Green University of Bangladesh
Department of Computer Science and Engineering (CSE)
Faculty of Sciences and Engineering
Semester: (Summer, Year:2021), B.Sc. in CSE (Day)

Course Title: Engineering Drawing
Course Code: CSE 201 Section: 201 DN

Lab Project Name: _ _ _ _ _ _ _ _ 3D Bungalow Design_ _ _ _ _ _ _ _

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Submission Date : 08/09/2021 _
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Lab Project Status

Marks: …… **Signature: .....**

Comments: ..... **Date: .....**

Introduction:

AutoCAD is professional design software.Autocad software is used to increase the productivity of the designer, improve the quality of design, improve communications through documentation, and create a database for manufacturing.Autocad is an important industrial art extensively used in many applications, including automotive, shipbuilding, and aerospace industries, industrial and architectural design, prosthetics, and many more.It is used by (Architecture, Engineer, and Construction) to generate and optimize 2D and 3D designs. AutoCAD is a widely used software program that can help us draft construction documentation, explore design ideas, visualize concepts through photorealistic renderings, and simulate how a design performs in the real world.

Several types of 3D modeling are available in AutoCAD. Each of these 3D modeling technologies offer a different set of capabilities. Wireframe modeling is useful for initial design iterations and as reference geometry, serving as a 3D framework for subsequent modeling or modification.Here we can design any kind of 2D or 3D design.

Design Goals:

AutoCAD 3d drawing comes with a variety of outcomes.

1)Streamlined Product Design Cycles,Scan Data and CAD.

2)An Accessible Design Process.

3)Improved Communication Across Internal and External Teams.

4)Catch Design and Quality Issues Before They Cost us.

5)Physical Prototyping Made Simple.

6)More Effective Data Management.

Before we start modelling, we need to change the workspace to “3D modeling” from the status bar at the bottom of the application. The ribbon will update to show 3D tools.We can start by navigating to an isometric view by clicking on a corner of the view cube on the top right of model space. If we do not see the view cube, we can make it visible from the ‘View’ tab of the ribbon. Launch the 3DPOLY command to draw a closed 3D polyline in the front view (XZ plane). Starting on the origin and with ortho mode on,start drawing as you would in a 2D view, keeping in mind that if we specify coordinates, we will need to provide them in all three axes.

Here I will design a 3D bungalow.

From this project I have learned about various tools of AutoCAD.

(Limits;Command box;Line;Circle;Box;Offset;Fillet;Extrude;Solid,Union;Extract Edges;Rectangle;Polyline;3D Rotate;Move;Copy;Trim;Join;Group;Presspull;Gizmo;Layers;Material) etc.

Design Of the Project:

Section 01: Basement Structure: First I have set the limits of Autocad (0,0) and (200,200).Then I will all,over the zoom extents.And also go to drafting and annotation and turn on 3D.Then I will draw a rectangle (15,20) meter and I will draw some small rectangle inside it and make the basement stand.Now,I will draw a line arround it and take two rectangles and five coloumns inside.Now,I will presspull five coloumns 3 meters upwards.And also presspull the inner rectangle 3 meters upwards again.Now,(12,12) meter draw a rectangle and presspull towards 0.15 meter width.Now,I will move this slab and put it on top of the plot.

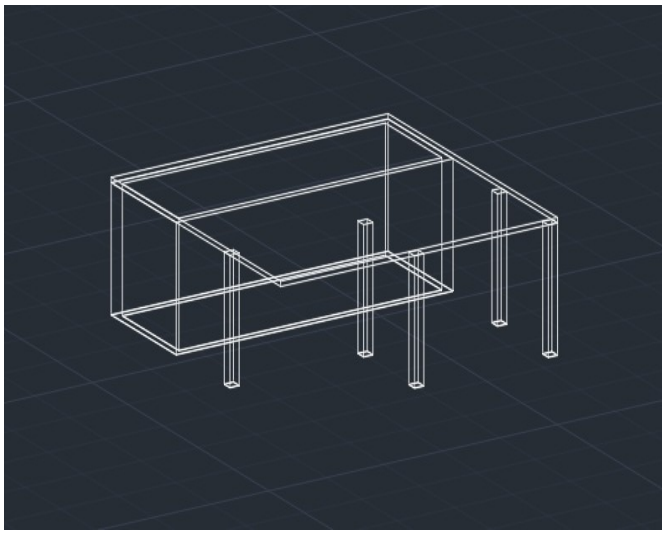

Figure 1.1 : 2D Basement

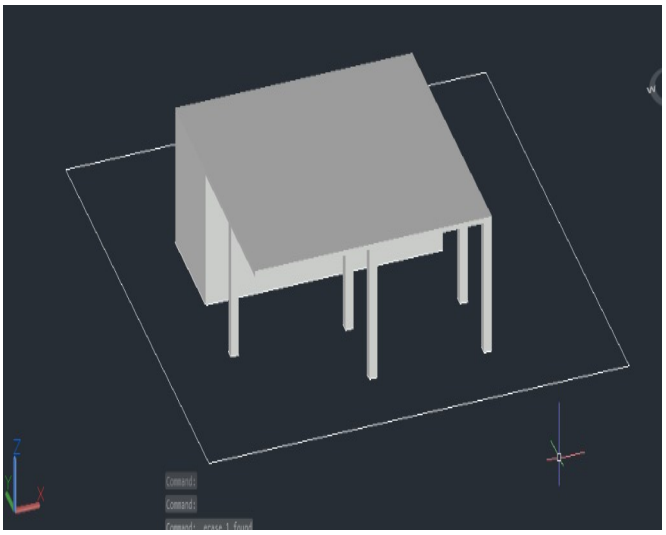

Figure 1.2 : 3D Basement

Section 02: 1st Floor Design: secondly (15,25) meter I will draw a rectangle ,and plot the door draw the line in the middle for the window.Now,I will copy the above rectengular and put it next to the first plot.Then,I will presspull 3 meters at the top of all the walls and I will presspull the windows at 0.9 meter top.Again,I will select all the windows together and copy them by clicking on the midpoint at the top.Now,I will select all the boxes and make them union.Then I will move this plot to the 1st floor and draw up a box.

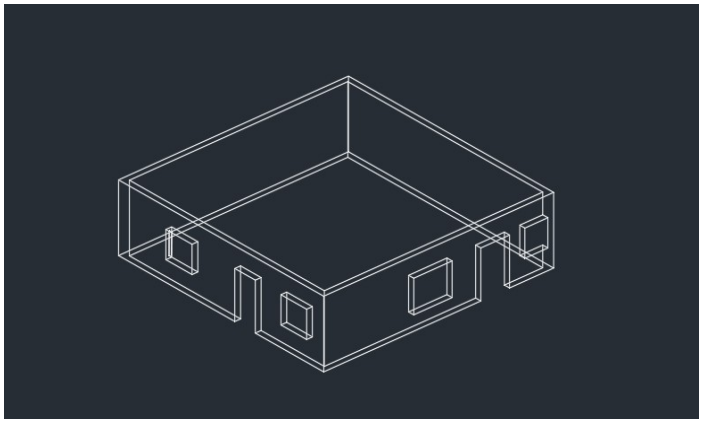

Figure 1.3 : 2D 1st floor design

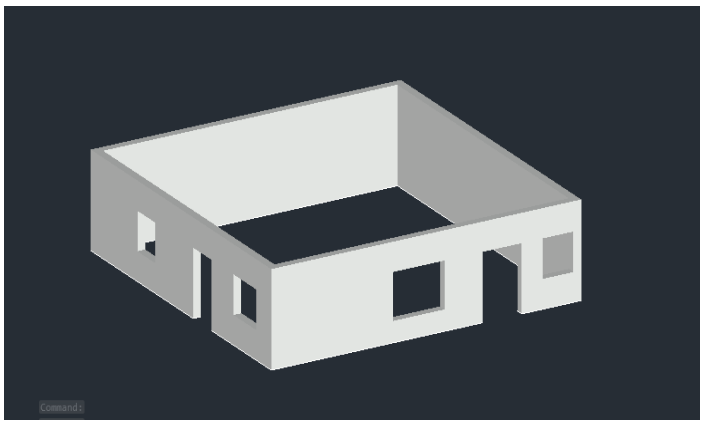

Figure 1.4 : 3D 1st floor design

Section 03: 2nd Floor Design: Then I will make a basement to make the 2nd floor,whose floor height will be 3.6 meters.And for the window I will presspull 0.9 meter upwards for balcony.And for the door I will presspull 1.2 meter upwards.Then select the union and make all the boxes union.Now,I will click on move and put it on the second floor.

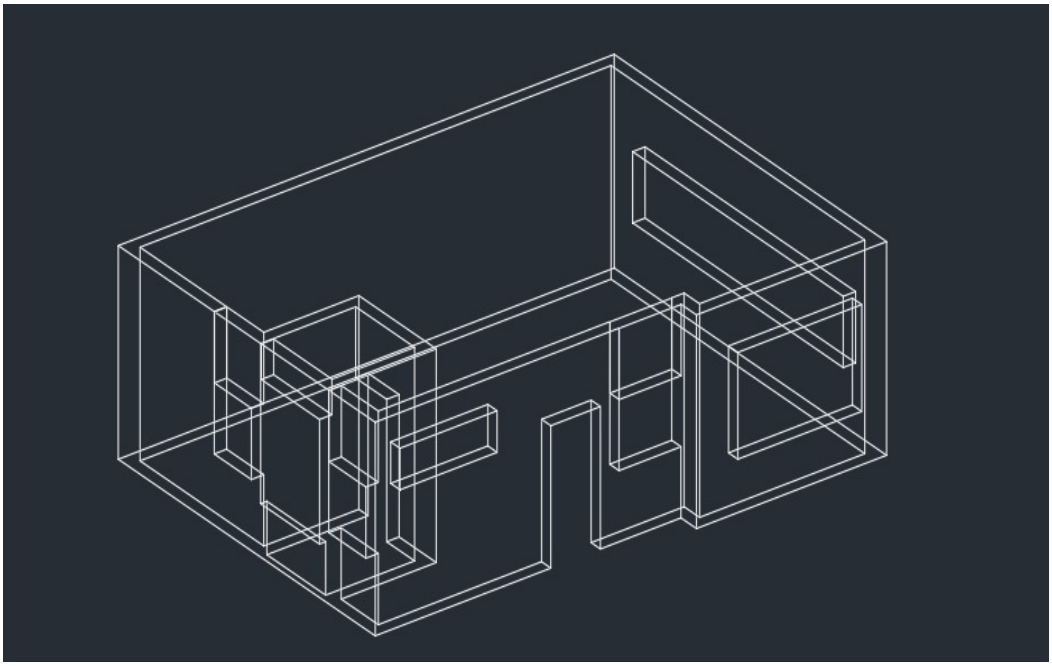

Figure 1.5 : 2D 2nd floor design

Section 04: Add Windows & Doors: Now I will presspull 0.03 meter upwards to make the frame of all windows.And presspull 0.01 meter upwards for windows glass.Then I will rotate and move the windows and put them at the midpoint of the plot. Similarly,I will put all the windows of the 3rd floor.And I will set the all doors in the same method.Then for some illusion of the 1st floor,I will presspull 0.05 meter respectively and place it in the corner of the windows.And the rest of the boxes will be pressed by 1 meter respectivelyand put it union.

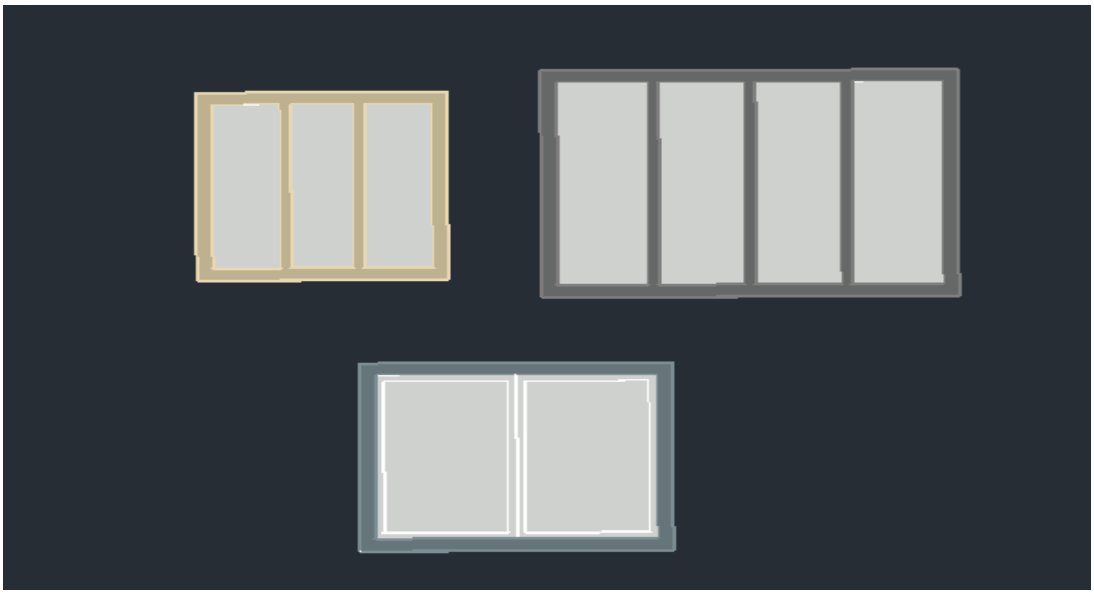

Figure 1.6 : Add 3D Windows

<u>Section 05:</u> Connect 1st 2nd & 3rd Floor: Now to make the slab of the roof top ,select the box ,click on the back corner,click on the front midpoint and presspull 0.15 meter at the top.In the same way,I will put the rest of the slab in the box again.Now select the box for the 3rd floor headroom and presspull 1.5 meter at the top.Then select the box again,select two midpoints according to the size and presspull 3 meters at the top.To make the shade of the headroom ,go to the box,select the pyramid ,click on the top center and give 1 meter height at the top.Now to draw the railing of the roof,select the polyline,click on the dynamic UCS and click arround the plot.Then I will gave 0.23 meter height on the inside.Now,I will presspull it to the top 0.06 meter.I will also make a shape for the swimming pool and draw according it.Then I will apply fillet to make it round shape and select radious 1 meter fillet it.Then I will offset 0.15 meter outside and presspull 1.3 meter at the bottom.

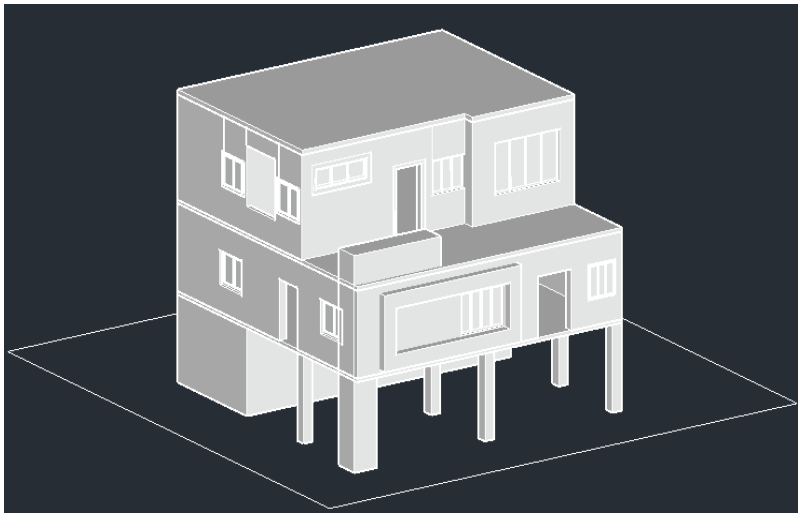

Figure 1.7 : Connect 1st & 2nd Floor

Figure 1.8 : Connect 1st , 2nd Floor & Headroom,Railing

<u>Section 06:</u> Adding all ingredients: Now to create on L shape staircase,select box and select the dimension (0.4,2.5) meter respectively and enter.Then give height 0.175 meter.Now,draw a line and copy the staircase and click on its midpoint.And I will presspull 2.5 meters to land the last slab of the staircase.Lastly,select move and click on the midpoint of the staircase and click on the midpoint of the door and set this.

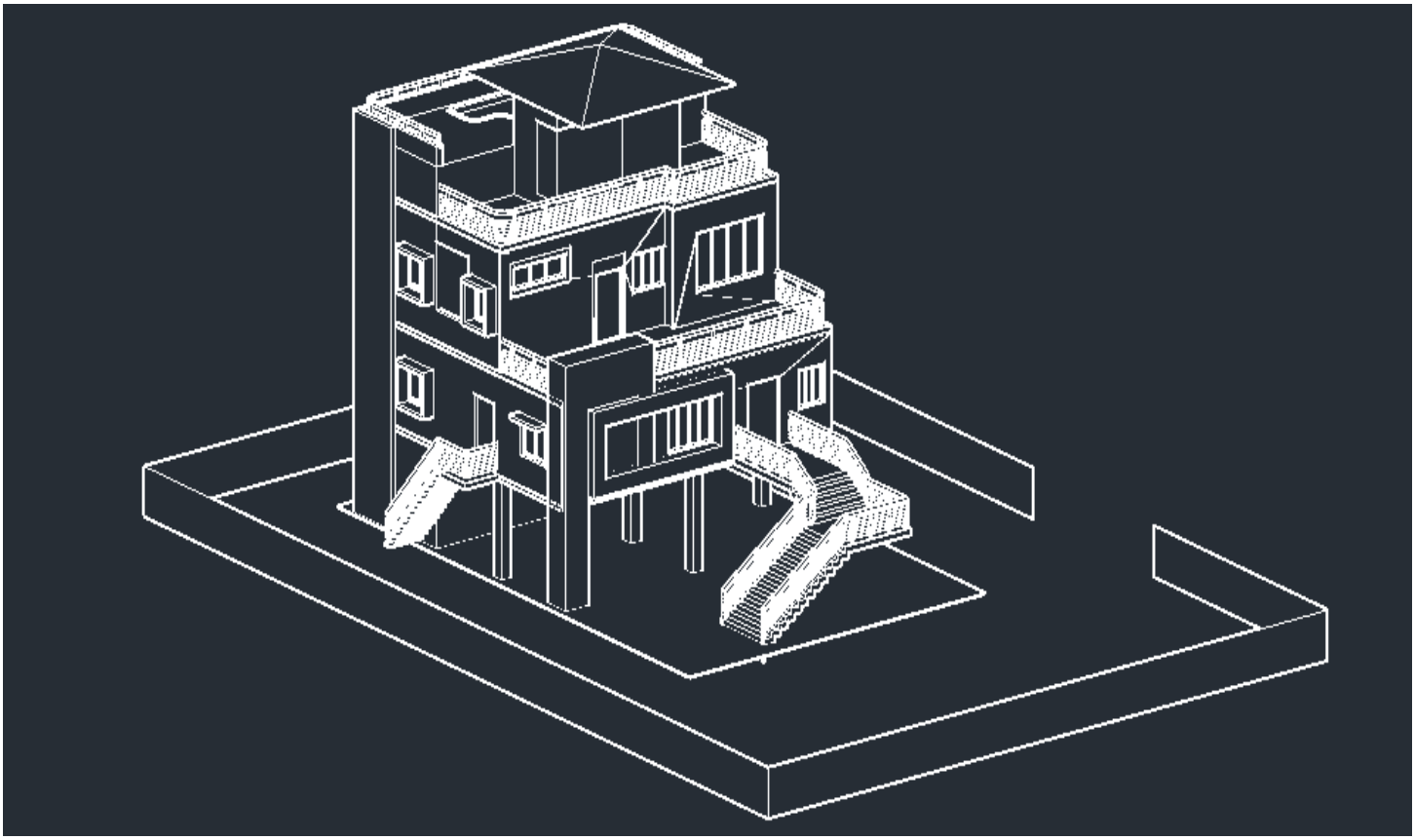

Figure 1.9 : Hidden View (Adding All Ingredients)

Performance Evaluation:

3D floor plans are very helpful in letting me decide how to utilize the interior space of our house.We can utilize the space in our home according to our wish and requirement.3D designs are much more alive as compared to the 2D floor plans.The 3D designs let us visualize how space would look once completed.

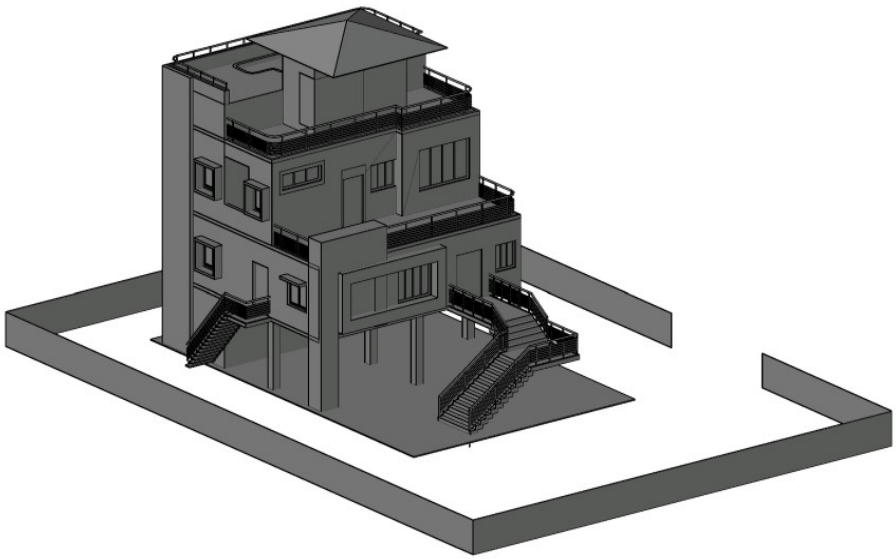

Figure 2.1 : Raw image

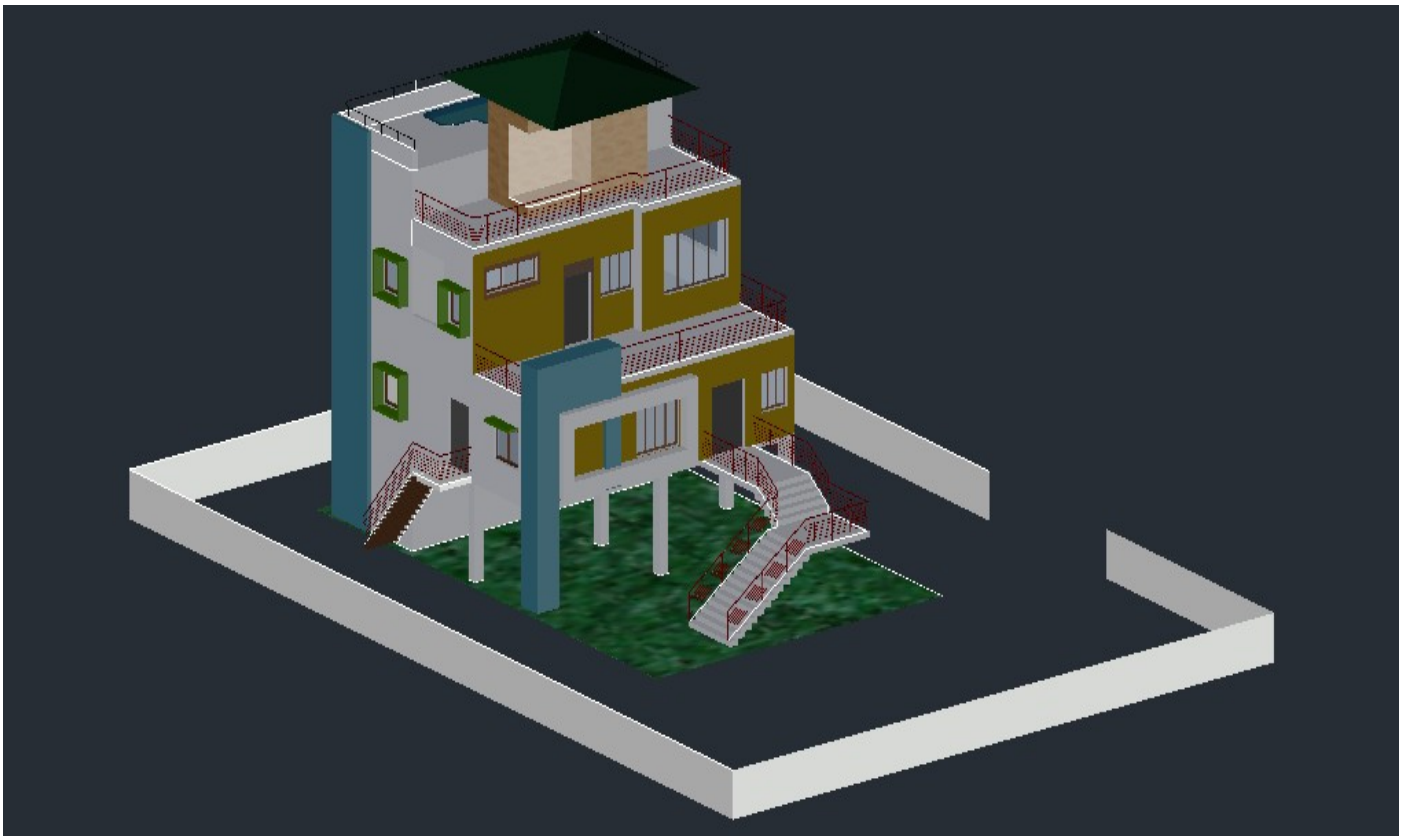

Figure 2.2 : Draw On AutoCad

In the above picture I got one hundred percent outcome.When I draw the design I accurately follow the distance and circle radius and also connect and cut their unnecessary edge nicely.

Results & Discussions: My aim was to learn 2D & 3D Design and the use AutoCad tools like (Limits;Command box;Line;Circle;Box;Offset;Fillet;Extrude;Solid,Union;Extract Edges;Rectangle;Polyline;3D Rotate;Move;Copy;Trim;Join;Group;Presspull;Gizmo;Layers;Material) etc.And then, I learnt how to draw line,circle, use of tan-tan radius, measure degree between different object, measure distance of different object,copy-paste object, use of polar array,Fillet,Offset,Presspull,Extrude,Gizmo,Material,Layout colouring etc.Because of those tools, I create a awesome 3D Bungalow design.

Conclusion:

Introduction: There were several problems that I faced during this project.As I progressed through the Tutorial and used the program more, I feel that I became much more comfortable with it.
The goals of this project were to be introduced to 3D solid modeling, work on technical writing skills, and to become more familiar with 3D Bungalow creation.I believe that I have accomplished all of these goals very well.I found the bonus part to be a good test of knowledge because instructions on how to create 3D Bungalow were not given.

Practical Implications: I highly understand that 3D modeling is the best part of designing before building any structure.It can be an interior, exterior, or any other structure I like.This is the easiest way to get a sharp understanding of the design and we can see our dream come alive in front of our eyes.

Scope Of Future Work: In the near future, we predict that smart homes will go much further than just standalone devices. Smart interiors will be built into the very beautiful structurse of our homes.Smart homes have come a long way in the past few years,and there's no doubt that we will continue to see our interiors getting smarter and smarter.

Reference: https://google.com/3d+bungalow/chrome/1CN0u

THANK YOU