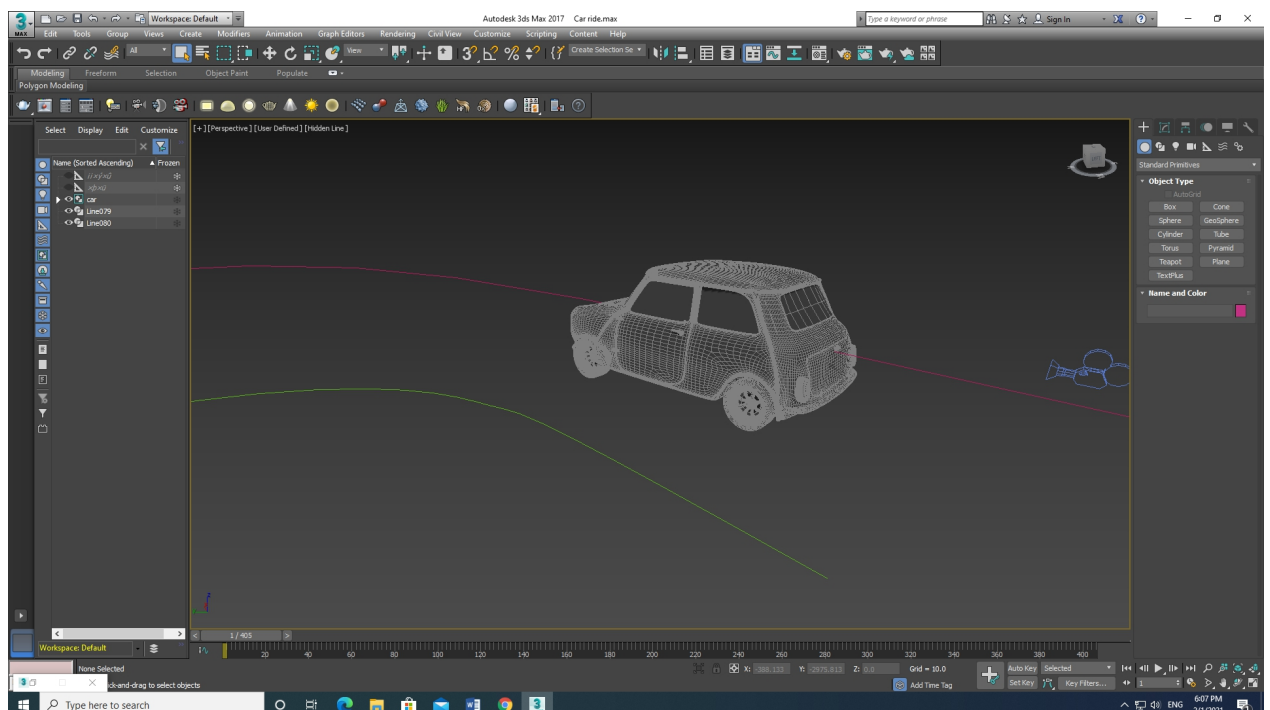


Figure 3.2.1.1 Car Path Constraint Animation

In this project we need a scene where a car move towards the housing society by smooth curve movement for that we need to create an animation for moving the car. To do that we use Path constraint animation here in Autodesk Max 2017.

Path constraint animation is very much effective. This restriction attaches an object to a user-generated curve or to the weighted multi-curve average and affects both the location of the item and its rotation values, orienting the item in the usual direction of the curve. The percentage number, once limited, governs the location and rotation of the object along the length of the curve. This setting can be used to animate objects that are moving along a road.

Use the Path restriction to limit the motion of an object along a spline or between multiple splines at an average distance.

Assign Controller (Position track object) > Route Restriction

Default menu: Menu Animation > Controllers Location > Route Restriction

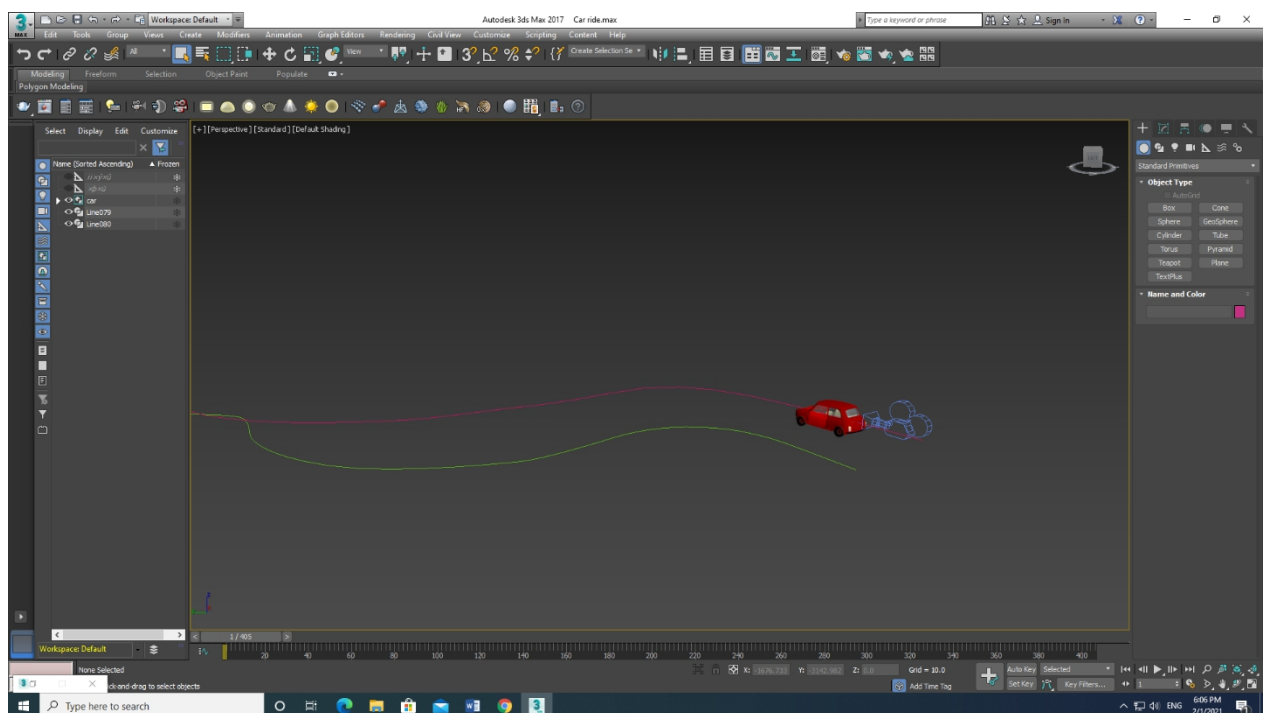


Figure 3.2.1.2 Car Path Constraint

The value determines a location along the path to which the object is limited, with the beginning of the curve (shown by a small circle around the first vertex of the curve) being 0 percent and the end of the curve being 100 percent. Paths were edited by selecting path edge and can be edited as per want of ovement.

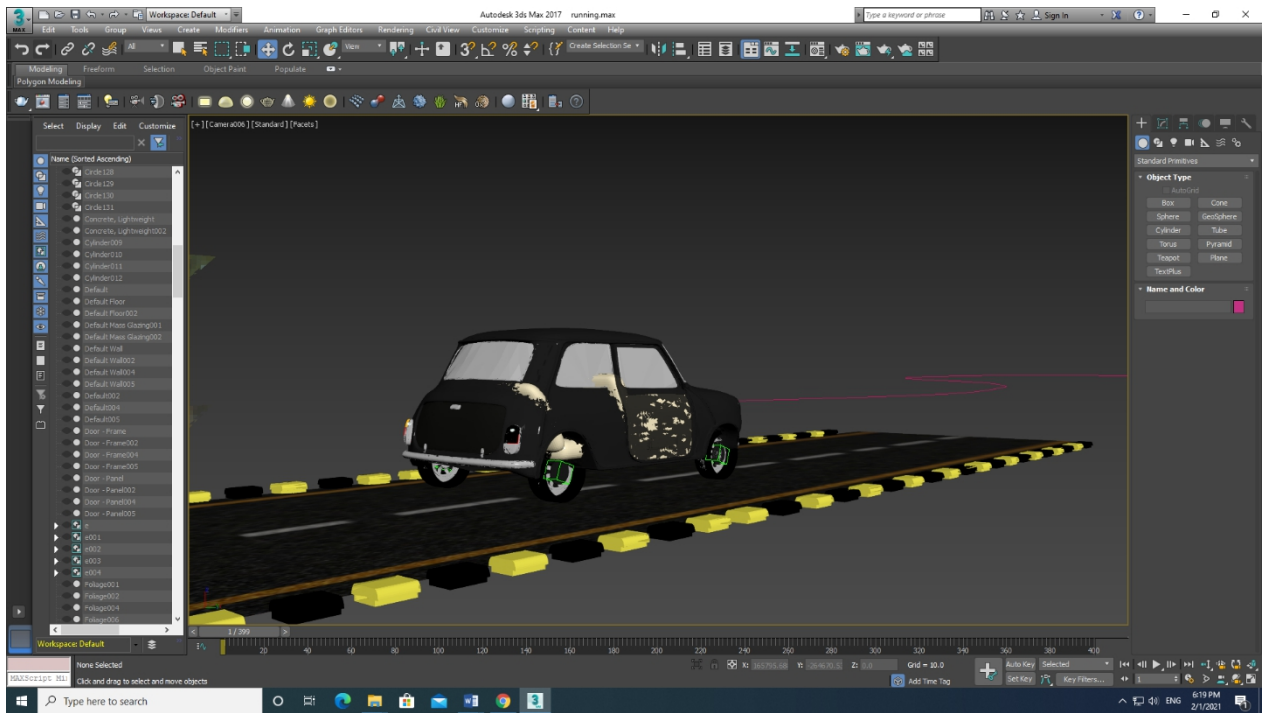


Figure 3.2.1.3 Car Path Constraint movement



Figure 3.2.1.4 Car Movement

### 3.2.2 Wheel Rotation:

Here in this project, we created an animation of moving car. So, we need to continuous rotation animation of car wheel. For that I modeled the wheel earlier in shape of usable rotation. For continuous wheel moving we need to create continue motion. For that I take a dummy and set it with the link formation of the wheel. Then selecting the axis and create a 360-degree rotation manually selecting both the dummy and the wheel.

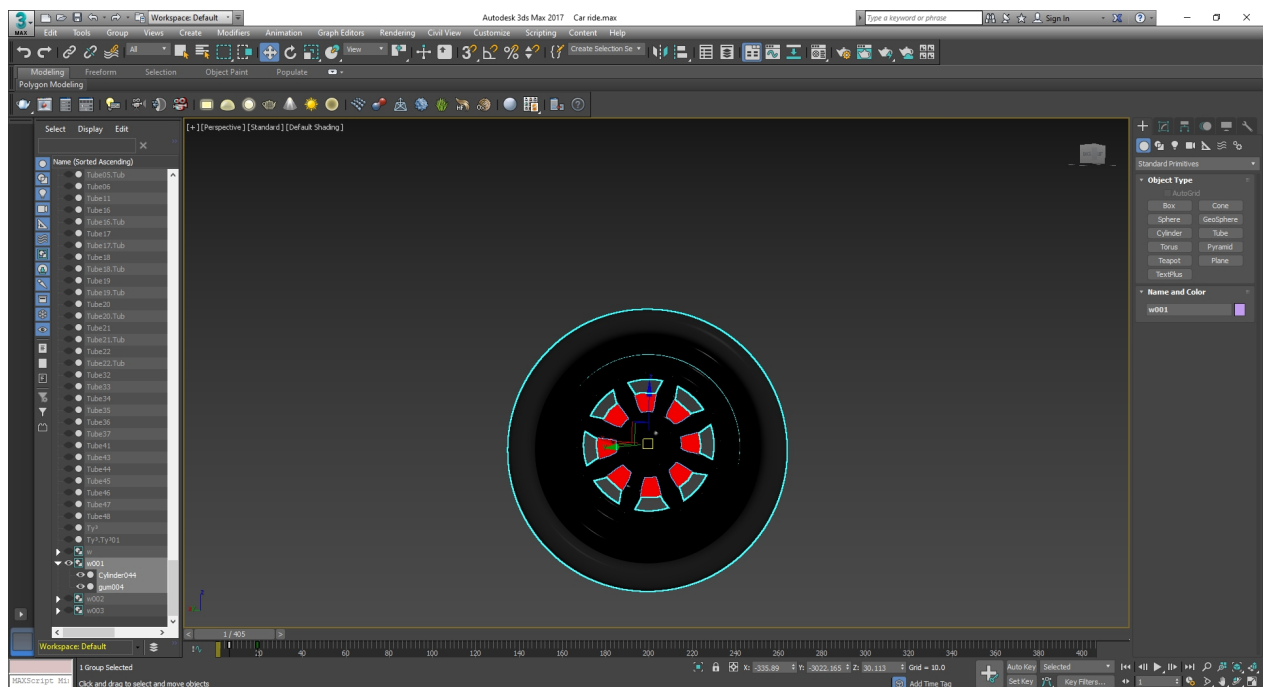


Figure 3.2.2.1 Car wheel

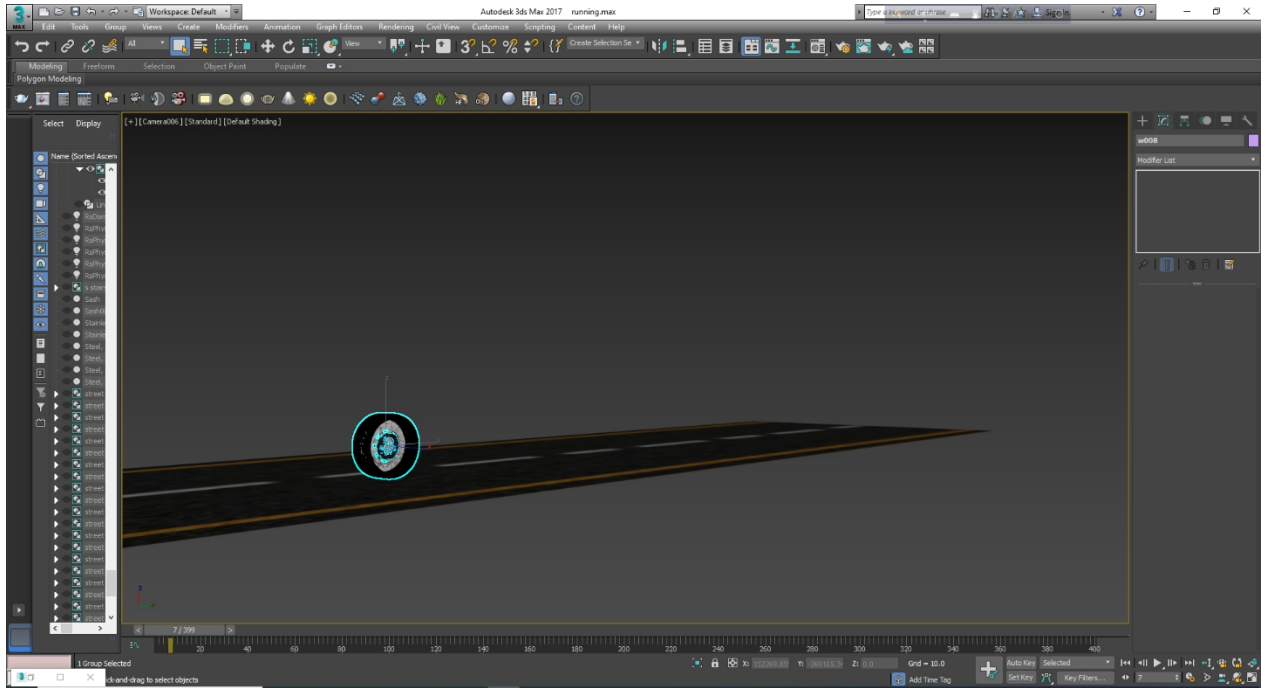


Figure 3.2.2.2 Wheel with Dummy

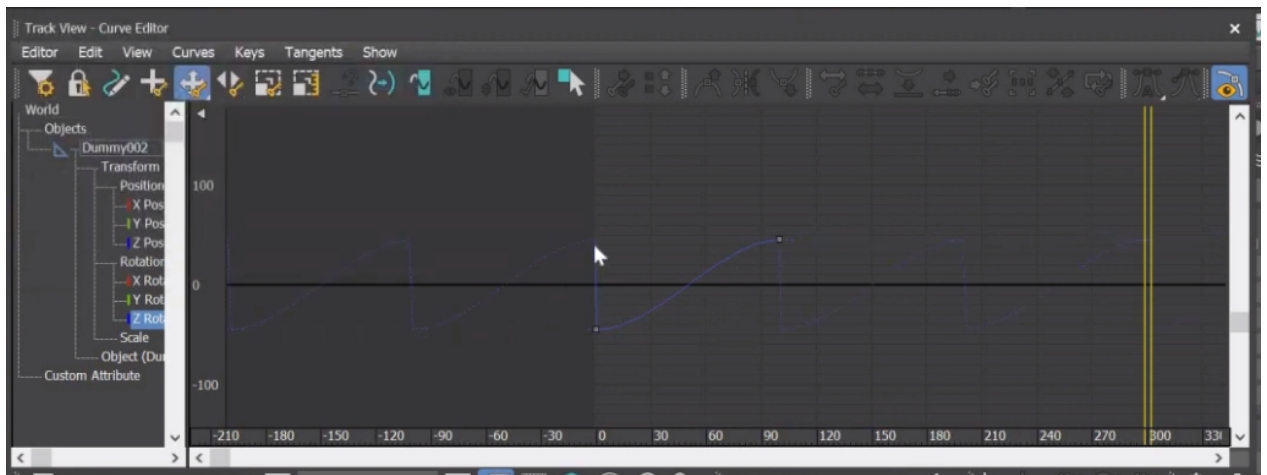


Figure 3.2.2.3 Curve Editor

We need to use Track view curve editor in order to make the rotation continuous. For that after selecting the wheel and dummy

Selection>Graph editors>Track View Curve Editor, Then the curve editor viewport will arrive. Then have to select the rotation movement of following axis.

Then View>Edit> Controller> Out of range types. It will make the continues motion of rotation that is out of range. And after playing or moving the frame we can check the spinning movement of the wheel.



Figure 3.2.2.4 Curve Editor (Out Of Range types)

### 3.2.3 Spray:

In this project we modeled a fountain which will appear as the decorative part for the project. For this we have modeled the fountain model earlier with simple polygon models. For creating the spray, I select the upper portion targeted point as the starter of spray. To create that selection point>Deflector>Spray. The spray will appear on it can be controlled by adjusting movement with the frame. But the spray will go to upper. To make it realistic waterfall I applied Gravity in the plane surface bottom of the model. And it will make the spray flow perfectly.

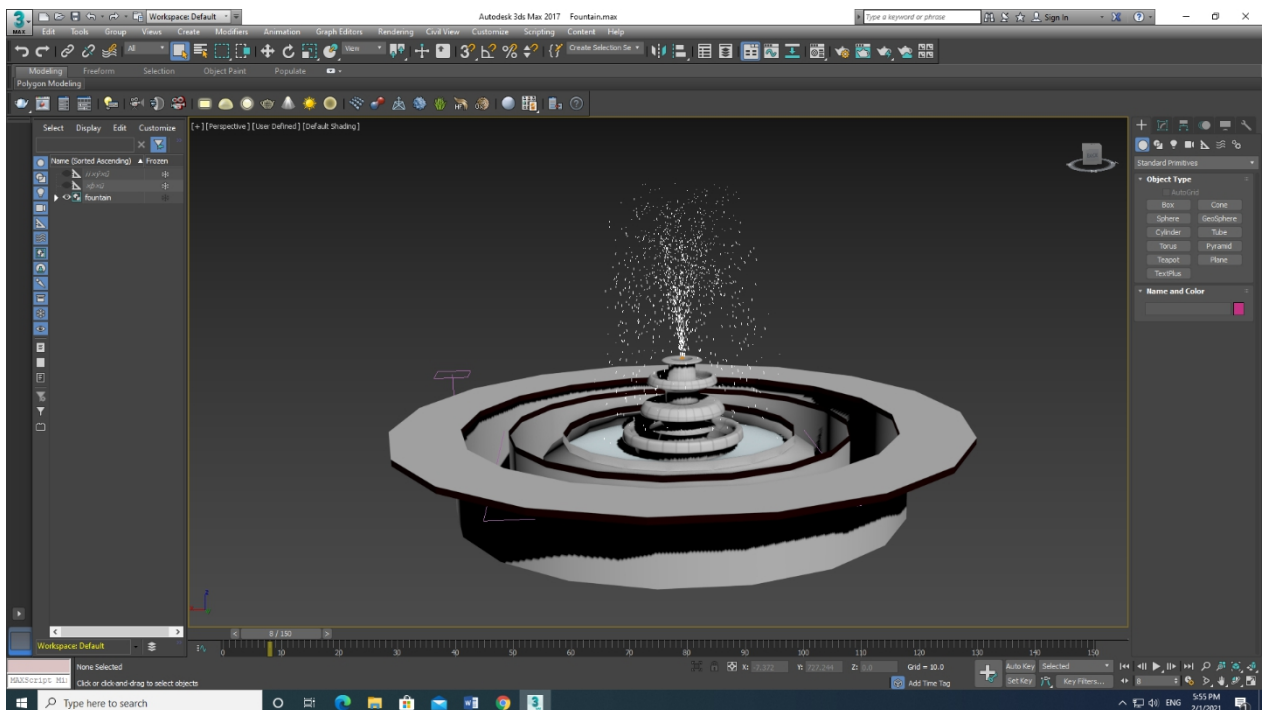


Figure 3.2.3.1 Curve Editor (Out Of Range types)

### 3.3 Lighting:

Lighting is the illumination of a project. Previously we modeled and animated the whole project, but that was only viewable to us while in standard viewport. To make the project output lighting the scene of projects is necessary. For this I lighting this project with basically Thoroughly Redshift lighting. After using the lights each and several elements lighten up physically individually.

Here in this project, I basically use 4 types of lights for 3.2.3.1 om Redshift Lighting properties. Those are:

1. Red shift dome
2. Red shift Sun
3. IES light
4. Physical Light

This project is basically an exterior project which contains several environments so several types of lights are been used here.

#### 3.3.1 Redshift Dome:

I use redshift Dome light to create the environmental sky for the exterior scenario. As this is an exterior project it was necessary to put physical sky to the scene for that I use a Redshift Dome and put a HDRI on Dome which illuminates the environment with the given source of sky and the environment. To create it Lights>Redshift>Dome.



Figure 3.3.1.1 Dome (HDRI)



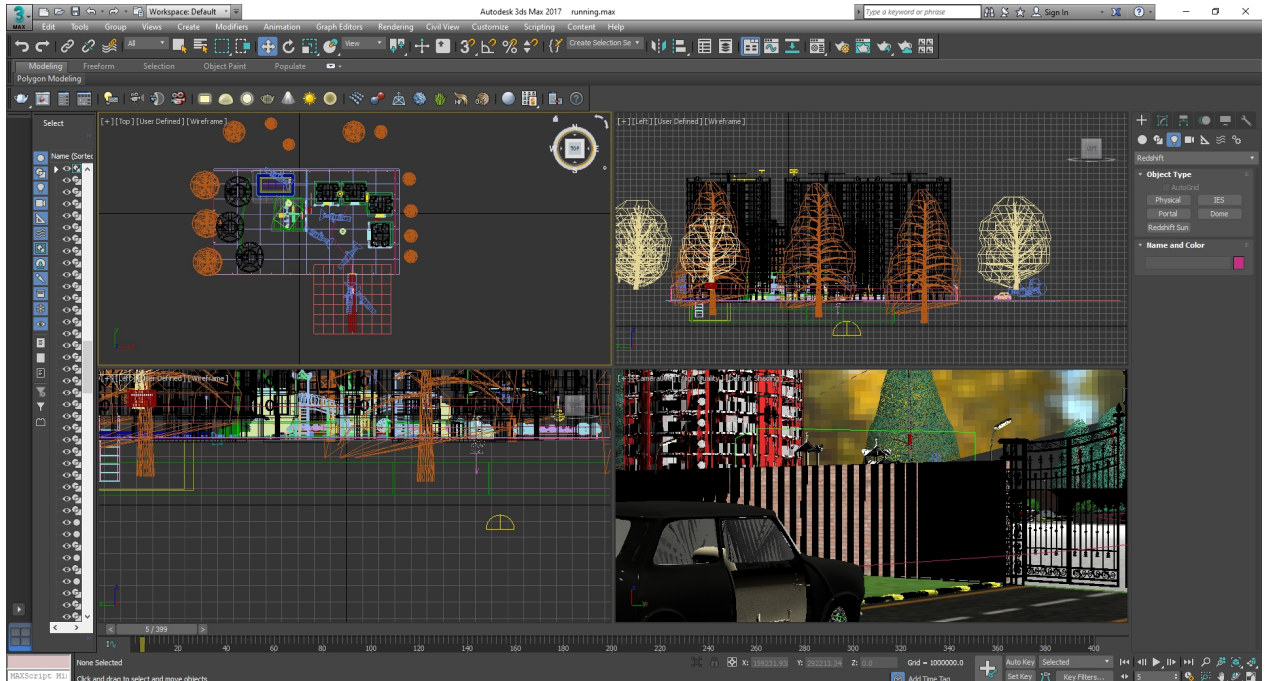


Figure3.3.1.2 Dome Light

### 3.3.2 Redshift Sun:

Redshift sun is basically I used for creating the daylight environment. In some scenario I need to illuminate the scenario with daylight for that I used redshift Sun positioner to creating Sunlight effect of Light and shadow casting to the Scene.

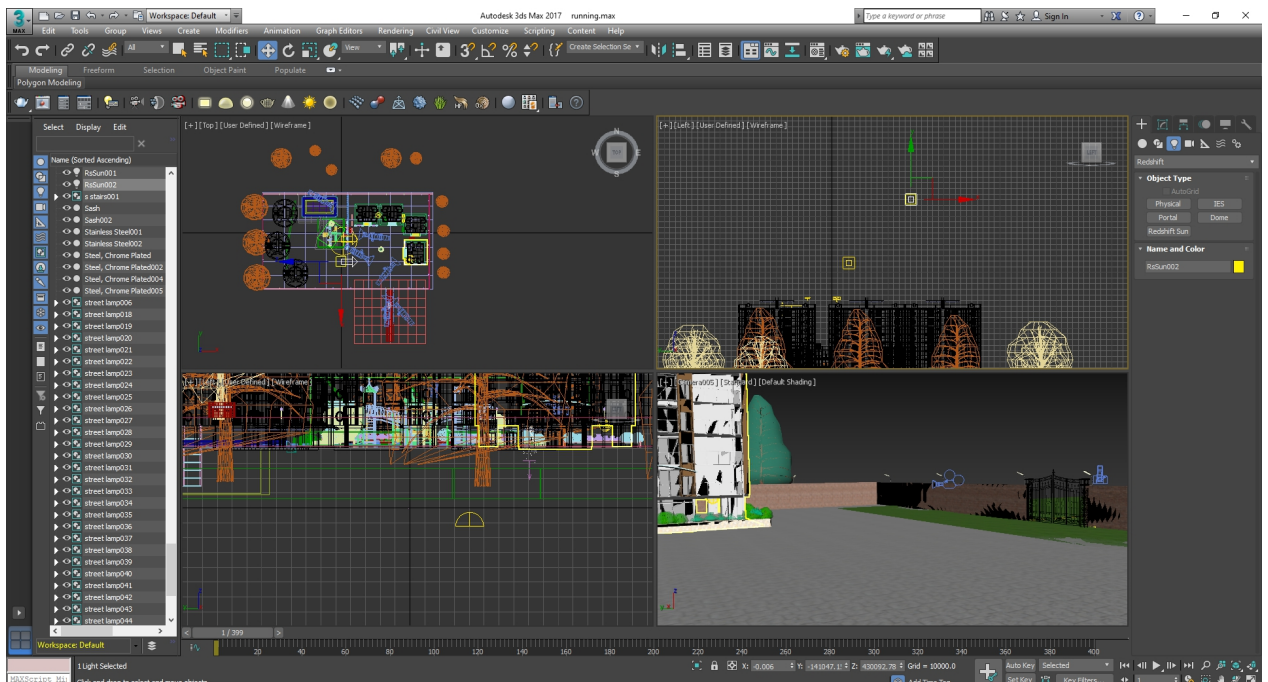


Figure 3.3.2.1 Redshift Sun

### 3.3.3 IES Light:

In this project in some scenes, I Used some streets light and wall light. Which will illuminate for the night scene of the exterior view.

For those I used some IES lights severally situated map with the lamps. To create this Lights>Redshift>IES>Load>IES files.

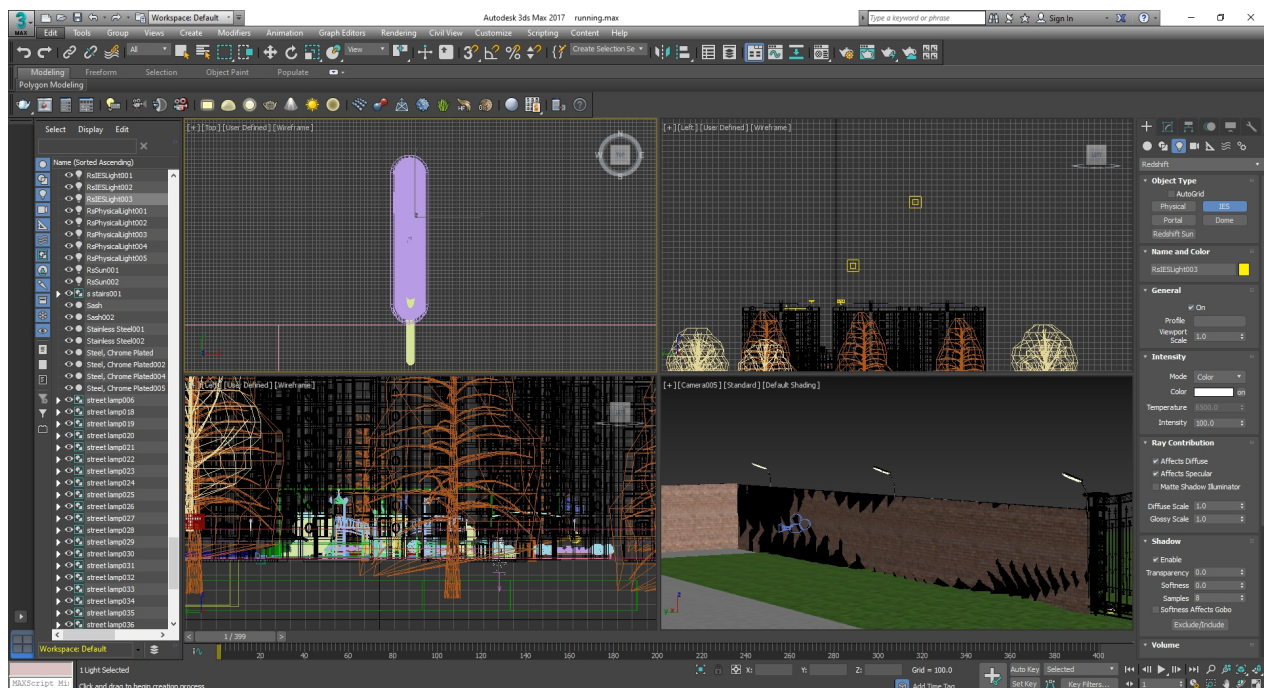


Figure 3.3.3.1 IES light.

### 3.3.4 Physical Light:

In this project in some corner position of building there were some lighting issues I faced earlier. Global illumination can reach those corners. So there were some visible noise and shadow issue. So, on that places I used some physical light with medium illuminations. The advantage of using [physical light is it can be controlled area of choice by easily dragging. To create this need to Lights>Redshift>Physical Light>Top.

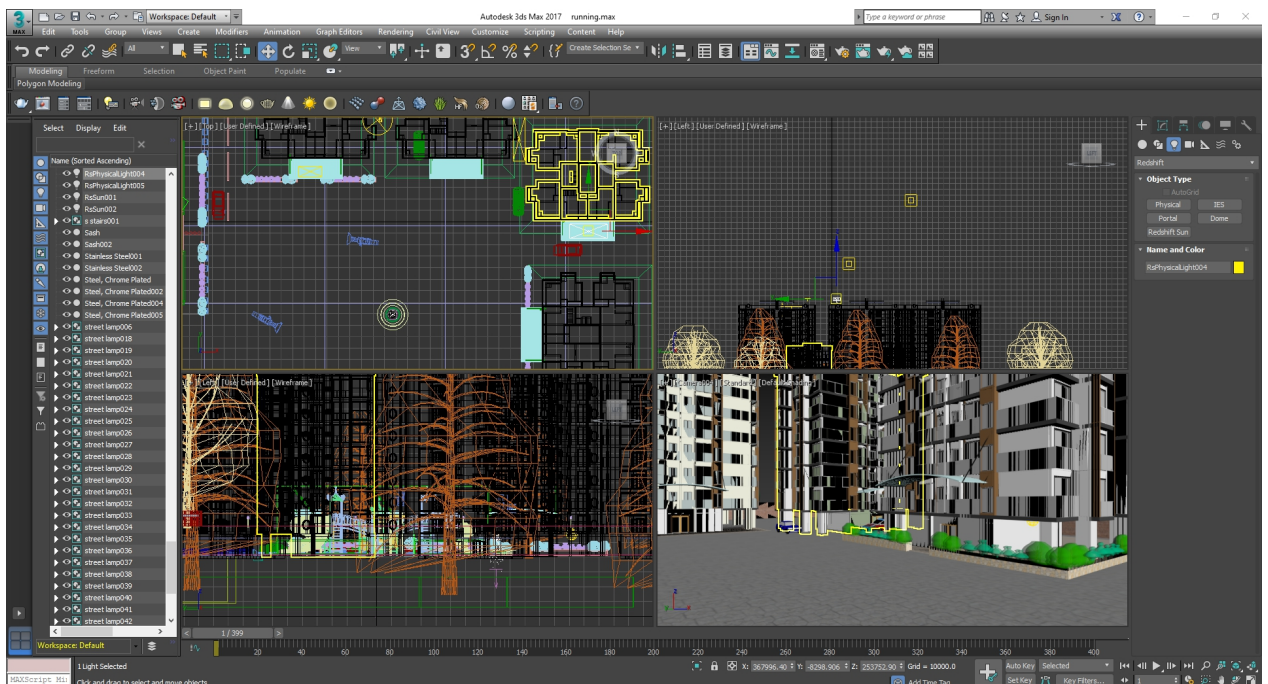


Figure 3.3.4.1 Physical light.

### 3.4 Rendering:

Rendering is the process of creating output of the project. 3D rendering is the process of creating 2D image from 3D file from the computer file. This works through frame-by-frame processing 2D images. And finally, all those frames are post produced to creating flow visualization as video output.

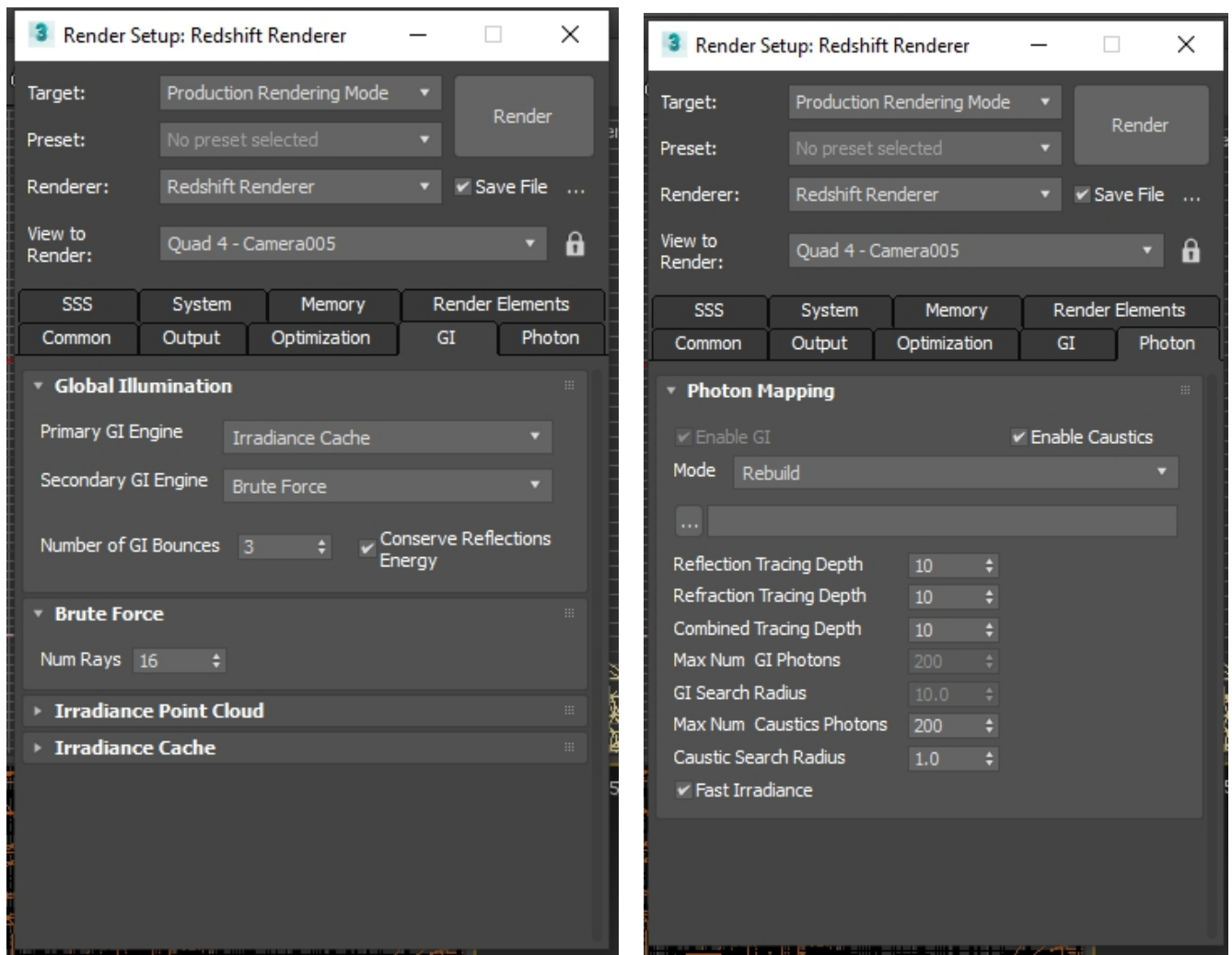


Figure 3.4.1 Render setup

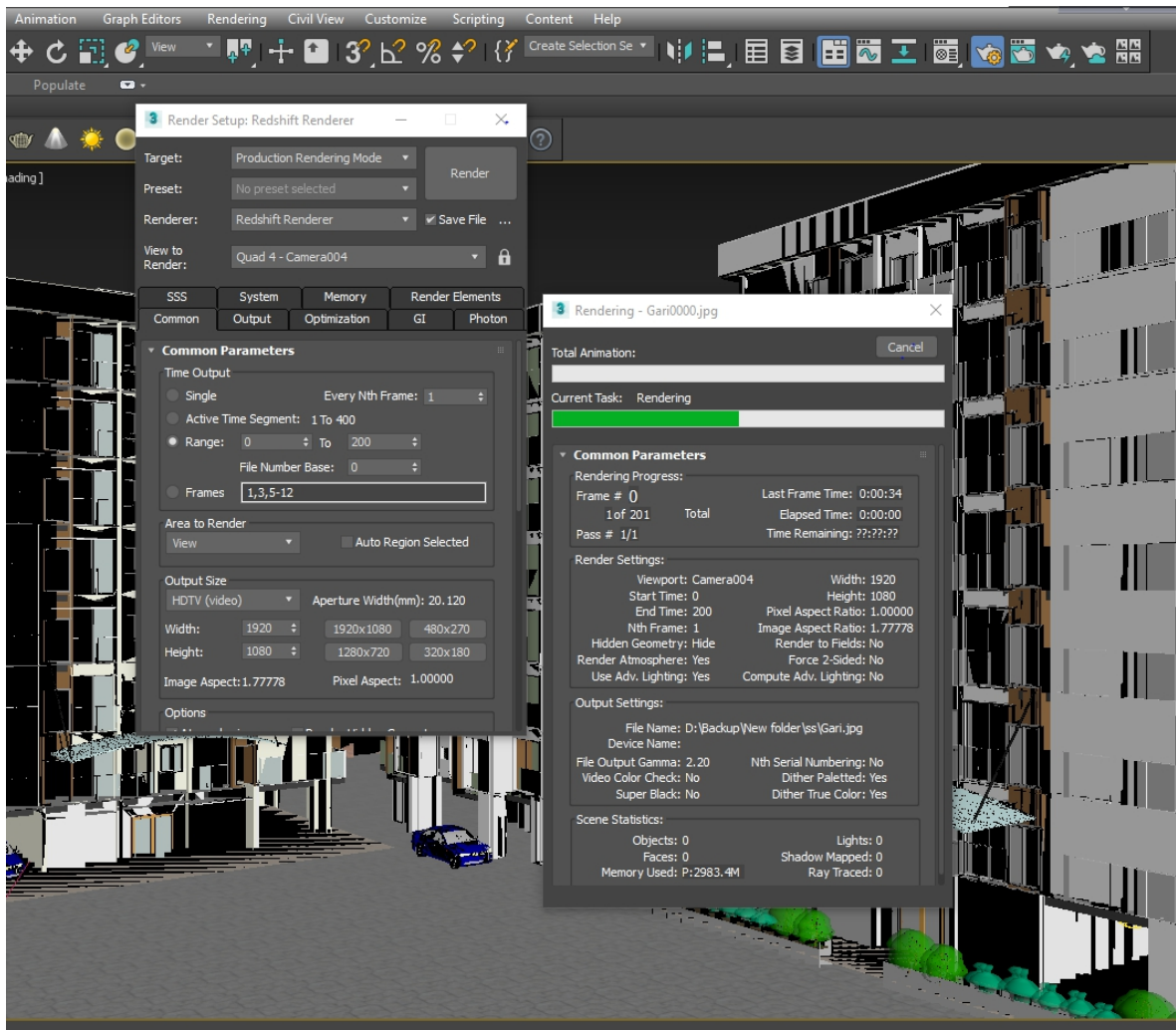


Figure 3.4.2 Production Render

To complete this entire exterior project, I used 9 cameras thoroughly from different angle and views. For this I rendered approximate 3500 frames of rendering covering several scenes. On average almost it took 2-3 minutes for processing per frame render. And It took almost 140+ Hour to render whole project.

### **3.5 Post Production:**

As mentioned above that from the 3d platform and from the render engine we got only 2d image of processed image. To finishing the output, I post produced the rendered output in several software's. Basically, for this project output we need to create final video output of scenario and that has been used for further presentation like apps and others.

For creating the final output, I had used 2 software.  
Those are:

1. Adobe After Effects CC 2019
2. Adobe Premiere Pro 2019

#### **3.5.1 Adobe After Effects cc 2019:**

I used adobe after effect to creating the video output. Render engine processed the sequence of JPEG images. Which I import onto after effects and I create several compositions to make the video outputs. Also, the gamma rate of the output and some color grading also been done on after effects and finally again have to rendered the file from after effects as final video output.

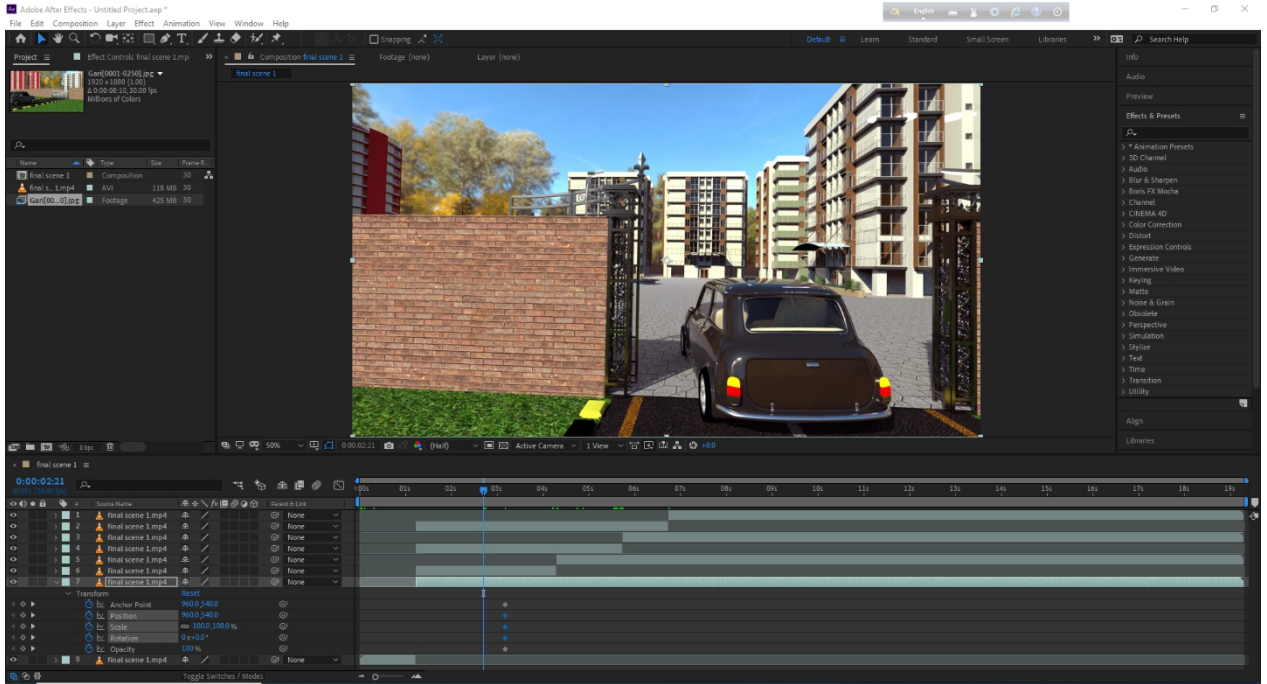


Figure 3.5.1.1 Post Production (Ae)

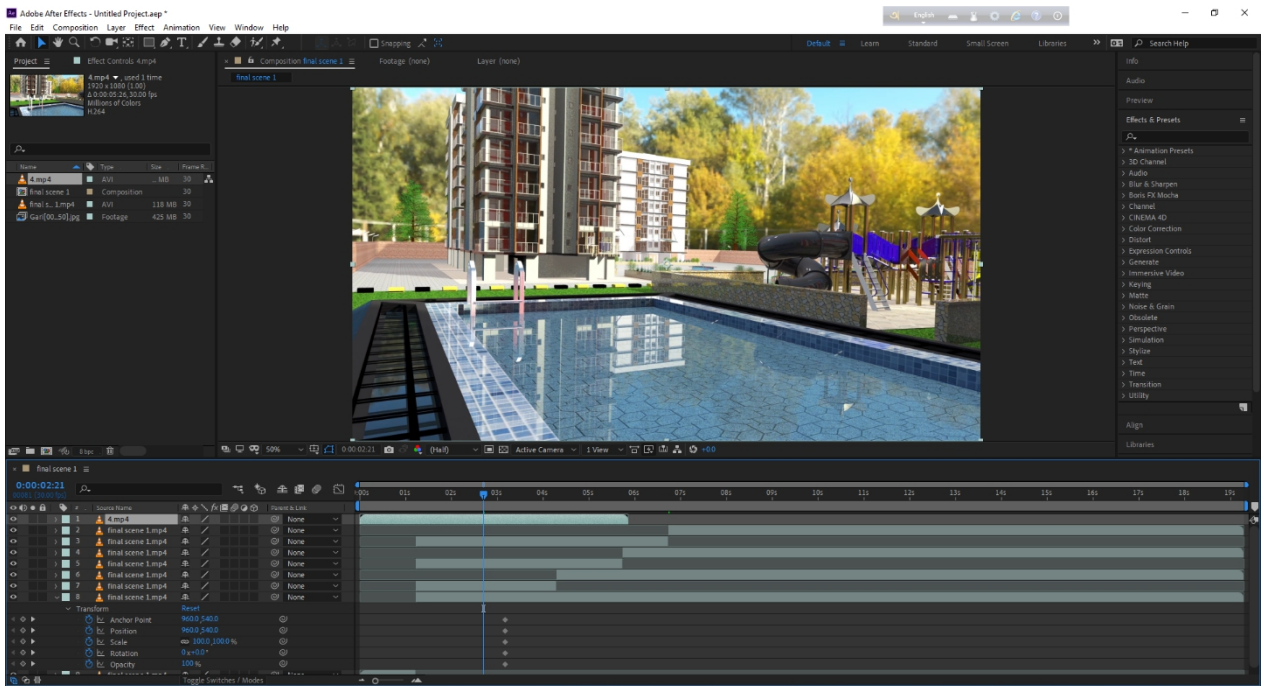


Figure 3.5.1.2 Post Production (Ae)

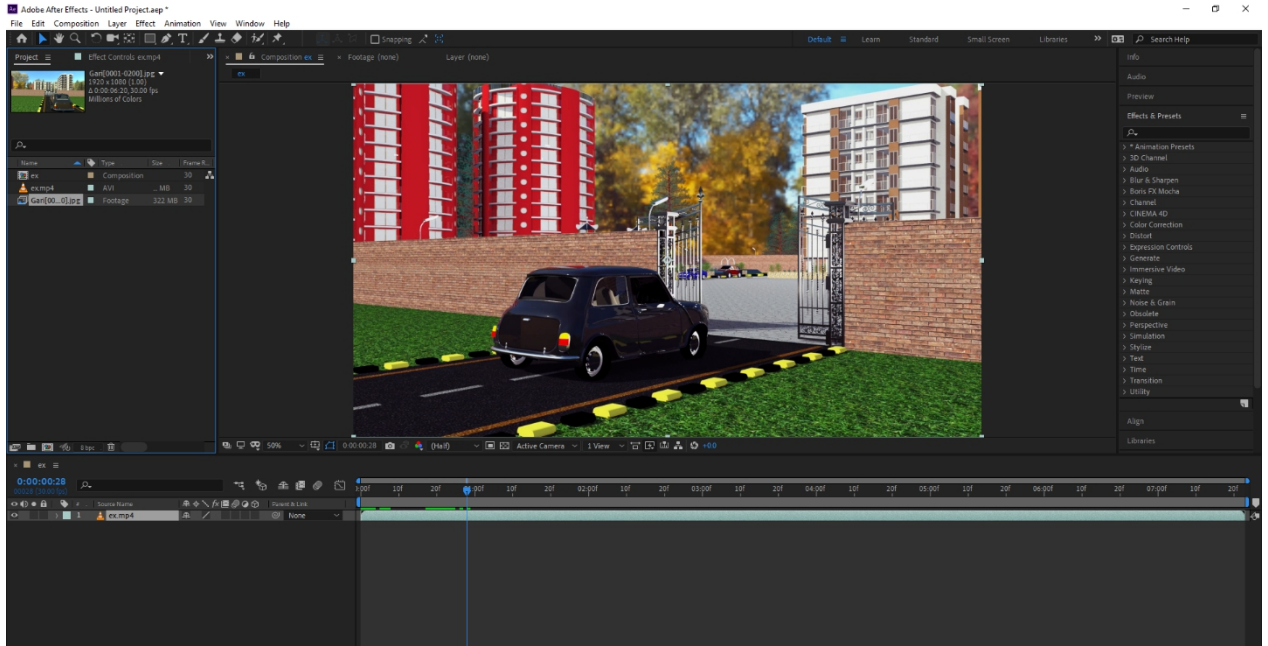


Figure 3.5.1.3 Post Production (Ae)

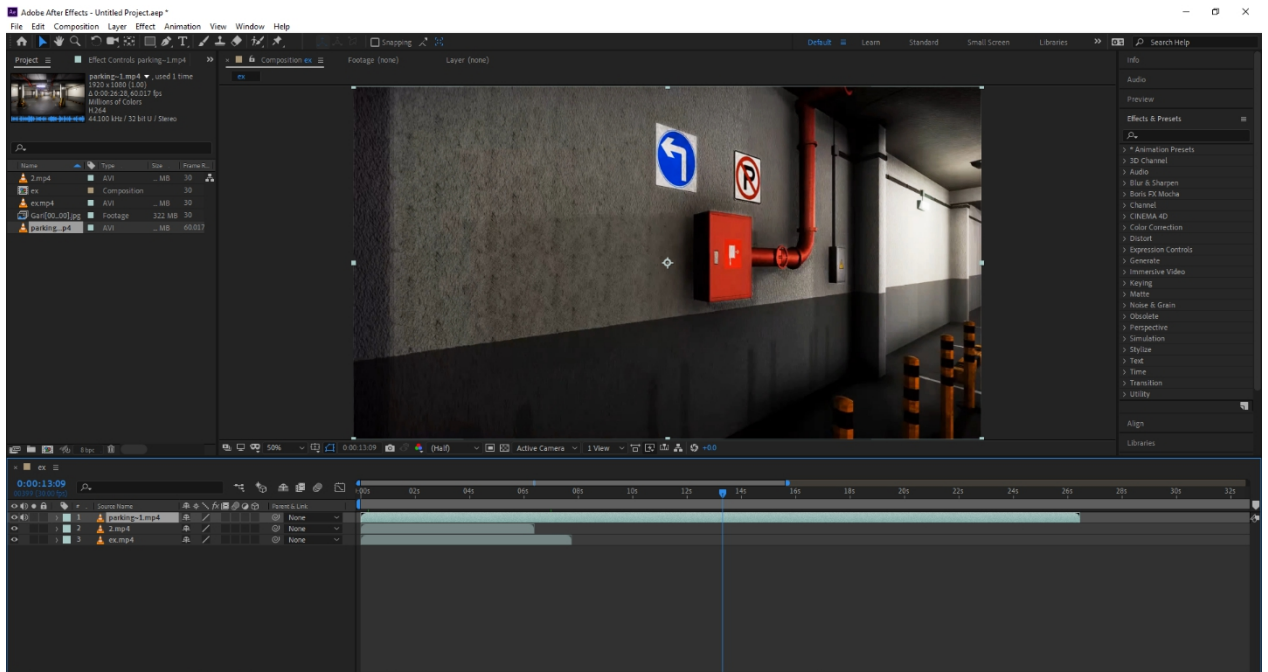


Figure 3.5.1.4 Post Production (Ae)





Figure 3.5.1.5 Post Production (Ae)

### 3.5.2 Adobe Premier Pro:

I used Adobe premiere pro to mix up some shots and clips. Basically, vide outputs are from single angle. To make the output more glorious I edited some shots with Premier pro mixing with some blending effect on premier pro.

Premier Pro is a one of a very powerful software known foe video editing. Here I edited clips sequentially as per my want. I also added sky blushing and some other effects in here.

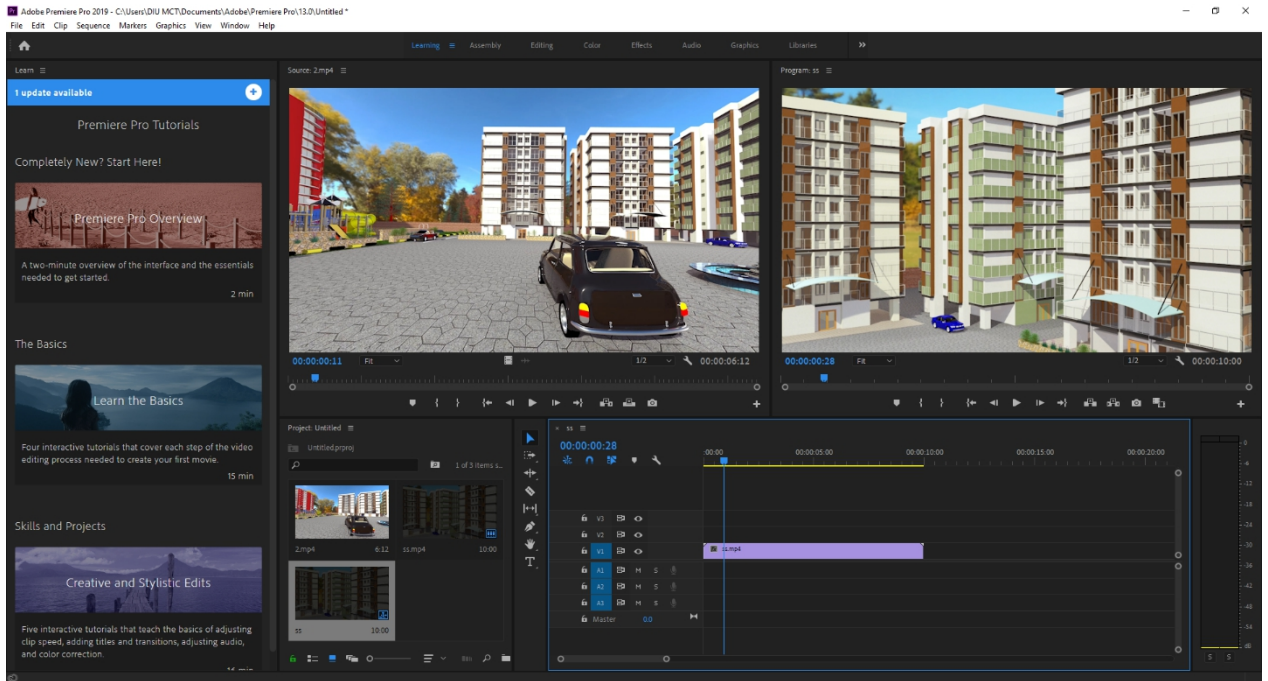


Figure 3.5.2.1 Premier Pro Production (pr)

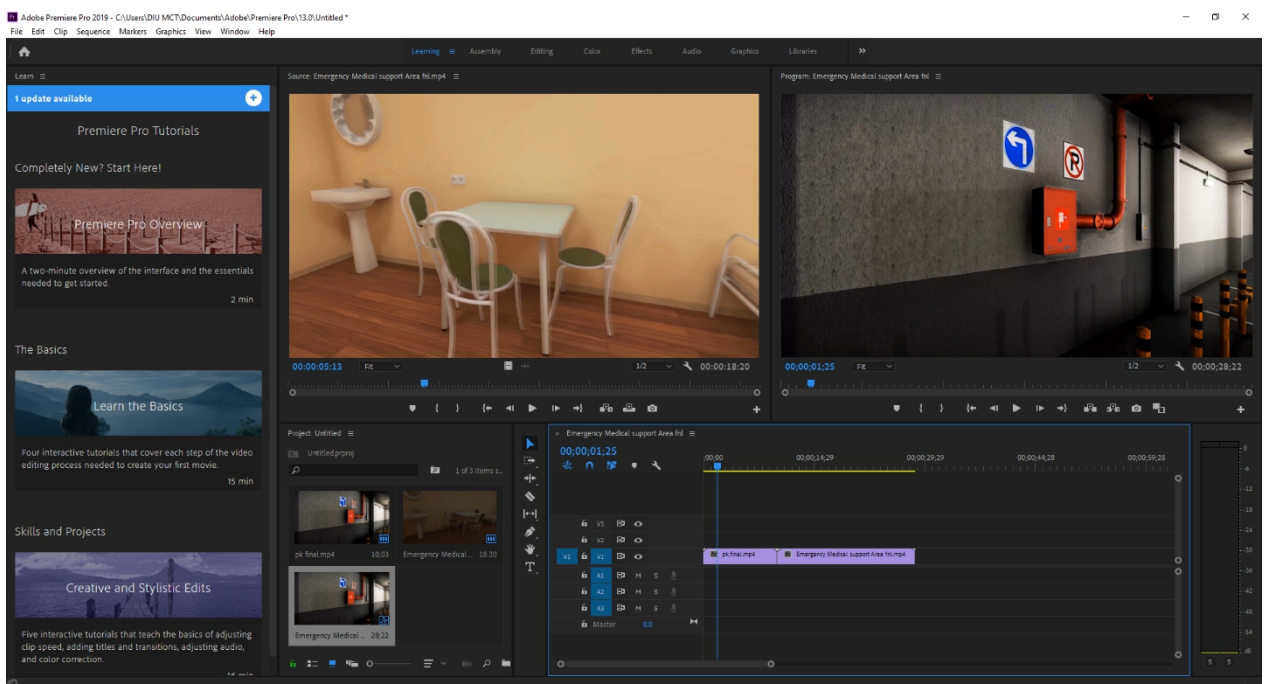


Figure 3.5.2.2 Premier pro Production (pr)

### 3.6 Final Output:

Some final outputs of rendered and post produced samples are given below:



Figure 3.6.1 Output scene (Society Building)



Figure 3.6.2 Output scene (Car Entrance)

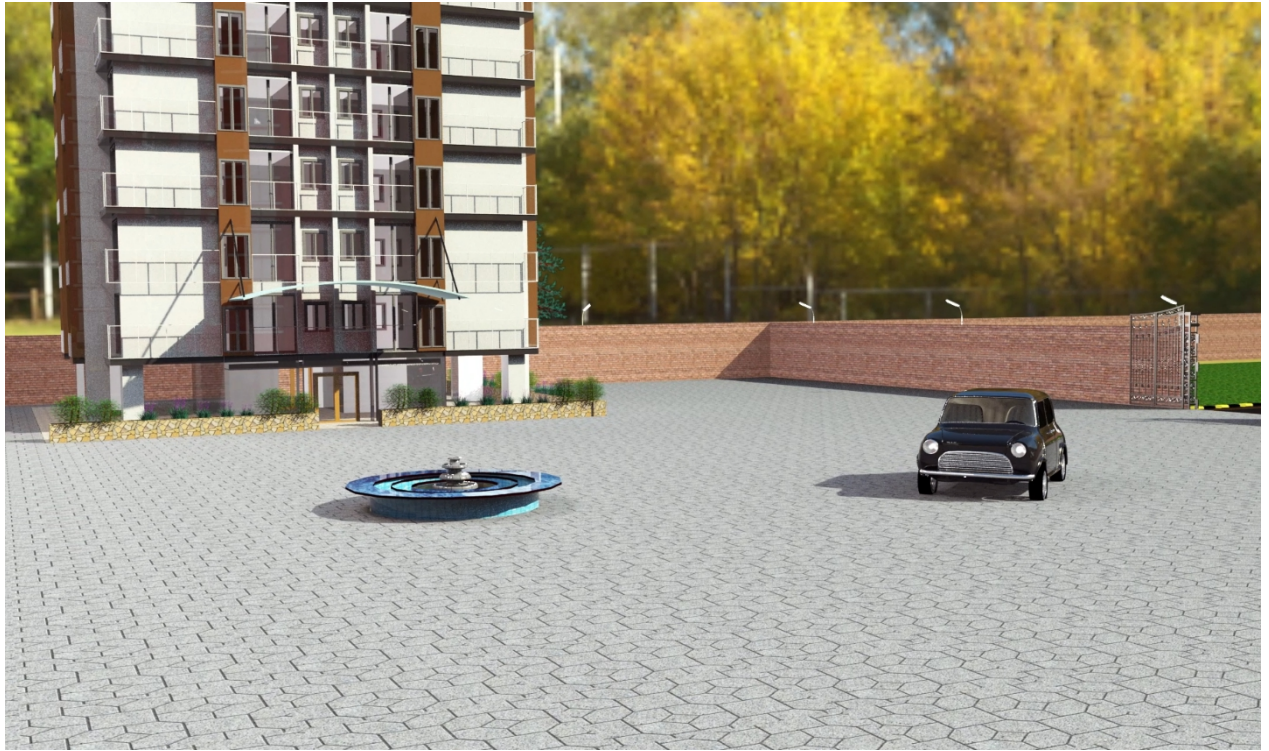


Figure 3.6.3 Output scene (Car Approaching)



Figure 3.6.4 Output scene (Multiple Buildings)



Figure 3.6.5 Output scene (Automated Entrance Gate)



Figure 3.6.6 Output scene (Society Swimming Pool)



Figure 3.6.7 Output scene (Fire Rescue facilities)



Figure 3.6.8 Output scene (Entrance Entry)



Figure 3.6.9 Society Birds Eye View

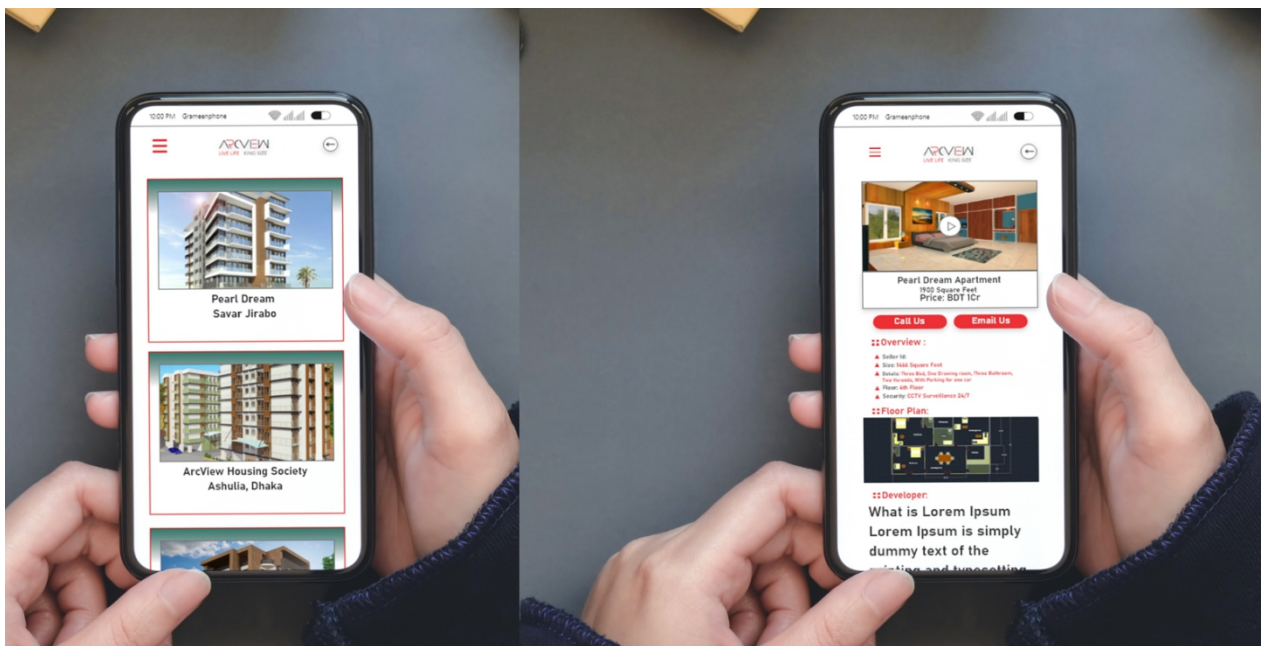


Figure 3.6.10 App presentation

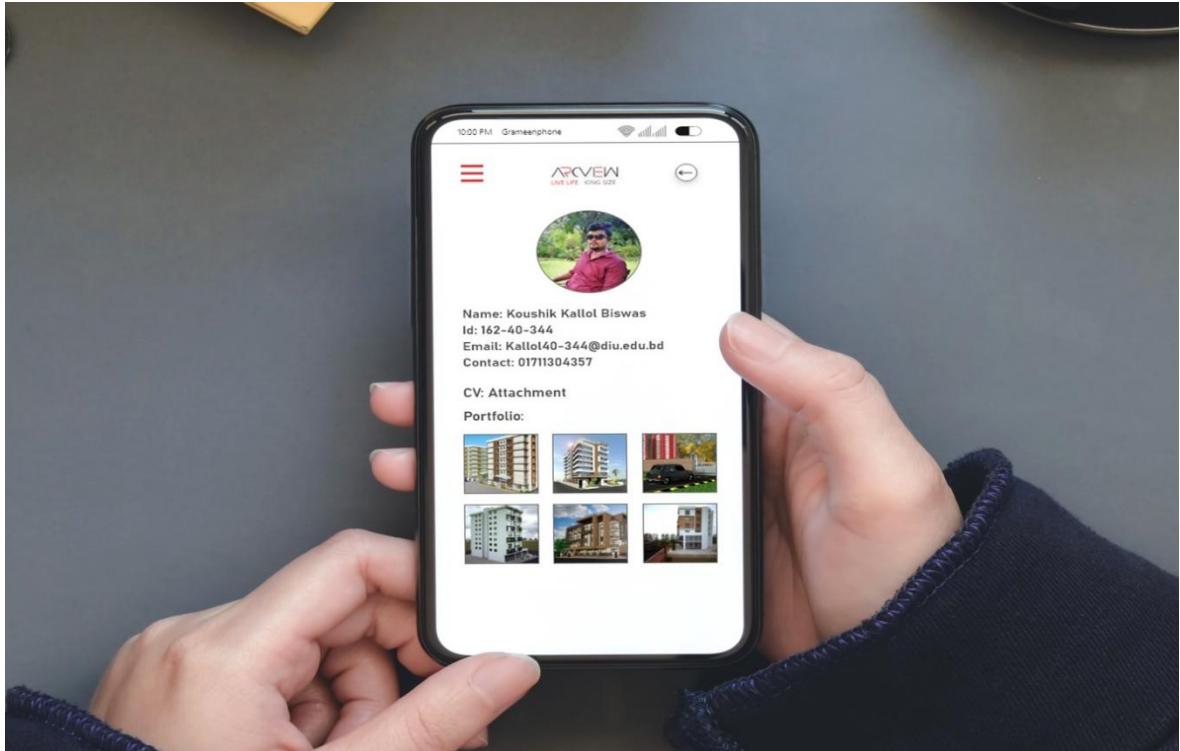


Figure 3.6.11 App Presentation

### 3.7 Used Software:

To complete the whole project my used software's are given below-

1. Autodesk 3ds Max 2017
2. AutoCAD 2020
3. Adobe After Effects CC 2019
4. Adobe Premier pro
5. Adobe Photoshop CC 2019
6. Adobe Xd 2019





## **CHAPTER 4**

### **Obstacles and Challenges**

#### **4.1 Obstacles:**

While completing this project we face many difficulties which are either major or minor. And those effects the output our project thoroughly in several stages. Those are mentioning below.

##### **4.1.1 Survey and Pandemic Issue:**

When we decided to develop this project, it was just before the pandemic issue after that the pandemic issue spread worldwide. And lockdown started. It causes a great harm to our project. For this we can't survey as our desired real-life projects. It was our target to taking some real-life scenes by pre shoot clips and then work with that reference but due to the situation we missed that and it may create some lack in our outputs.

Moreover, at the 11<sup>th</sup> hour we visited some of Re known companies and farms but according our project it was much less than our planning. In that very short time, we visited-

##### **4.1.2 Hardware and Software Issue:**

All 3D animation and rendering software requires highly configured computers. The higher the configuration, the better the quality in this instance. But we have faced a lot of challenges working with our average quality computers. The application kept crashing or getting stuck. They were slow at times and were unable to read the commands and execute them properly. Sometimes files take too many times to open or some it crashes frequently

##### **4.1.3 Render Issue:**

While after modeling entire project, it was my target to render this project with Vray or cortana render engine which are mostly known foe the most realistic render engine in the world. But when I attempted to do it with those it was just next to impossible to do that enlarged exterior scene with our average configured computer. And also, it was taking too much time to render a single frame. So, after that I have to figure out and had to use Redshift Renderer which is comparatively lighter and faster render engine. But here I have to compromise little bit of output qualities.

## **4.2 Challenges:**

This project was a group project of three of our members. In this project individually we have several parts to do thoroughly discussing and sharing. It was our plan to work together and bring out the best output. But here we have to face biggest difficulties because of Covid-19 pandemic situation. Our team members we had been separated thoroughly even on different cities of the country. It was our biggest challenge to collaborate each other through internet, but it was really too much challenging and project like this need to collaboration and team work. So, it was our biggest challenge. Although this situation creates so many complicated issues which hampers workability and it was so challenging for us to complete this project within short time.

Both 3D animation and rendering software needs highly configured computers. The higher the configuration, the better the quality in this instance. Yet we have faced a lot of difficulties working with our average quality computers. The program kept crashing or getting stuck. They were sluggish at times and were unable to read the commands and execute them properly.

Moreover, render time is another big issue because it can't be minimized with limited configured computers. To keep that in mind it was our challenge to render output in time with the obstacles of time and machines.

## CHAPTER 5

### Conclusion

Bangladesh is a densely populated country. Urbanization makes it more complicated; People are in great trouble of living place. The real estate sector contributes to the need for accommodation, one of the five necessities of human life, while playing an important role in the country's economic growth. Bangladesh's real estate sector is unique in the world. It is a mixture of various housing cultures from different countries encountered by professionals.

At present, the real estate sector plays a leading role in the supply of housing units, but this sector still has tremendous scope to flourish in Dhaka City's housing market. Proper implementation of planning policies will soon generate great prospects for this sector. In short, the real estate industry will contribute a great deal to reshaping the future of urban living in Dhaka City.

So, the real estate sector is ring day by day, It creates in both way socio economic development country and ensures the living place to people.

As I planned at the beginning of my thesis project work, I made a 3D visualization of and some other residential environments using the process of 3d visualizations. I have been studying many methods and using some of them. Of course, 3D visualization can be done in other ways, and my project can create bit impact on the scenario of real estate development.

From this project I learned a lot about the professional work by visiting some professional firm and companies and from further query and help of my honorable mentor learned a lot about 3d visualization which will help me lot to my next projects.

## REFERENCES

1. Craftcloud portal (february , 2017) , Real Estate & 3D  
  
Retrieved from "<https://all3dp.com/2/what-is-3d-rendering-simply-explained/>"
2. Toolfarm (Hugo, Orso-manzonetta Vincent, Yang Kai) ( November 16, 2018) ,  
  
Retrieved. From "<https://www.toolfarm.com/buy/redshift1>"
3. Autodesk Help desk (March, 2020), Support & learning  
  
Retrieved From "<https://www.autodesk.com/>"
4. Free 3d storage cloud (March 12, 2014), Resource cloud  
  
Retrieved From "<https://free3d.com/3d-models/3ds-max>"
5. Pcmag Encyclopedia (July 12, 2020), Retrieved February 13.2021.  
  
From "<https://www.pcmag.com/about>"
6. Bid llc (June 9, 2020) Nhc Masterprint Photorealstic 3d Visualization .  
  
Retrieved From "<https://www.youtube.com/watch?v=gvonAkOrh84>"
7. Animin Studio, (January 30, 2018), Archietctural animation Showreel  
  
Retrieved From "<https://www.youtube.com/watch?v=KzLJVFIZXYk>"
8. About Detail Storyboard (November 11, 2019) , Why storyboard?  
  
Retrieved from "<https://www.vyond.com/resources/what-is-a-storyboard-and-why-do-you-need-one/>
9. Autodesk Max, (July 5, 2019). Max Products  
  
Retrieved From "<https://autodes/max/overview>"
10. Cg Trader Resource (August 20, 2019). Max/Models  
  
Retrieved From "<https://www.cgtrader.com/products/cg-trader/>"
11. Adobe Photoshop CC (July 5, 2020) product key  
  
Retrieved From "<https://www.adobe.com/products/photoshopkey.html>"
12. Turbosquid 3D properties (August 15, 2020) Resource building

Retrieved From” <https://www.turbosquid.com/3d-model/architecture>”

13. Low poly Road (May 7, 2019, Architectural

Retrieved From “<https://www.Unityassetstore.com.au/advanced-skeleton>”