

Project II
Animation And Film Design (2009-11)

Guide :
Prof . Sumant Rao
IIT Bombay
IDC 2011-05-30

By :
Manish Hans
09634801

Declaration sheet

I declare that this written submission representation my ideas in own words
And where other's ideas or words have been included, I have adequately
Cited and referenced the original sources. I also declare that I have adhered
to all principles of academic honesty and integrity and have not
misrepresented or fabricated or falsified any ideas/data/fact/sources in my
Submission. I understand that any violation of the above will be cause of
My disciplinary action by the institute and can also evoke penal action from
The sources which have not been properly cited or from whom
Proper permission has not been taken when needed.

Signature : *Manish Hans*

Name of the student : *Manish Hans*

Roll No: *09634801*

Date : *09/06/2011*

Approval Sheet

The project III titled “ exploration in 3D animation “ by Manish Hans
Is approved in partial fulfillment of the requirement for the M.Des
Degree in Animation And Film Design.

Guide :



External examiner :

MANISHA

Internal examiner :

nina salmani

Chairman :



Acknowledgement

I would sincerely like to thank my guide Prof Sumant Rao for his immense guidance and support and also would like to thank Prof Phani tetali , Prof Nina Sabnani , Prof C.P. Narayan and Prof Shilpa Ranade for their Valuable suggestions during presentations.

Content

- 1) Abstract
- 2) Introduction
- 3) Exploration
 - Initial Ideation and final Story
- 4) Execution
 - a) Script
 - b) Storyboard
 - c) character Exploration
 - d) Backgrounds
 - e) Production Techniques
- 5) Sound
- 6) References

Abstract :

In this project my objective was to effectively utilize the medium of 3D animation for storytelling in Short animation film.

Learning the basics of 3D animation and an attempt to make a finished film where I can demonstrate my ability to tell a story effectively and clearly.

Introduction

This Project is my attempt to learn and familiarize myself with the skills of making animation in a3D Software.

Through the project i learned various methods and techniques to make objects in computer software i.e.

From initial ideation and sketches on paper to the final rendered image from computer software.

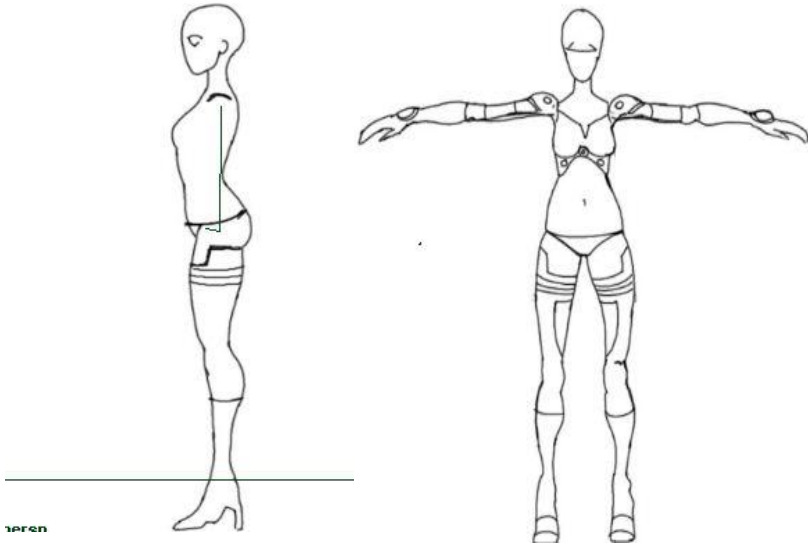
Exploration

Initial Ideation: I started with reading about the 3D contents and their application in the real world.

The wide use of computer graphics in the world of entertainment, medical science, defence, education and engineering etc shows how vast the topic is and the fields it has provided to explore within.

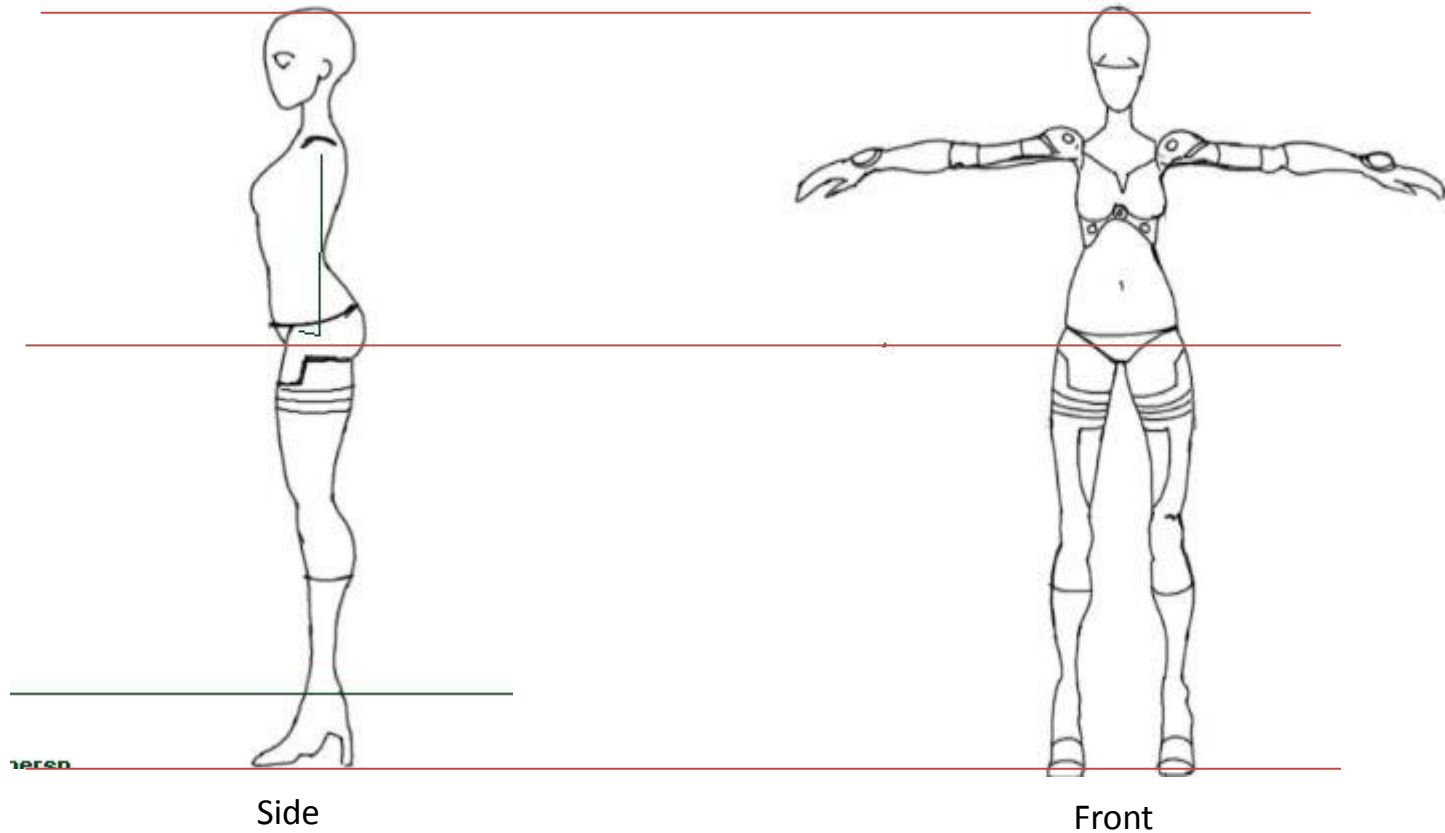
Consulting different books and online available references I learned the basic user Interface of Maya and its uses in different domains.

Pencil sketches for the modeling



To animate any character in 3D software one needs to have it modeled in the software itself; there are some basic rules to follow which are almost the same for every package (software). First, the designer needs to make a detailed model on paper. Clearly detailing the character helps the modeler to make it in software.

Now when one has finished making the character and it is approved, the next step is to make the side profile of the character as well. It helps the designer to model the character correctly in the software.



The side and front profile of the character should match with each other dimensionally, the red lines Helping to match the dimensions of the character.

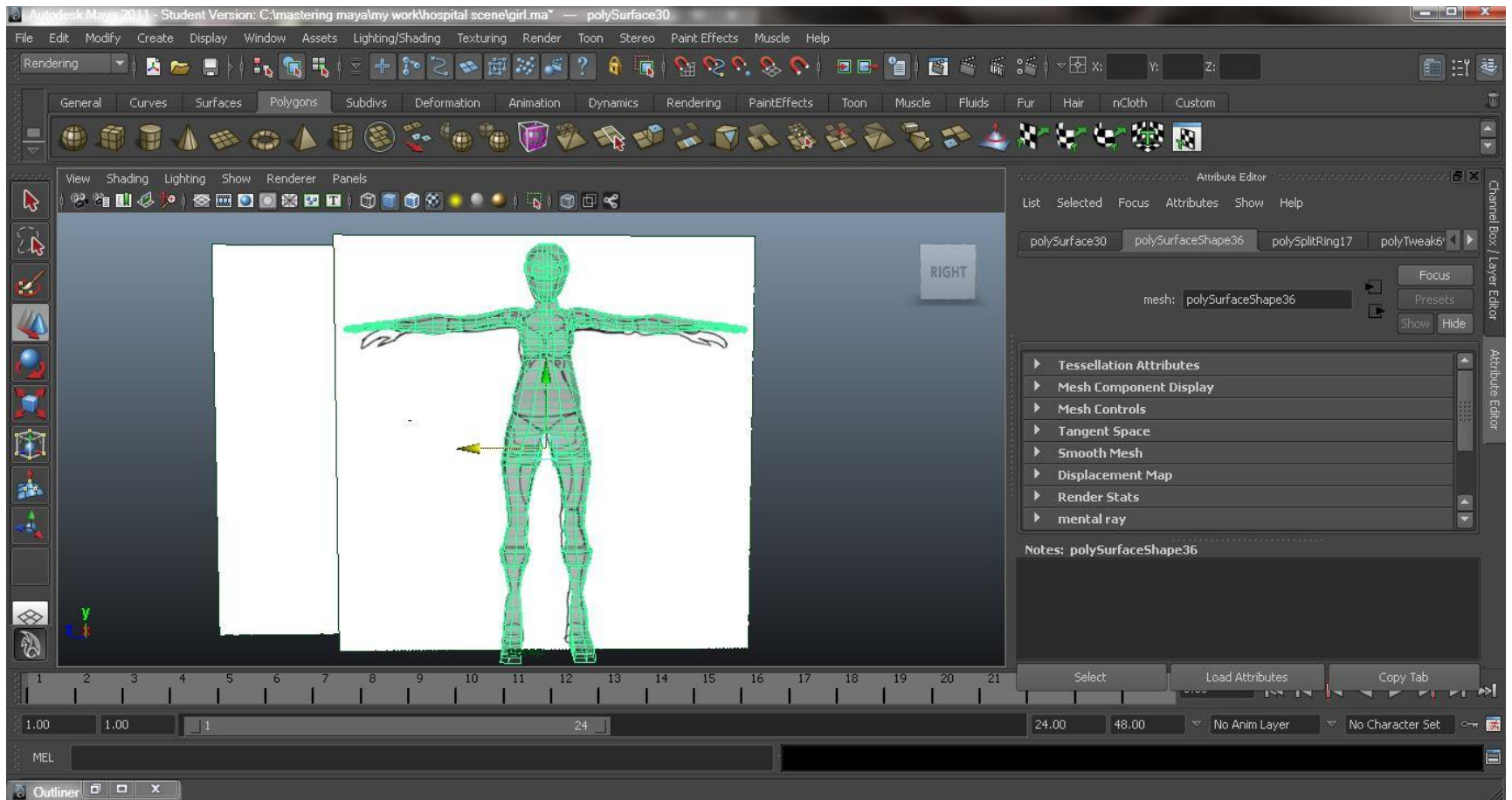
Modeling Techniques :

There are different modeling techniques to model a object or character .

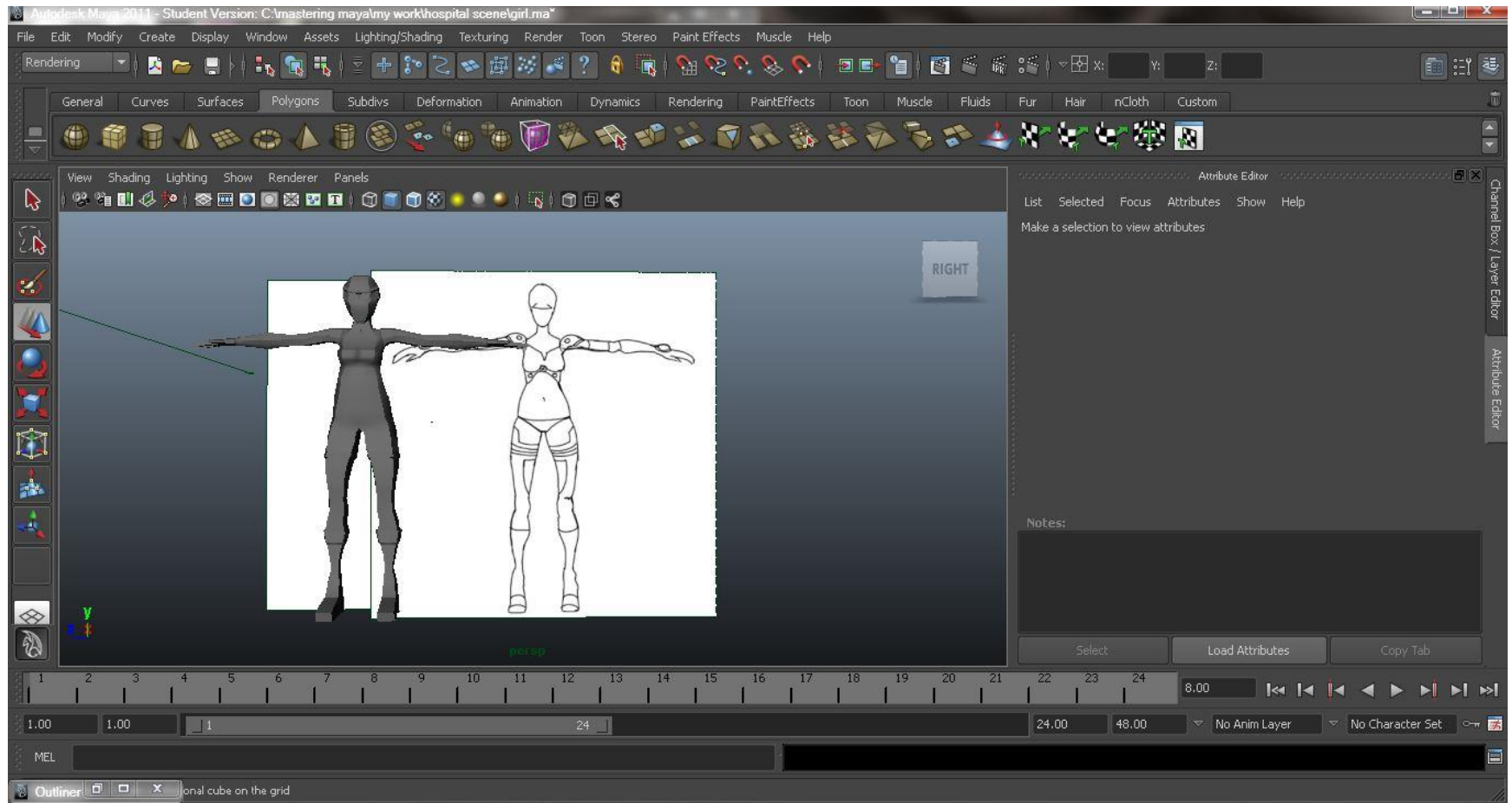
I started learning Polygonal Modeling in Autodesk Maya 2011, Student Version.

Polygonal modeling is widely used for characters which are going to get animated , as they are lighter and comparatively easier method of modeling .

Modeling In Autodesk Maya.

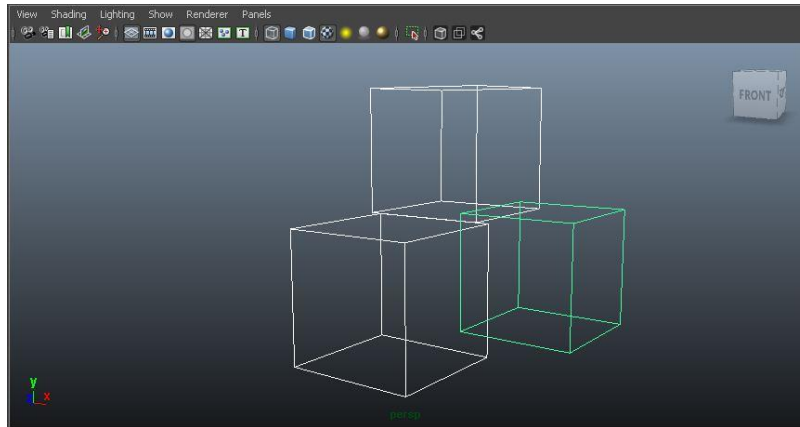


Modeling on computer software Autodesk Maya 2011



Modeling taking reference from the 2D image

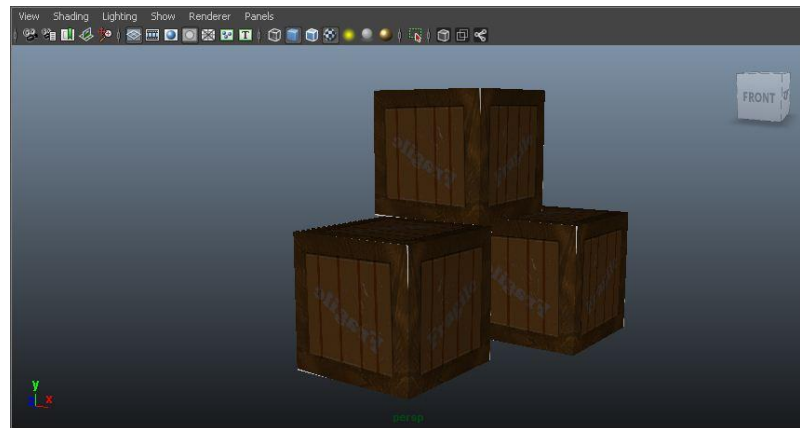
Texturing Techniques



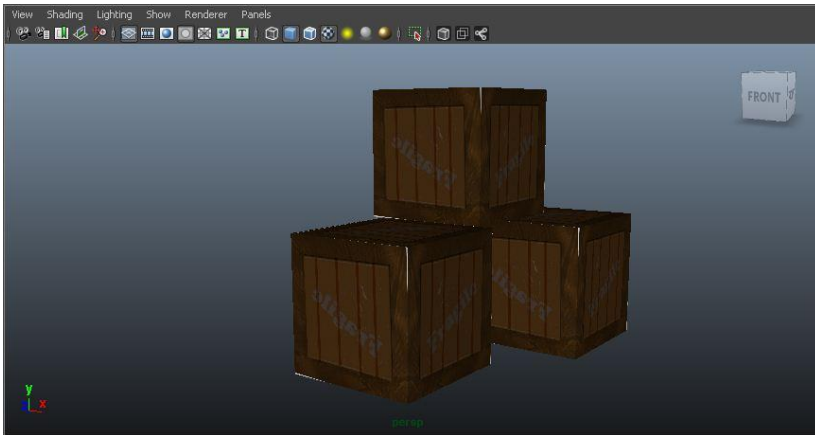
Cuboids on Maya software (without texture)



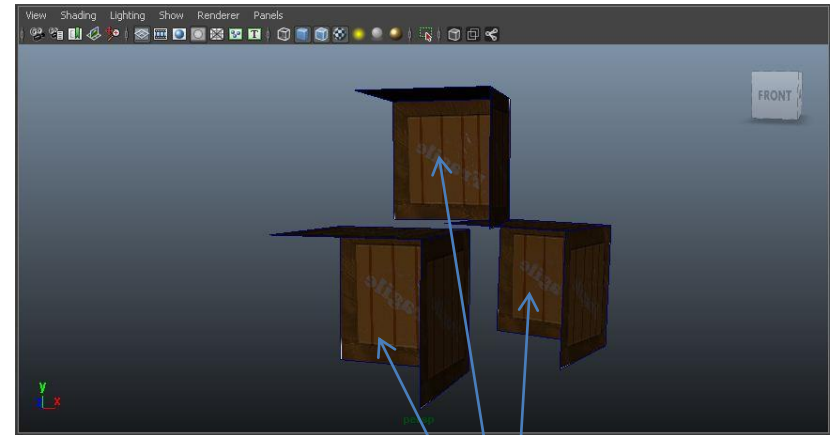
Texture Image



Textured 3D block

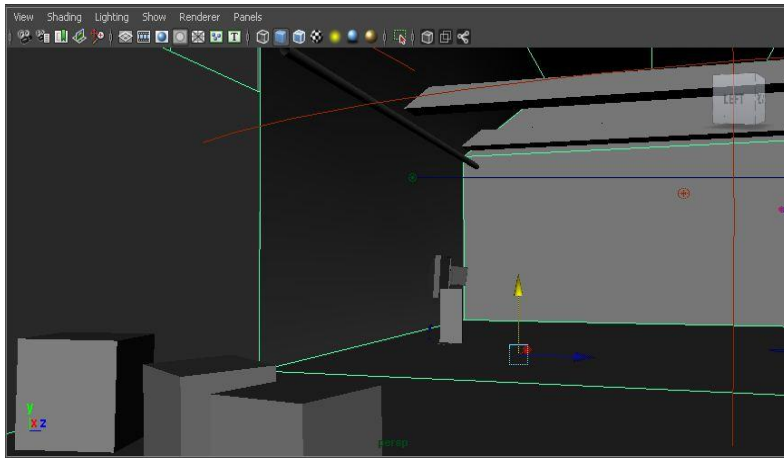


Front side



Back side

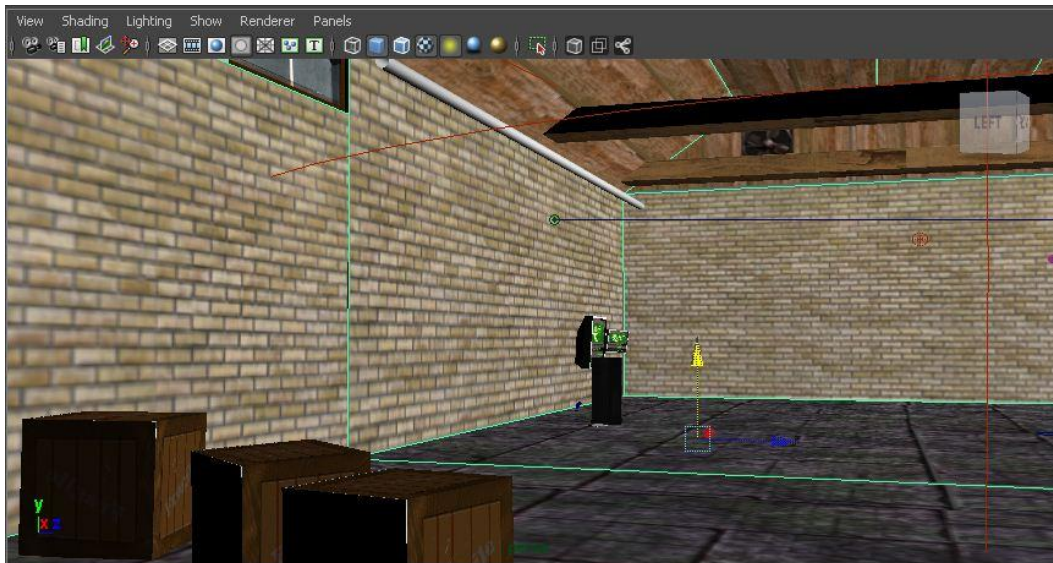
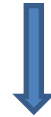
The extra faces of the textured box is removed to decreases the polygon counts



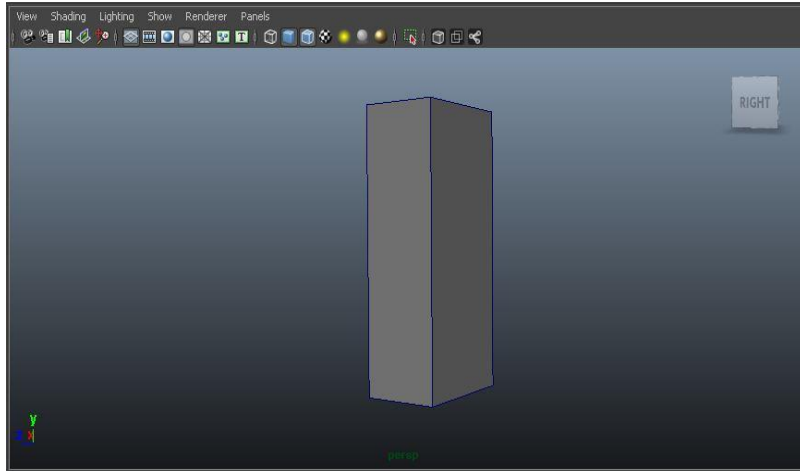
Modeled Room in Maya



Textured image



Final rendered Image



2D texture



3D surface

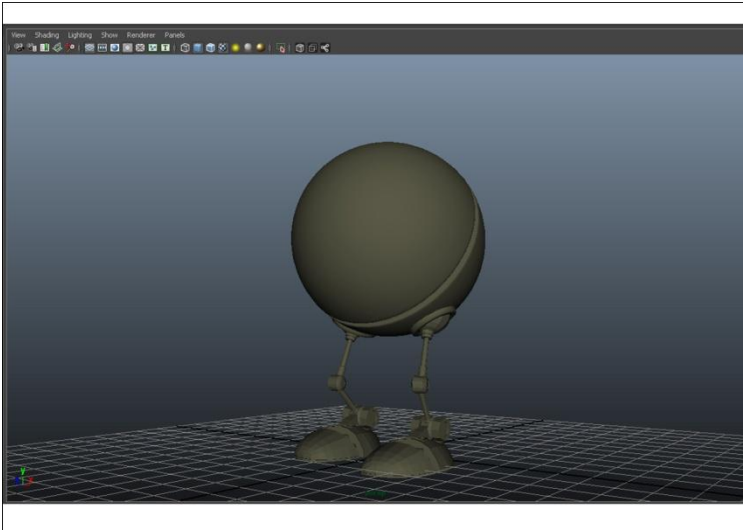


Textured Surface





Fully textured room with interior objects

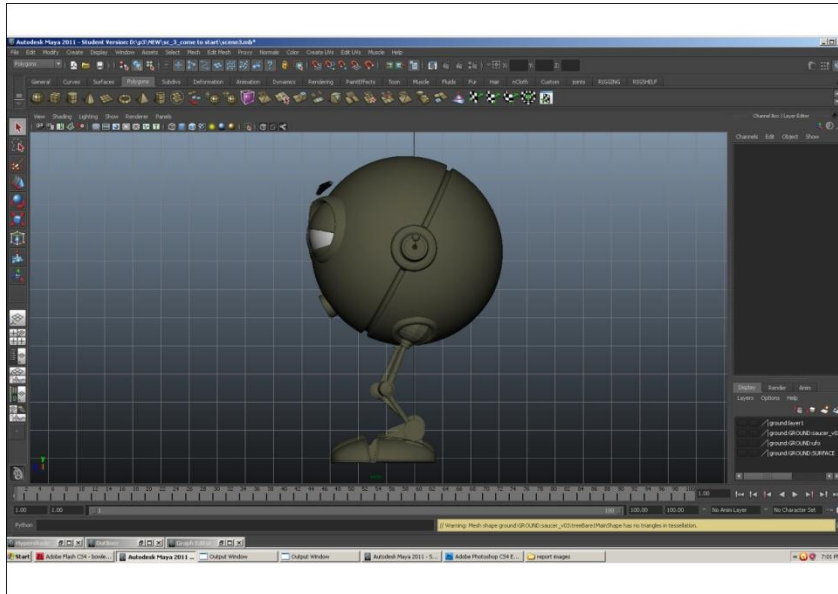


Character Rigging

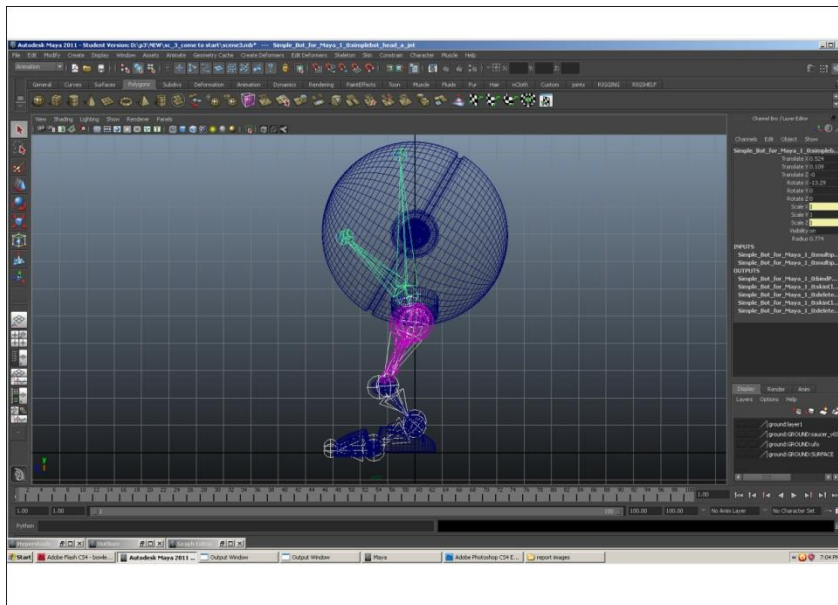
Character rigging is the process where one put the bones in the character and bind the bones to the model geometry.

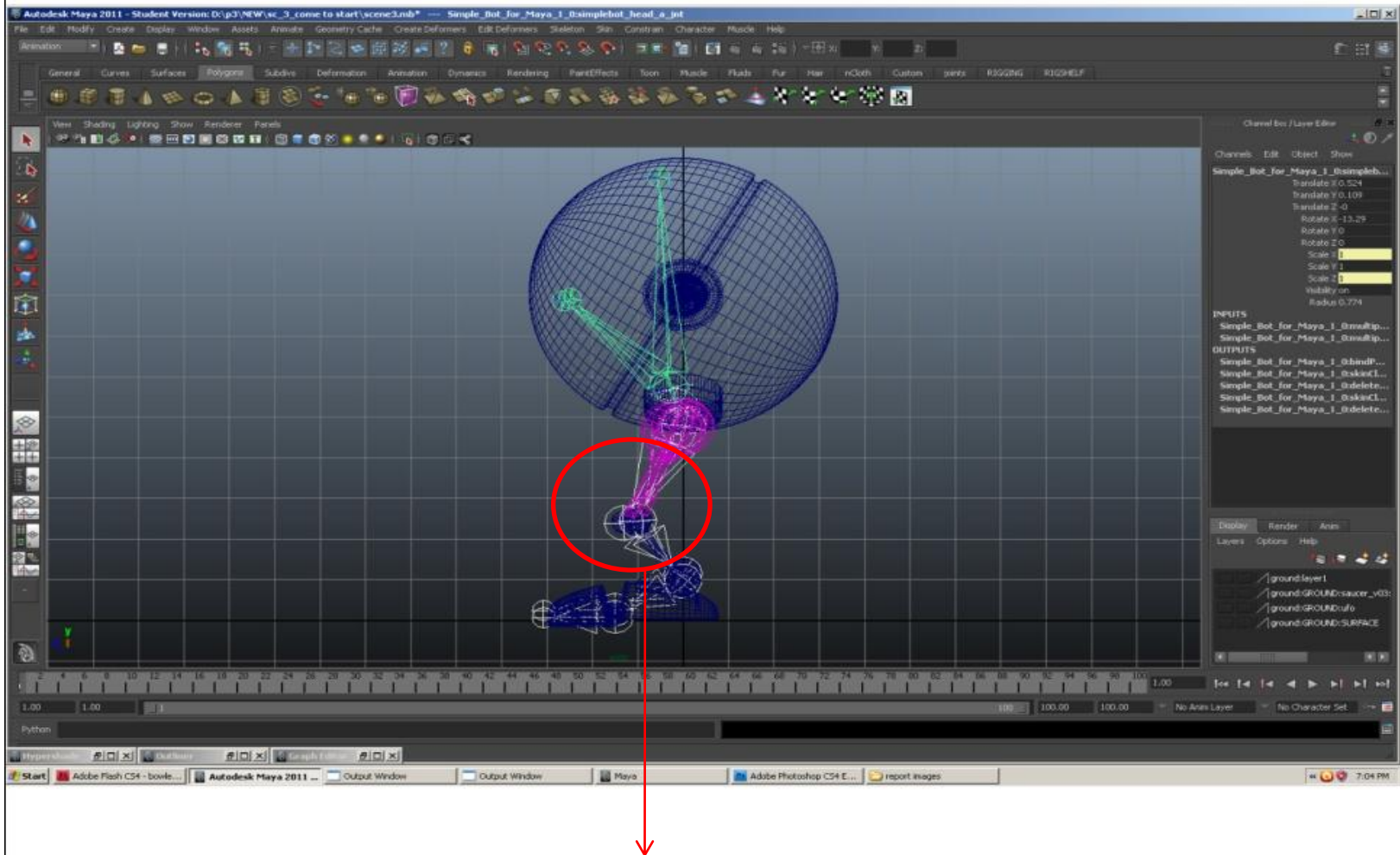
In the process of binding the bones to the geometry which is also called as weighting, the vertex of the geometry is assigned percentage of movement which will get effected by the movement of the joints.

In the left side is the model, made in Autodesk Maya. it is not rigged so it cannot be animate the way we wanted in the film. So the next step would be the rigging.



First image is the side profile of the character and second image which is at the bottom is wireframe view of the same where joints are placed keeping in mind the movements of the character.





The joints are placed according to the joints in the character

Story development :

After learning the nuances of using 3D software I focused on using my acquired skills for making a short animation film.

So I started with the idea of making a cut-scene for a computer video game . It had the character of a girl who wanted to take revenge of the murder of her masters.

And later on as I progressed with my project I realized it Would take a longer duration then the time span of a project to fulfill all the technical complexities and firmly establishing the story line,

Also since it's a cut-scene animation i realized that there is a limitation in character animation and this project required more of cinematography skills.

So I decided to again work on the story for that I started looking for reference or story ideas from deferent sources .

Story Exploration

When I was pretty sure that I wanted to make small Story which is kind of funny.

I saw different cartoon Short films which are funny and complete in themselves .

Some of the few explorations I kept in my mind while writing a story are:



The Owl

The Owl, also known as La Choutte, is a series of short CGI-animated episodes for children's television. The series features the owl, pink in colour, and with blue feet that "float" below her body. Each of the minute-long fifty-two episodes centres on the owl attempting to overcome unfortunate circumstances (sometimes created by his negative attitude and antisocial behaviour), but end in her demise by her various appendages and body being dispensed of in unusual or comical ways. The series also feature a surrealistic world with floating objects and exploding apples.

Reference :

http://en.wikipedia.org/wiki/The_Owl_%28TV_series%29



The Madagascar Penguins

The Madagascar Penguins first features on Madagascar , then later a television series is aired on Nickelodeon television in USA.



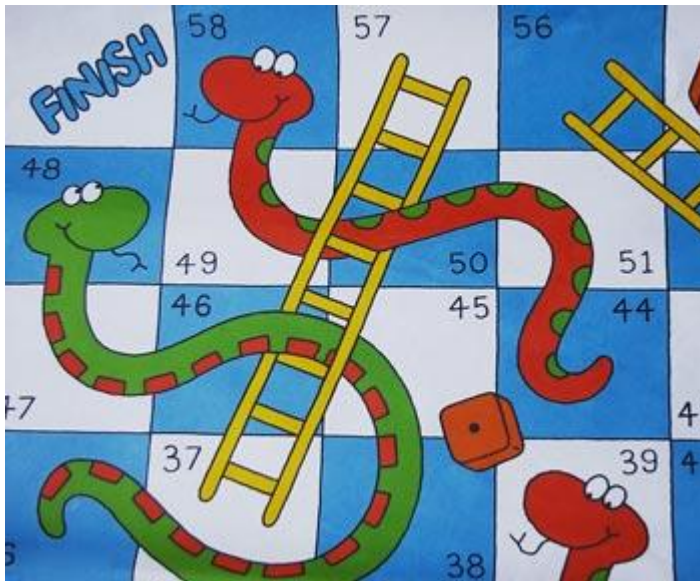


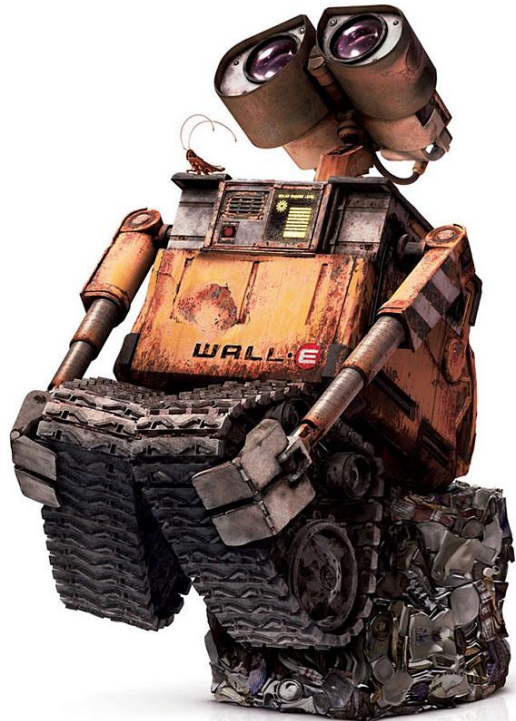
Board Games

The board games like "Ludo " and "snakes & ladders".

Where the player's chance of winning is governed by the roll of a dice.

This give me an idea of making some short film which has this game concept where your chances of wining is solely depends upon the dice.





Wall-E

Animation film produced by Disney-Pixar.
In the year 2008.

Where a small WALL-E, a garbage collecting robot has been left to clean up the mess of the Earth .

It's a mechanical robot having human emotion and which survives itself on the changing climate of earth due to adaptation of survival skills and intelligence , where as all his counterpart either get rusted or become useless.

Initial Idea

The Board Game “Snake and ladders” which I am sure everyone played during his/her childhood attracted my attention. One incident that always happened to me and I remember from my childhood that whenever I play this game, most of the time I get bitten by the snake on block just before the finish point which takes me all the way to start. That scares me away, but after all this is all the part of the game.

The initial idea derived from the fact that it happens many times during the play that a player will get bitten by the snake just before the finish point. So I first thought that in a story when everything seems going alright there will be something different that will happen in the end.

First story

The story is about a game which is going on from ages
In some different location of the universe.

The UFO from unknown planet drops the player on the
game board then only player realized he is in-between the
Game .

The story starts with the UFO coming from far and drops the
unconscious Robot cum human creature on the board , it was
all dark initially.

When the player finds consciousness the light glows and he
find himself in some unknown place . Later he finds that he is
not alone here but there is another his kind of creature
But who is standing like a statue without doing any action .
He went to the statue and started conversation but nothing
happened. He also find a dice near statue. While creating
voices and trying to talk to the statue the robot cum human
Creature accidentally pushed the dice .

Dice started rolling and surprisingly the statue also started
walking on the board according to the no comes on the top
face of the dice.

Which initially startled the human cum robot creature, but later he start playing with it . Making fun and doing all kind of fun playing with the dice and the statue robot .

At the last when dice rolled 5 , the statue comes on the 13th no block. Suddenly everything stops and a burst of light comes and made the statue disappeared .

Which amazed the hum cum robot creature , before he could think anything a second light wave falls on him and made him statue like the previous one.

The screen went dark again.

After some time another UFO comes and drops another same creature on the middle of the Board.

Film ends here.

Final Story

Since in the First Story I thought of 13 as the unlucky no Where the player will get struck into the game , which doesn't sounds logical so I again started thinking new possibility for the end part of the game.

The Story starts with The UFO traveling in the outer space . It stops at one place and drops player from above to one unknown place which is dark . When the player got consciousness he finds himself in some dark closed room.

Looking around he see another same kind of player standing motionless , with curiosity he goes near him. He tries to talk to other player but didn't get any reply accidentally he kicked the Dice which was kept there. The motionless player now get activated and started moving the no of blocks in the game corresponding the the digits came on the dice . At first player didn't understand what happns suddnly and why the motionless player suddenly started moving. Later he came to know that it's the dice which makes the other player move.

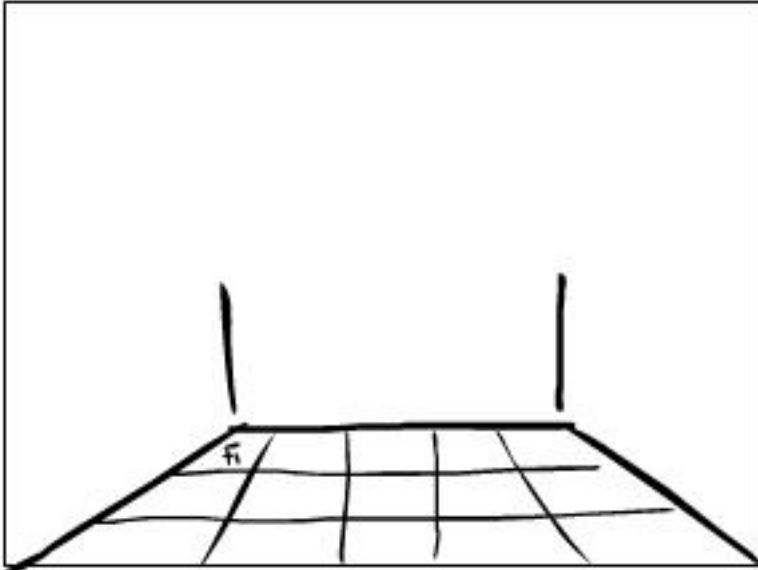
Knowing the secret he started playing with the dice by kicking it and enjoy watching other player moving on the board.

The story progress till the motionless player reaches just before the end, one block away now to finish the he needs one in the dice. In several attempts when finally “one’ came on the dice the motionless player take one step and reaches the finish point . Suddenly dice started shaking and motionless player goes inside it.

This amazed the player and when he came near the dice , he also started shaking and finally became motionless.

Now he becomes the motionless player and after sometime another UFO comes and Drops another player into the game. The film ends.

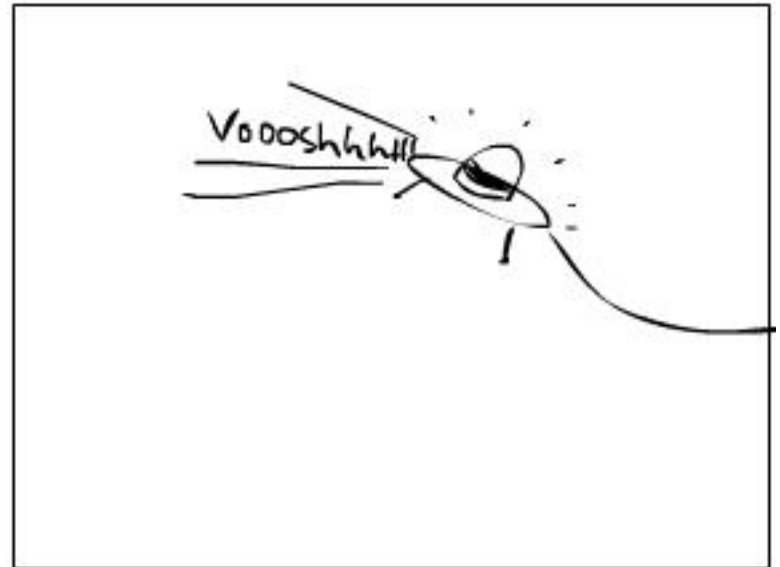
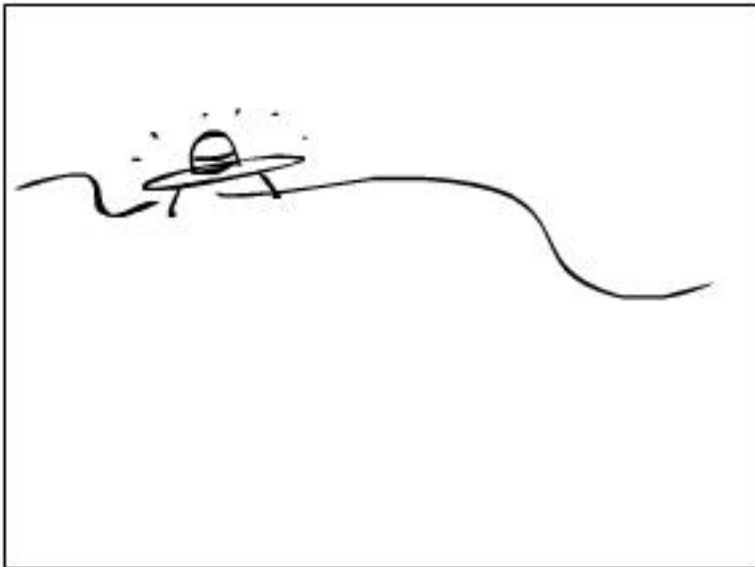
Story Boarding

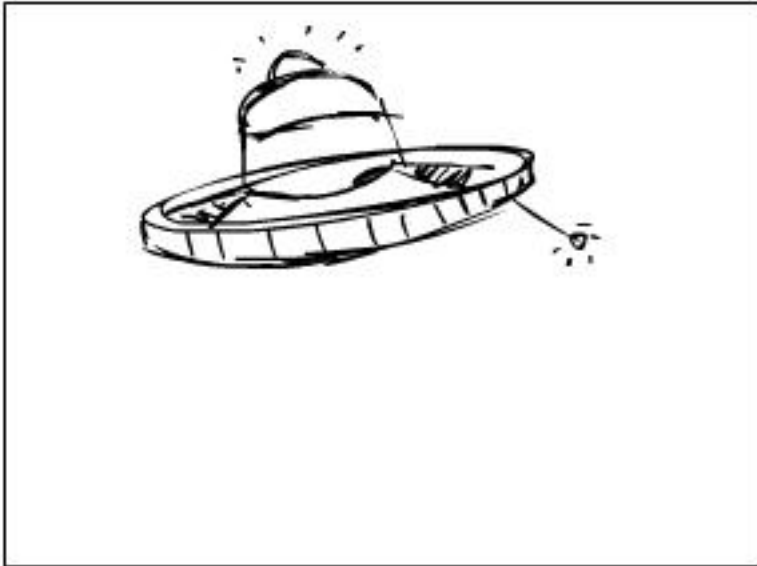


Empty dark room



Ufo comes from far

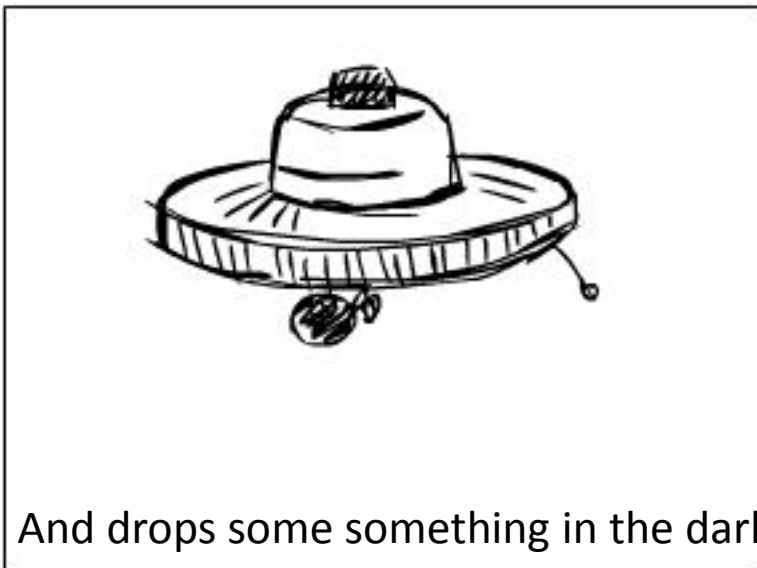




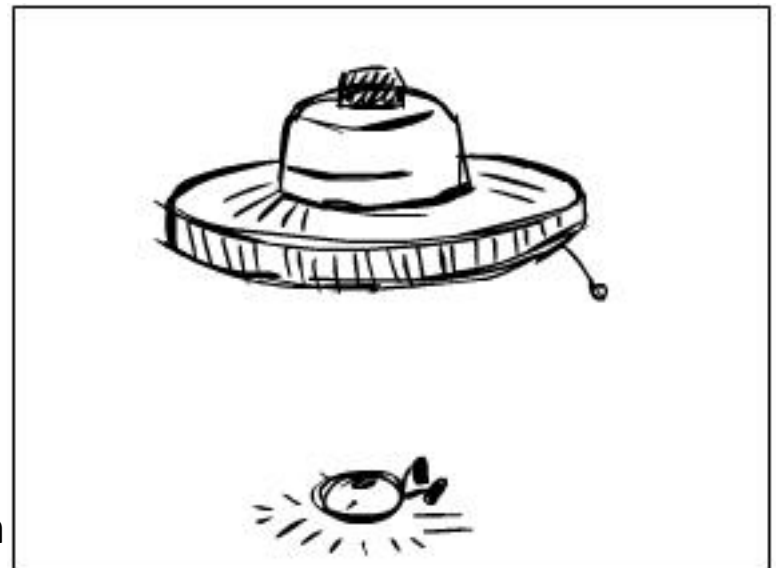
Stops still in the air

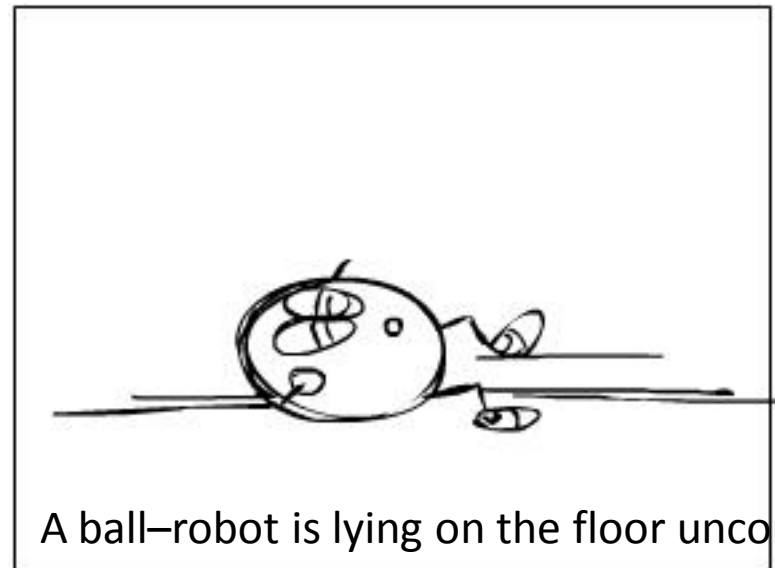
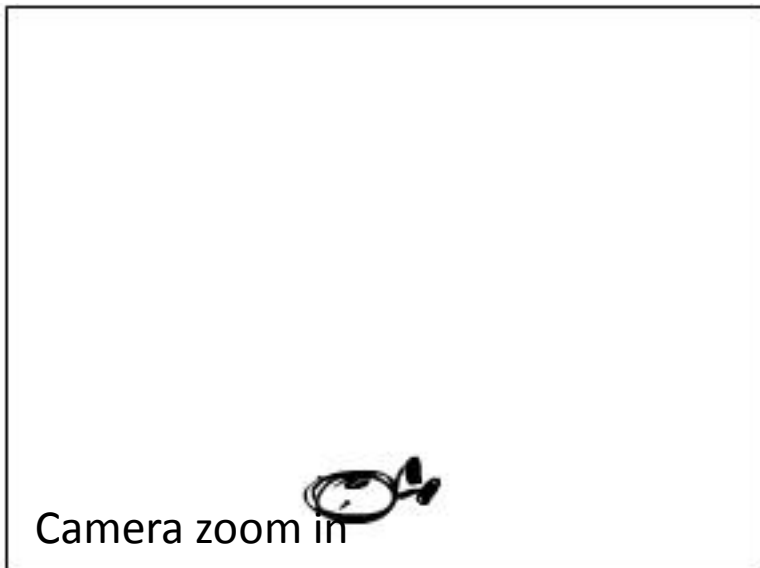
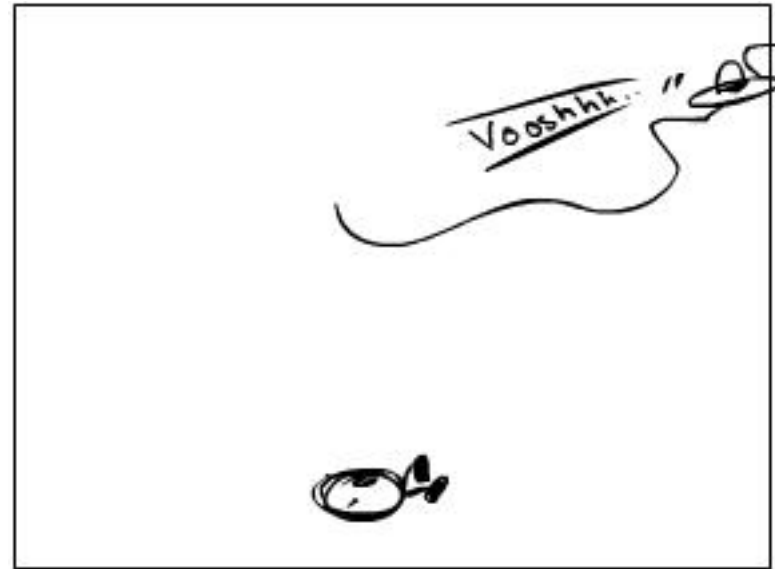
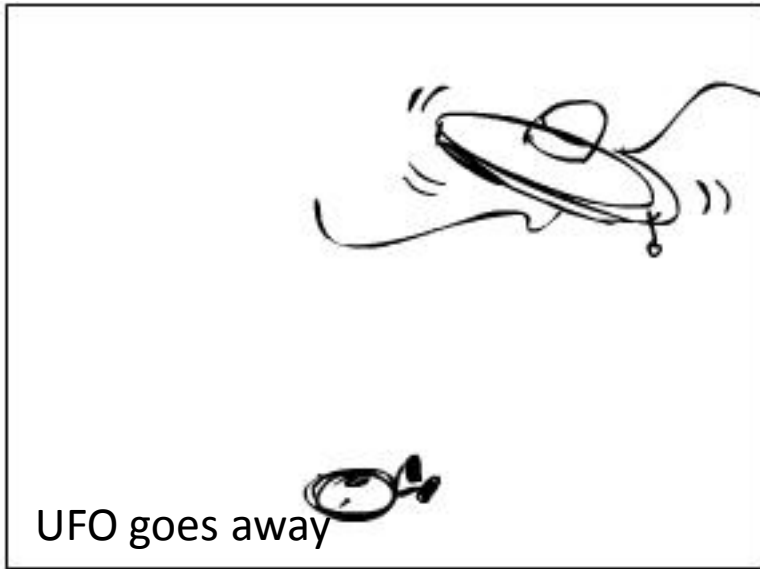


Flash light comes from it



And drops some something in the dark room



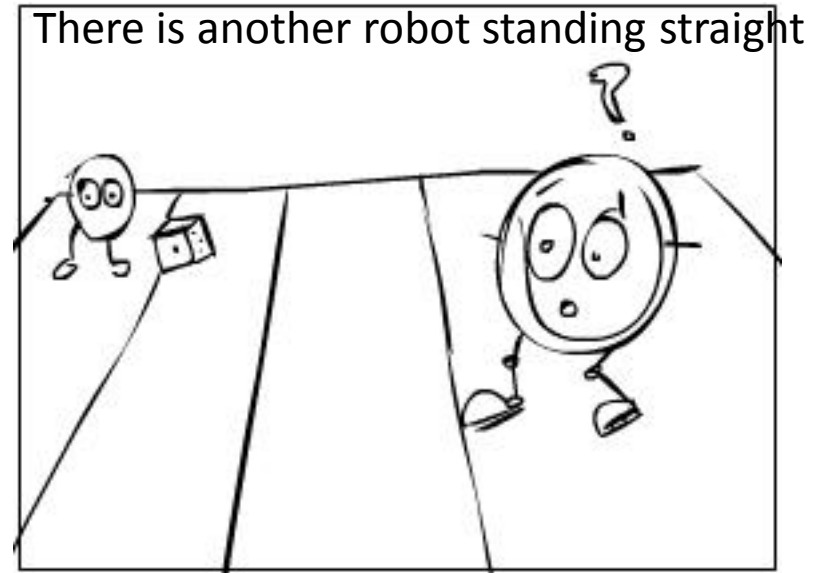
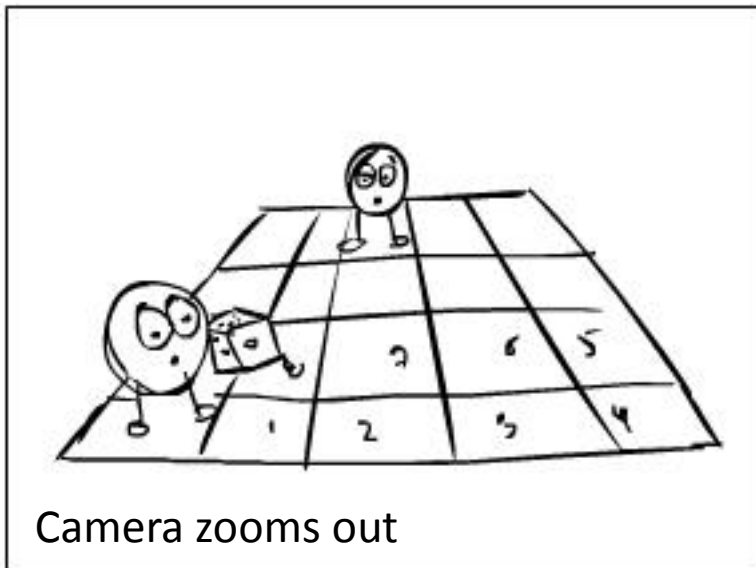
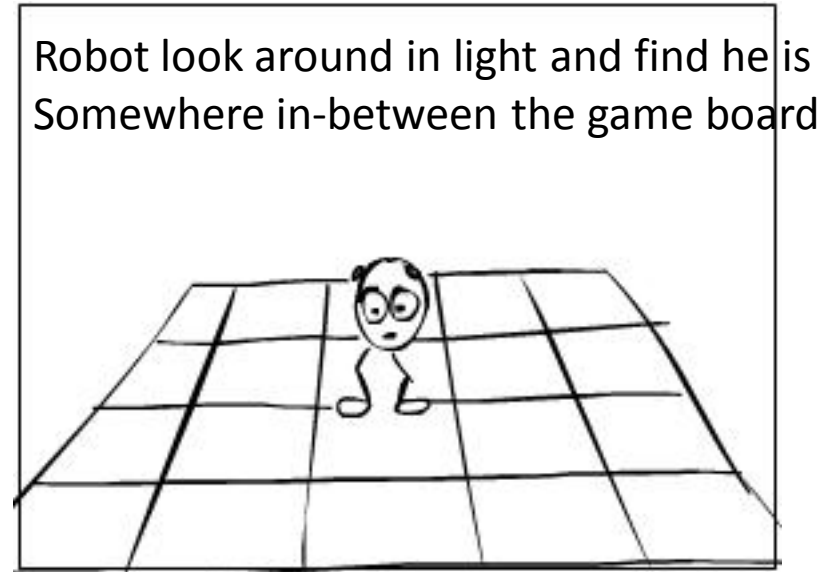
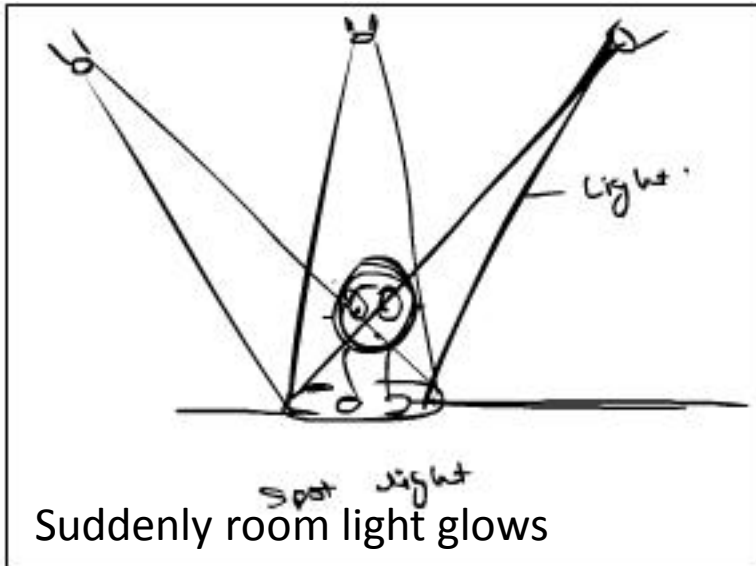




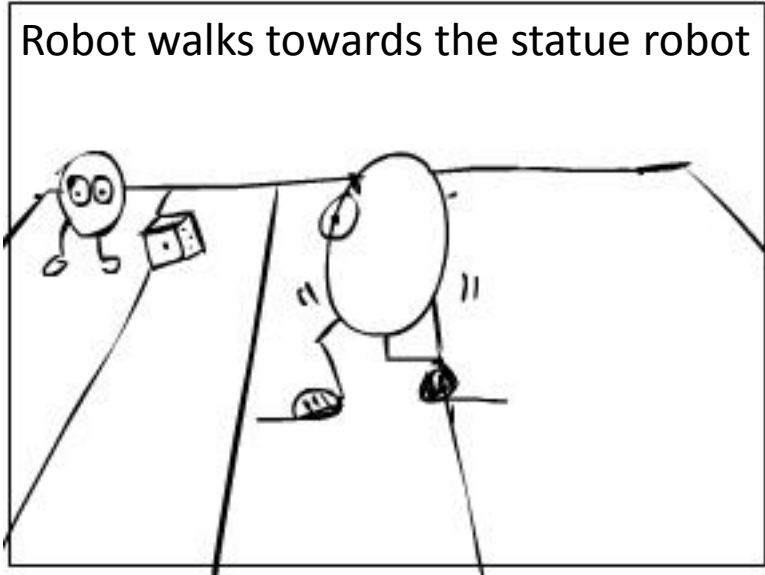
Got consciousness



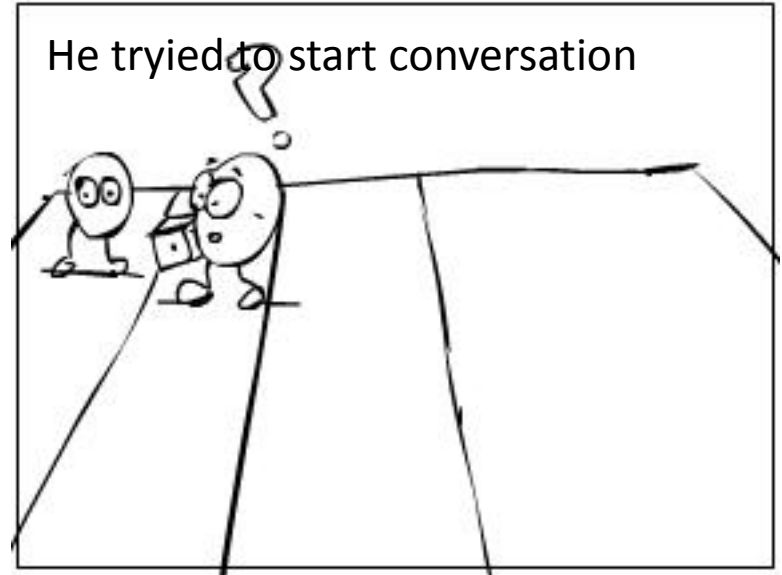
Look around but there is nothing only dark



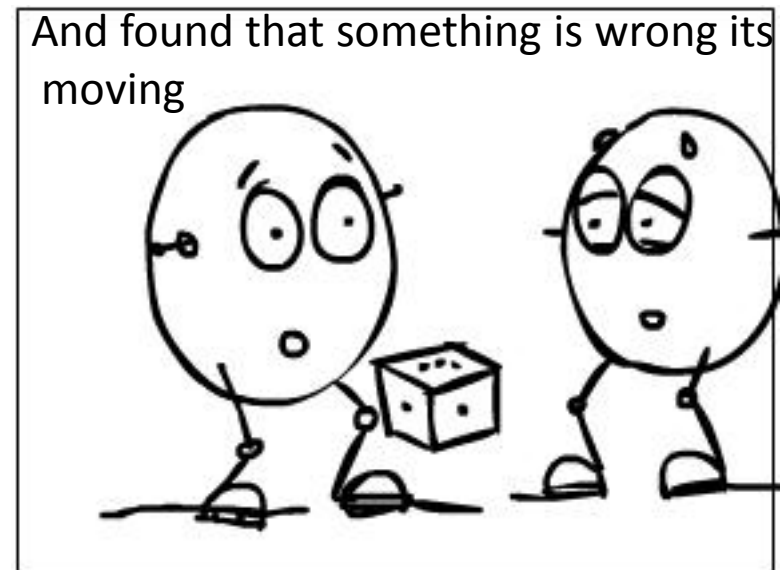
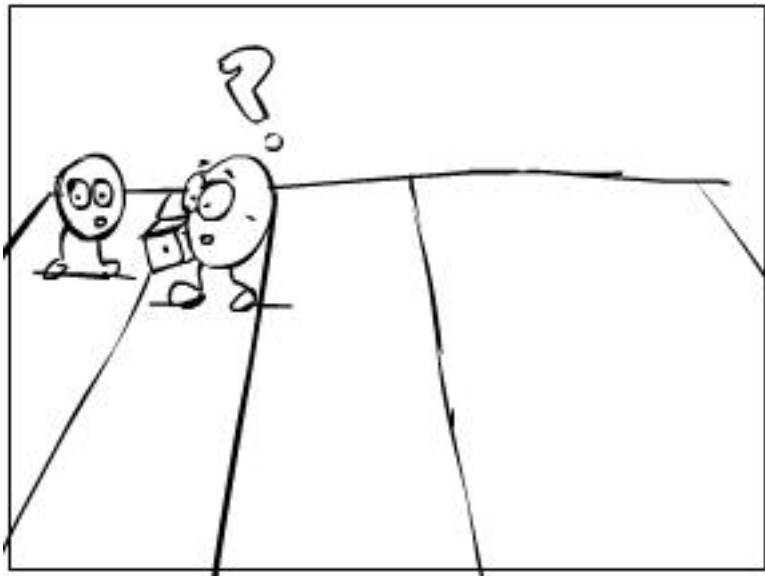
Robot walks towards the statue robot



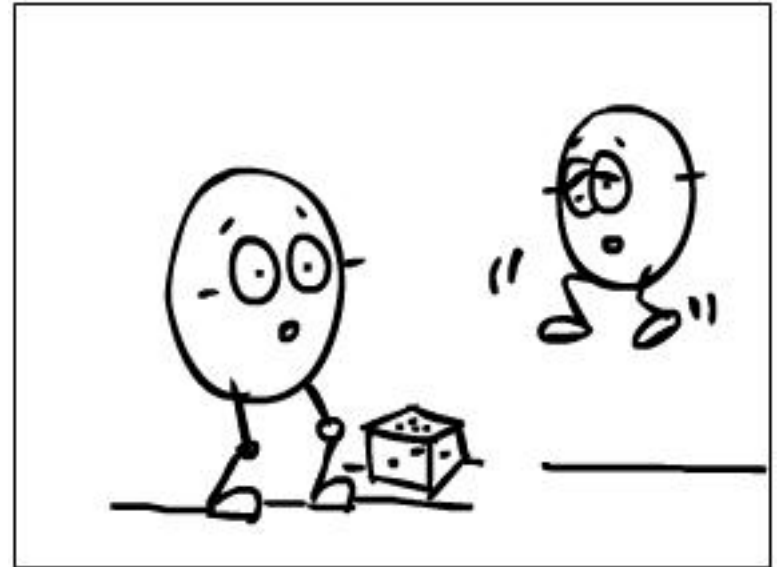
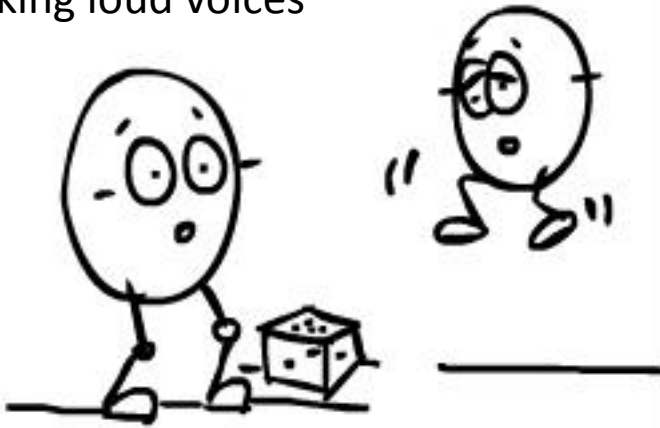
He tried to start conversation



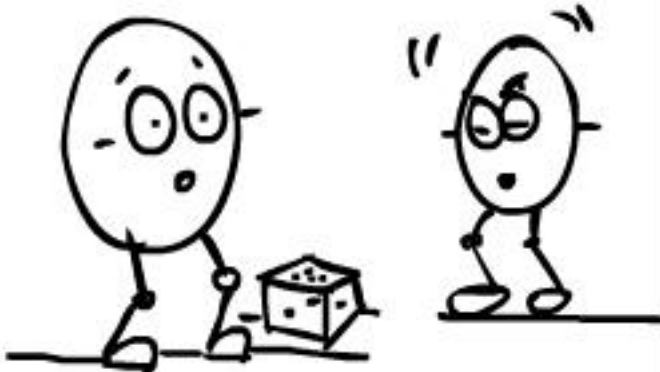
And found that something is wrong its not moving



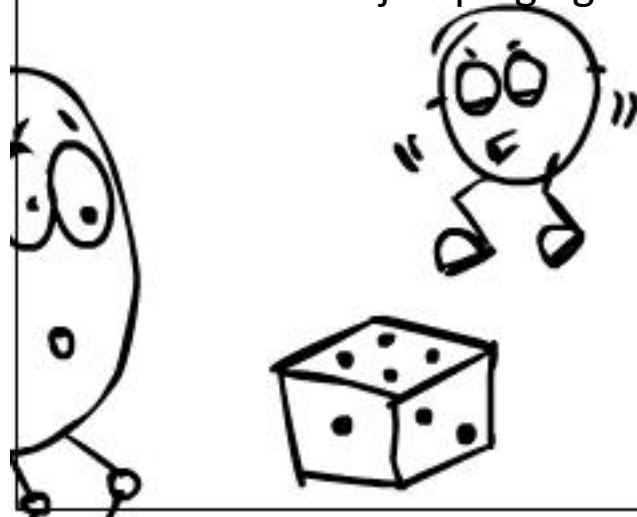
Ball robot started jumping and making loud voices

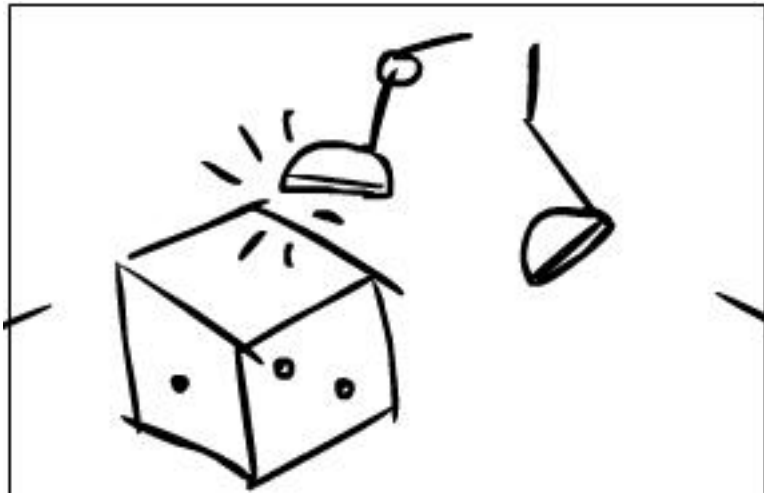


Nothing happend

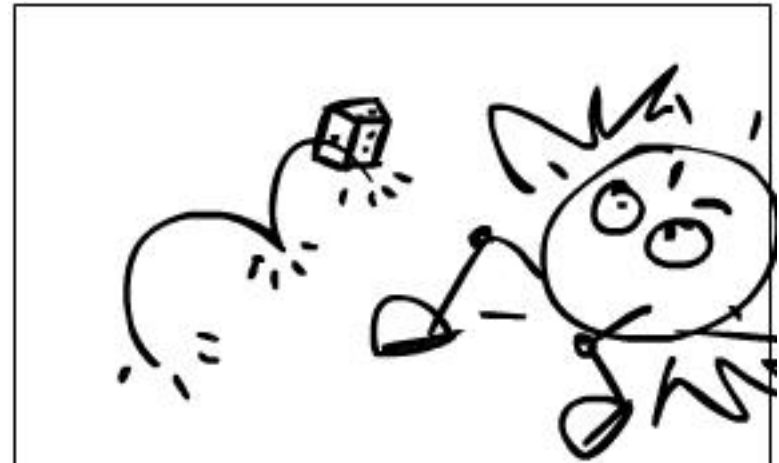


Ball robot started jumping again

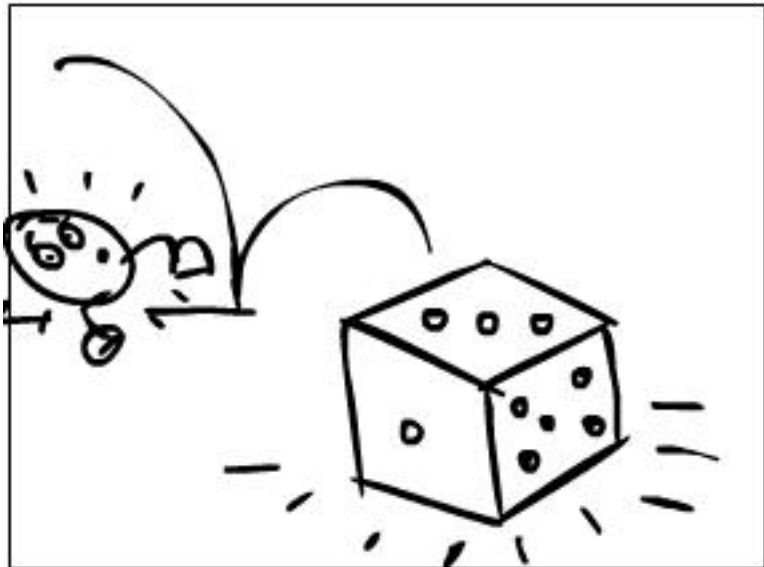




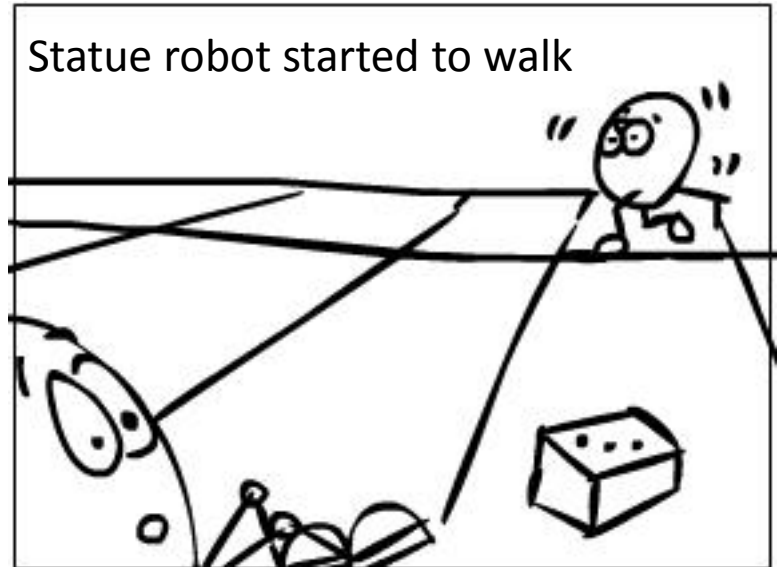
Close-up of leg accidentally pushing dice kept there



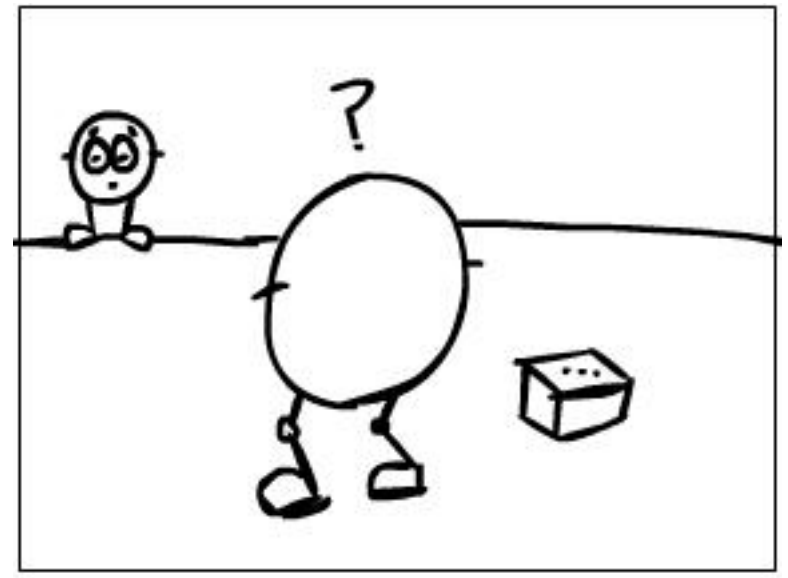
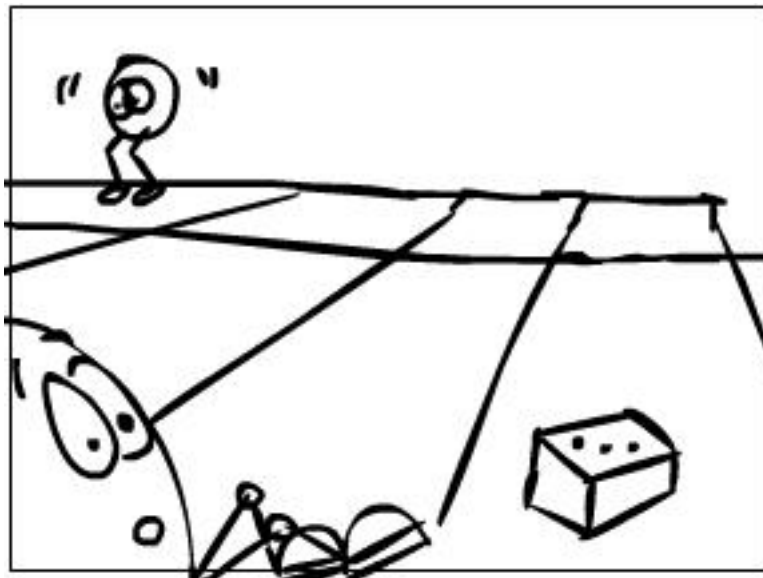
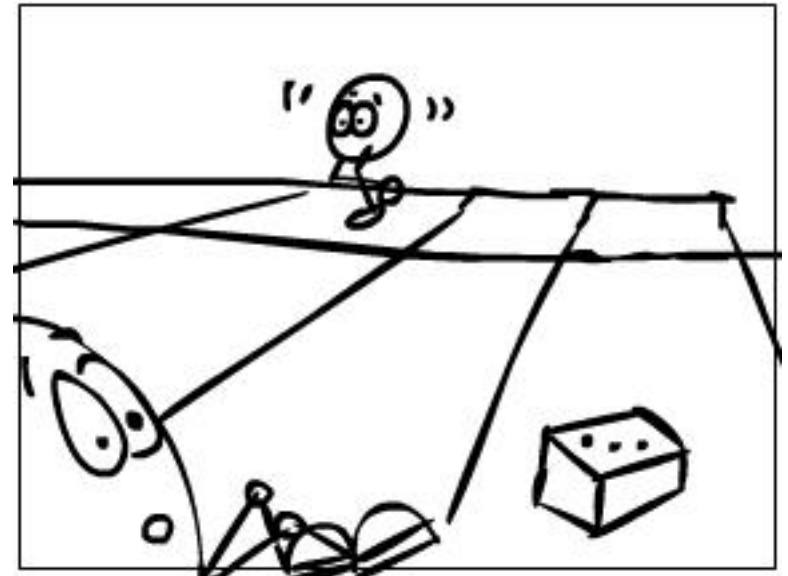
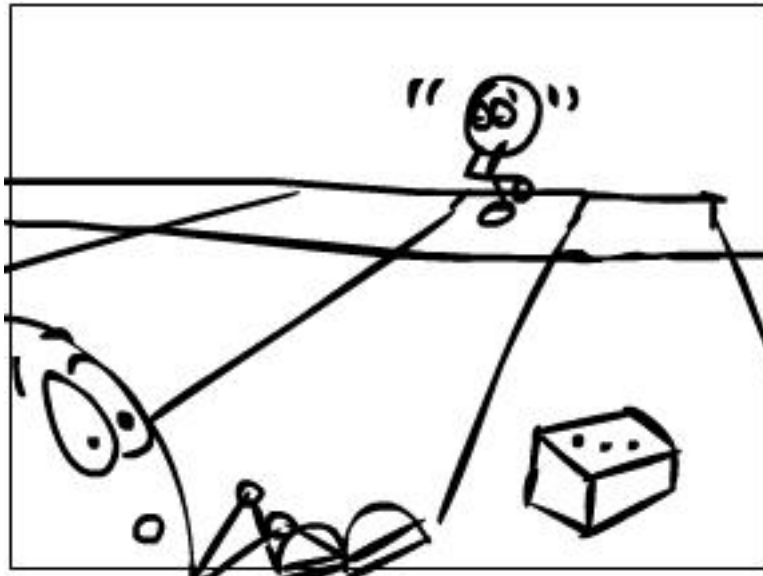
Dice rolled down



Dice stops in front of camera, 3 on face

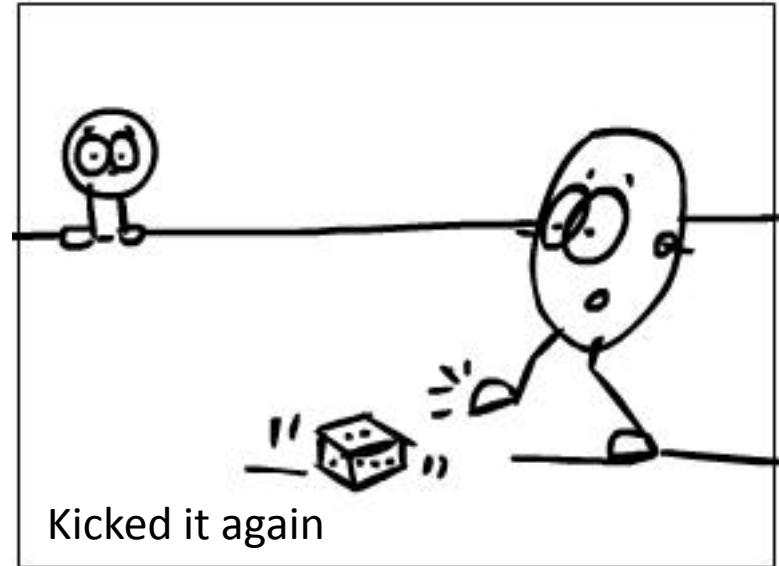
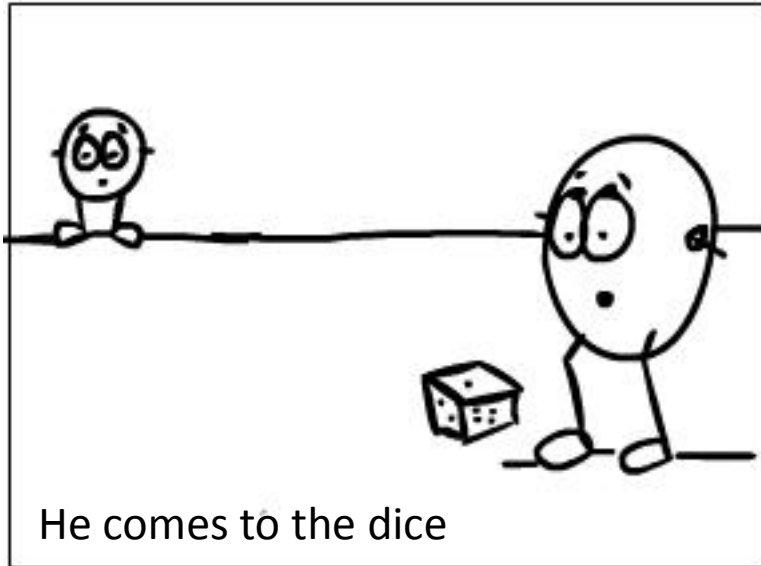


Statue robot started to walk

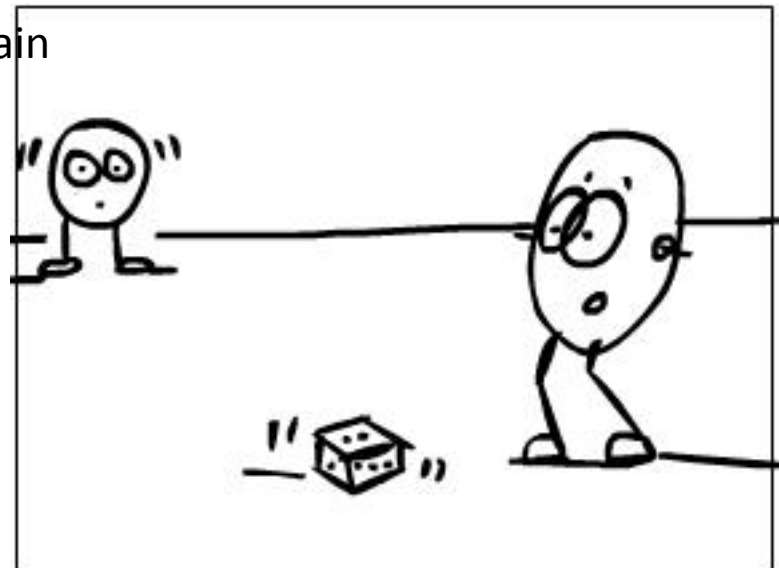
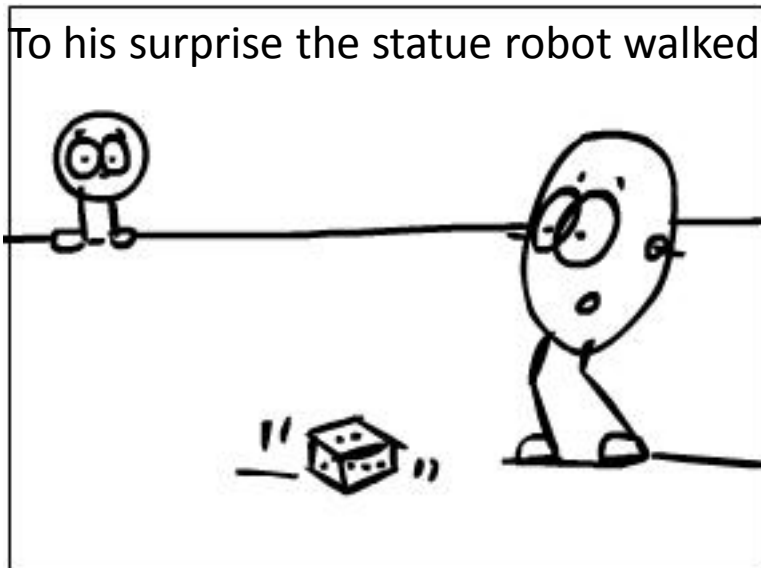


Statue robot walks three steps on board

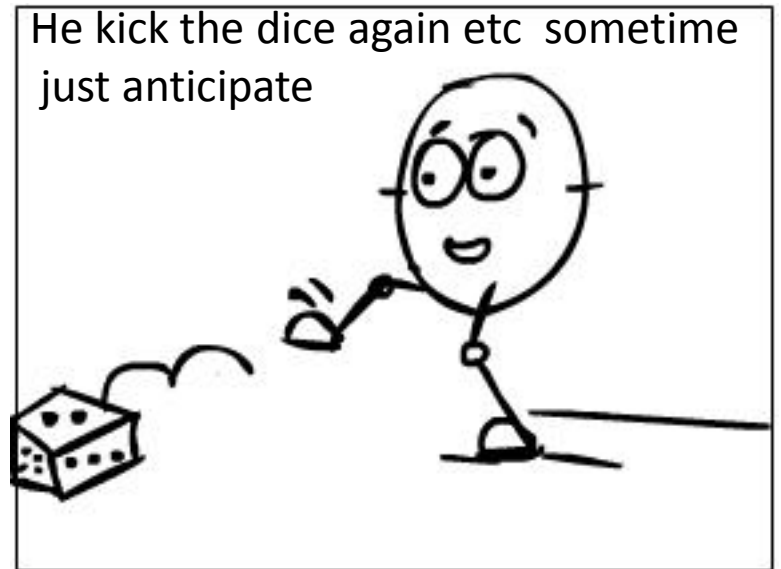
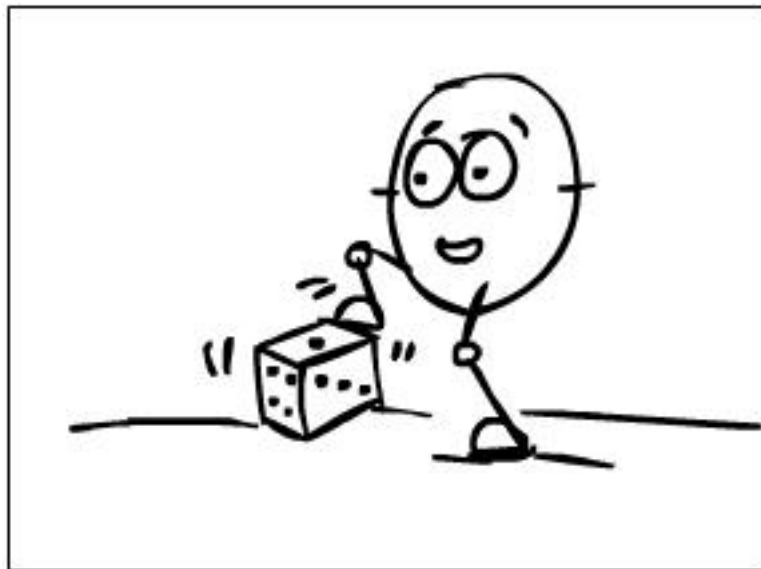
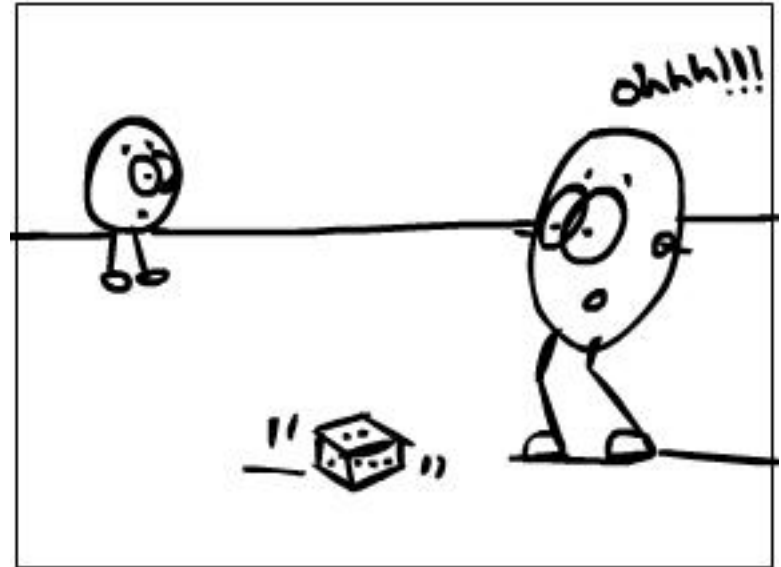
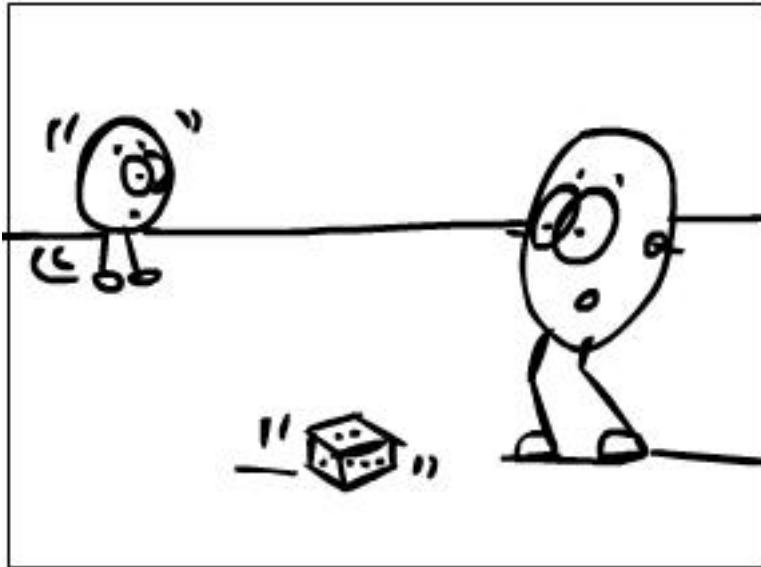
The whole thing amazed the ball robot



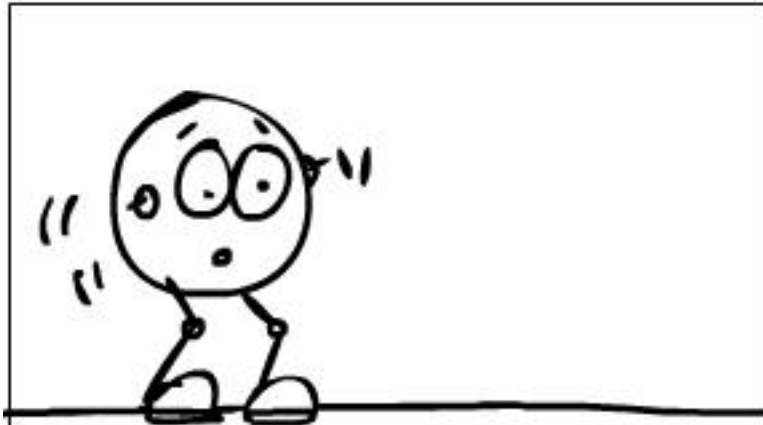
To his surprise the statue robot walked again



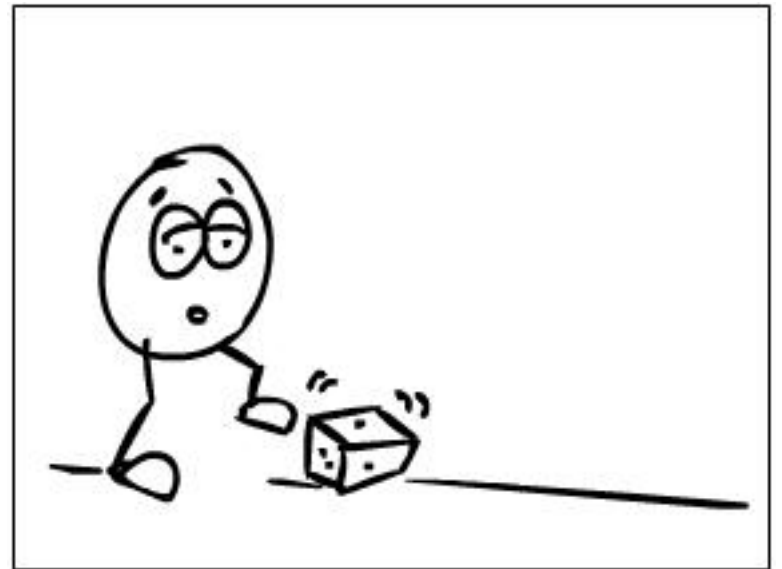
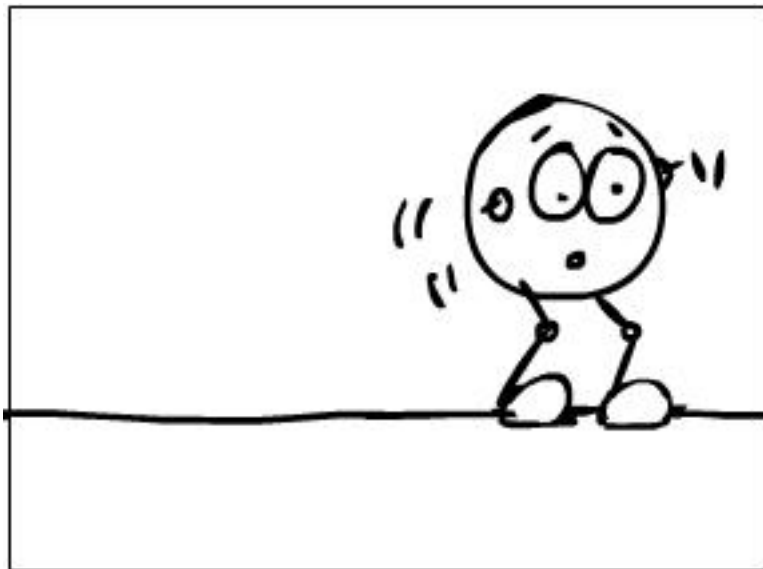
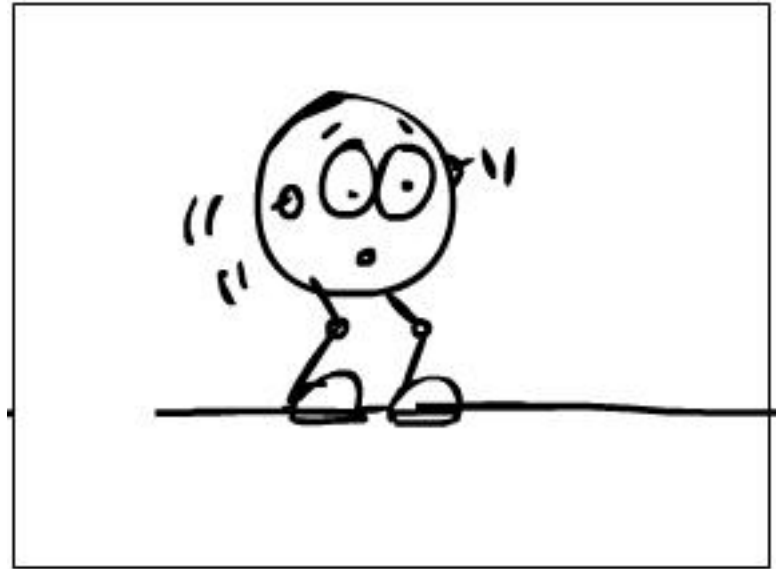
Understanding the whole puzzle ,

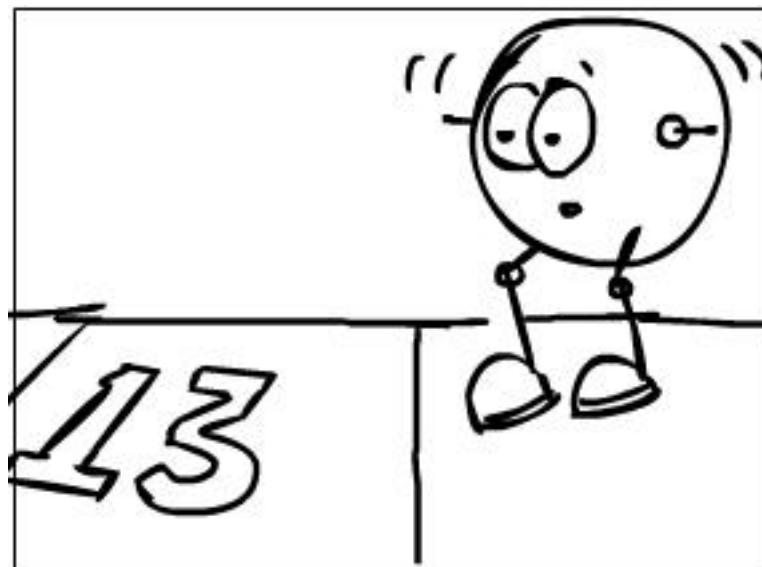
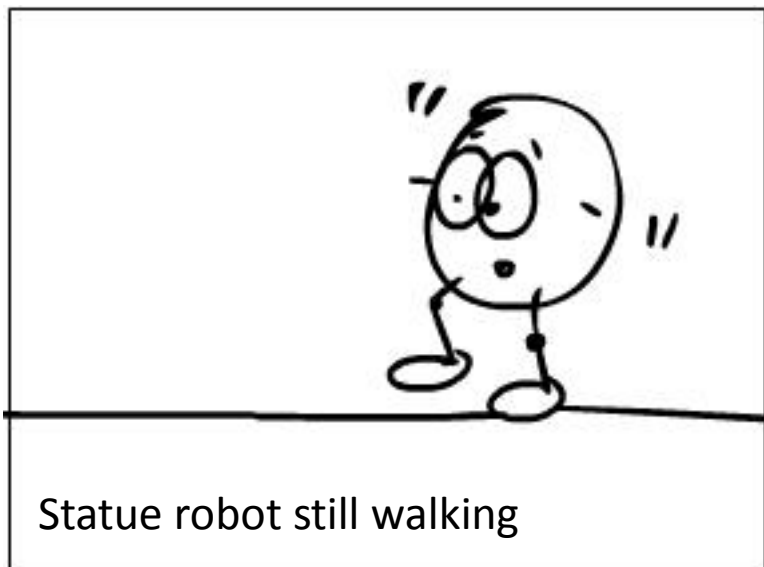


Ball robot started taking fun with statue

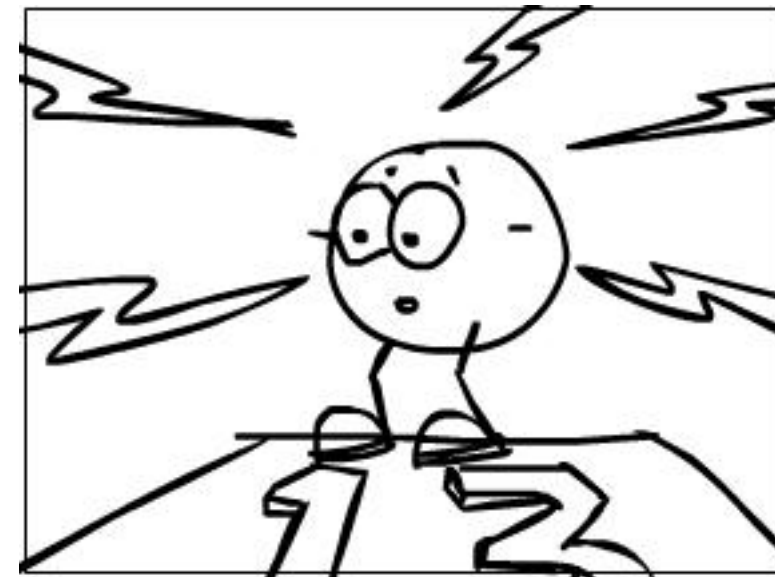


Statue robot couldn't do nothing but
Just follow the dice numbers

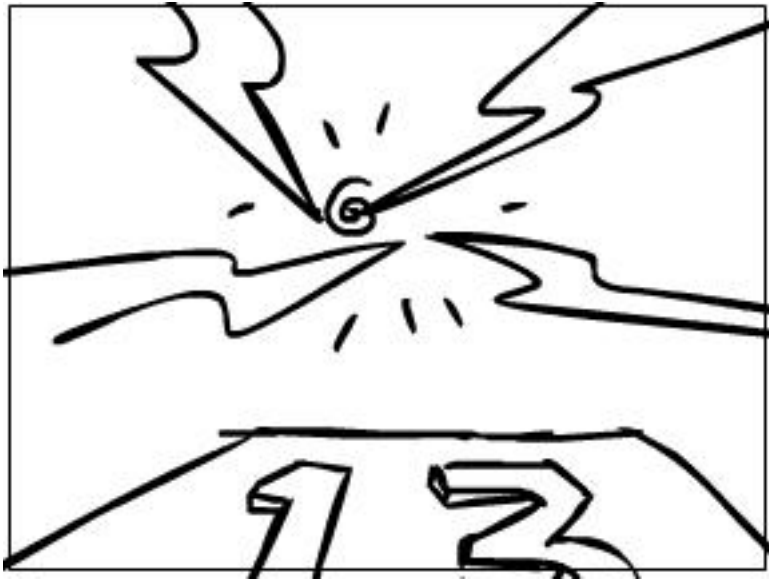




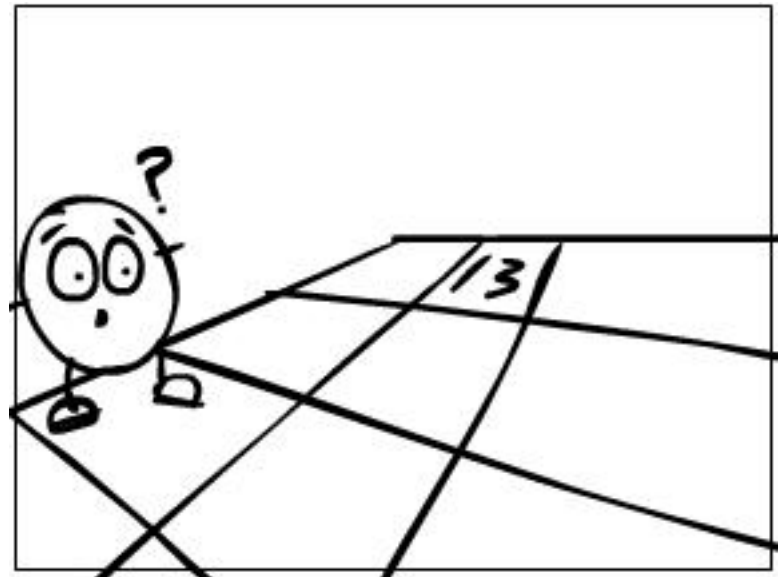
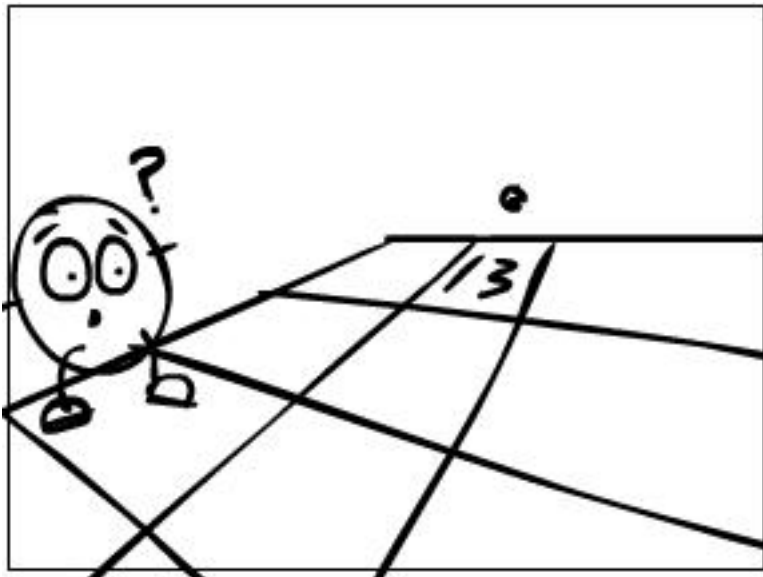
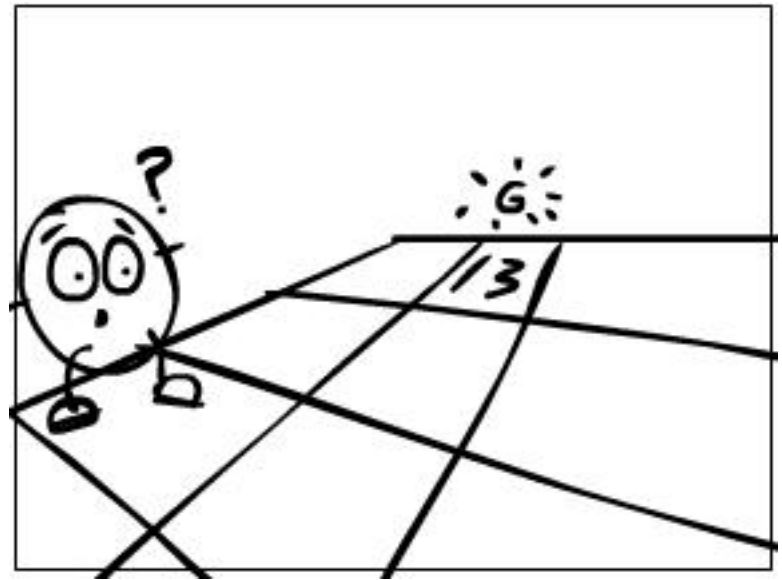
He steps onto 13th no block



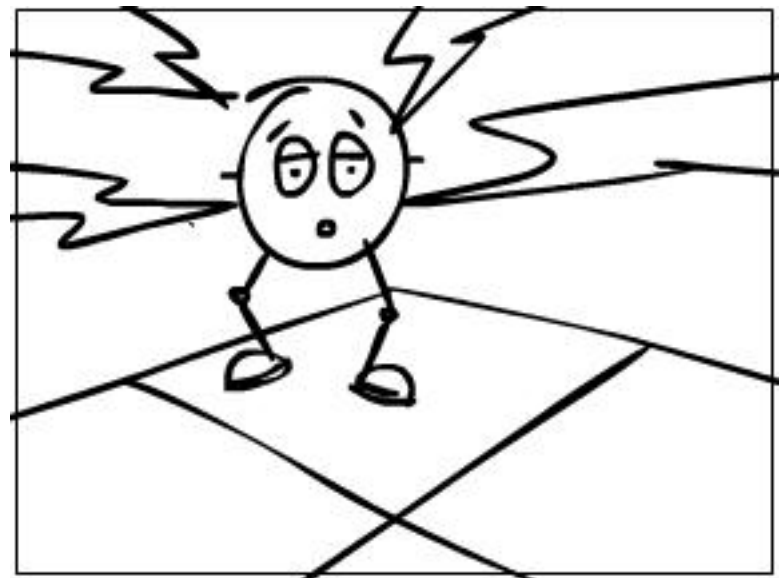
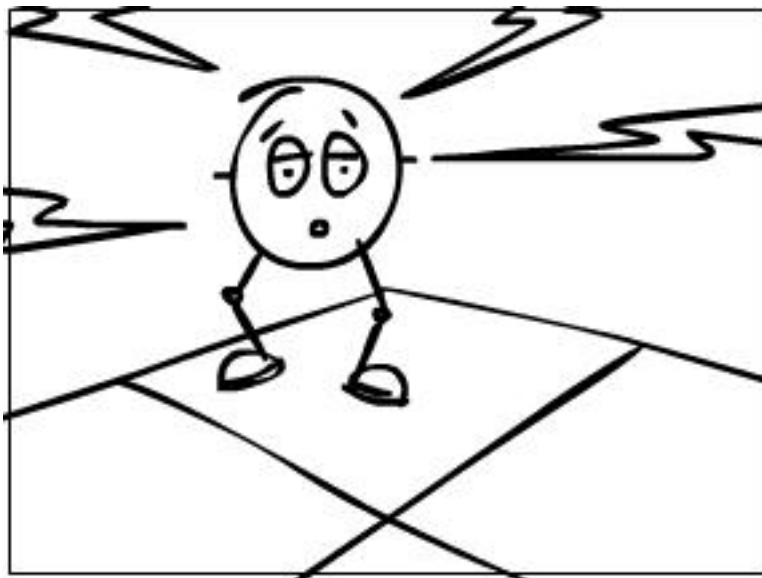
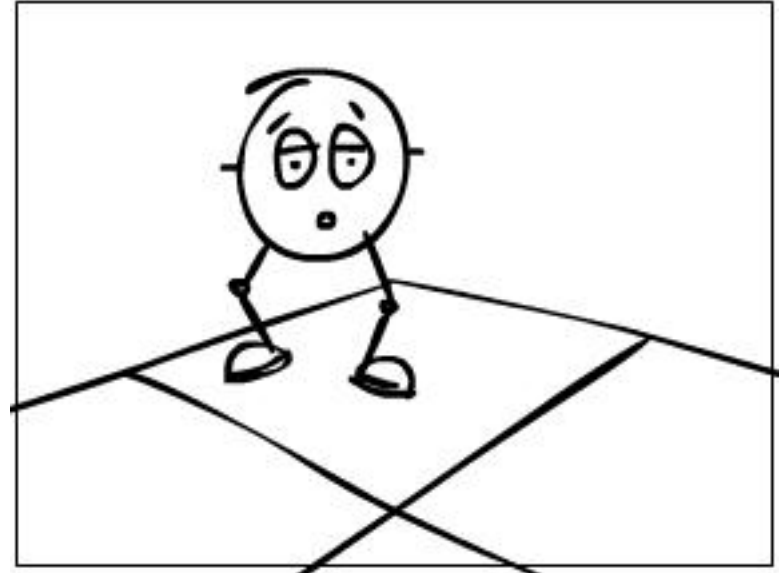
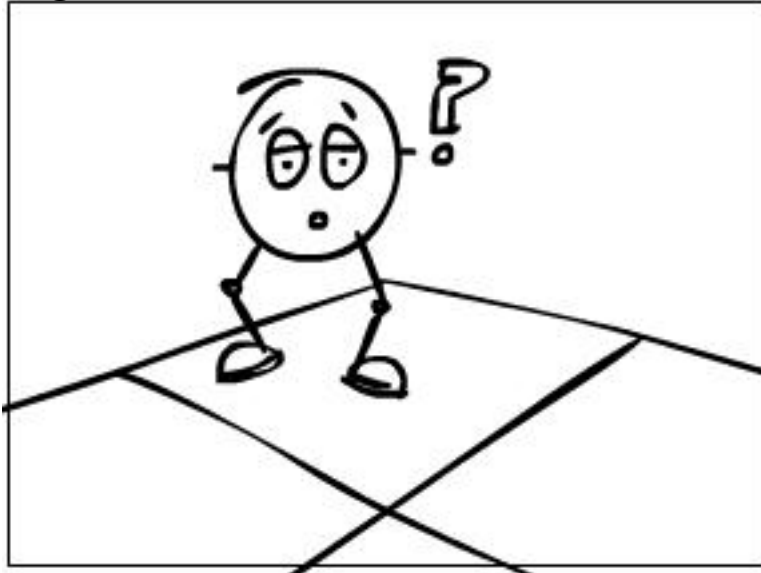
A current waves coming



Statue Robot dissapears

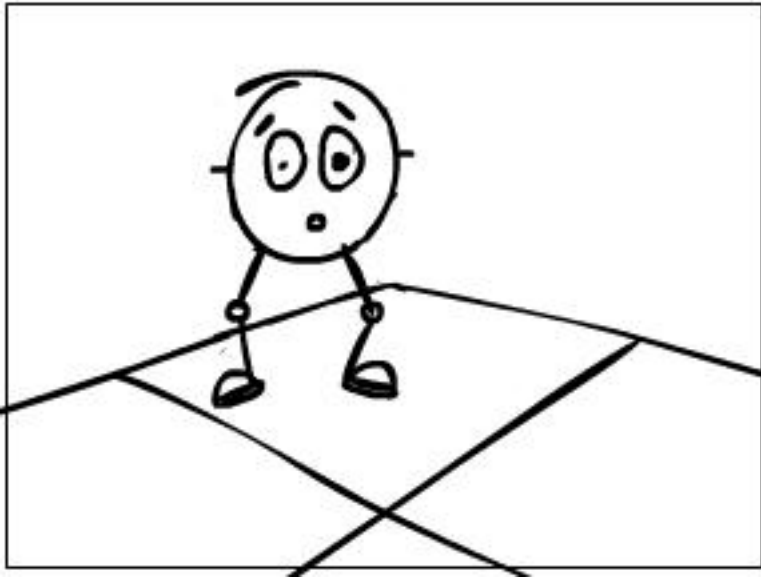


Again a sound comes

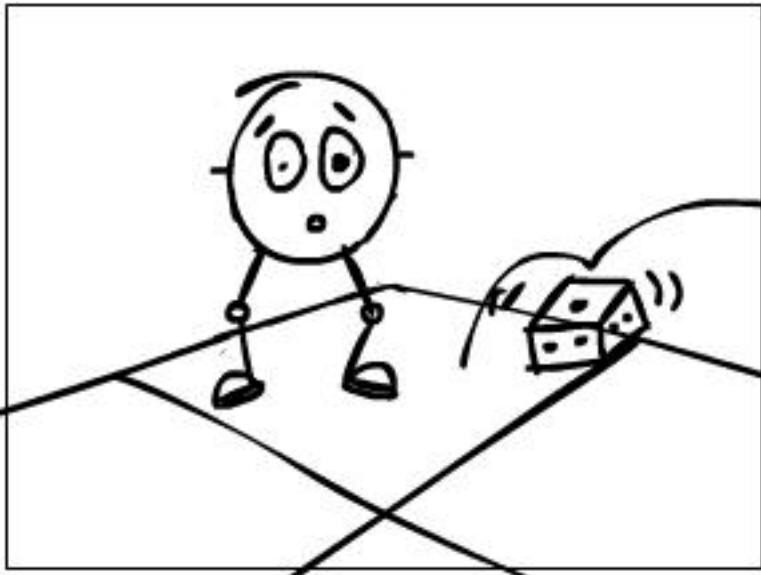
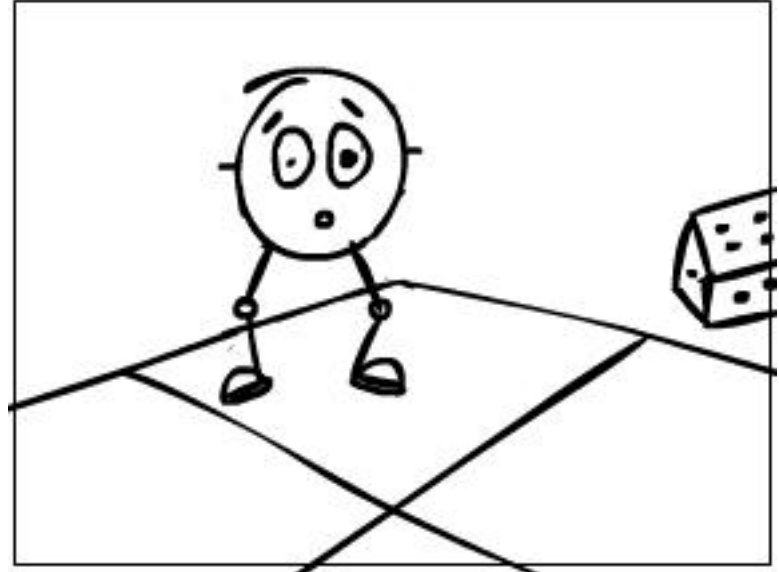


Current waves hit the ball robot

Ball robot turns into statue

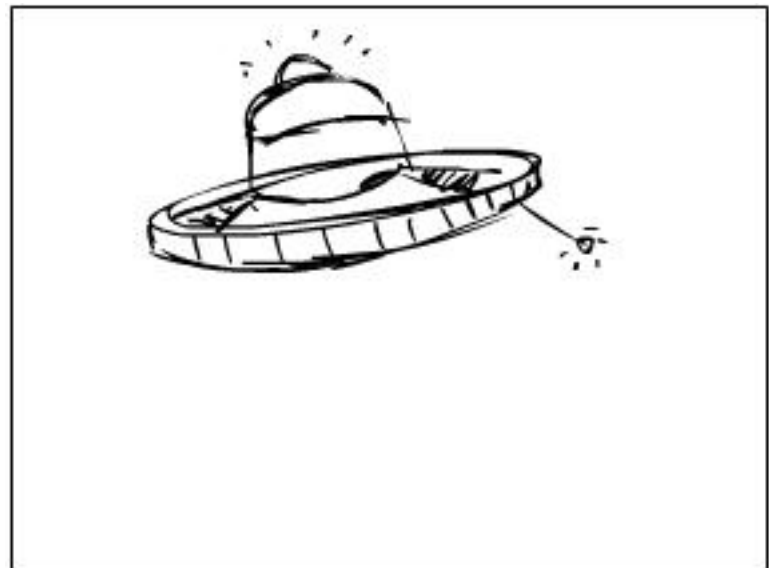
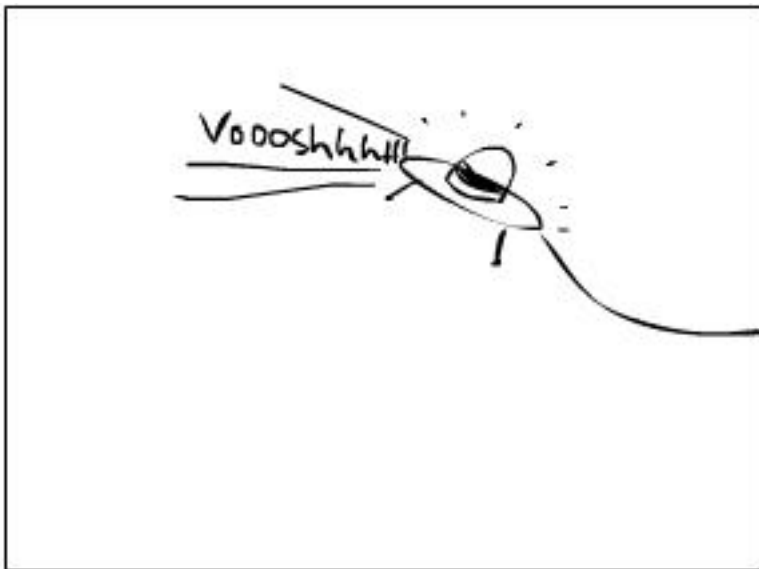
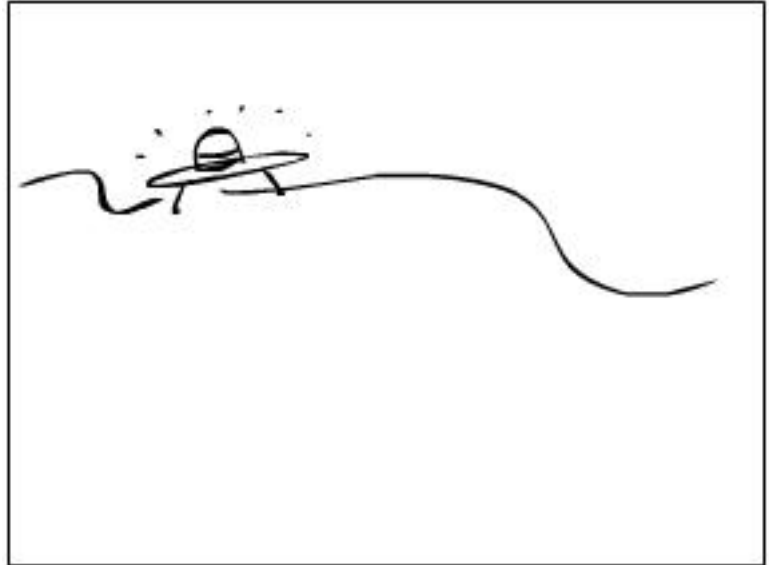


Dice comes from somewhere



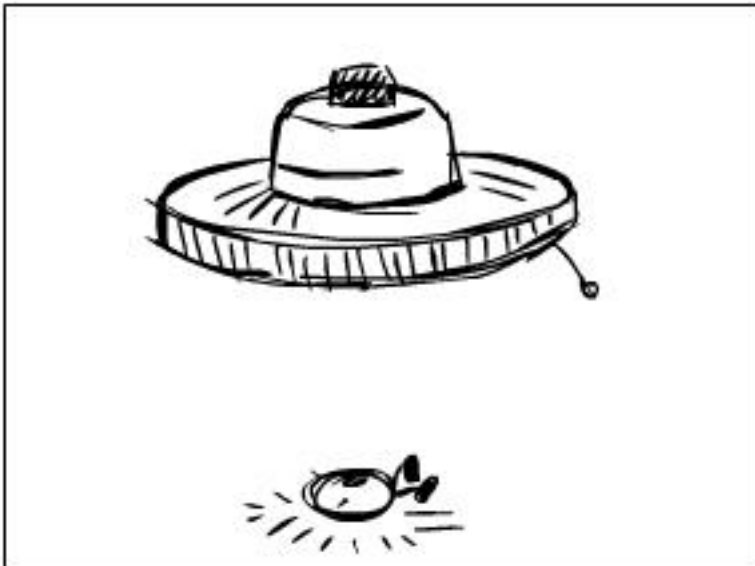
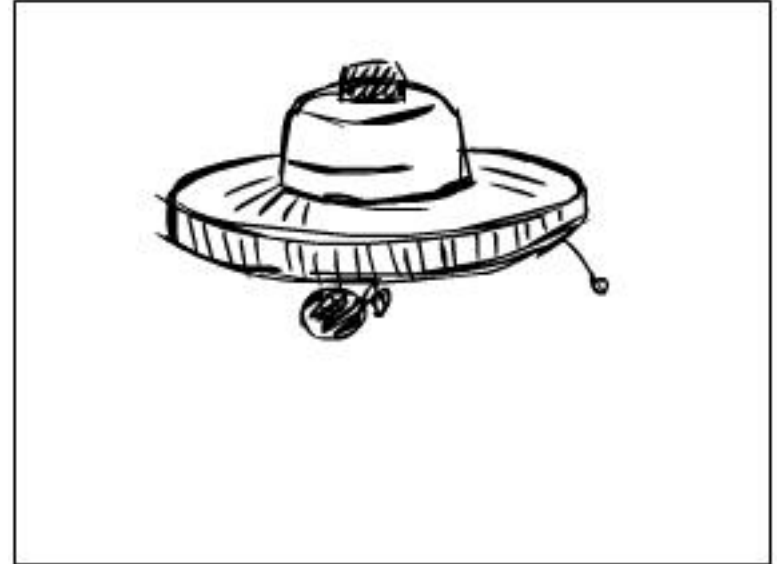
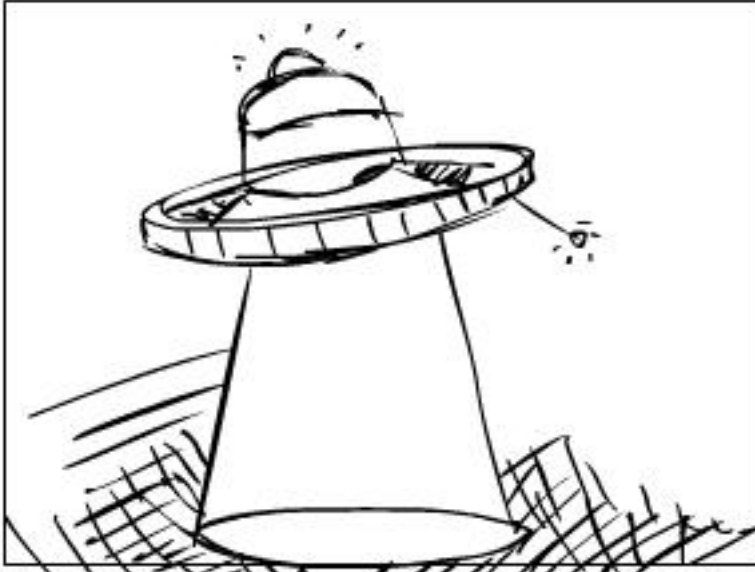
Screen blacks out

Again Another UFO comes

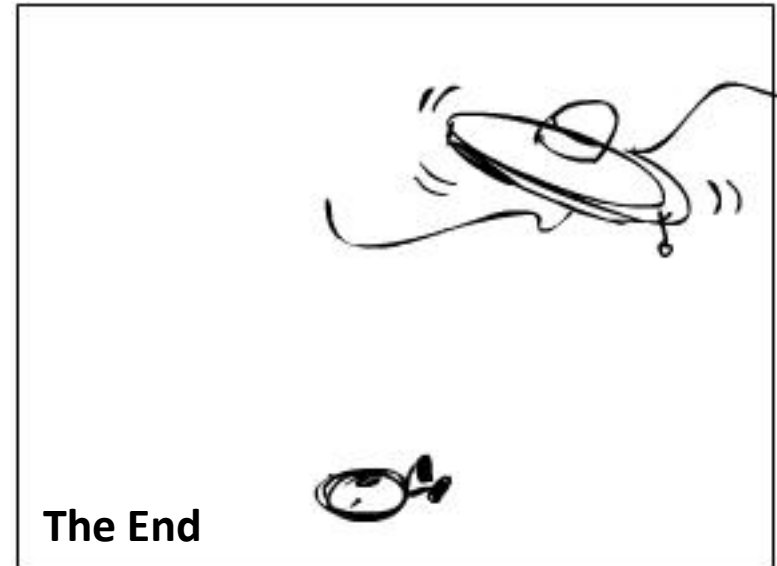


Stands in air

Flashes a light

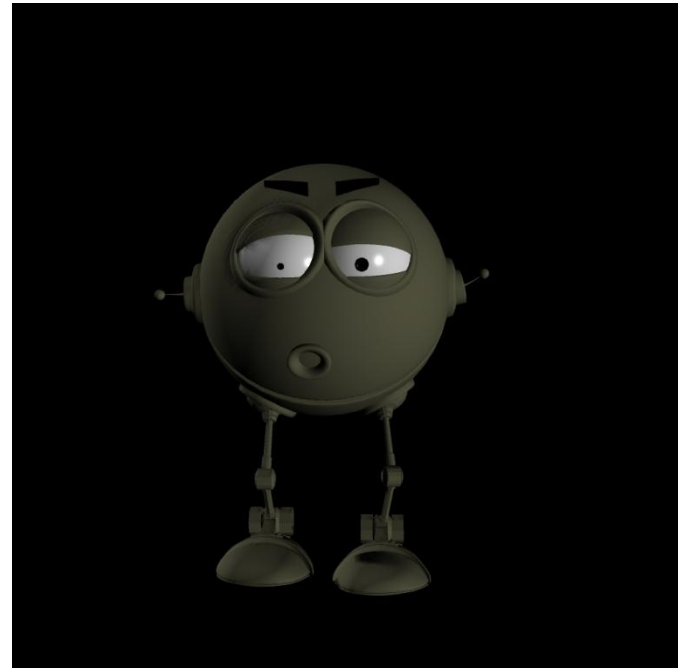


Drop another robot and went back!!!



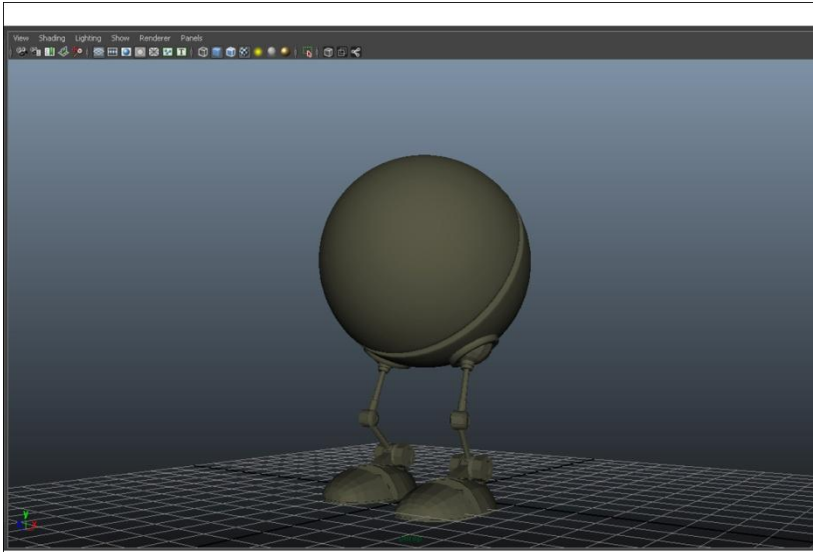
The End

Character



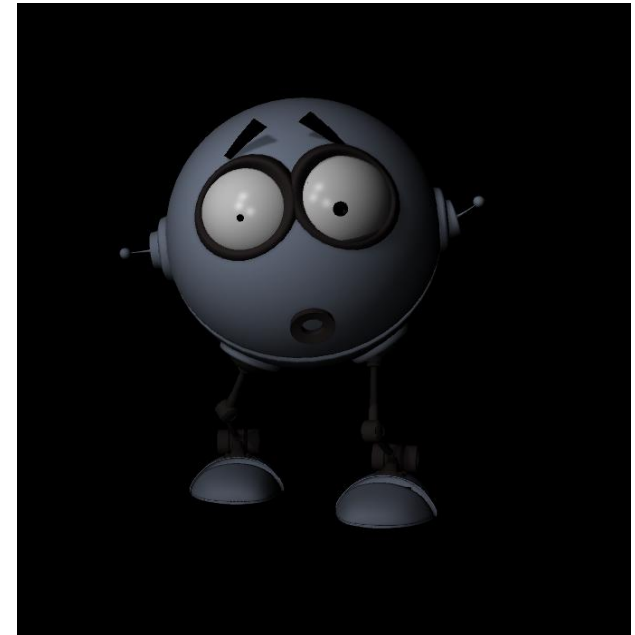
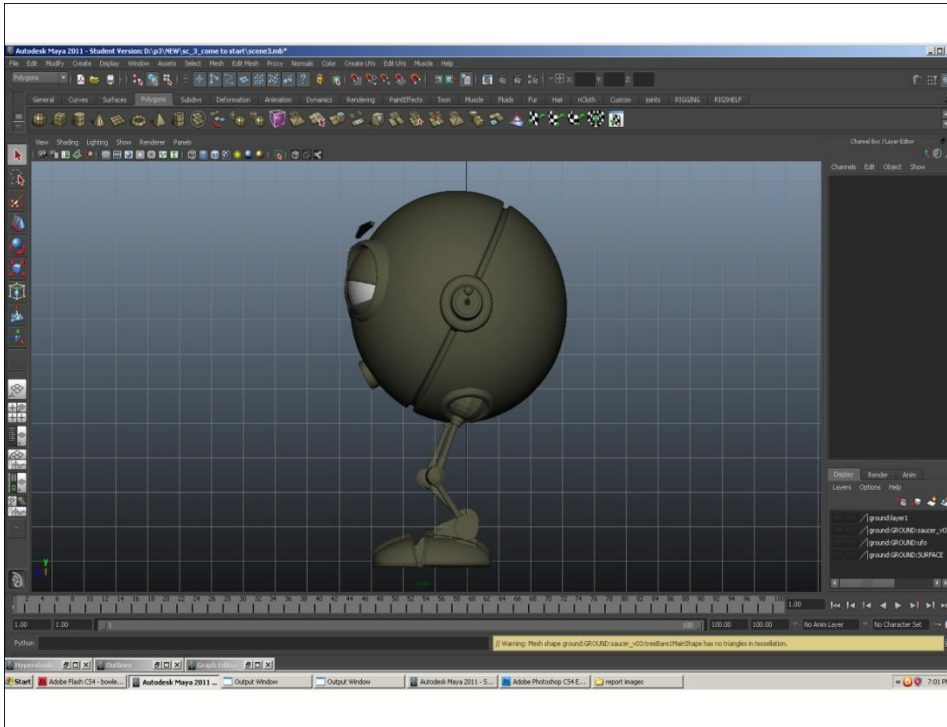
The character is simple Robot without hands, who expresses his emotions through his body language and eyes.

Character development



Character is simple in terms of modeling process , a normal polygon ball is attached with mechanical legs . And legs are rigged using inverse kinetics .

Since eyes are used more frequently to express the emotions in the animation they are modeled separately and later combined in the model . It has controls of its own also which controls the blink of eyes etc.



Final Model

Technique :

The film is done in Autodesk Maya Software 2011 student version . From character and props development to the final Animation key frames are done in this software itself . Later taking Render images sequences the post production is done in Adobe After effects CS4. The sequence of images is again rendered in quick time video for further editing .

Pre-Production Process

Animatics ;

First after the detailed storyboarding is done , the images are placed in Adobe premier sequentially ,and timed correctly with rough music where ever required – the process is called Animatics.

Animatics is essential part of making film because it gives rough idea of the length of the film and help filmmaker to visualize the events happening in real time .

Production:

According to the animatics , the scenes are made in Autodesk Maya the characters and props where ever required .
The scene files are saved properly with naming each folder correctly .

As in Maya the whole film is not shot in one scene rather it is cut into different scenes and animation is being done accordingly.

After completing the animation of one scene , the render is taken out in the form of image sequence in Tiff or PNG format .
Tiff is preferred because it can use in any post production software.

Post Production :

In the post production the image sequence take from Maya is imported into Adobe After Effects , where further timing is corrected wherever required .

Color correction is also major process in post production where the lighting of the scene is matched with the overall look of the film .

When everything is done the final render is generated from after effects in Quick time video format and named according to the scene.

The video clip is then placed in adobe premier in previously made animatics . After all the scene is rendered and placed in animatics file in Adobe premier , the final render is generated doing final editing of timings and music etc.

Finish .

References And Guide Books :

Eric Keller Maya visual Effects: The innovators guide, Sybex

Luke Ahearn 3d Game Texture : Create Professional game art using Photoshop, Focal Press

Eric Keller Mastering Autodesk Maya : 2011 ,Sybex Press)

Lynda online tutorials (lynda.com)

Creative Crash online tutorials (creativecrash.com) .