



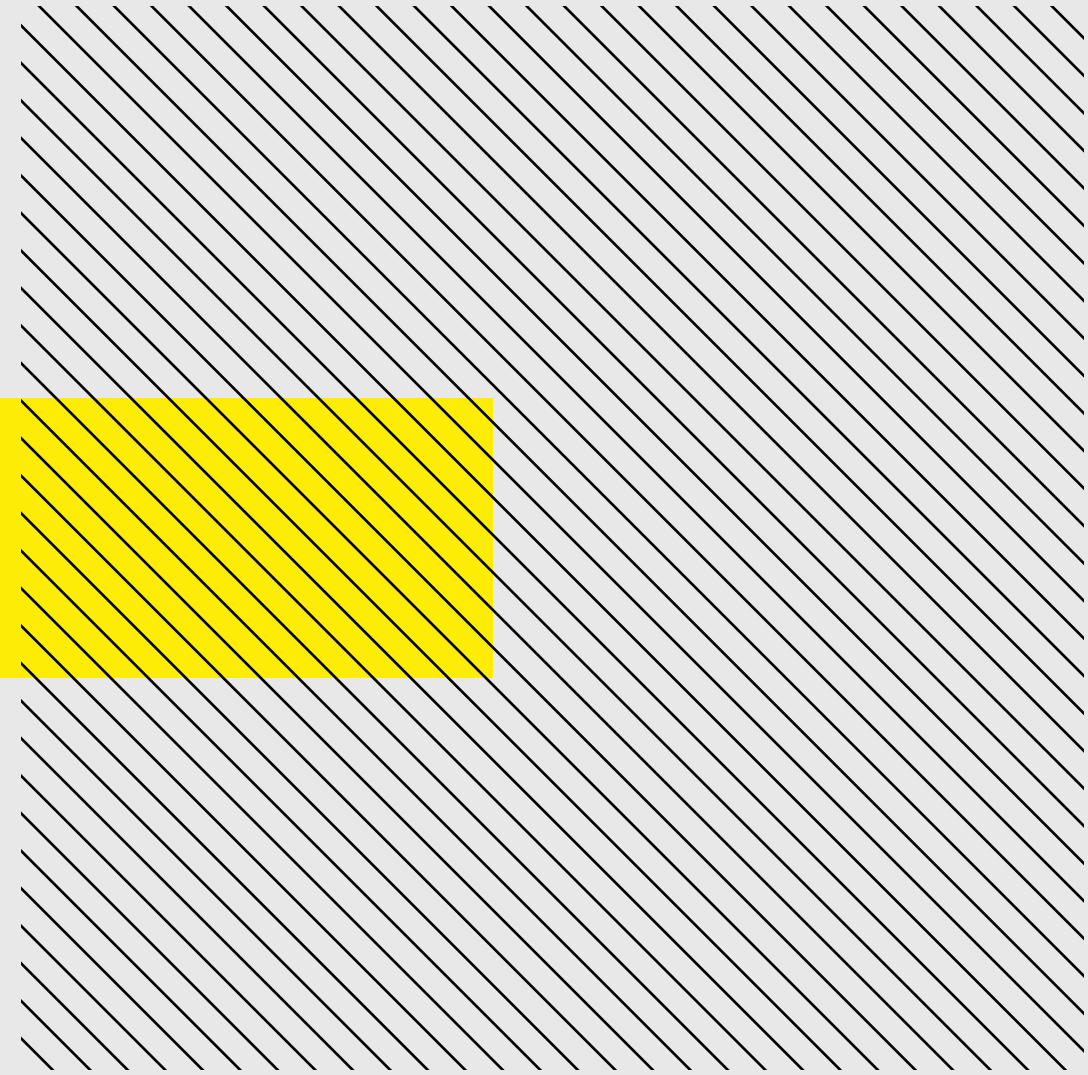
INDUSTRIAL **DESIGN**

P O R

T F O

L I O

MAYANK JINDAL



2021



D.O.B- 23 MAY ,1999

MAYANK JINDAL

I'm a Product design student at CEPT University, Ahemdabad, and looking for an Internship opportunity of a minimum of 6 months in this field to obtain my degree. Passionate about my work and looking forward to its benefaction to this fast-moving world which leaves the salient details unnoticed.

My approach towards every category of design is comprehensive; inclusive of creativity, practicality, and distinctive towards a finished in the detailed product. Moreover, I like to travel, photography, videography, and watch content-oriented movies. I love to work on real projects as that allows me to apply my learning from academics to the real world. I started approaching companies and startups from my 2nd year in college to work for them.

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 Haryana, India

EDUCATIONAL QUALIFICATION

Secondary Education -

DC Montessori Senior Secondary School
Manimajra, Chandigarh, 160017

Bachelors in Product design -

CEPT University, Ahmedabad, Gujrat
(Ongoing - Semester 7th)

LANGUAGE -

Hindi , English, Punjabi

ANALOUGE SKILLS

Sketching
Rendering
Concept Ideations
Prototyping
3d modeling
Graphic Design
Visualization

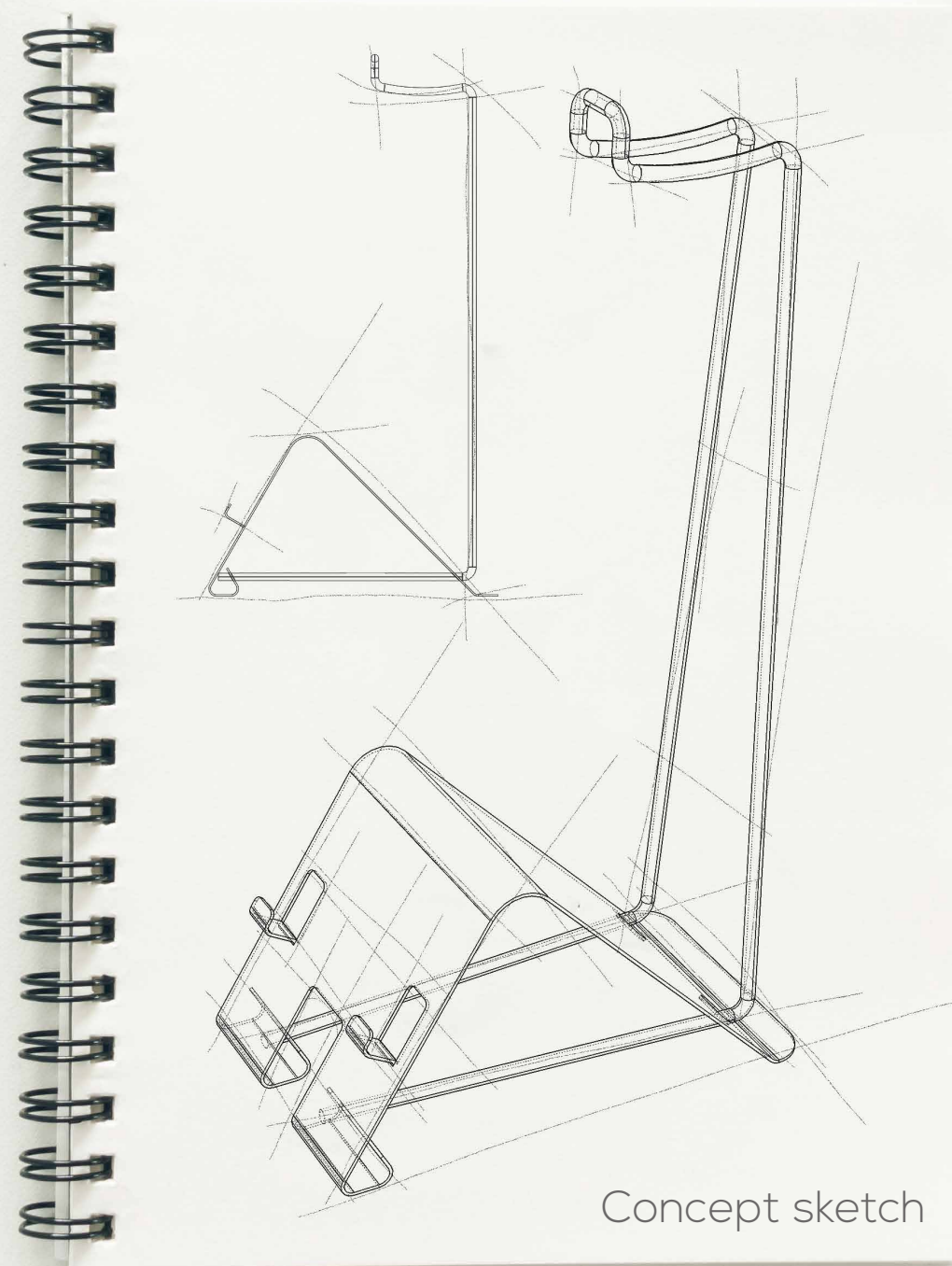
DIGITAL SKILLS

- Autocad
- Solid works
- Sketchup
- Rhino7
- Lumion
- Key shot
- Adobe Illustrator
- Corel Draw
- Adobe Photoshop
- Adobe Premiere Pro

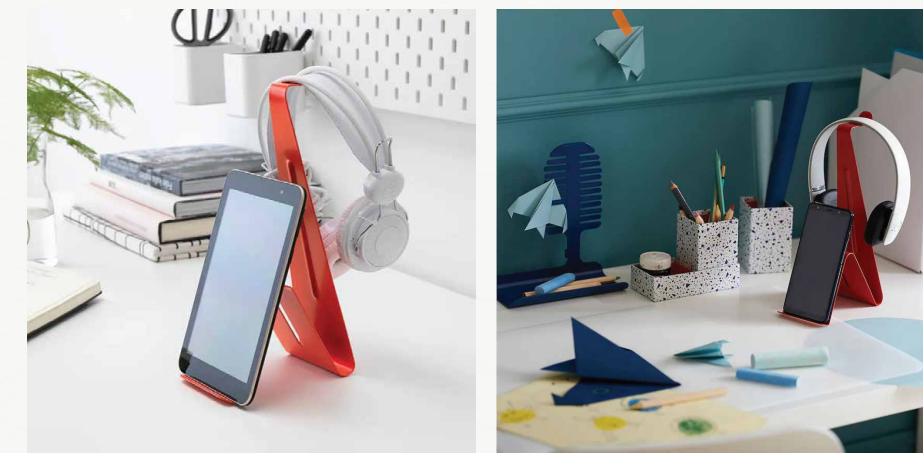
EXPERIENCE - PARTICIPATION

- **Snr. Graphic Designer -**
StartupsHive (2019 - Present)
- **Product Designer -**
INSTAHOT (2020-2021)
- **Packaging Designer -**
Shivbaba masale (2021)
- **Website Designer -**
Akfullstack (2019-2021)
- **Documenting Varanasi -**
Video- Varanasi badlav ki kahani
- **TACTICAL URBANISM -**
SWS- Pakwan street , Ahemdabad

- 1 TELEFONSTATIV:** - Redesigning Ikea's headset and phone stand
- 2 CLOTH HANGER** - Designing a cloth hanger by understanding the wood as a material
- 3 WOODEN TABLE** - Designing a Table similar to an image shared by the client
- 4 TABLE CUM STOOL**- Designing a Deplobable Table cum Stool
- 5 INSTALLATIONS** - Navratri installation 2019 for CEPT University
- 6 TWIRLING GHAGHRA** - Geometric Reflection, Twirling Ghaghra Navratri installation 2019 for CEPT University
- 7 REDESIGNING THE STUDY TABLE** - Human-centric design application
- 8 PHOTO AND VIDEOGRAPHY**



TELEFONSTATIV:



MÖJLIGHET

Headset/tablet stand, Red

Above stand is from ikea and claims to makes easier to keep headphones and tablets or mobile phones organized. Small, lightweight and easy to move from the desk to the bedside table after finishing homework.

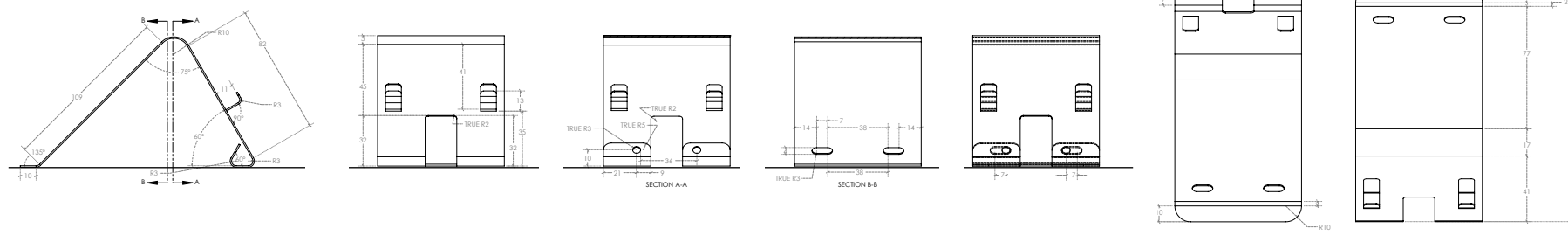
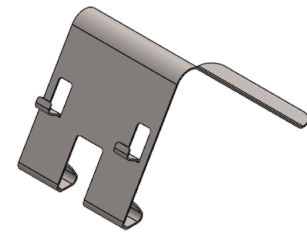
Design opportunity

Redesigning IKEA's Mobile and headphone stand

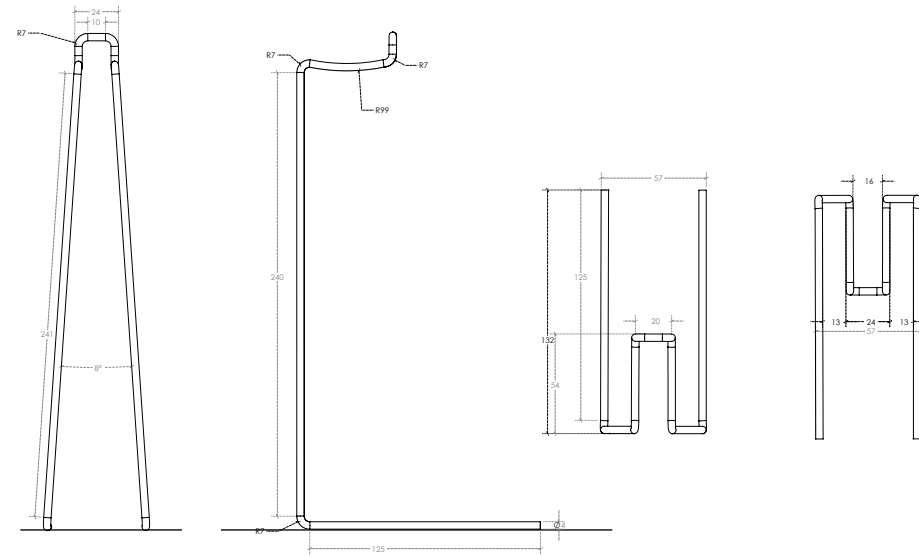
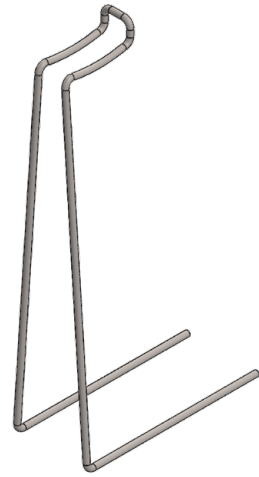
Why to redesign this?

- Badly designed in terms of material usage
- Ergonomics of both users and products are neglected
- Can't charge phone/ tablet while using
- Cant connect headphones if it is at the bottom of the phone/tablet

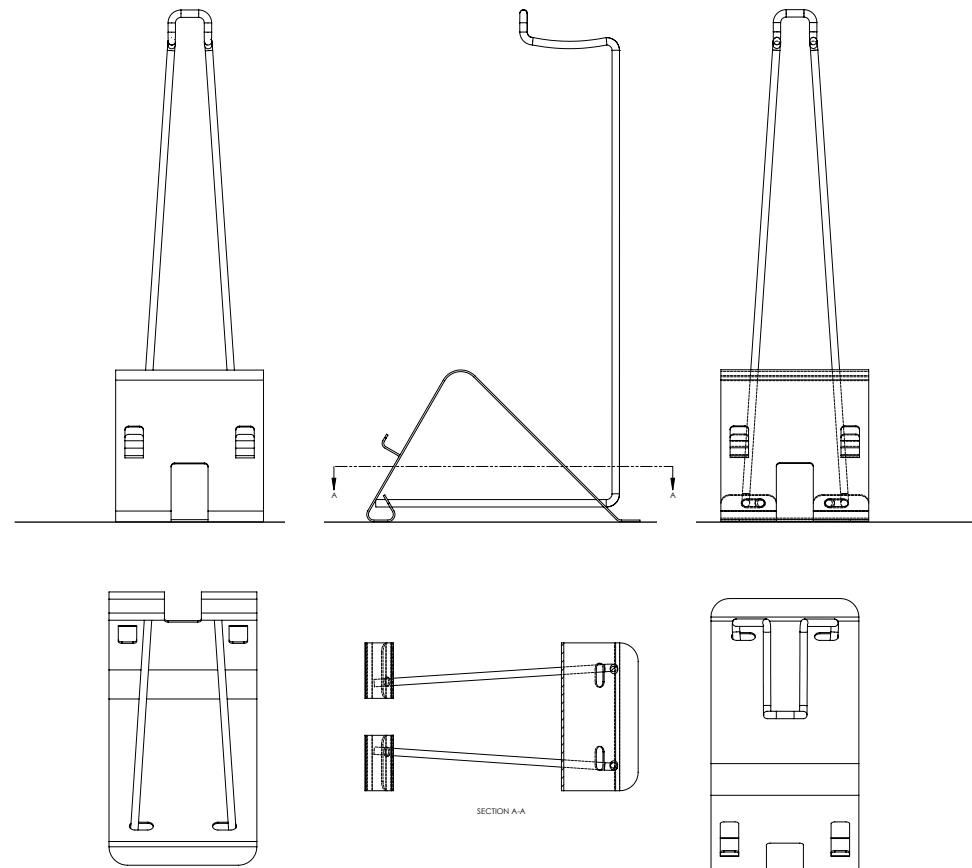
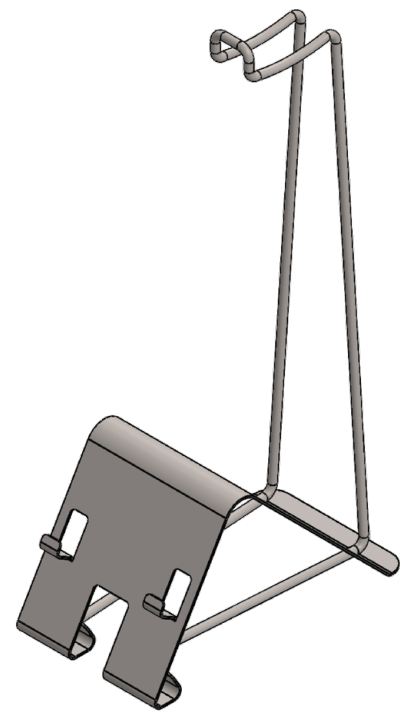
Part 1 -



Part 2 -



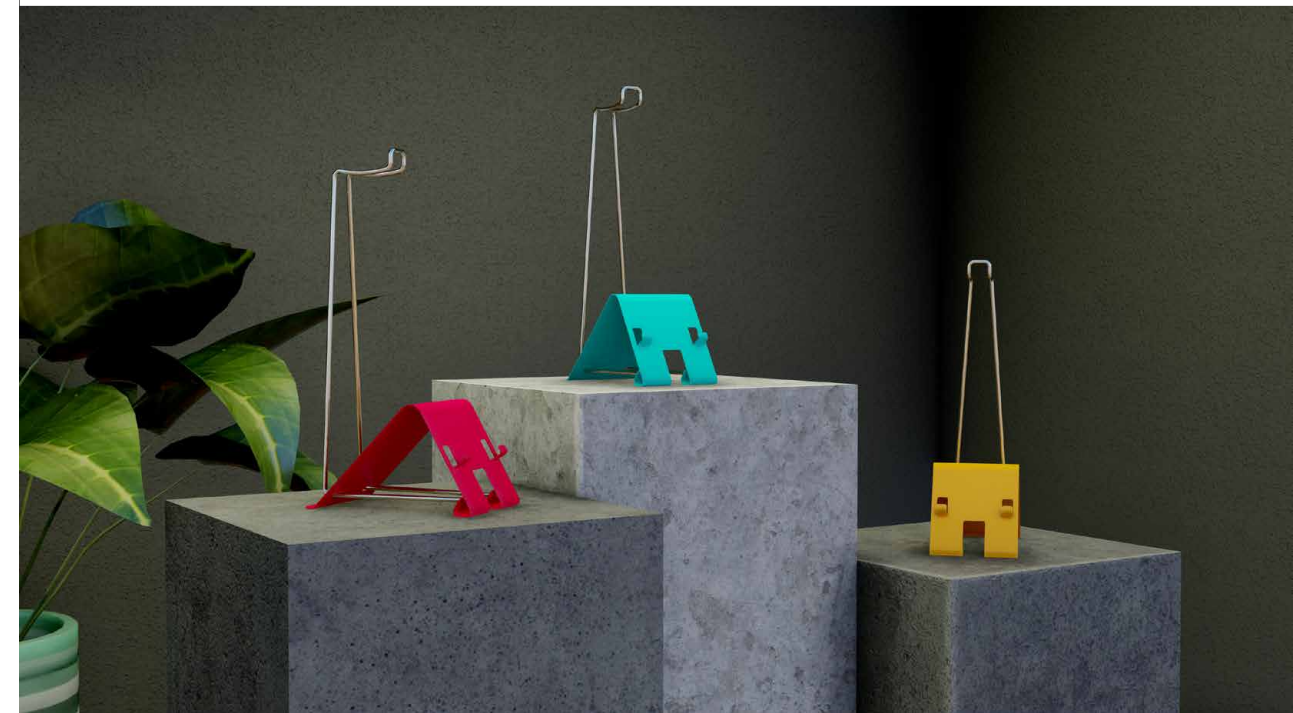
Assembly -

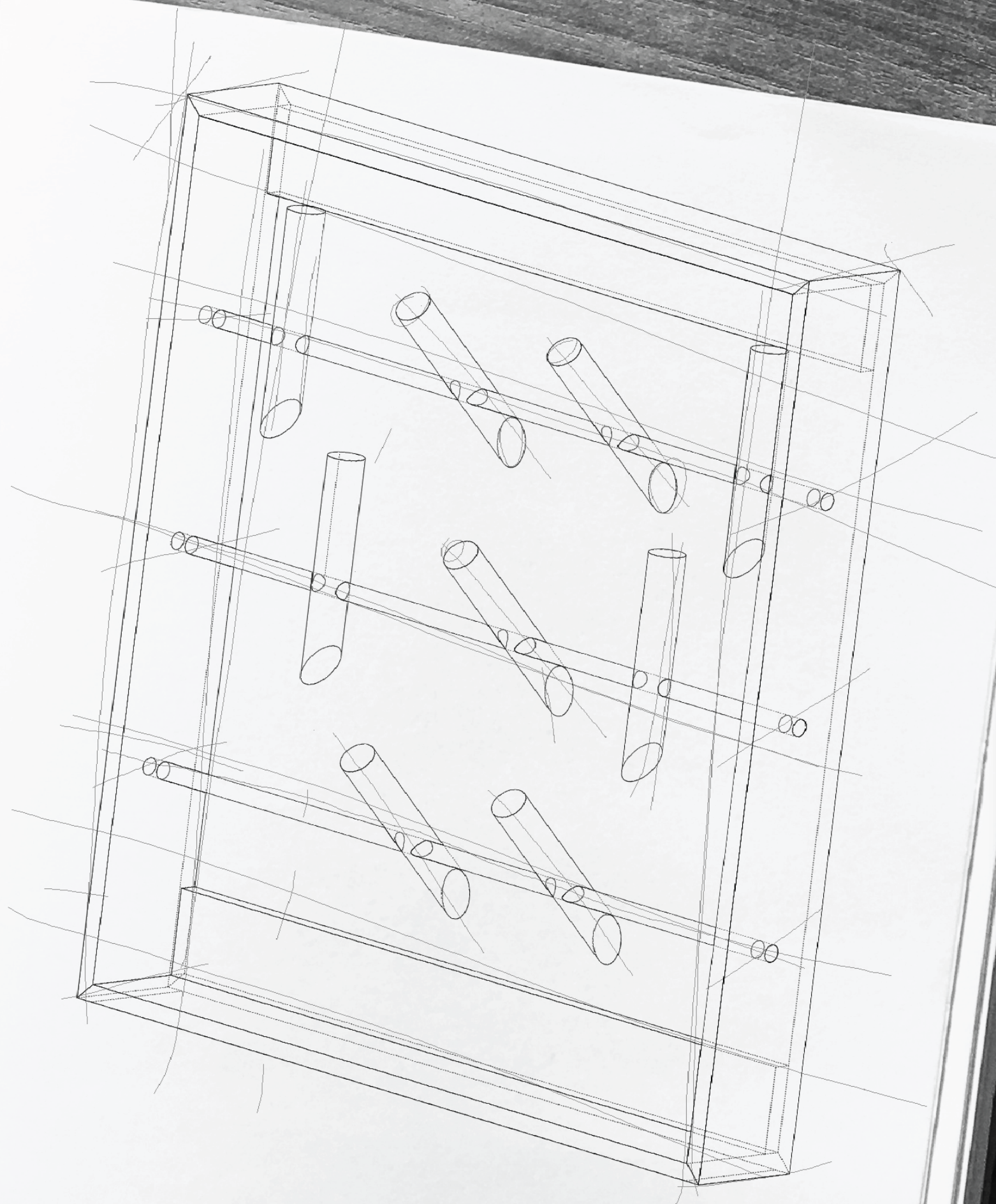
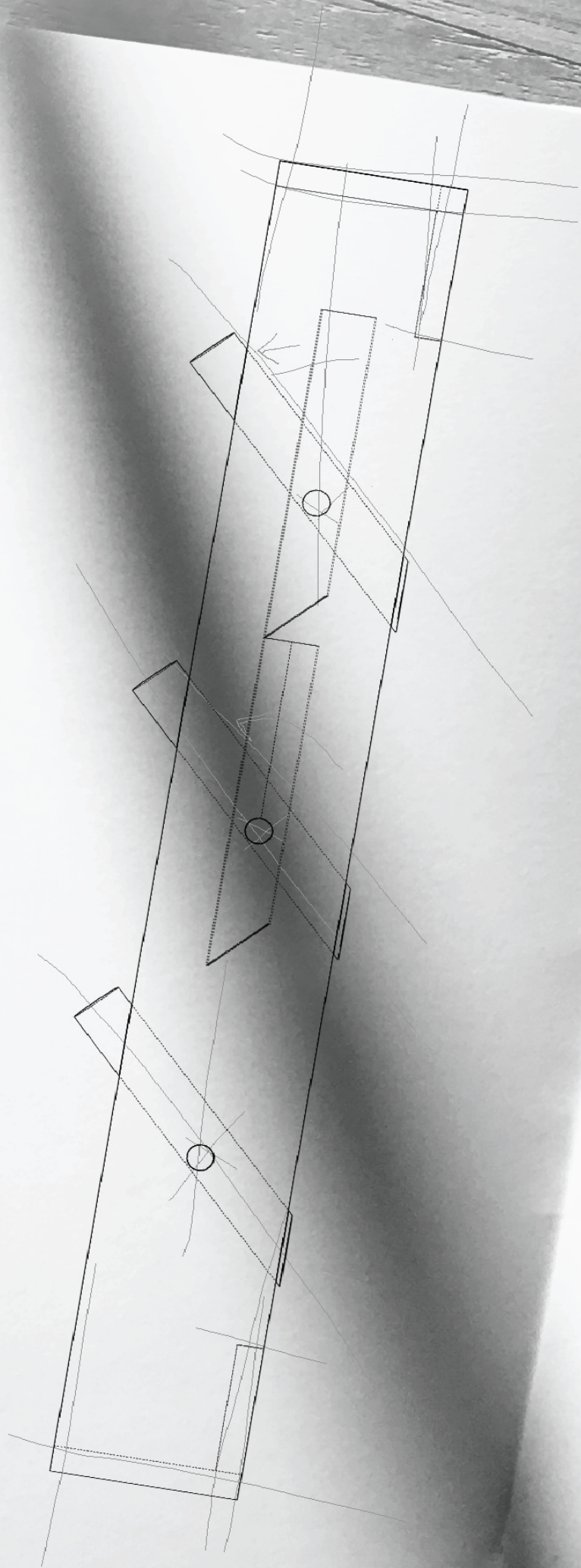


CONCEPT

The product comes in 2 parts now, part 1 is for phone and part 2 is for headsets. Part 2 is a continuous form of spring steel and gets locked in part 1. The phone is supported by 2 arms that hold the phone at 35mm from the ground, cut out in center under these arms allow wires to pass. The stand is ergonomically designed

PROTOTYPE





CLOTH HANGER

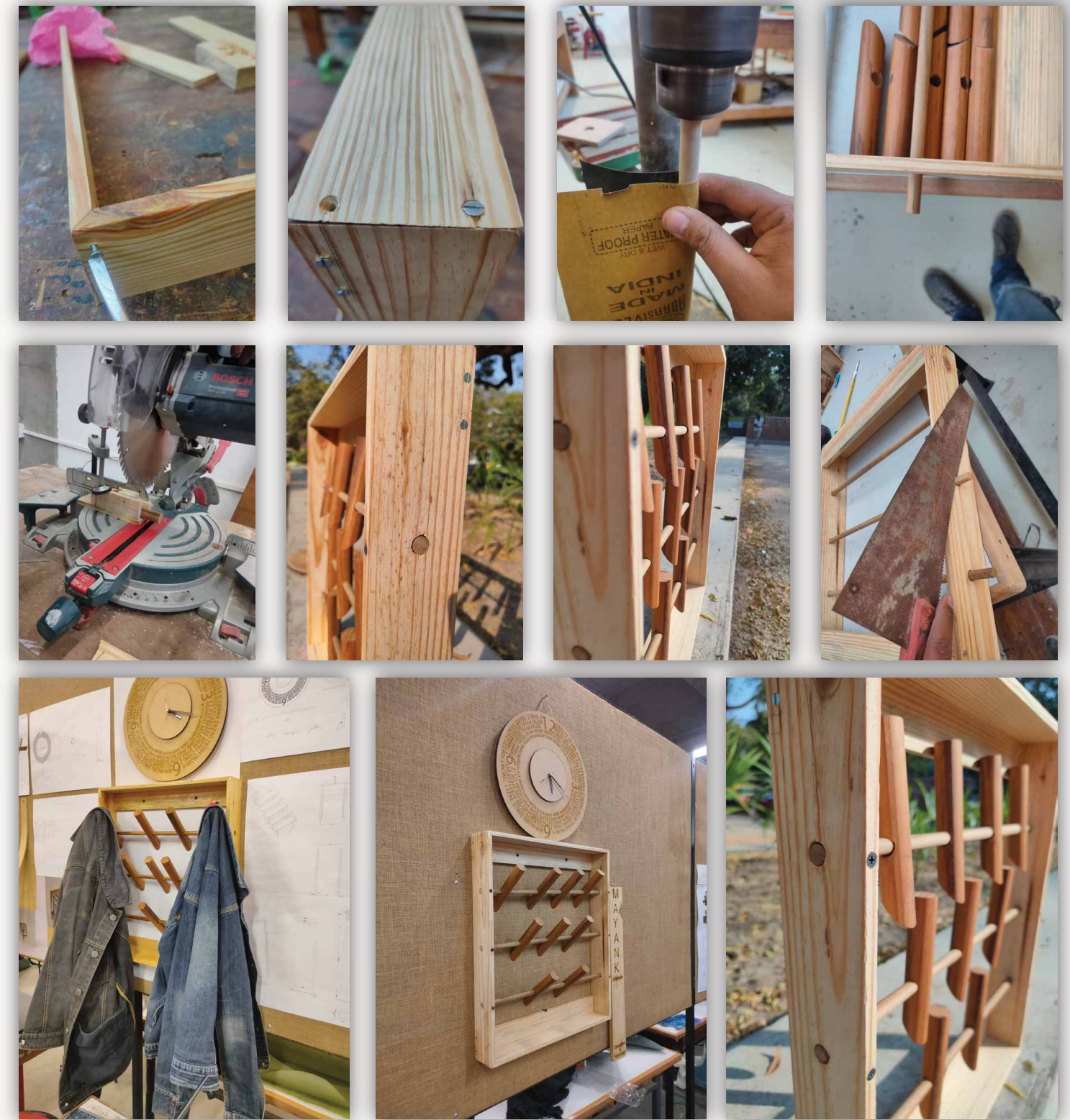
Idea was to design a cloth hanger using the properties of soft and hardwood.

Hardwood is good for woodturning and hence used in circular dowels. Dowels are cut at 45 degrees and rotate to rest against the wall.

The cloth hanger needs a flat wall at back. Dowels not only rotate but can also be moved horizontally.



ACTUAL MODEL & MANUFACTURING



COMPONENTS

•C1 | WOODEN KNOB (X3)

Material Required : A Grade Sagwan Wood & Double threaded screw (40x6mm)
Processes Required: Cutting , Chamfering, Wood routing and Drilling
Colour and Finish: Hand buffed and oil based polishing

•C2 | Sliding Drawer (X1)

Material Required : Sagwan Wood , Nails(4d,12^{1/2}"), C1 and H4
Processes Required: Cutting , Chamfering, Wood routing and Drilling
Colour and Finish: Hand buffed and oil based polishing

•C3 | WOODEN DOORS(X2)

Material Required : Sagwan Wood, C1, C4 ,H1,H2, And H3
Processes Required: Cutting , Chamfering, Wood routing and Drilling
Colour and Finish: Hand buffed and oil based polishing

•C4 | WOODEN SUPPORTS(X4)

Material Required : Sagwan Wood
Processes Required: Cutting and Chamfering
Colour and Finish: Hand buffed and oil based polishing

•C5 | DOWELS(X16)

Material Required : Sagwan Wood
Processes Required: Cutting and Chamfering
Colour and Finish: Hand buffed and oil based polishing

•C6 | Wooden legs (X4)

Material Required : Sagwan Wood
Processes Required: Cutting , Chamfering, Wood routing and Drilling
Colour and Finish: Hand buffed and oil based polishing

•C7 | Legs Extentions(X8)

Material Required : Sagwan Wood
Processes Required: Cutting , Chamfering, and Drilling
Colour and Finish: Hand buffed and oil based polishing

•C8 | Wooden top(X1)

Material Required : Sagwan Wood
Processes Required: Cutting , Chamfering, Wood routing and Drilling
Colour and Finish: Hand buffed and oil based polishing

HARDWARES

•H1 | Metal strip (X2)

When door closes the magnet in the frame is stick to this metal strip

•H2 | Screw (X12)

60X 5mm Screws used to attach the wooden support to the doors

•H3 | Washer (X3)

Washer is inserted between knob and the bolt. It transfer the load evenly and prevent wood damage while using the knob

•H4 | Telescopic Ball Bearing Channel 250mm(x2)

Telescopic Ball Bearing Channel is reduce the friction while opening the drawer

•H5 | Door Catcher(X4)

Door Catcher 50 x 30 x 13mm has a strong magnetic force that prevent doors from Opening Themselves

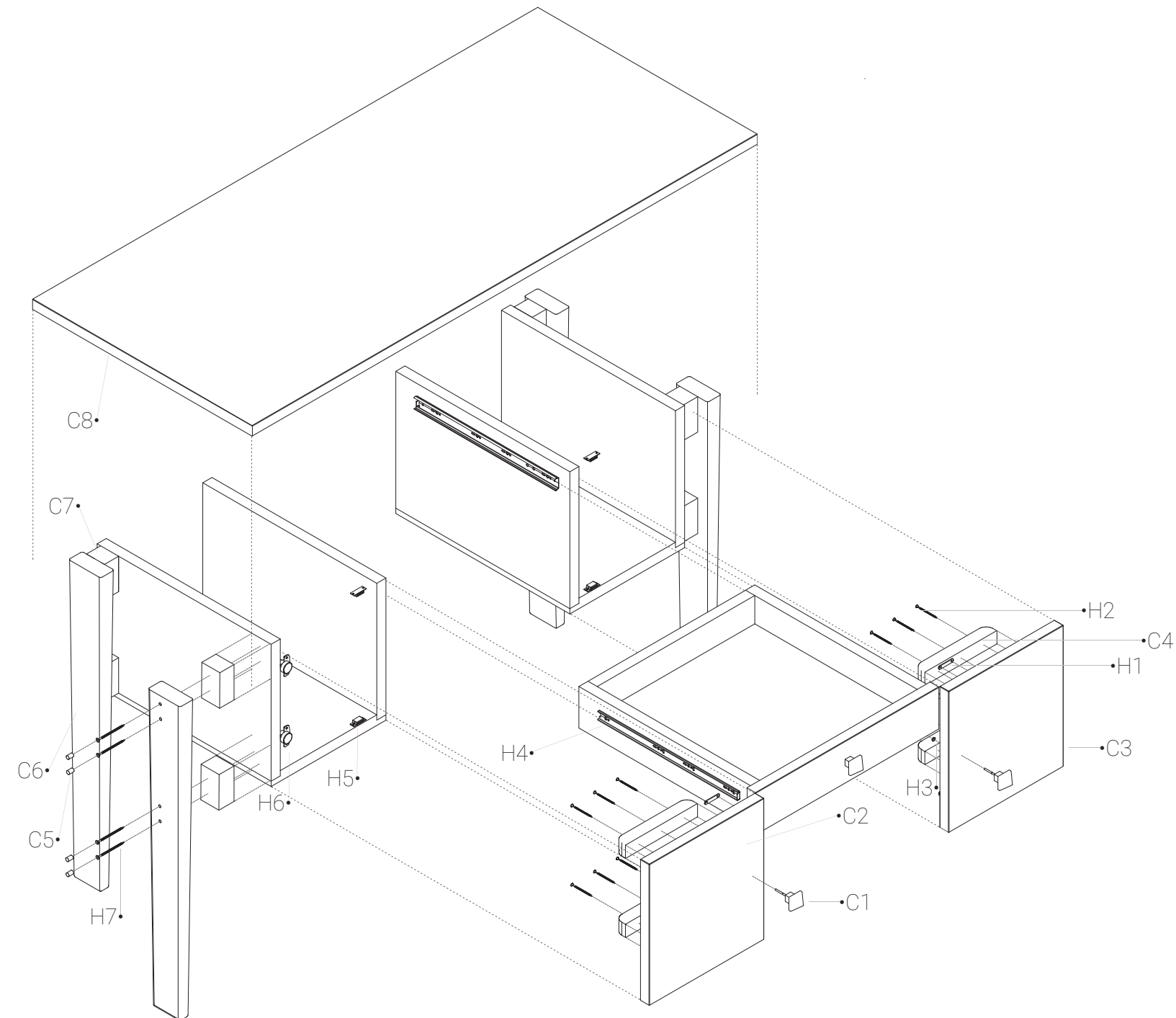
•H6 | Steel Slip-on Concealed Hinges (X4)

Steel Slip-on Auto Closing Panel Thickness 15-22 mm Concealed Hinges for Full Overlay Doors

•H7 | Screw (X16)

75X 5mm Screws used to holds the legs to the frame

ASSEMBLY



WOODEN TABLE



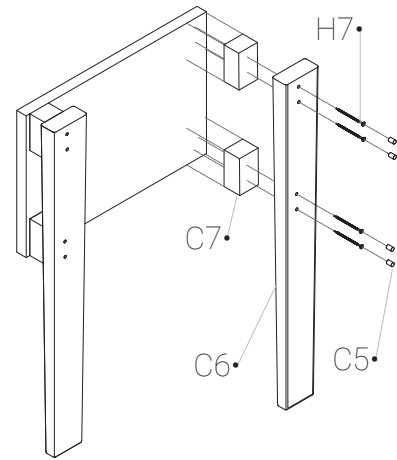
DESIGN CHALLENGE- This furniture is designed in collaboration with W.V.C studio (Wintage wooden craft) Ahmedabad. An Ahmedabad-based client shared an image with VWC and wanted a similar table. To figure out all the dimensions and joinery from a single image was the challenge

The table will be used for aesthetic purposes only, the client mentioned. The table has one drawer and two cabinets. The most appealing but difficult part was to manufacture the legs of the table.



Image shared by the client, Client wanted the same form but with some changes in storage part.

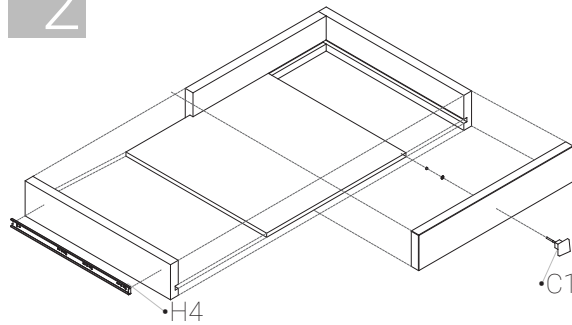
1



"Legs are the most difficult but most attractive component of this table. Initially, I made a Single leg with different variations having different ratios as well as corner radius then I choose the best variation. The only criteria for choosing the leg was only aesthetics. It should look great." VWC Fabricator told

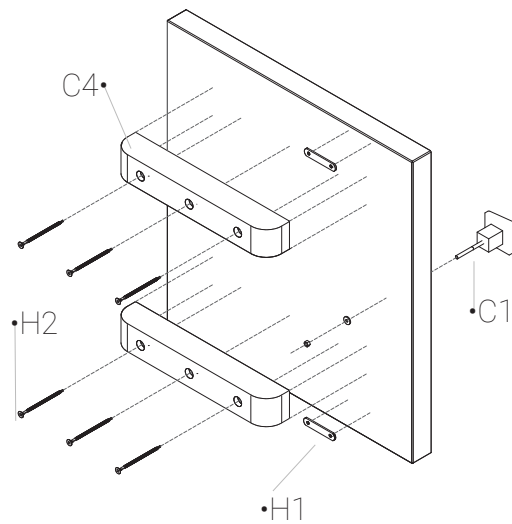
- Once all four legs (C6) were made, it was attached to the mainframe by adding wooden extensions (C7) between frame and legs.
- 5mm dia hole is drilled in legs and extensions (C7) and then 10mm dia and 20mm deep hole is drilled above that 5mm hole so that dowel (C5) can be inserted
- Legs are attached using all four screws and then holes are covered with the dowels also known as the plugging the holes process

2



- All the four walls are cut and then a continuous groove of 12mm is done at 25.4 mm height from below.
- now Bottom base is cut and slid between these 3 walls
- Knob (C1) is attached to the front wall. A 5mm hole is drilled and then knob is inserted into the hole and tightened with bolt and washer
- Now the front wall with a knob attached is fixed with the rest of the walls. This front wall doesn't have any groove.
- Now the drawer is ready and Telescopic Ball Bearing Channel (H4) is attached to both sides.

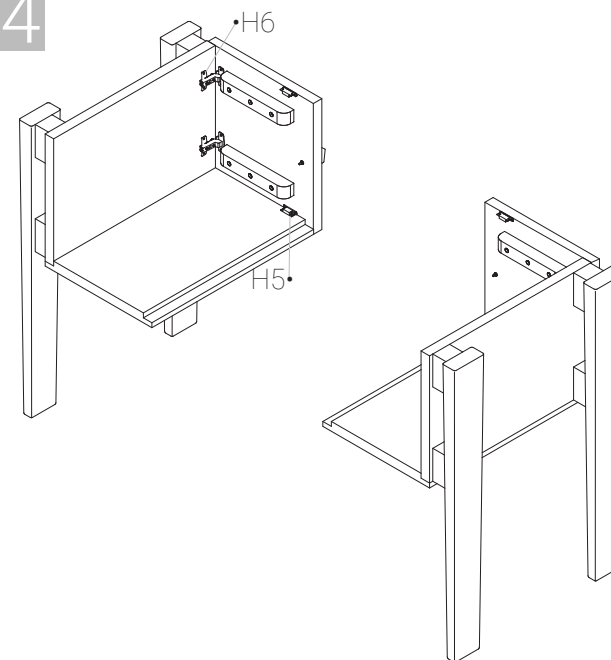
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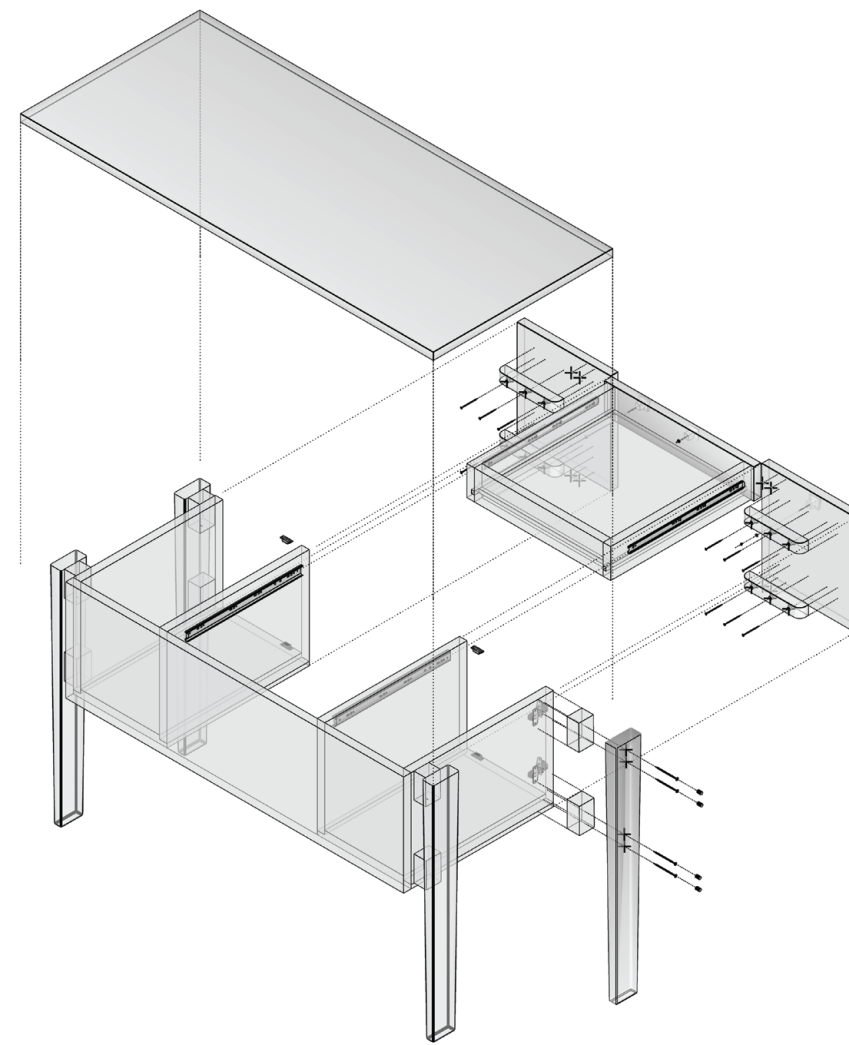
- Wooden door is cut and routing is done on all sides.
- Wooden supports (C4) is attached to the door using screws (H2) before inserting the screws hole is countersinked
- Metal strips (H1) is attached using small screws.
- Knob (C1) is attached to the door . A 5mm hole is drilled and then knob is inserted into the hole and tightened with bolt and washer .



4



- Now doors are hanged with mainframe using Steel Slip-on Concealed Hinges. The first fabricator marks the hinges and carved out some wood to fix the hinge. When both the hinges are attached to the door then the fabricator marks the holes to attach it with the mainframe.
- Door Catcher is marked according to the metal plates attached before the door. There is no need to attach this door catcher as the Steel Slip-on Concealed Hinges have a small spring and hydraulic system that enables auto close. But by using the door catcher life of these hinges increases.



Cost of this Table is Rs. 22000 and this is sold to the client for Rs. 33000. Accuracy, Precision & Tolerance were taken care of in the furniture. The fabricator is skilled and experienced.

The most difficult part according to the fabricator to make was knobs. Very small errors in them can break them. If it is not equal from all sides then while routing they can break easily. Fabricators have to face this problem. The only solution was to make them with high Precision

■ FINISHED PRODUCT PICTURES



TABLE CUM STOOL



CONCEPT-Idea was to design a table of which users can change the height so that it can be used for sitting as well. The top of the table is made of 4 equal squares, 2 are fixed and 2 have hinges. To convert into a stool, the user has to open the two square panels that have hinges, and then four angular arms will rotate and lower scissors arms the top will rotate and height will reduce then user have to close these two panels to lock it.



<https://youtu.be/41AVXNwAflw>



Scan to get link

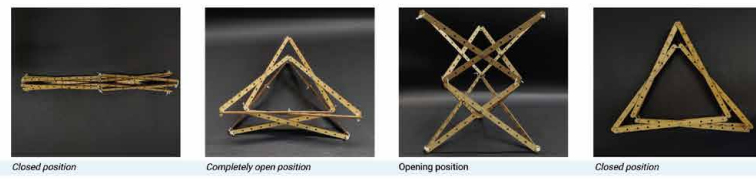
Model 1

Description :
Individual members are joined at unequal length to form a scissor. These scissors are connected using zip ties to explore the deployability of a 3d form into both 2d and 1d. Only 3 scissors are used in this model.



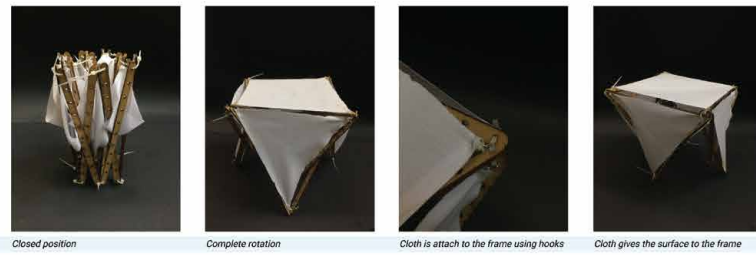
Model 2

Description :
Repeating the upper mentioned scissors on each side of a square resulting in this form. It can be deployed in 1D form and when completely opens gives a square base with triangulated legs



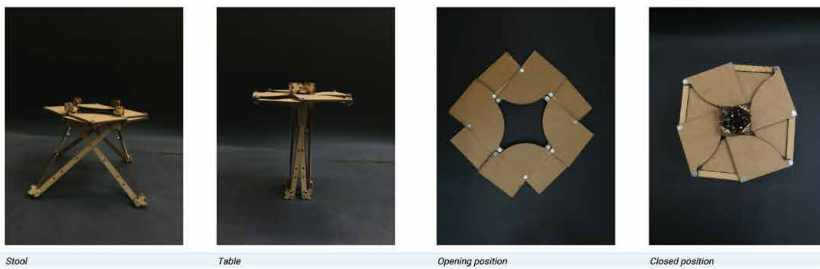
Model 3

Description :
Individual members are joined at unequal length to form a scissor. These scissors are connected using zip ties to explore the deployability of a 3d form into both 2d and 1d.

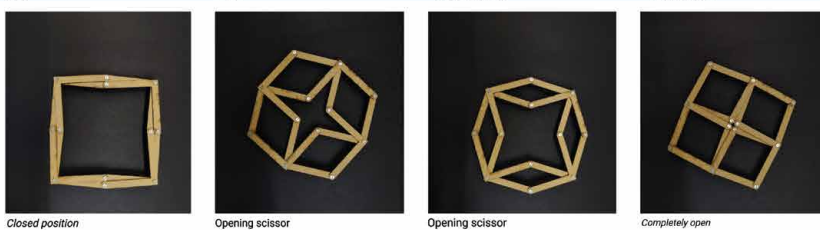


Model 4

Description :
Four 90 degree angular scissors are joined together and off-centered scissors were used for the legs. Form of the top remains same when height is changed



Description :
Eight angular members are joined to form a scissor mechanism that deploys equally in length and width when open and closed.



Learnings and Outcome

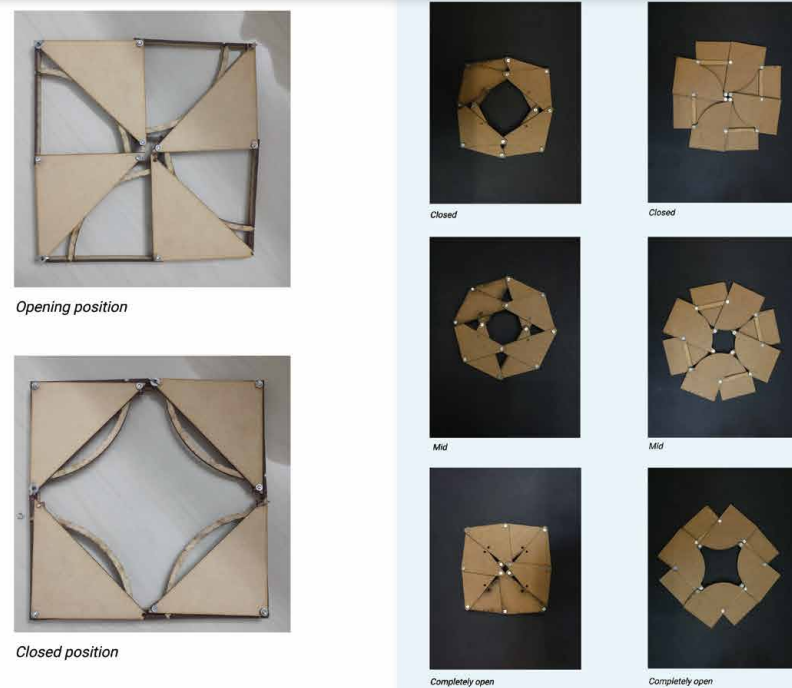
The intent I chose was to design a table cum stool and by making the different physical models I was able to experiment with the form as well as the structure. Model 4 in which angular members are used is something I wanted to take forward for the next step. I found model 4 more stable and also has more potential in terms of use. The only problem was how the top can be made perfect square. Next step will be making the top a perfect square and finding a way to lock it.

Model 5

Description :
A perfect square can be achieved by fitting the edges of the scissor into each other. Here it is a perfect square when it is in the open position and close position. Now, This form can be used as a top of table cum stool.

Learnings and Outcome

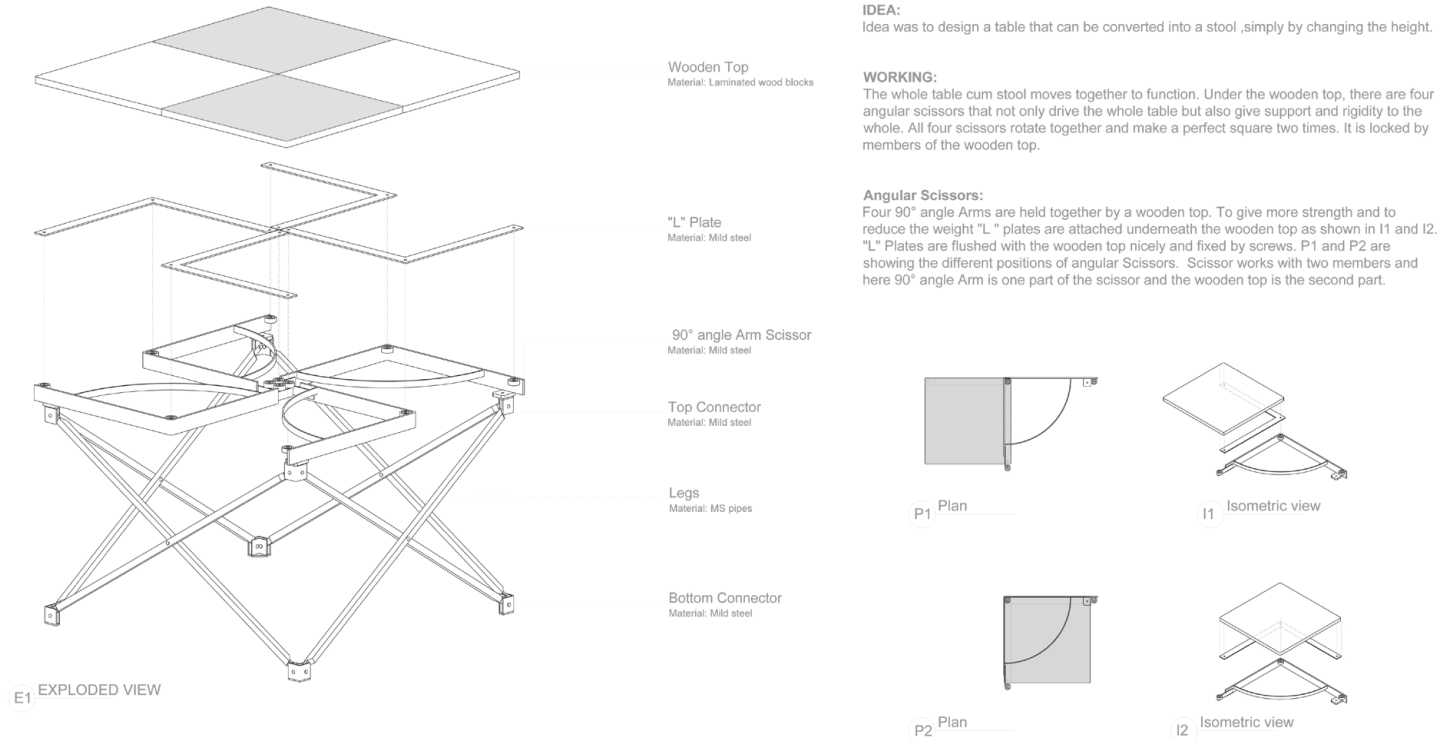
The final model will be a combination of model 4 and model 5. Model 4 design gives the different height and model 5 gives the form of the top. For the locking alternate scissor can be fixed and the other two can have hinges that can open and close thus locking the whole form. The top of the table will be square and have the same area both times when it is stool and table. The legs of the table can be off-centered and centered as per need. If we need more height difference between table and stool then off centered scissors will be used.



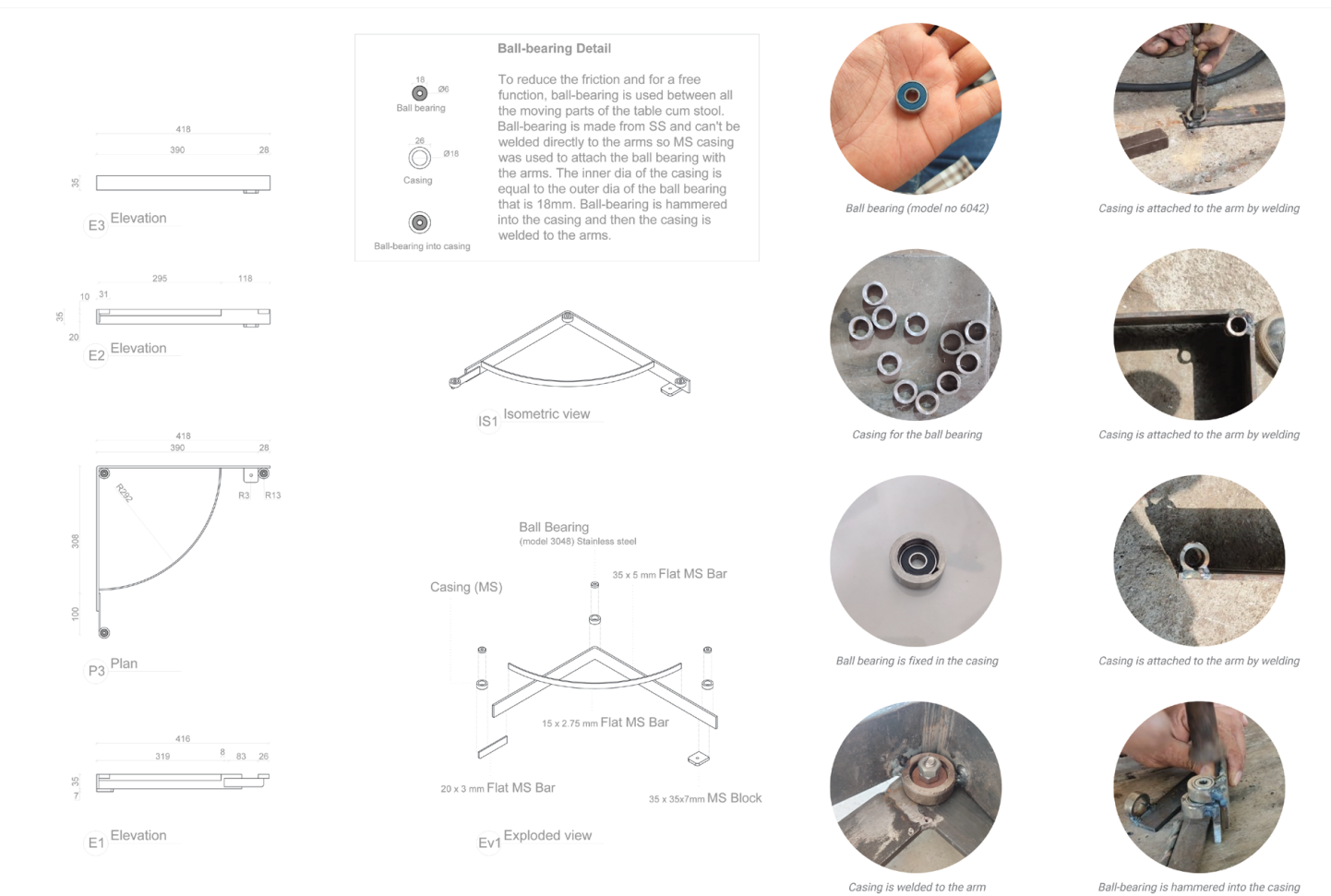
Exercise 4:

In this exercise, Students have to Explore more their design ideas by making physical models. The physical model helped students to understand the form better. Different Materials can be used to mimic the design limitations.

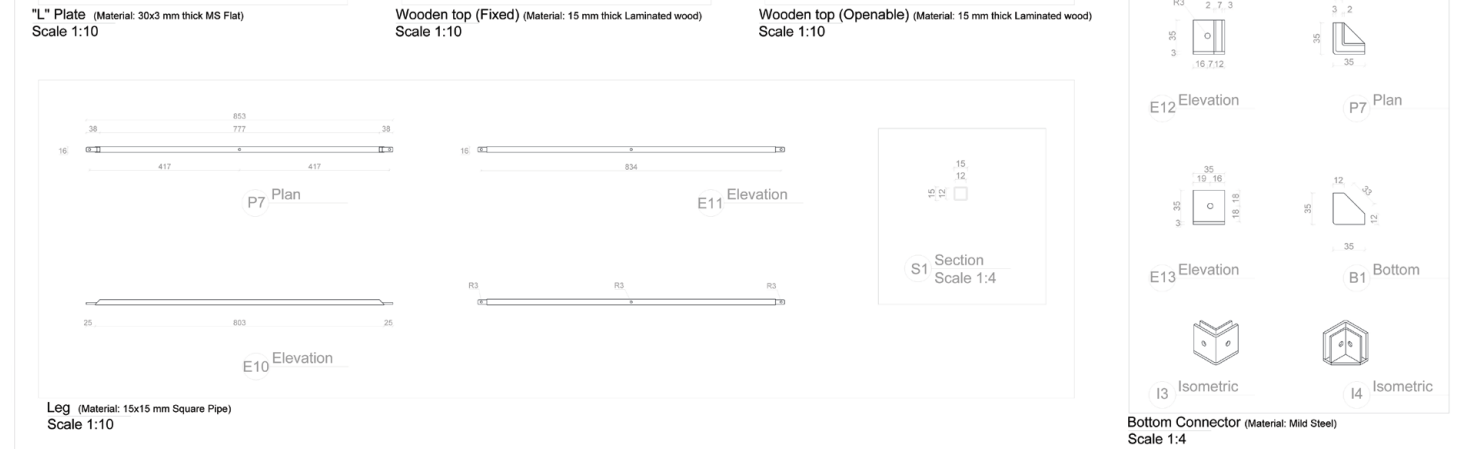
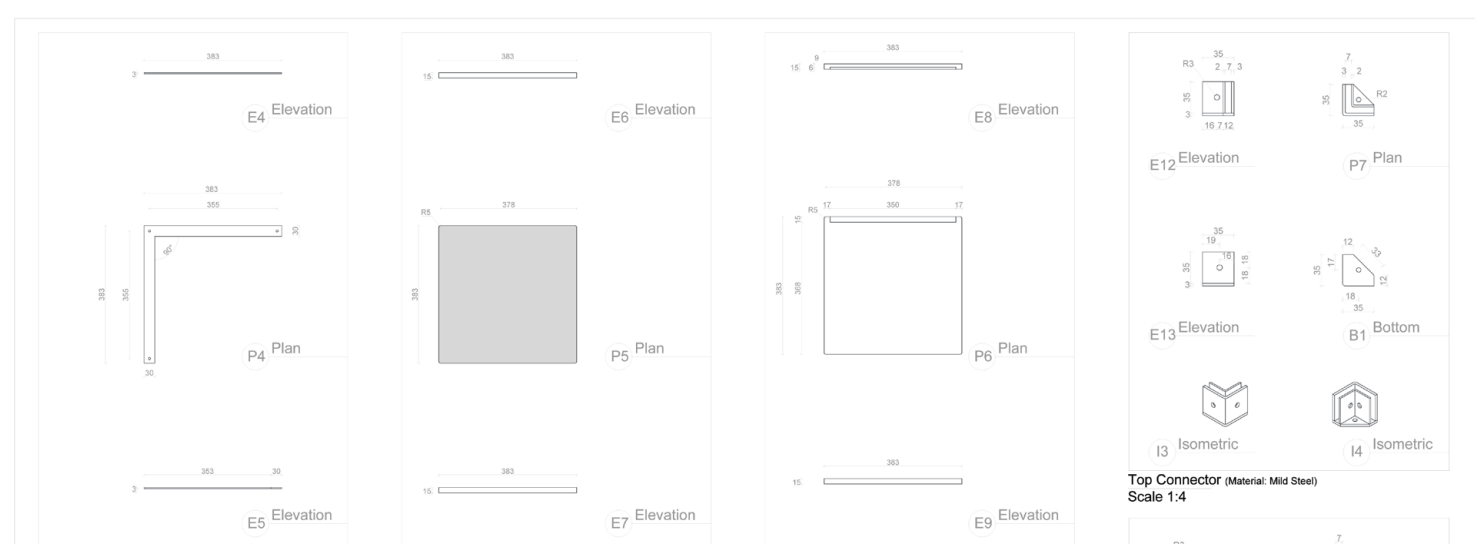
Form Exploration through models #



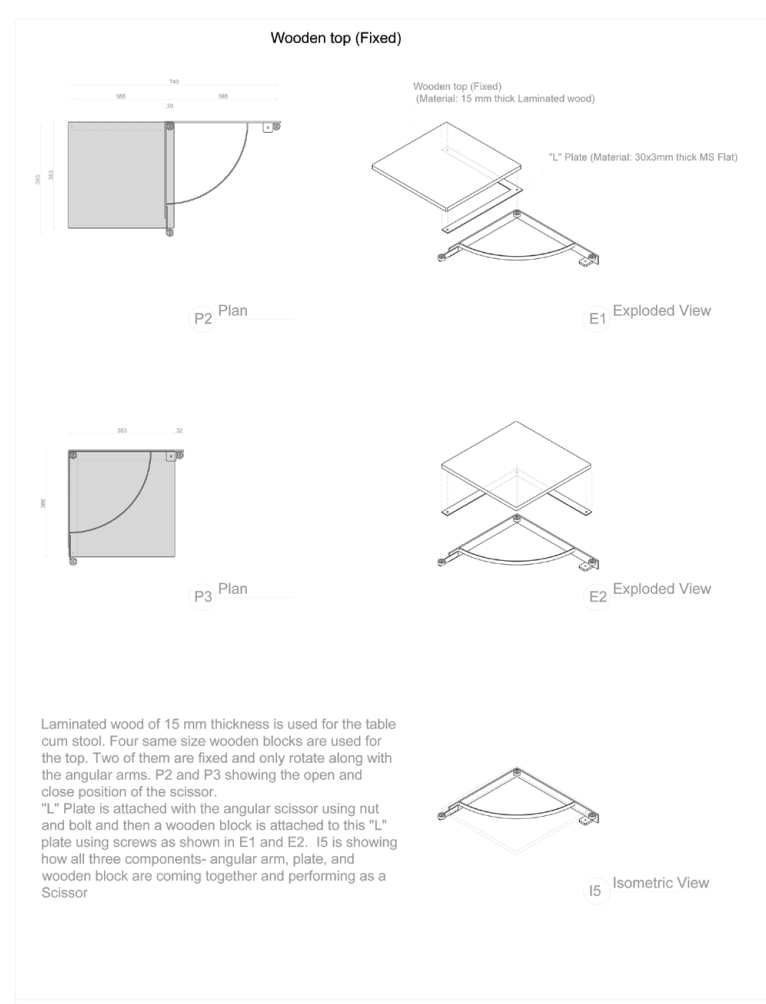
1 TITLE: Exploded View of Table cum Stool and Introduction Spring 2021_JR2030 Deployable Systems CEPT University, Ahmedabad, Gujarat DATE : 30/04/2021 MAYANK JINDAL (UG180346)



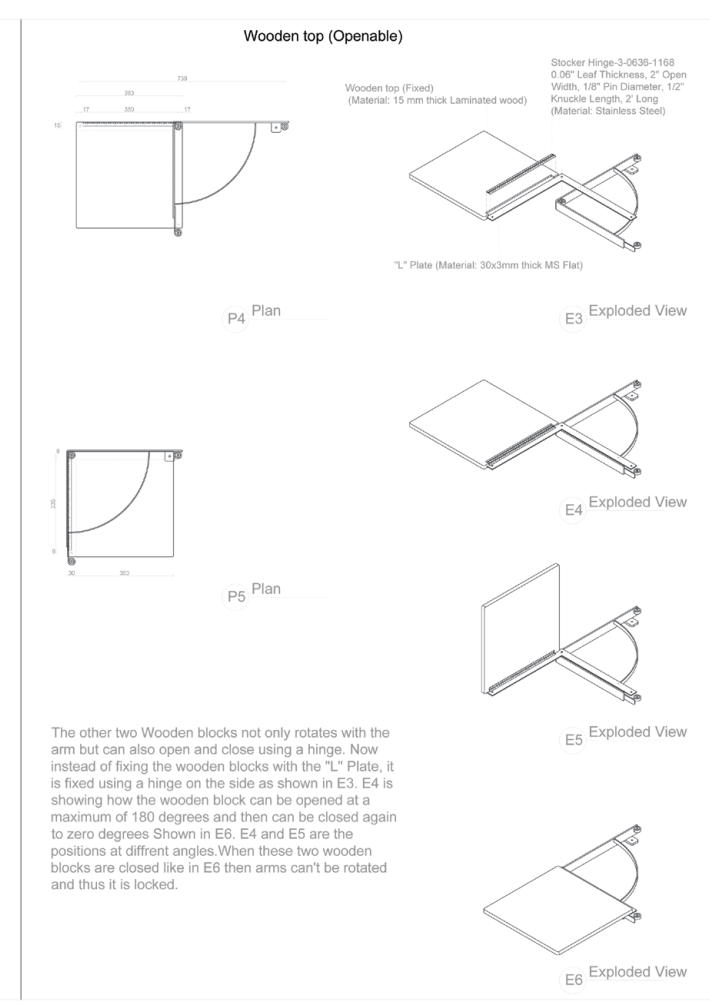
2 TITLE: Technical drawings of 90° Angle Arm Scissors Spring 2021_JR2030 Deployable Systems CEPT University, Ahmedabad, Gujarat DATE : 30/04/2021 MAYANK JINDAL (UG180346)



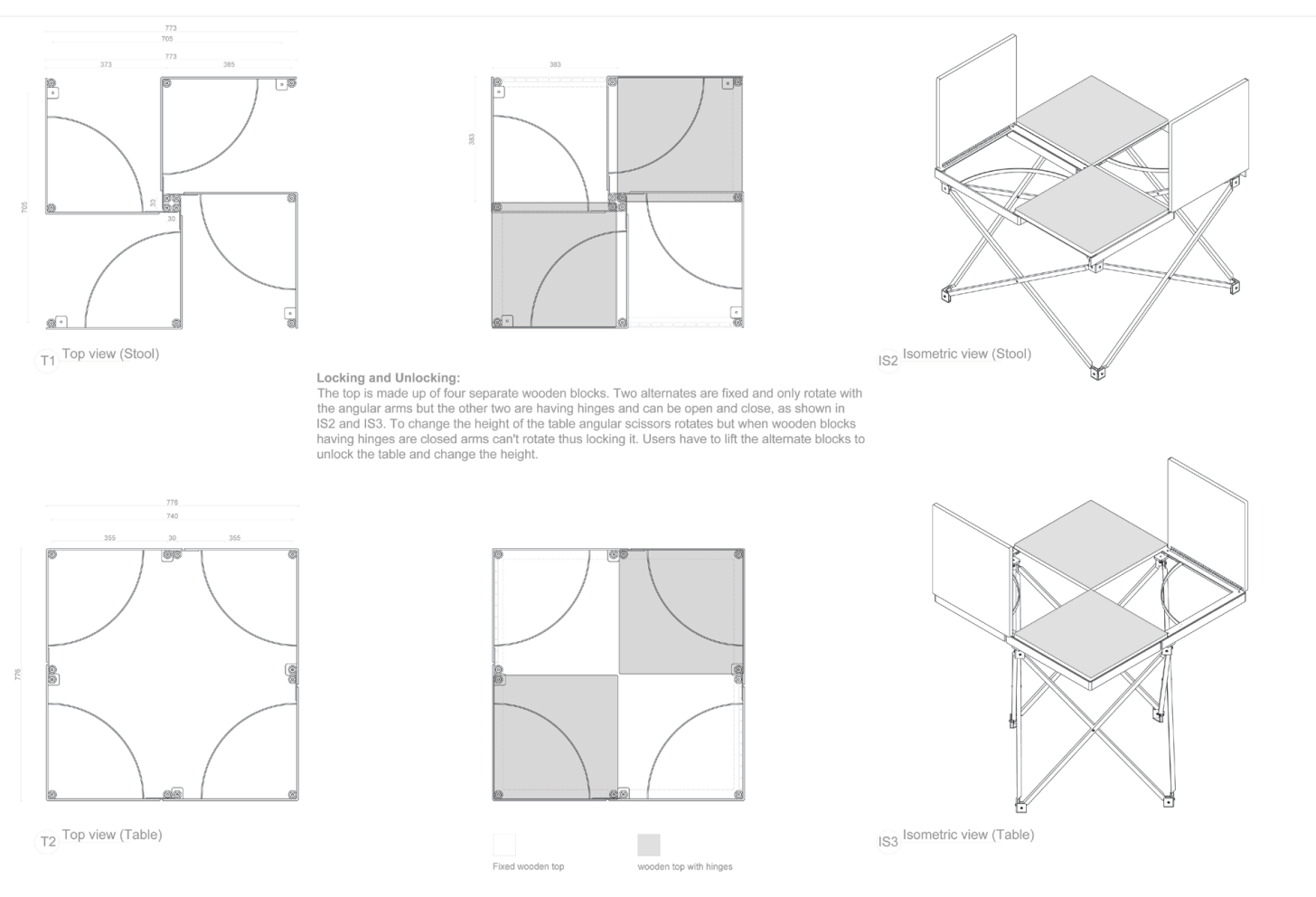
3 TITLE: Component Drawings
Spring 2021_IR2030 Deployable Systems
CEPT University, Ahmedabad, Gujarat
DATE : 30/04/2021
MAYANK JINDAL (UG180346)



4 TITLE: Wooden top fixing details
Spring 2021_IR2030 Deployable Systems
CEPT University, Ahmedabad, Gujarat
DATE : 30/04/2021
MAYANK JINDAL (UG180346)



5 TITLE: Working of Scissors
Spring 2021_IR2030 Deployable Systems
CEPT University, Ahmedabad, Gujarat
DATE : 30/04/2021
MAYANK JINDAL (UG180346)



6 TITLE: Front Elevation
Spring 2021_IR2030 Deployable Systems
CEPT University, Ahmedabad, Gujarat
DATE : 30/04/2021
MAYANK JINDAL (UG180346)



7 TITLE: Working of Scissors
Spring 2021_IR2030 Deployable Systems
CEPT University, Ahmedabad, Gujarat
DATE : 30/04/2021
MAYANK JINDAL (UG180346)



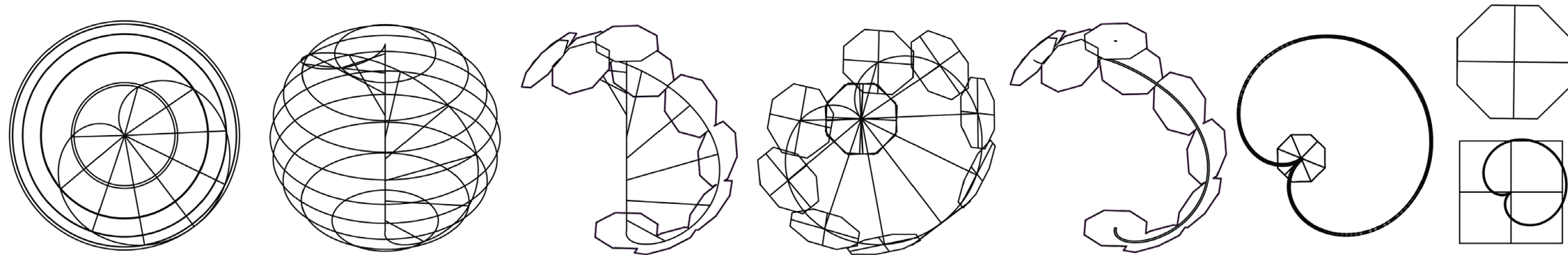
8 TITLE: Working of Scissors
Spring 2021_IR2030 Deployable Systems
CEPT University, Ahmedabad, Gujarat
DATE : 30/04/2021
MAYANK JINDAL (UG180346)

NAVRATRI INSTALLATION 2019

GEOMETRIC REFLECTION

Materials -MS rod, Octagon Mirrors, MS box section pipe, wires, 12 Bulbs

Description - The Geometric Reflection installation made for CEPT Navratri has also been designed by me along with a batchmate. The warm light of the bulbs in the center gets reflected by the octagonal mirrors creating a beautiful impact. The play of light and the simplicity of materials are the highlights of the installation.

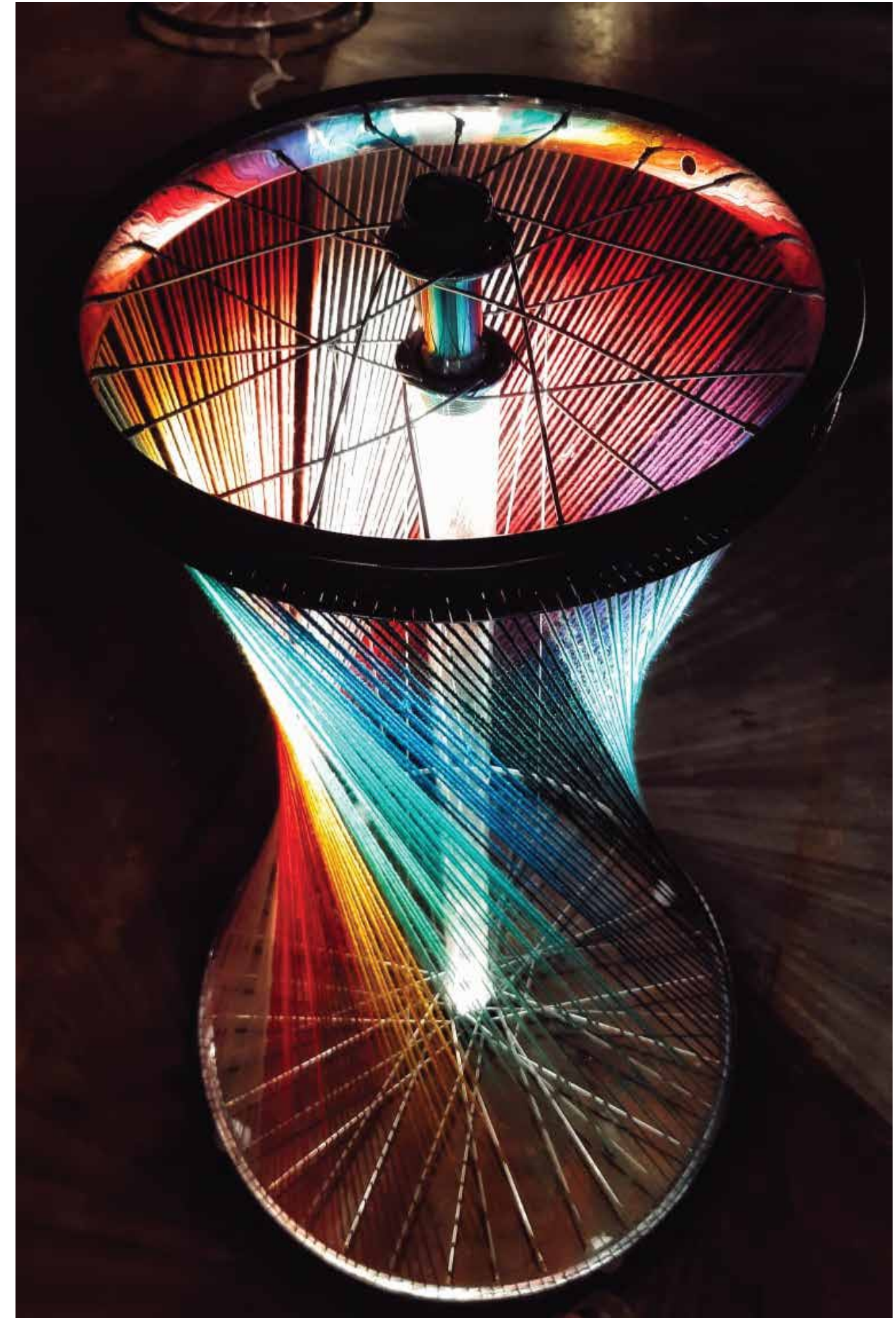
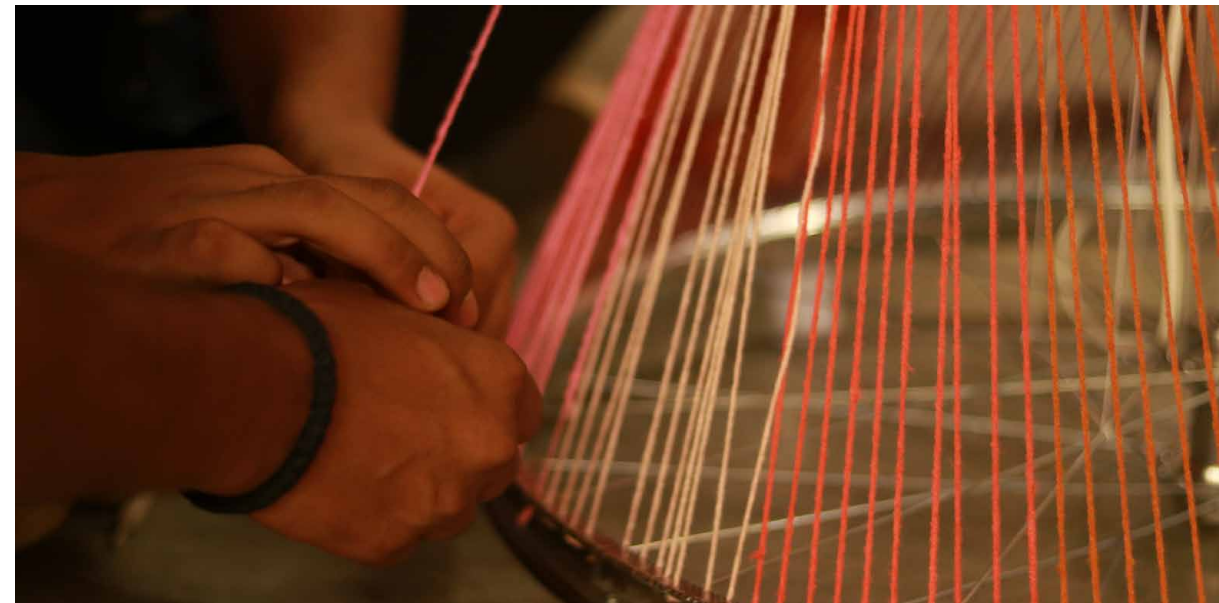


THE TWIRLING GHAGHRA

Materials - Acrylic pipes, cycle rims, woolen threads, hacksaws, series LED lights.

Description - Concept of showing the twist in ghaghra while doing garba during Navratri. The light inside the acrylic makes the colorful threads look bright and glowing.

The installation creates a beautiful shadow. Twirling Ghaghra is an installation designed for CEPT Navratri exhibition. The idea was proposed by me and a friend of mine, which was the executed by a team of 9 students under our guidance. We also reused the scrap tires rims. There were 360 cuts in a single rim and all cuts are done by hand say only.



REDESIGNING THE STUDY TABLE

(Human centric design)

Task- By understanding the user interaction with the space, I have to redesign the study table unit

Workstation - Study



- BOOK STORAGE UNITS
- LED LIGHT 2.5 FT LONG
- TAG BOARD
- SWITCHBOARD
- 28 Inches Led Screen
- LAPTOP
- SLIDING TABLE (COMES OUT 35 CM)
- CPU
- DRAWERS
- READING STOOL

- Product is a study table and a reading space made up of plywood and then laminated.
- It is majorly used do work on system, led screen can be attached to below PC or Laptop as per use.
- There is a sliding table attached in the bottom of the table that comes out 35 cm. It is 50 cm wide.
- Laptop , Led screen and mouse are kept on the table all the time.
- Above led light is turned on with the middle button on the switch board.
- A Tag board is provided on the left, that is rarely used.



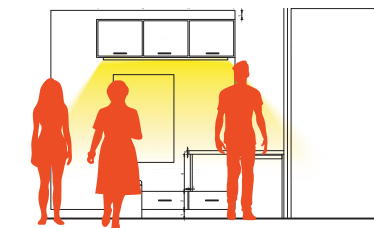
Product Functions and Users Tasks



The reading stool is not fixed and the user uses it for sitting while reading. The same stool is also used as a footrest sometimes or for keeping extra stuff. When the stool is not in need it can slide under the table. Behind there is a tag board also to pin the notes but it is rarely used



The major task is using the system on the table. The workstation allows the screen to be attached to a PC as well as a laptop. The screen is connected with both via 2 HDMI cables and screen projection can be switched with TV remote kept in below drawers.

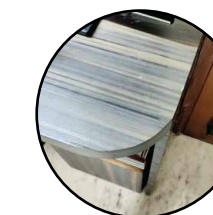


No window allows natural light to enter the room so most of the light is kept on. The led light is just a few centimeters above the eye level. It doesn't cause any problem while reading and working but it irritates users' eyes while standing and doing stuff.

Primary user- While working on the system he doesn't found any problem but when a user stands to take out any book from above bookshelves then the light directly hits into the eyes so, he first turns off the light then he stands up and takes out the book

Secondary users- The height of both the users is less and the light didn't hit them while standing but both of them face the same problem while accessing the above bookshelves. The housewife always turns on the other light in the room and turn off this led light while cleaning. Both secondary users struggle a bit to reach the books

The workstation is made up of plywood and clad with the laminate that creates very sharp corners along with that table is fixed using this kind of C shaped brackets. The user usually bumps into them and gets injured. one is near the leg space.



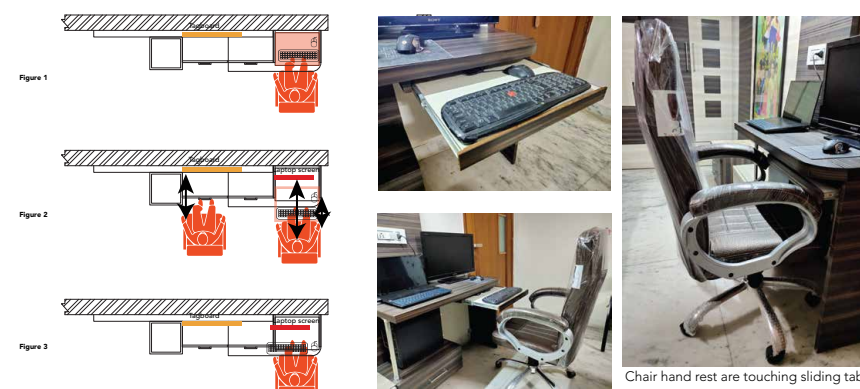
The right corner of the table is curved and the sliding table placed below is visible. Visually it doesn't look good and sharp corners are open and even can hurt someone entering into the room.



Books for reading are stored in the above racks. The lid of the rack has an Hydraulics system User just pull the handle a little and the whole lid is opened automatically.

Extra stuff and stationery are kept in bellow drawers. The user opens these once or twice a day while working.

Anatomical



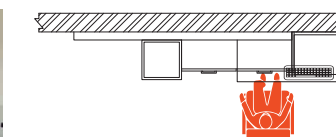
The sliding table is 50 cm wide and the user cant place both keyboard and mouse together on it. The sliding table doesn't allow the chair to fit inside the void because the height of the table is less as compared to the chair.

Primary user- In figure 1 keyboard and mouse are kept in the sliding table and to take that out the user has to move the chair back, now the width of the sliding table is too less and there is no space to use the mouse on it. So, in that case, users have to keep the keyboard on the sliding table and mouse on the main table but due to this gap between the screen and eyes is more than 800mm that gap is too much. so the user has to use both keyboard and mouse on the main table and close the sliding table as shown in figure 3 this makes the table too congested but the user has to adjust. There is very little space for the mouse to be used and cause hand pain. The Tagboard is very far and the user has to stand and use it every time. The below drawers are the reason for that.(shown in figure 2)

Secondary users- Both users don't use the sliding table and system so for them them

Bottom drawers are at 10 cm high and most of the time footwear slides into space between the drawers and the ground.

Primary user- The user has to bend and struggles to find it. Due to Sharp corners also user gets injured when the hand is placed in such a narrow space to find. While accessing the space underneath, the posture is very uncomfortable and the user is likely to bump their head on the table. Secondary users- The same problem came with both users. To clean this area housewife has to bend a lot and the posture is very uncomfortable and the user is likely to bump their head on the table.



When the users wants to use the left portion of the table then bottom drawers don't allow the chair to be placed there. There is no legroom for that. The steel pipe is fixed as extra support later on. The table was not taking the load and start bending while working.

Users

Primary



Male - 21 years old
Height - 1555 mm
Full Hand Span- Vertical - 1900
Full Hand Span- Horizontal-1500

The user is a college student and a graphic designer. He uses this workspace for most of the time. The major task is working on the system to design and do college work. He also uses tagboard sometimes for important notes.

Secondary



Female - 19 years old
Height - 1300 mm
Full Hand Span- Vertical - 1650
Full Hand Span- Horizontal-1400

The secondary user is also a college student and she also uses the workspace but for a very short period. The major task is reading and writing.

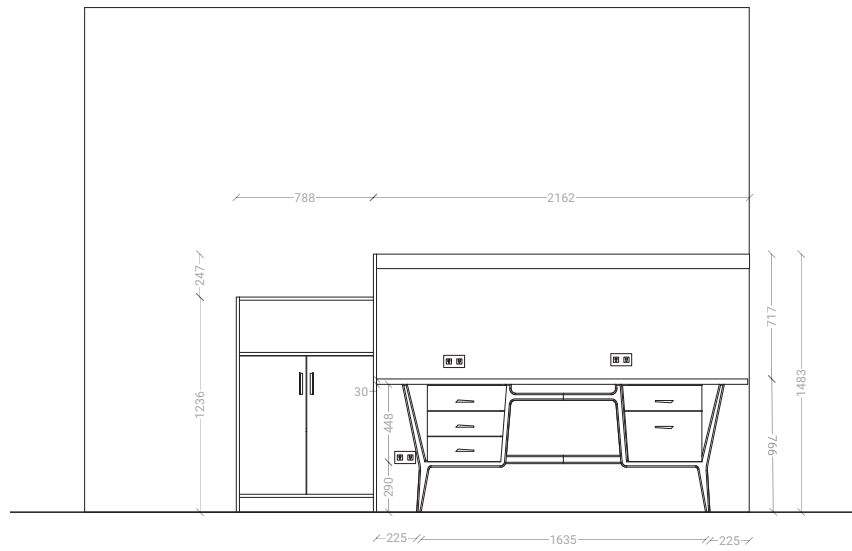


Female - 45years old
Height - 1230mm
Full Hand Span- Vertical - 1540
Full Hand Span- Horizontal-1300

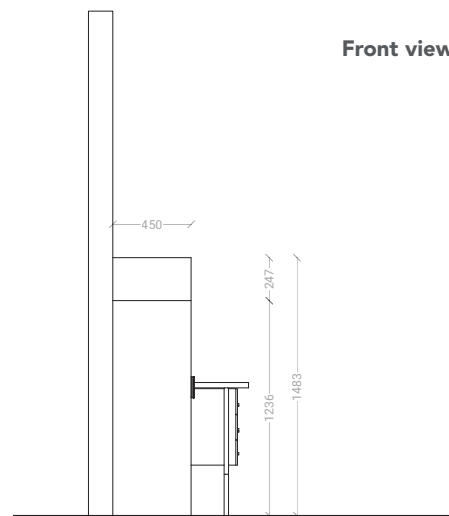
A secondary user is a housewife. She does not use the workspace but the major task is to clean the workspace.

Proposed work station

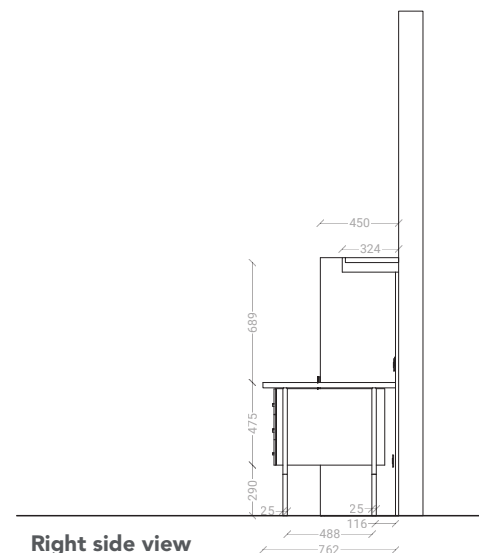
The whole Workstation is designed for the users to eliminate the problems faced in the previous workstation. The new workstation is made from hardwood. It has a table with drawers on both sides and an overhead slab. Under the slab, Light is fixed. There is also a small almirah for storage. It has 2 times more leg space and also table is bigger than previous one.



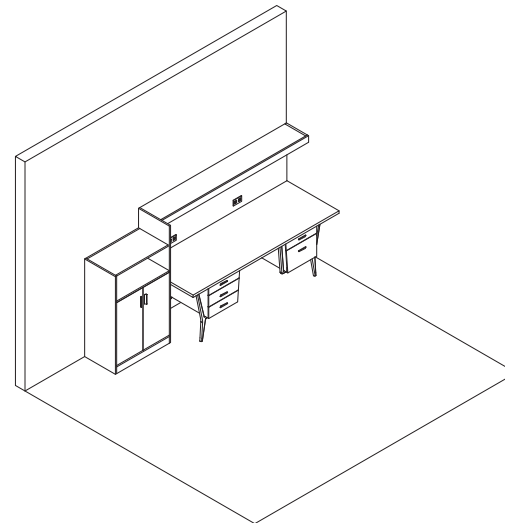
Front view



Left side view



Right side view



Primary user is using the workspace.



Secondary user is using the workspace.



Chair is parked inside the space when no one is using the workspace.



Hidden led light just throw light where it is needed, it is not irritating any user



Placement of light shown, It is turned off/on with switch on front wall



A lot of leg room is given in proposed workspace.

- Whole workspace is made from hardwood with a smooth finish that eliminates any possibility of hurting while working and moving. The table is at 766 mm instead of 750 mm that not only allows the chair to fit in but also more comfortable than the existing one. Both the primary user as well as the secondary user can sit and do work easily.

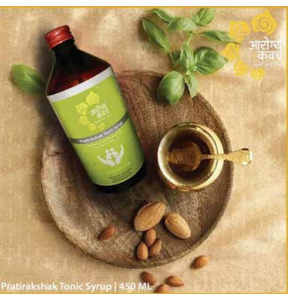
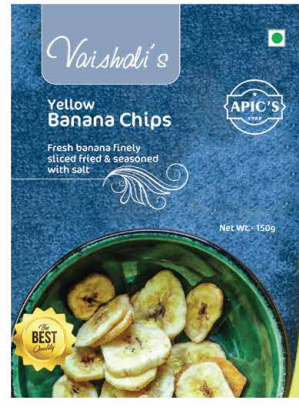
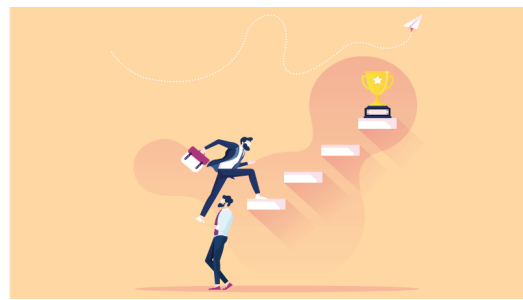
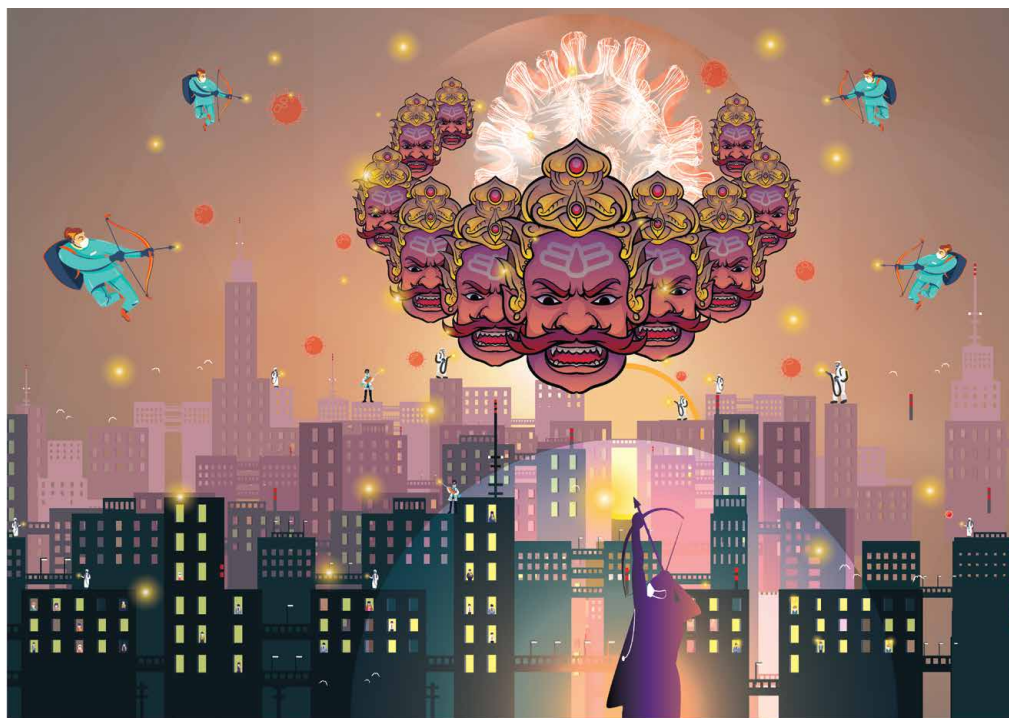
- Front wall of the table is clad with melamine that allows the whole wall to be used as a whiteboard.

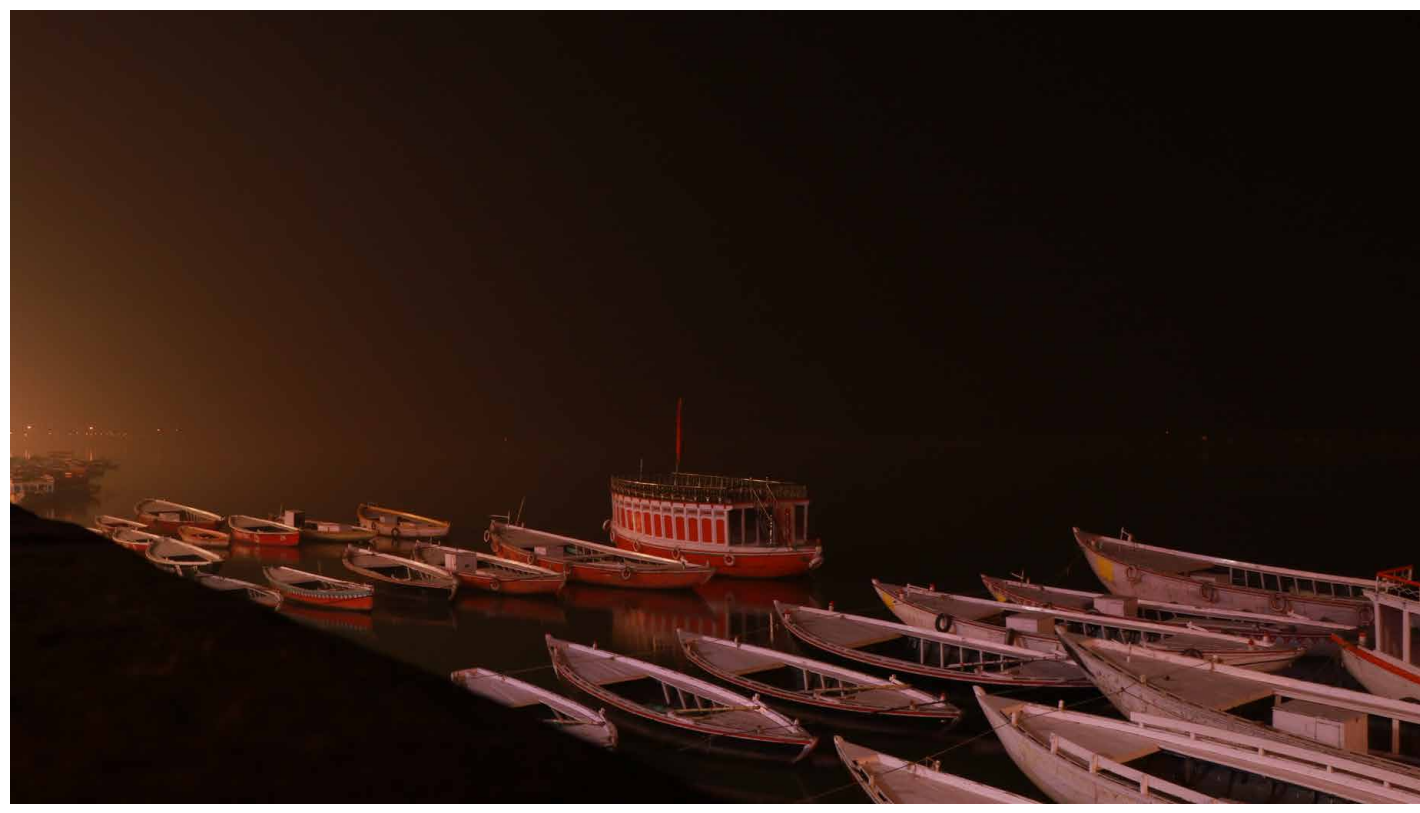
- Table is now wider and bigger than existing which allows easy working capability. The primary user can Use a mouse more effectively for a long time without hurting hands joints.

- The led light is hidden under the wooden slab so any user who is standing or sitting it will not irritate the eyes. The housewife can now clean also while keeping it on.

- Now the table is not fixed to the wall it is separate and the legroom is 290 mm instead of 100 mm that allows not the only housewife to clean and reach below easily but also allow chairs legs to move freely.

- Drawers are closer to the hands and can be open and closed while sitting on the chair it eliminated the bending on very uncomfortable angles, also cleaning this space is also easy for secondary user housewife.





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