Design and prototyping

ES1110

Faculty Guide :-

- Prof. Bhargav Prajwal Pathri
- Prof. Tanmoy Deb

Institute of Engineering and Technology (IET)
JK Lakshmipat University, Jaipur

Group M6

Group Members

Mridul Goyal

2020BTECHCSE051

Minal Pandey

2020BTECHCSE048

Mohammad Asad

2020BTECHCSE050

Mittapally Sai charan

2020BTECHCSE091

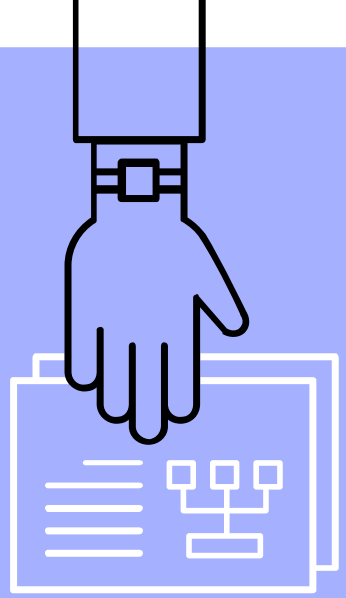
[redacted]

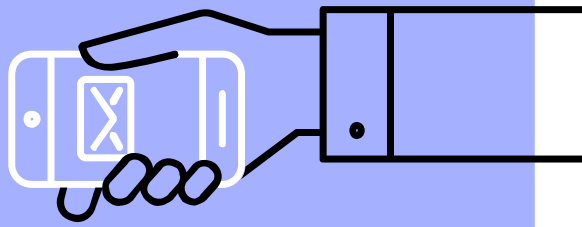
Mridul Gupta

2020BTECHCSE052

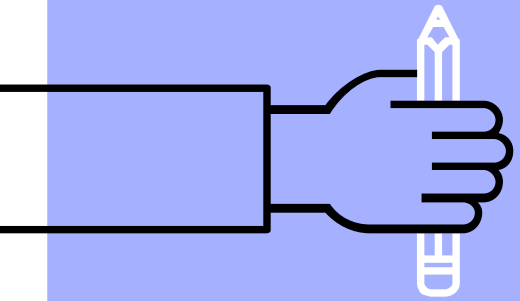
Problem Statement: -

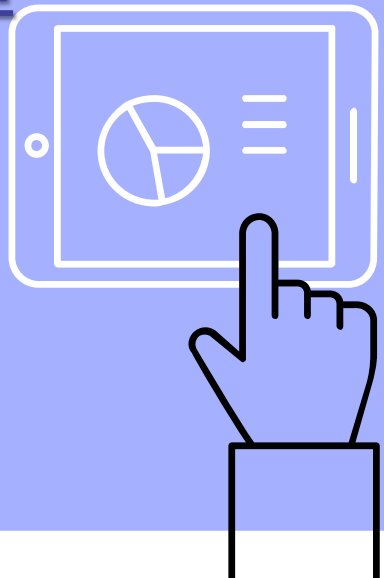
"Designing & Fabrication of Automated Mechanism to Facilitate Medical Care System"



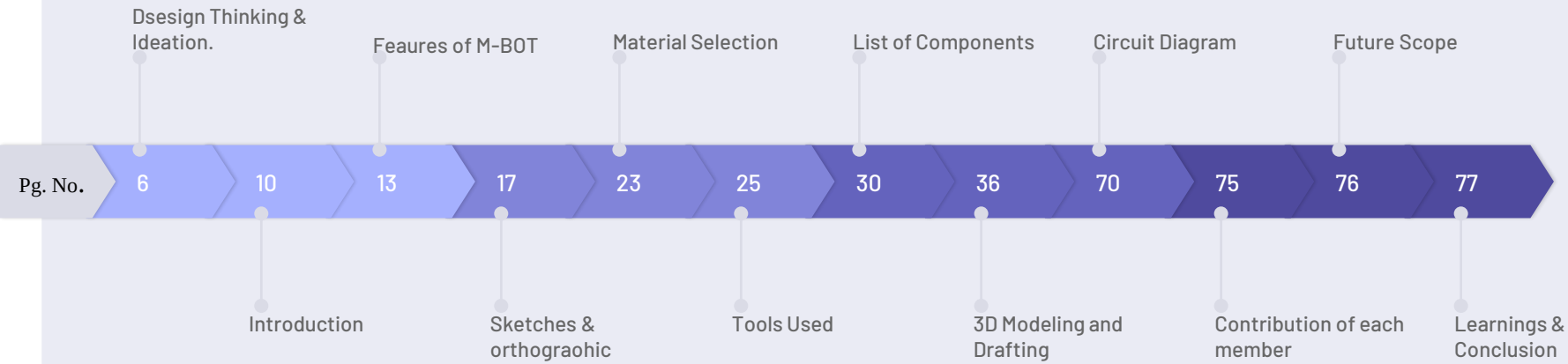


Title – MEDICARE ROBOT (M-BOT)



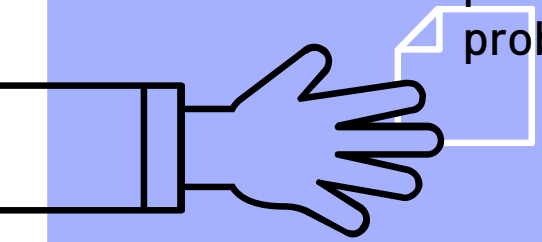


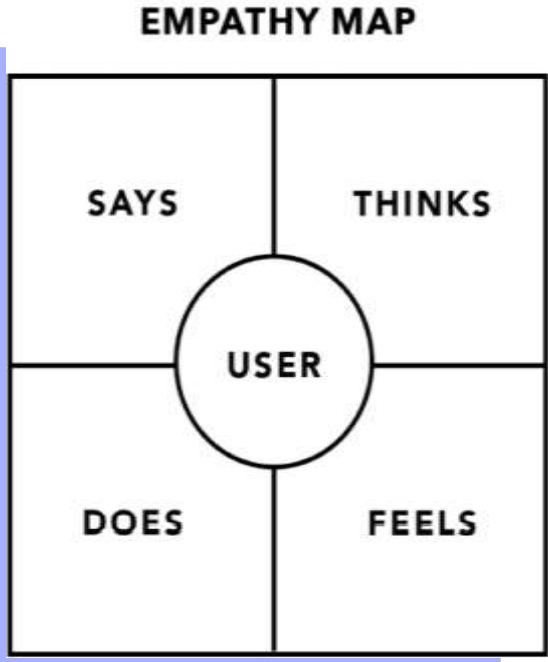
LIST OF CONTENT



DESIGN THINKING

Design thinking originally came about as a way of teaching engineers how to approach problems creatively, like designers do. Design thinking is both and ideology and a process that seeks to solve complex problems in a user-centric way.





It is a 5 step process to come up with meaningful ideas for a particular group of people.

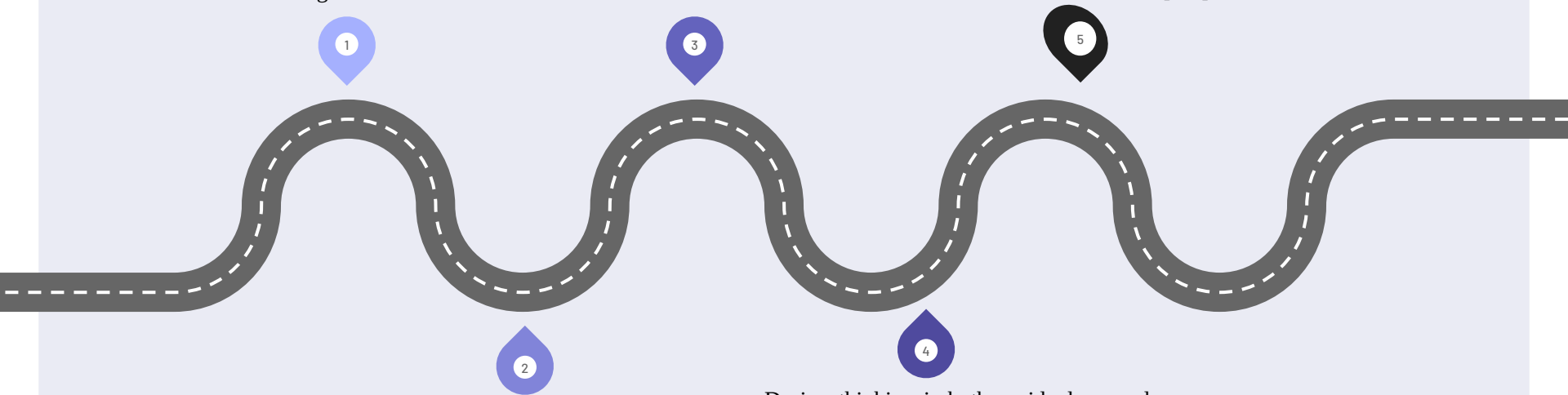
It is a multi-disciplinary team based methodology that adopts design principles to business management.

It helped many businesses to gain happy customers.

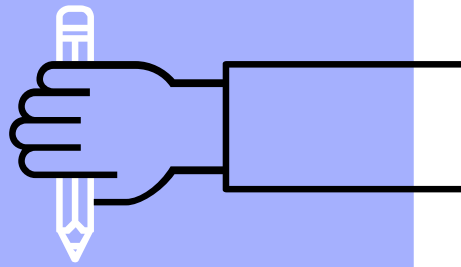
It helped many entrepreneurs to come up with innovative new ideas/solutions.

Design thinking is both an ideology and a process that seeks to solve complex problems in a user-centric way. It focuses on achieving practical results and solutions.

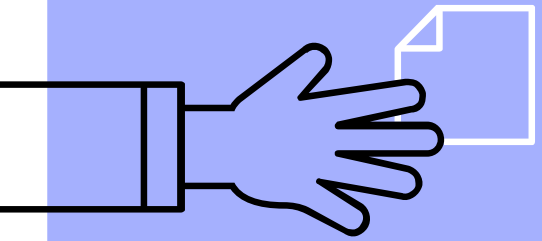
It is a process that seeks to solve complex problems by approaching it from the user's perspective.



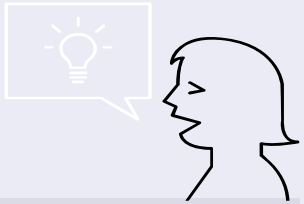
IDEATION



Ideation is a creative process where designers generate ideas in sessions (e.g., brainstorming, worst possible idea). It is the third stage in the Design Thinking process. Participants gather with open minds to produce as many ideas as they can to address a problem statement in a facilitated, judgment-free environment.



INITIAL AND FINAL IDEAS



Mohammad Asad

A device attached in the hand of a patient if he want anything patient have to move his hand. The device send call message to doctor or patient .

Making a robot type structure which helps in delivering food, medicines etc. to coronavirus affected patients inside a COVID ward. So the doctors and nurses don't go in that ward again and again.

Mridul Goyal

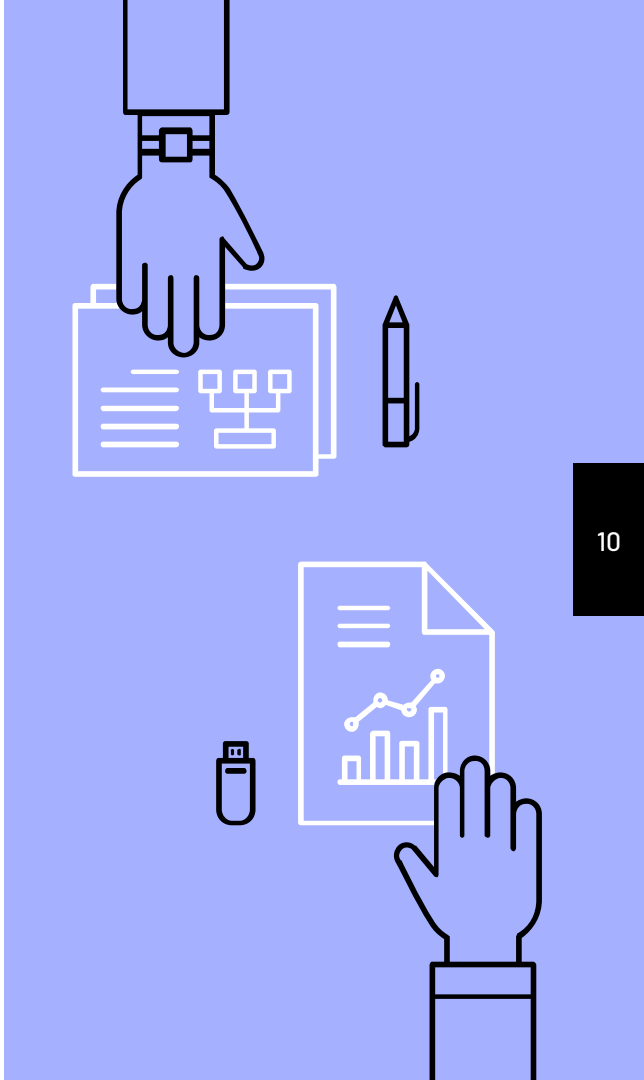
Minal Pandey

A idea of door guard. It is a type of a door which detects the temperature of any person who is entering in any room. If the person entering the room have the symptoms of coronavirus like high temperature then door will click the photograph of that person and siren rings so that he or she will stop entering that room.

Now here we have selected our final Idea.

INTRODUCTION

The COVID-19 pandemic, also known as the Coronavirus pandemic, is an ongoing pandemic of Coronavirus disease 2019 caused by severe acute respiratory syndrome Coronavirus. Doctors and health care workers are working hard to cure the affected patient. In this pandemic we are going to help doctors, nurses, patients and all healthcare workers. So our group come up with an idea of robot name “Medicare Robot” (MBOT). It can distribute food and medicine to corona patient inside a COVID ward. This robot can help frontline COVID -19 warriors like doctors, nurses and other health care staff to avoid direct contact with patient and being exposed to the virus. The robot can connects to a smart phone so that doctors and other staff members can easily video chat with a patient through a camera fixed on the top of the robot, in order to monitor their health. All the electronics will be contained in the base so that other things can be carried as well. It will also provide with the feature of touchless hand sanitizer, so that they can sanitize themselves before collecting anything. Hospital can be divided in GREEN ZONE (for doctors, other staff and Non-Covid positive people) and RED ZONE (for corona patient). Because of this robot doctors and health staff can concentrate on caring of patient, rather than worrying about missing medicine and supplies.



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'One in three doctors dying of coronavirus'

By September 10, a total of 382 Covid related deaths and 2,174 infections were reported amongst doctors with a Case Fatality Rate of 16.7%.

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155 healthcare staff, including 64 doctors, died due to COVID-19 as on September 11: Government

Centre was responding to a question on the number of healthcare staff, including doctors, nurses, support staff and ASHA workers, affected by the disease.

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IMA says nearly 200 doctors in India have succumbed to COVID-19 so far; requests PM's attention

Last Updated: Aug 08, 2020, 03:18 PM IST

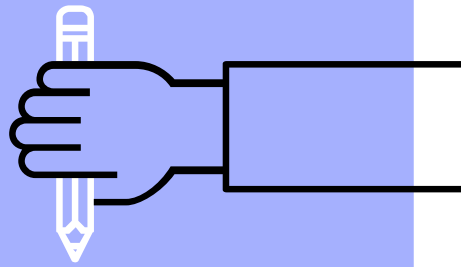
TARGETED AUDIENCE

Doctors

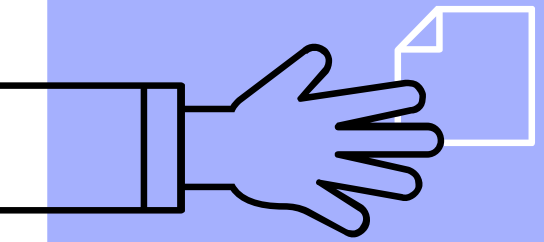
Nurses

Patients

Other healthcare staff



Features of M-Bot



- This robot can help frontline COVID-19 warriors – nurses, doctors and other health care staff to avoid direct contact with patient and being exposed to the virus.

- The doctors and other staff can also video chat with patient through a camera fixed on the top of robot, in order to monitor there health.

- It can distribute food and medicine to corona patient inside a COVID ward.

- Hospital can be divided in GREEN ZONE(for doctors, other staff and non-COVID positive people) and RED ZONE (for corona patient).

- It will also provided with the feature of hand sanitizer, so that they can sanitize themselves before collecting food.

- In order to move the robot we are using line following method or connects to a smartphone via Bluetooth and use joystick control.

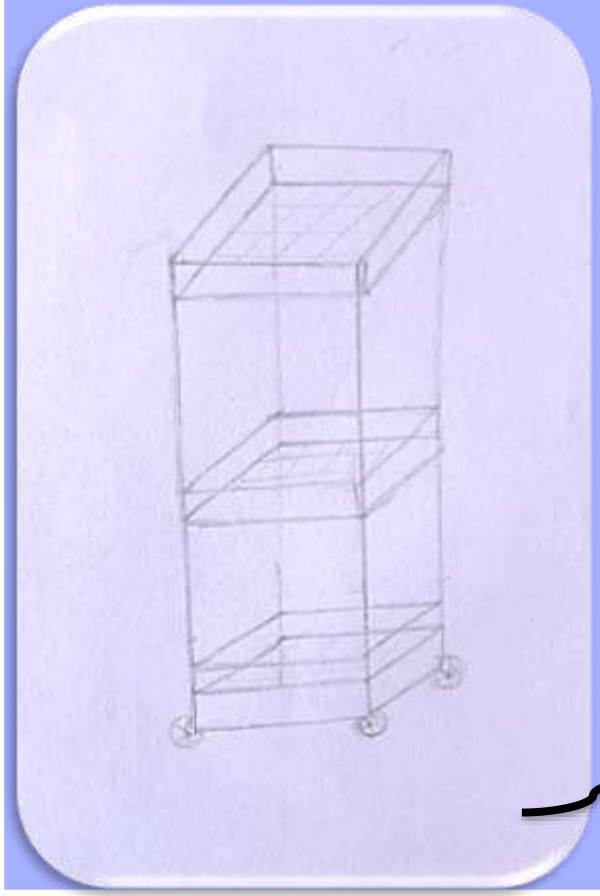
- All the electronics will be contained in the base so that other things can be carried as well.

Line following Method

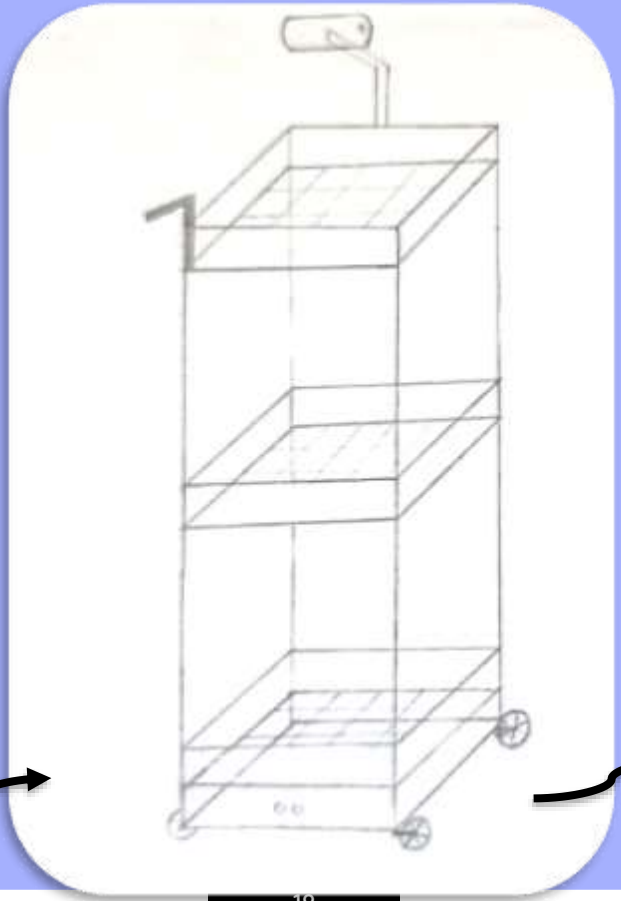
Line following method can defined as, a robot which follows a particular path or trajectory and decides its own course of action which interact with obstacle. The path can be black line on the white floor. The workings of the line following robot is pretty straight forward. This robots will have the capability to detect a black or dark line on a lighter surface depending on the contrast. It will use an array of IR (infrared) sensors in order to calculate the reflectance of the surface beneath them. For this method we are using the line following sensor is an add-on for our Robot that gives our robot the ability to detect lines or nearby objects. The sensor works by detecting reflected light coming from its own infrared LED.

Sketch

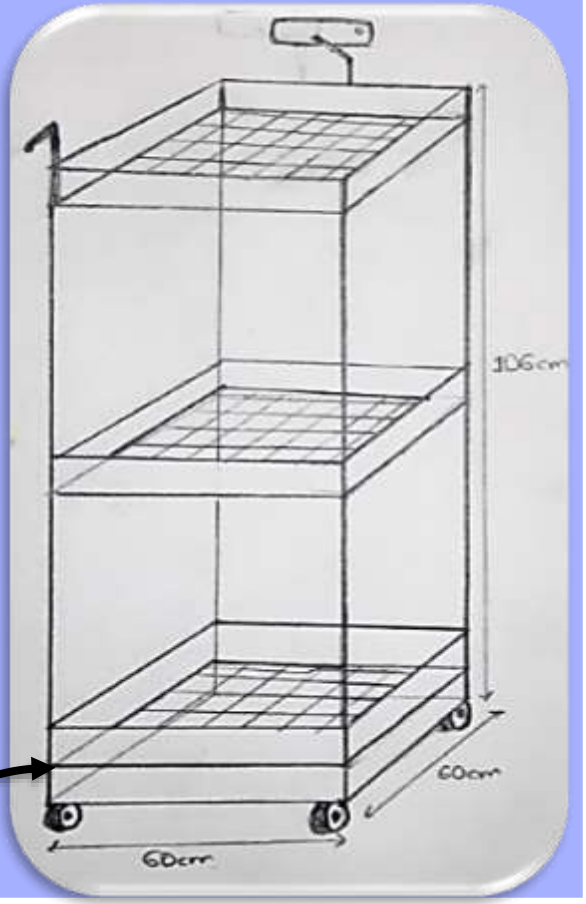
Rough Sketch



Initial Sketch



Final Sketch



Material Selection

For selection of material, we did research based on following points :-

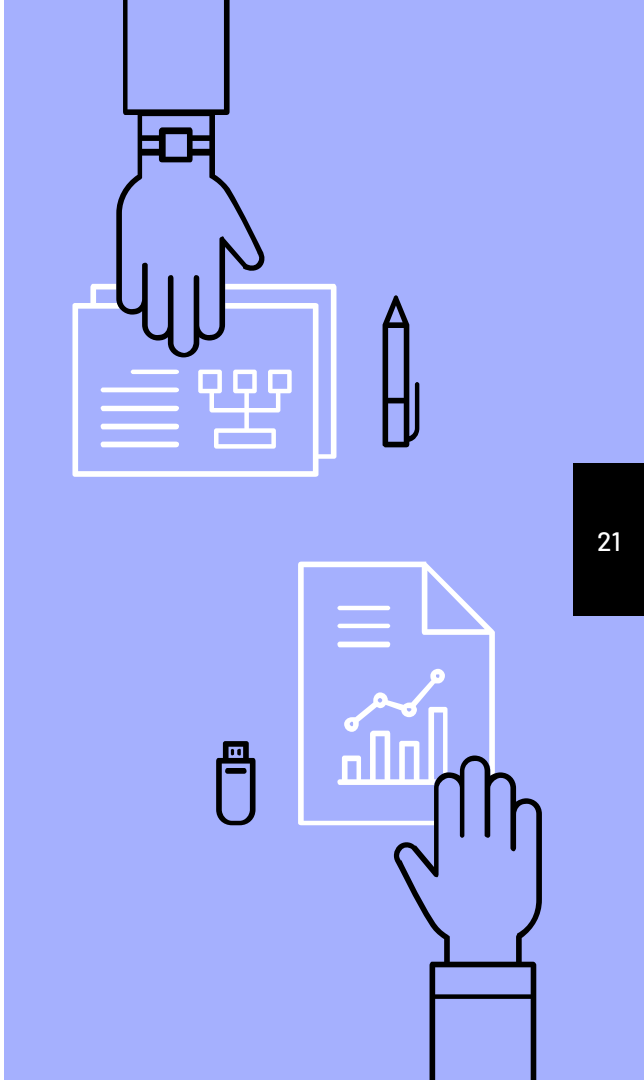
- ✓ Availability of the materials.
- ✓ Suitability of the materials for the working conditions in service.
- ✓ The cost of the materials.
- ✓ Impact resistance capacity.
- ✓ Long lasting.

On the basis of all those points, we finalized the most suitable material which is Wood (Plywood) for M-BOT.

- High Strength and Dimensional Stability
- High Impact Resistance
- Good Flexibility or Bendability
- Sound and Thermal Insulation
- available in all the size
- Heat resistance

AUTOCAD

AutoCAD is a computer-aided design (CAD) software that architects, engineers and construction professionals rely on to create precise 2D and 3D drawings. Draft, annotate and design 2D geometry and 3D models with solids, surfaces and mesh objects. This program helps designers create their designs much more quickly than by hand and offers many quick, easy and useful features.

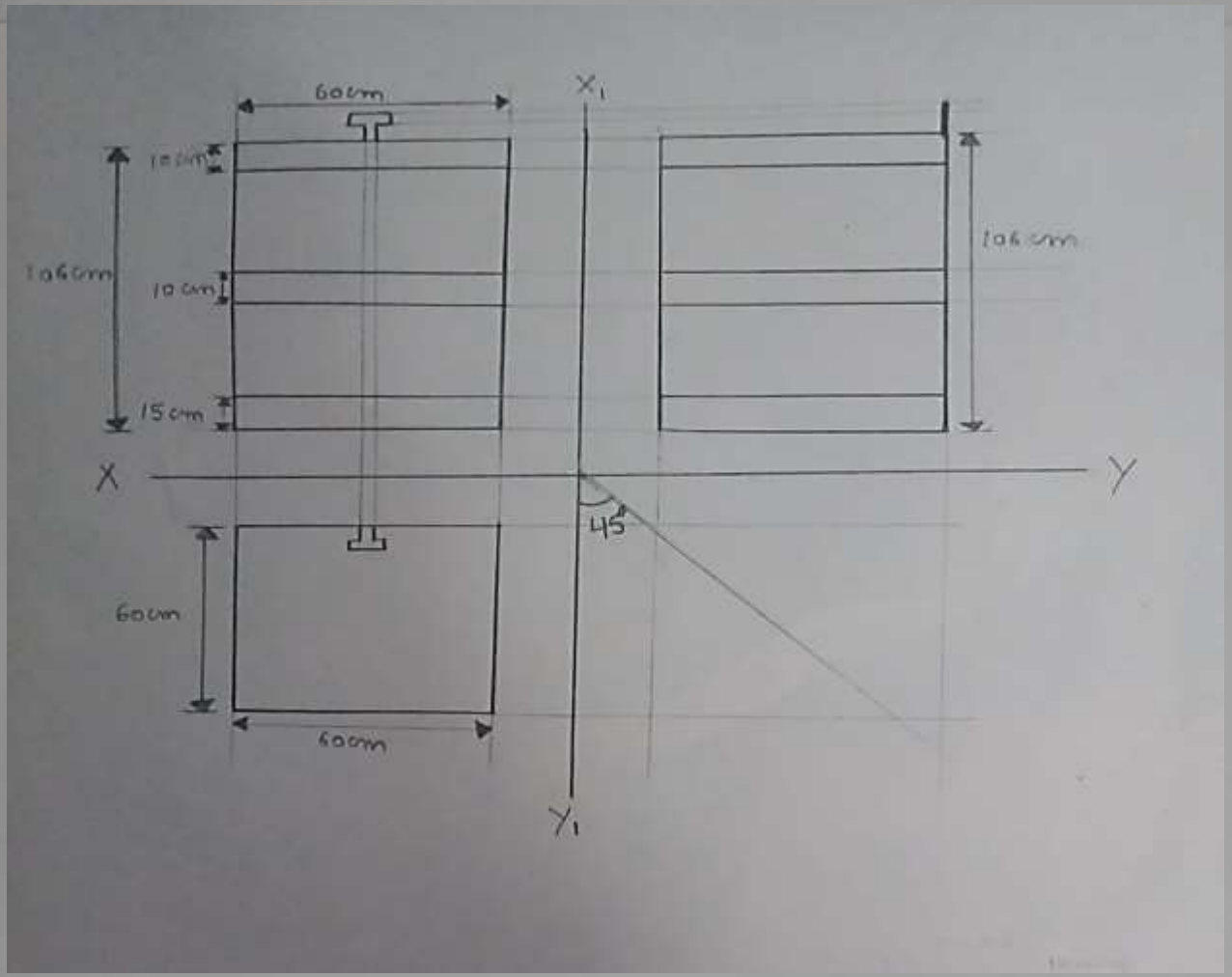


ORTHOGRAPHIC PROJECTION

Orthographic projection is a means of representing three-dimensional objects in two dimensions. It is a form of parallel projection, in which all the projection lines are orthogonal to the projection plane, resulting in every plane of the scene appearing in affine transformation on the viewing surface.

First angle projections and third angle projections are the two main types of orthographic drawing, also referred to as 'working drawings'. The difference between first and third angle projection is in the position of the plan, front and side views.

we are using the first angle projection for making the orthographic view of our M-Bot.



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TITEL OF DWG	M-BOT
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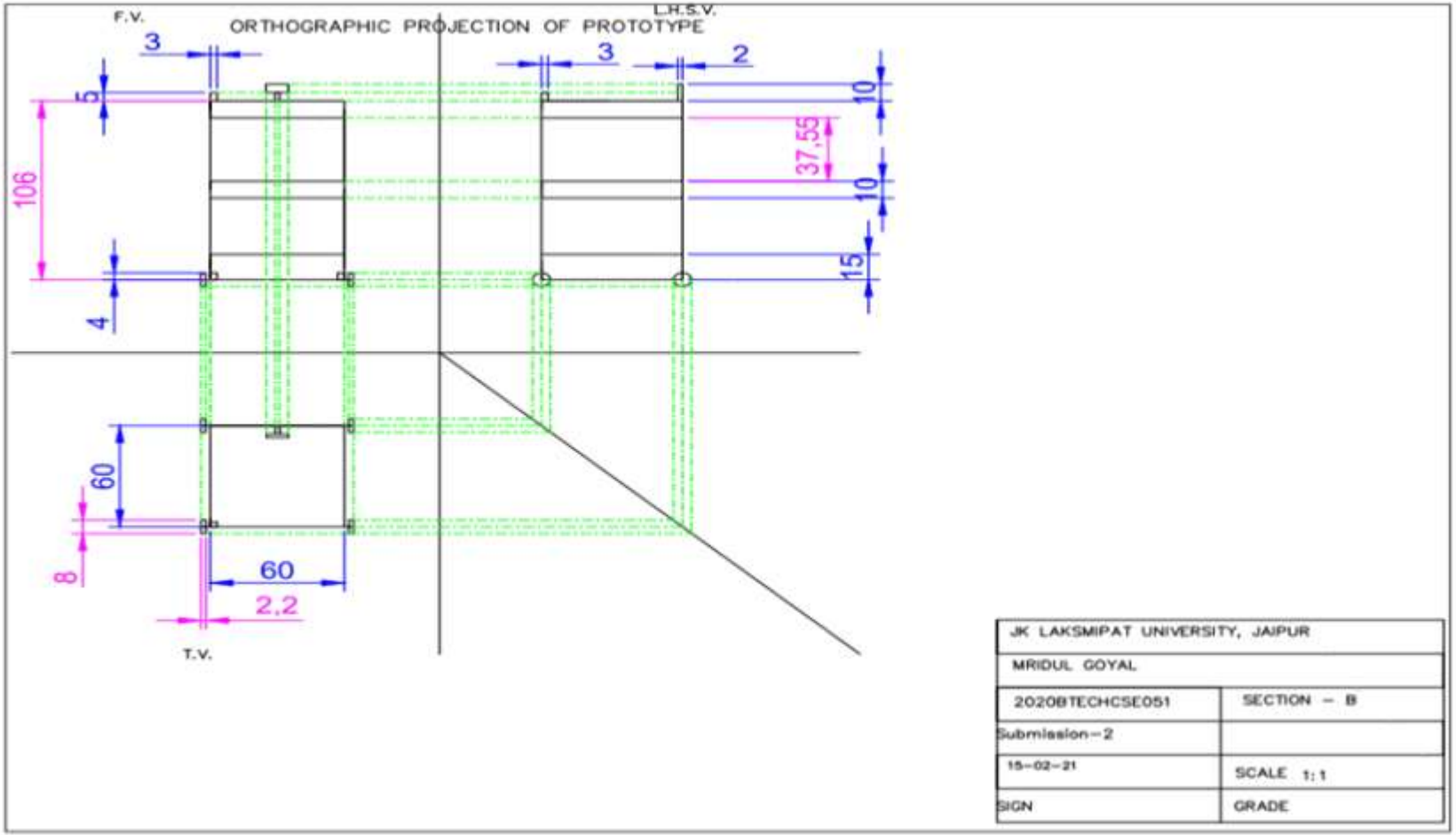

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Submission–2	
15–02–21	SCALE 1:1
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TOOLS USED IN MANUFACTURING PROCESS

Carpenters Vice

A woodworking vice is a type of vice primarily designed to solidly clamp wood without damaging the surface.

Bar Clamp

A bar clamp is typically used for woodworking applications, such as carpentry and joinery, although they can also be used for metalworking.

Try-Square

A try square or try-square is a woodworking tool used for marking and checking 90° angles on pieces of wood.

Steel rule

The steel rule is a basic measuring tool. When used correctly, a good steel rule is a surprisingly accurate measuring device.

Hand saw or crosscut saw

It is used to cut across the grains of the stock. The teeth are so set that the saw kerf will be wider than the blade thickness.

Rip saw

It is used for cutting the stock along the grain. The cutting edge of this saw makes a steeper angle.

Tenon saw

It is used for cutting tenons and in fine cabinet work. The blade of this saw is very thin and so it is stiffened with a thick back strip.

Coping saw

It has a very small blade used for cutting small and intricate parts with curves.

Compass saw

It has a narrow blade of 250mm long which can enter confined spaces for cutting.

Firmer chisel

Chisels are used for cutting and shaping wood accurately.

Mortise chisel

These are used for cutting mortises. The cross-section of the mortise chisel is proportioned to withstand heavy blows during mortising.

Auger bit

It is the most common tool used for making holes in the wood. During drilling, the lead screw of the bit guides into the wood necessitating only moderate pressure on the brace.

Gimlet

It has cutting edges like a twist drill. It is used for drilling large diameter holes with hand pressure.

Carpenters brace

It has a narrow blade of 250mm long which can enter confined spaces for cutting.

Hand drill

Carpenters brace is used to make relatively large size holes; whereas hand drill is used for drilling small holes.

Screwdriver

It is used for driving wood screws into wood or unscrewing them. The length of a screwdriver is determined by the length of the blade.

Mallet

This is a wooden-headed hammer of a round or rectangular section. The striking face is made flat. Mallet is used for cutting tools and has a wooden handle.

Wood rasp file

It is a finishing tool used to make the wood surface smooth, remove sharp edges and finish fillets and other interior surfaces. Sharp cutting teeth are provided on its surface for the purpose.

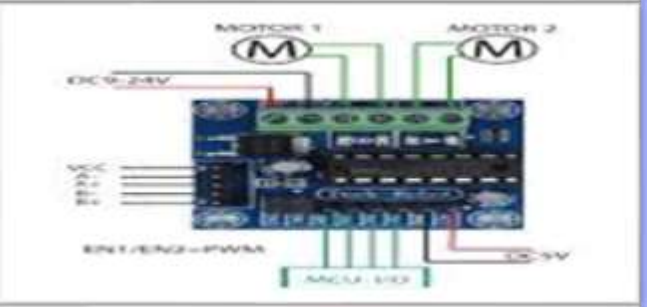
Wooden jack plane

This is the most commonly used plane in the carpentry shop.

Metal jack plane

It severs the same purpose as the wooden jack plane but facilitates smoother operations and a better finish.

LIST OF COMPONENTS



Wheels

For the movement of the M-Bot, we are using 4 wheels i.e., 2 driven wheels + two idler wheels. The two drive wheels are used to propel and turn the robot (skid steering) and the two idler wheels to prevent the robot from falling forward or backward.

Motor

Motors and actuators are the devices that make the robot movable. Motors and actuators convert electrical energy into physical motion.

Motor Driver

Motor drivers act as an interface between the motors and the control circuits. It is the most important part of the line follower robot. It reads the sensor's output and based on it, drives the motor's motion.

Wires

A wire is a single usually cylindrical, flexible strand or rod of metal. Wires are used to bear mechanical loads or electricity and telecommunications signals. The wire is commonly formed by drawing the metal through a hole in a die or draw plate.

Body

The body of our robot will be made up of mainly plywood with some use of aluminum. The basic structure looks like a table.

Arduino UNO

Arduino is an open-source electronics platform based on easy-to-use hardware and software.

IR Sensor * 2 & Female jumper wire

An IR receiver captures the reflected light and the voltage are measured based on the amount of light received.

Li-ion battery

We have used a Li-ion battery that can hold 30% more capacity and are much lighter than the NiMH battery. Li-ion also suffers from a lower discharge compared to NiMH battery.

Smartphone

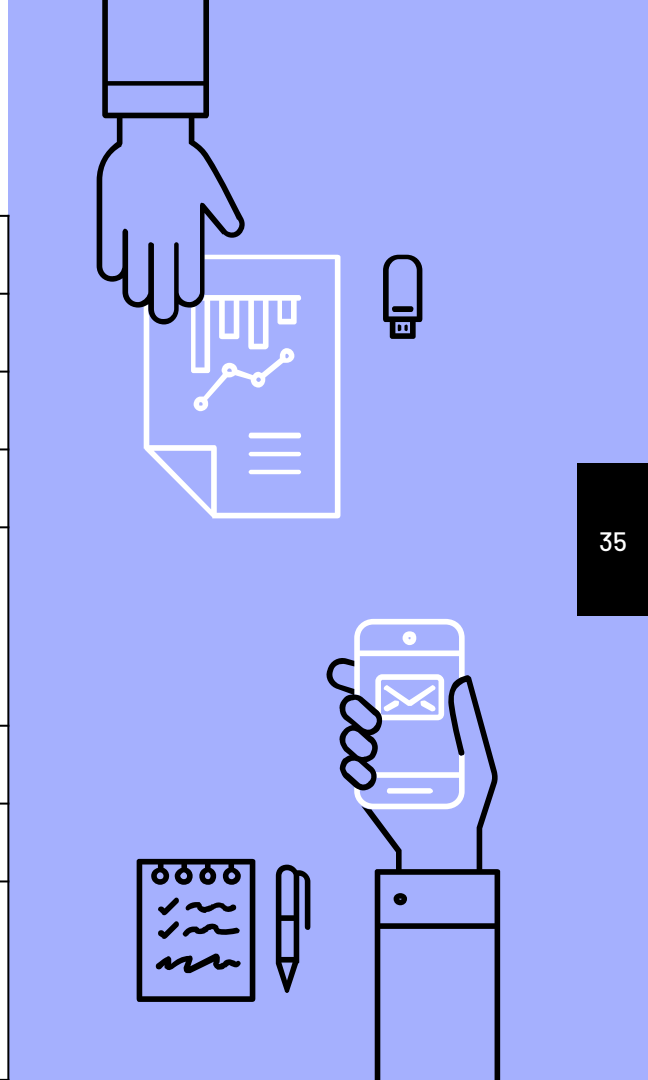
In our robot, we are using a smartphone so that, The doctors and other staff can also video chat with the patient through a camera fixed on the top of the robot, in order to monitor their health.

COMPONENTS	MATERIALS	SPECIFICATIONS	COST
Wooden Plates	Ply Wood	• Insulation • Longevity	750 Rs.
Motor Driver x 1	-	• Generic 0826U40KLRA Q L293D	110 Rs.
Arduino UNO x 1	-	• It has 14 digital input/output pins. • 6 analog inputs. • A 16 MHz ceramic resonator. • A USB connection. • A power jack. • An ICSP header. • A reset button. • Weight – 0.2gm	500 Rs
Motor x 4	-	• Geared Motor • 6V -12V • Torque – 5Kg-cm • 500rpm • DC power	800 Rs.

Wheels x 4	Hard Rubber	• Noise Reduction • Floor Protection • Better grip and traction	300 Rs.
Battery	-	• Amptek 12v 1.3Ah • 12 Volts • 550 g	650 Rs.
Wires	Copper	• Simple connection wires.	50 Rs.
Smartphone	-	• A simple smartphone with good quality camera.	1300 Rs.
Touchless Hand Sanitizer	ABS	• Outer body material – ABS • Capacity- 500ml • Box weight – 700gm	400 Rs.
IR sensor	-	• detects a distance of 2 ~ 10cm. • detection angle 35°. • Board size: 3.1CM x 1.5CM.	150 Rs.

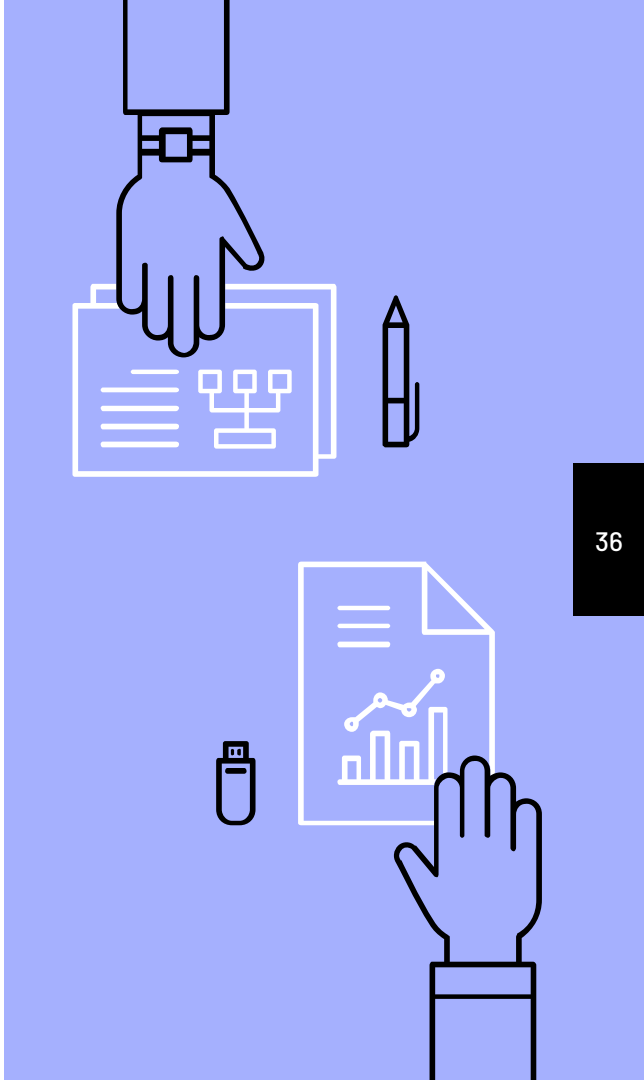
Links of Components

Sr. No.	Materials
1	https://amzn.to/3rE5K3J
2	https://amzn.to/36VKLBB
3	https://amzn.to/3rF9UIv
4	Electronicspices Self Locking Switch, DC 260V 1.5 A Tactile Tact Switch 2Pin On Off Push Button Switch DIY Electronics Accessories - Pack of 5: Amazon.in: Industrial & Scientific
5	https://amzn.to/2MREobE
6	https://amzn.to/2Z6B3Ih
7	INVENTO 2pcs 6V - 12V 5 Kg-cm 500 rpm DC Motor Metal Geared Motor for Robot Car DIY: Amazon.in: Industrial & Scientific



Onshape

Onshape is the only Software-as-a-Service (SaaS) product development platform that combines CAD, built-in data management, real-time collaboration tools, and business analytics. Onshape allows teams to collaborate on a single shared design, the same way multiple writers can work together editing a shared document via cloud services.



3D modelling & Drafting

3D modelling is the process of developing a mathematical coordinate-based representation of any surface of an object (inanimate or living) in three dimensions via specialized software. Three-dimensional (3D) models represent a physical body using a collection of points in 3D space, connected by various geometric entities such as triangles, lines, curved surfaces, etc.

Drafting also spelled draughting, also called engineering drawing, graphical representation of structures, machines, and their component parts that communicates the engineering intent of a technical design to the craftsman or worker who makes the product.

WHEELS

Link: -

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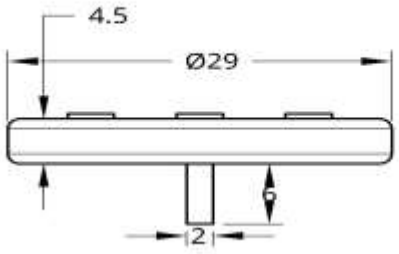

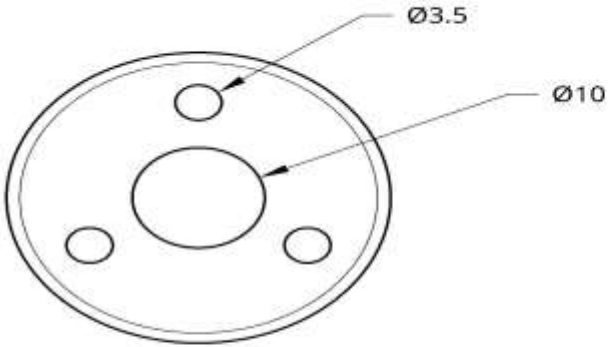

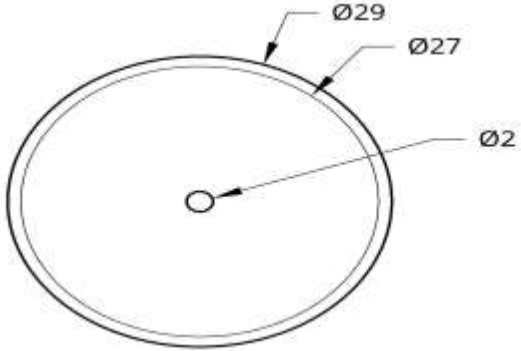

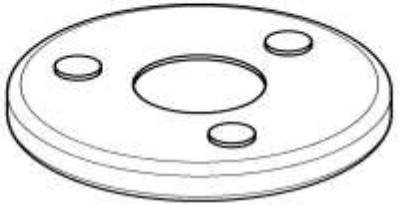

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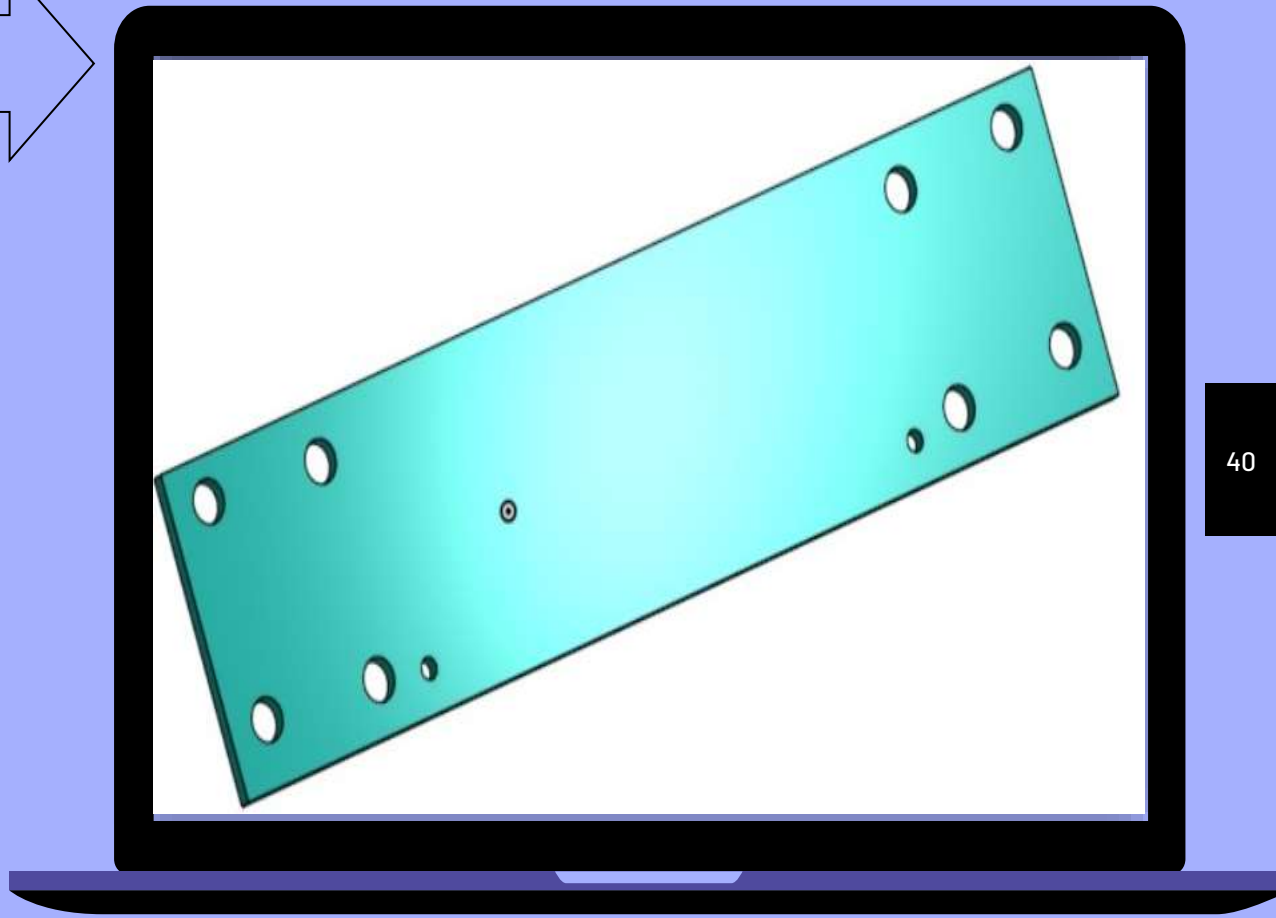
WOODEN PLATES

(A)



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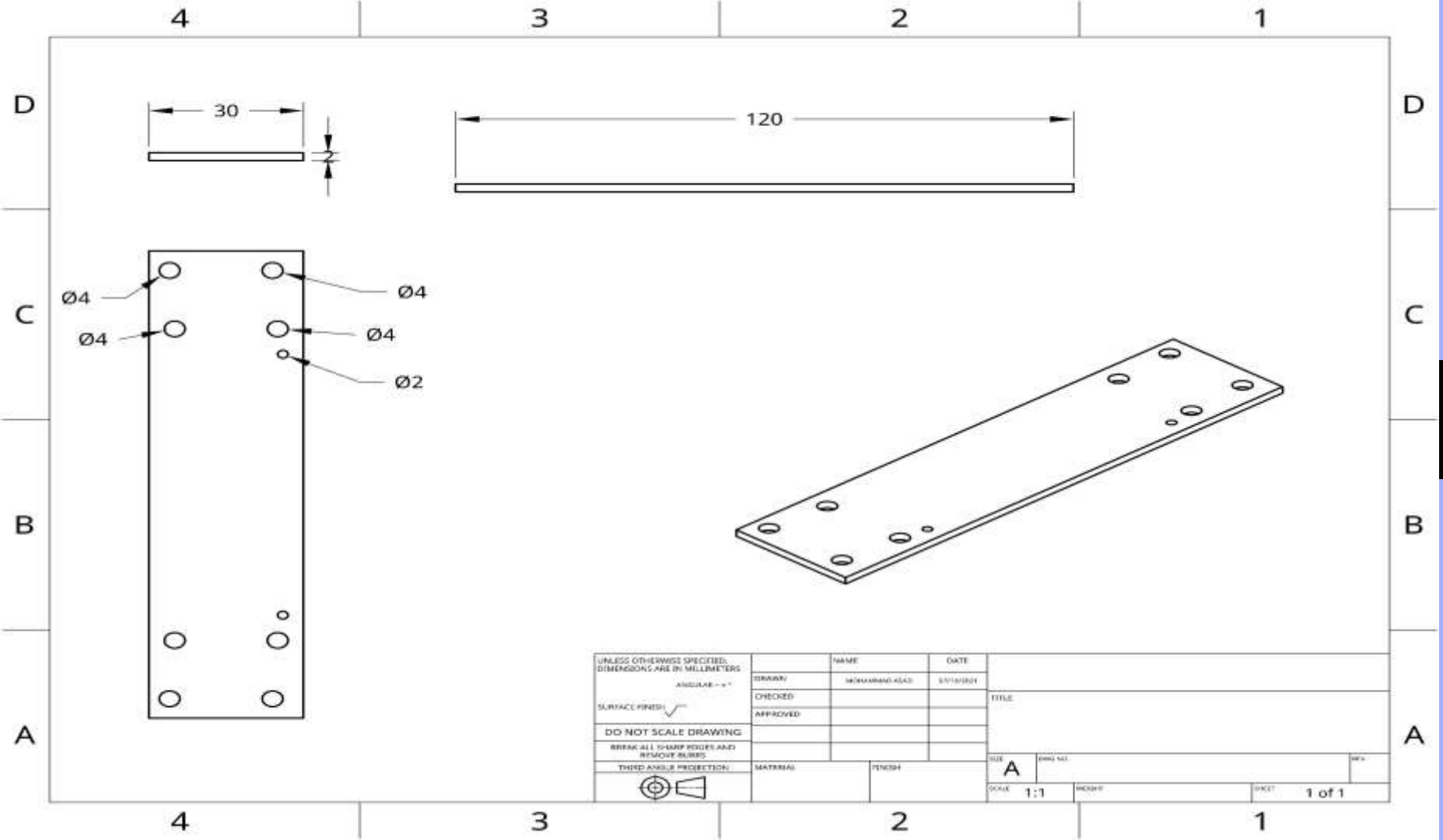
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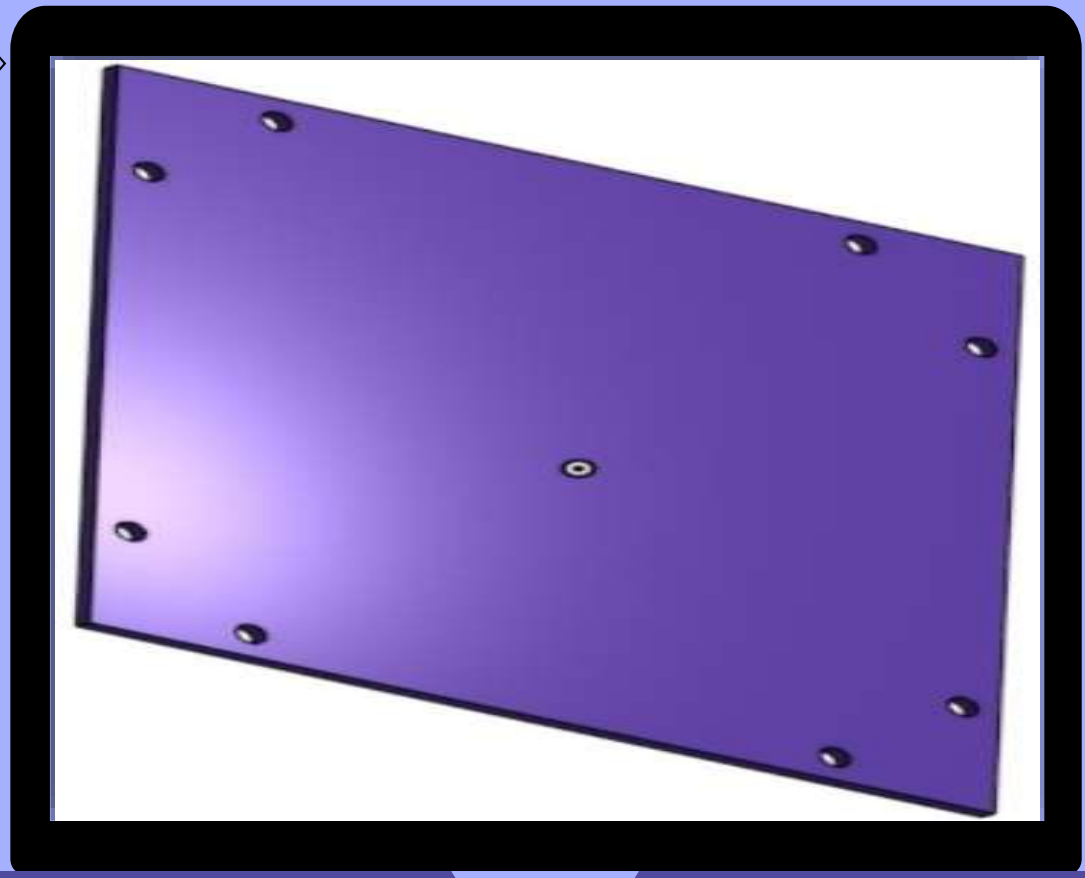
UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN MILLIMETERS
ANGULAR: ± °
SURFACE FINISH:
DO NOT SCALE DRAWING
BREAK ALL SHARP EDGES AND REMOVE BURRS
THIRD ANGLE PROJECTION
NAME
DATE
DRAWN
MOHAMMAD ASAD
CHECKED
APPROVED
MATERIAL
FINISH
TITLE
SIZE
A
SCALE
1:1
SHEET
1 of 1

(B)



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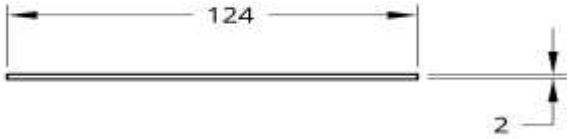
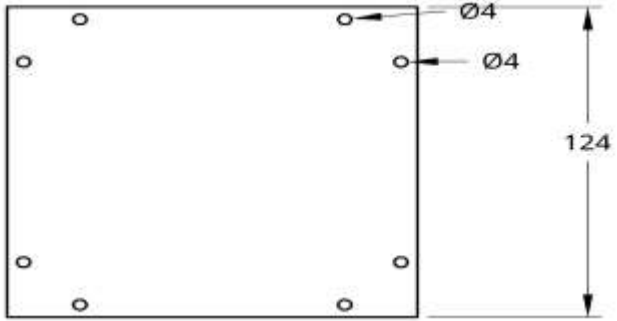
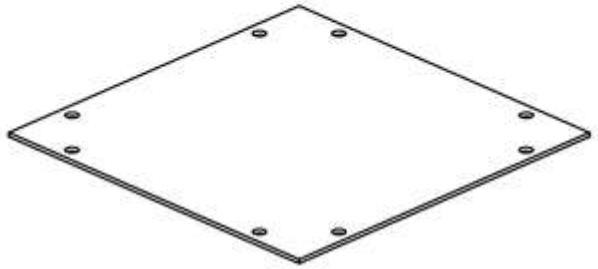






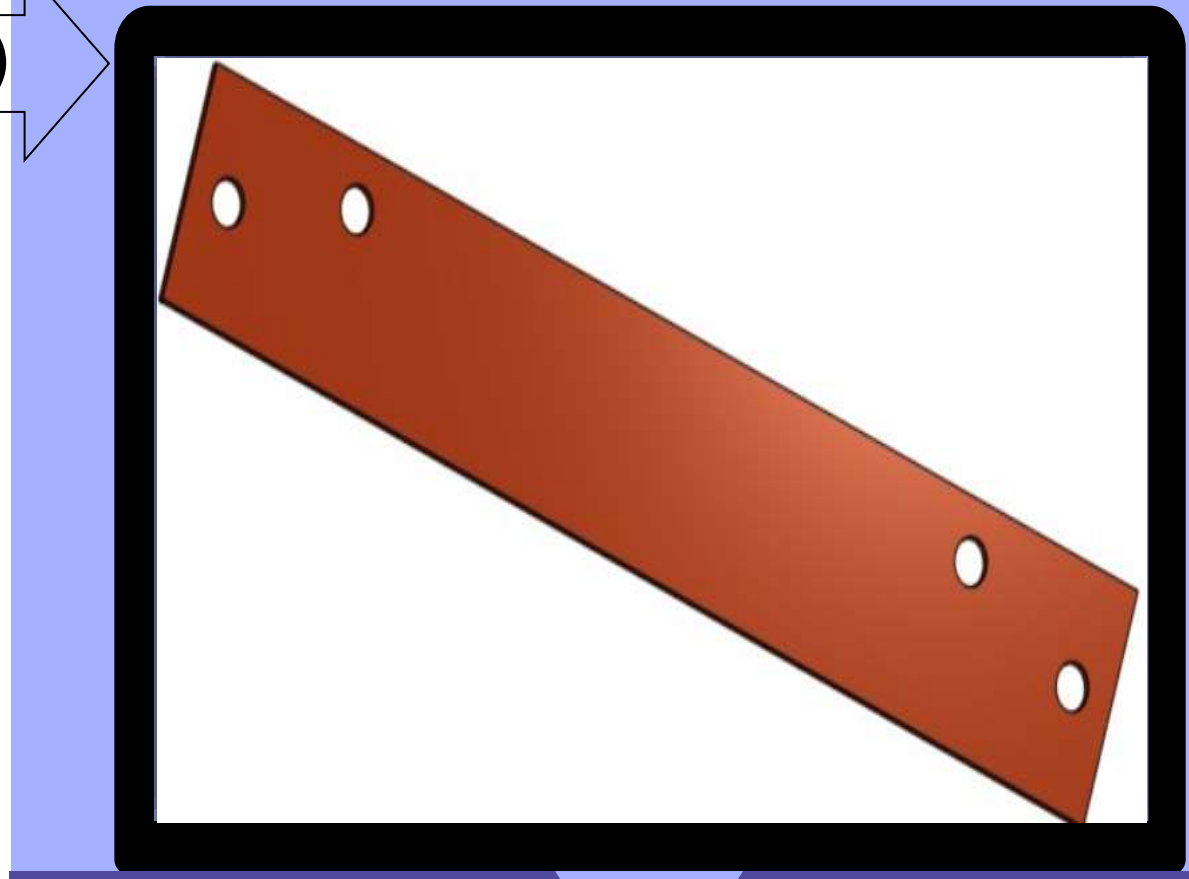
UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS		NAME	DATE
ANGULAR: ± °	DRAWN	MOHAMMAD ASAD	07/10/2021
SURFACE FINISH: √	CHECKED		
	APPROVED		
DO NOT SCALE DRAWING			
BREAK ALL SHARP EDGES AND REMOVE BURRS			
THIRD ANGLE PROJECTION	MATERIAL	FINISH	

TITLE:

SIZE A | DWG NO. | REV

SCALE 1:2 | WEIGHT | SHEET 1 of 1

(C)



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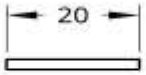

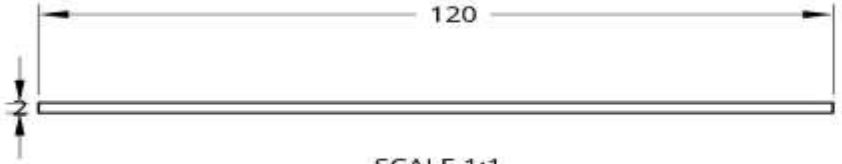

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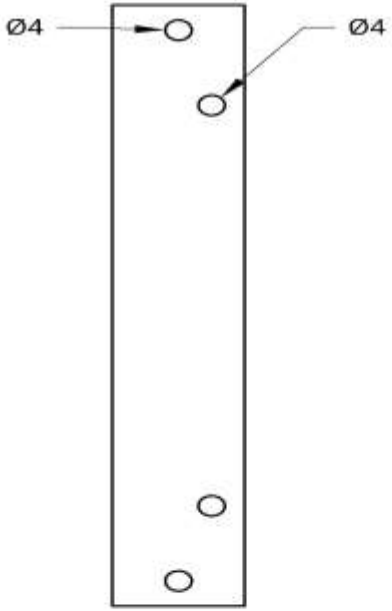

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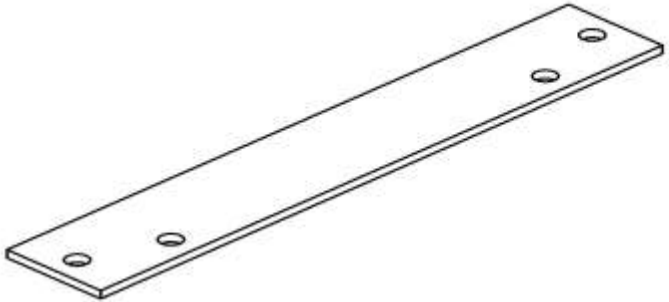

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UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS		NAME	DATE
ANGULAR: ± °	DRAWN	MOHAMMAD ASAD	07/10/2021
SURFACE FINISH: √	CHECKED		
	APPROVED		
DO NOT SCALE DRAWING			
BREAK ALL SHARP EDGES AND REMOVE BURRS			
THIRD ANGLE PROJECTION	MATERIAL	FINISH	

TITLE:

SIZE A | DWG NO. | REV

SCALE 2:1 | WEIGHT | SHEET 1 of 1

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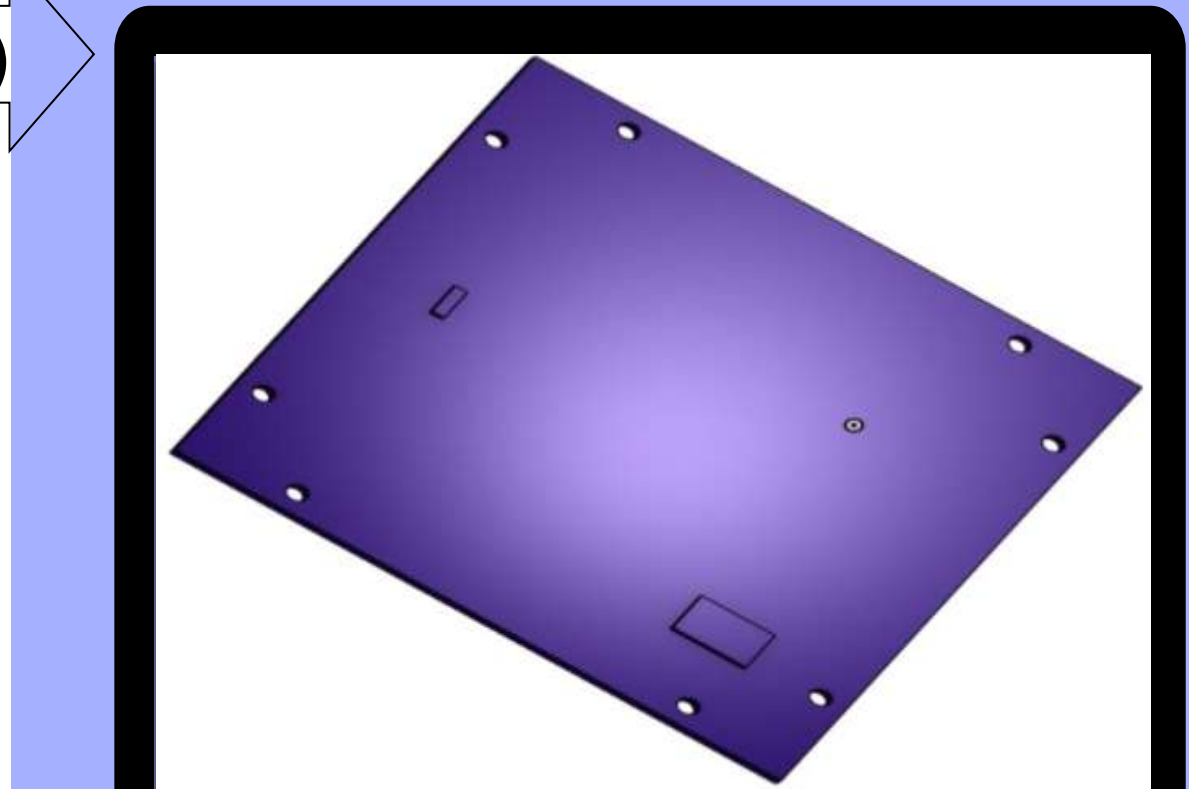

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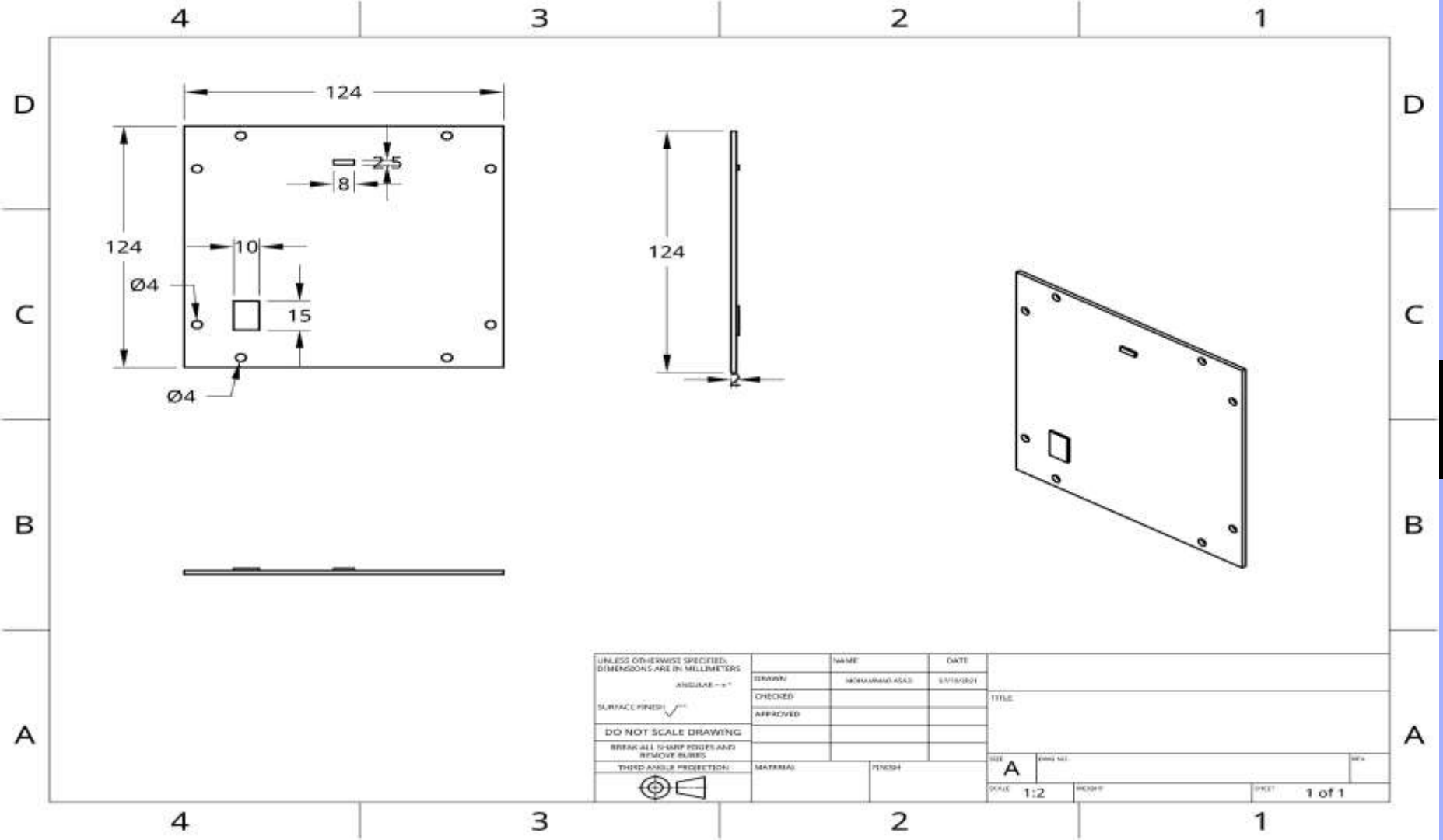
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UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN MILLIMETERS
ANGULAR: ± °
SURFACE FINISH:
DO NOT SCALE DRAWING
BREAK ALL SHARP EDGES AND REMOVE BURRS
THIRD ANGLE PROJECTION
NAME
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APPROVED
MATERIAL
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SCALE
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WEIGHT
SHEET
1 of 1

Touchless Hand Sanitizer

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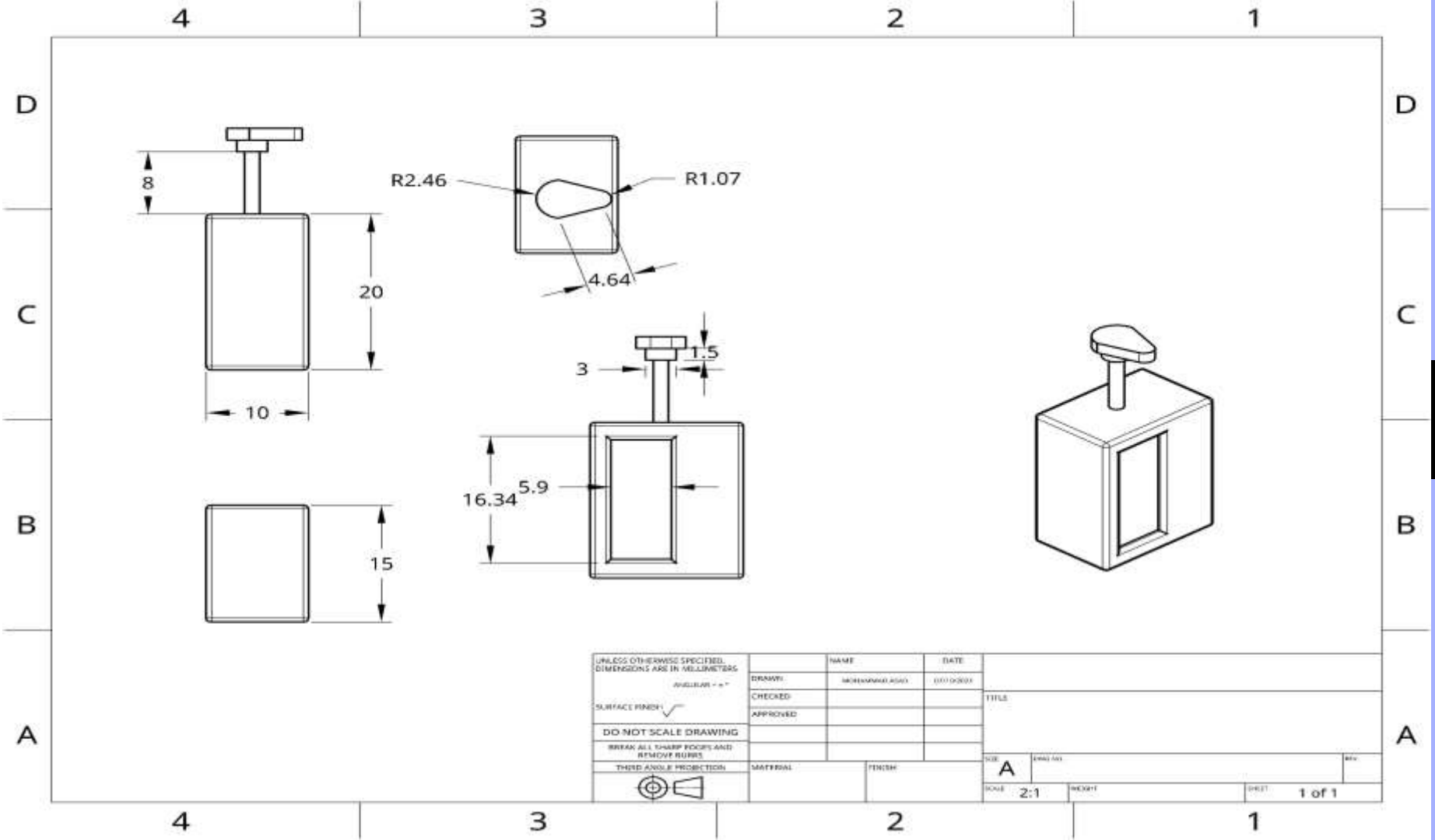
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UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN MILLIMETERS
ANGULAR: ± °
SURFACE FINISH
DO NOT SCALE DRAWING
BREAK ALL SHARP EDGES AND REMOVE BURRS
THIRD ANGLE PROJECTION
NAME
DATE
DRAWN
CHECKED
APPROVED
MATERIAL
FINISH
TITLE
SIZE
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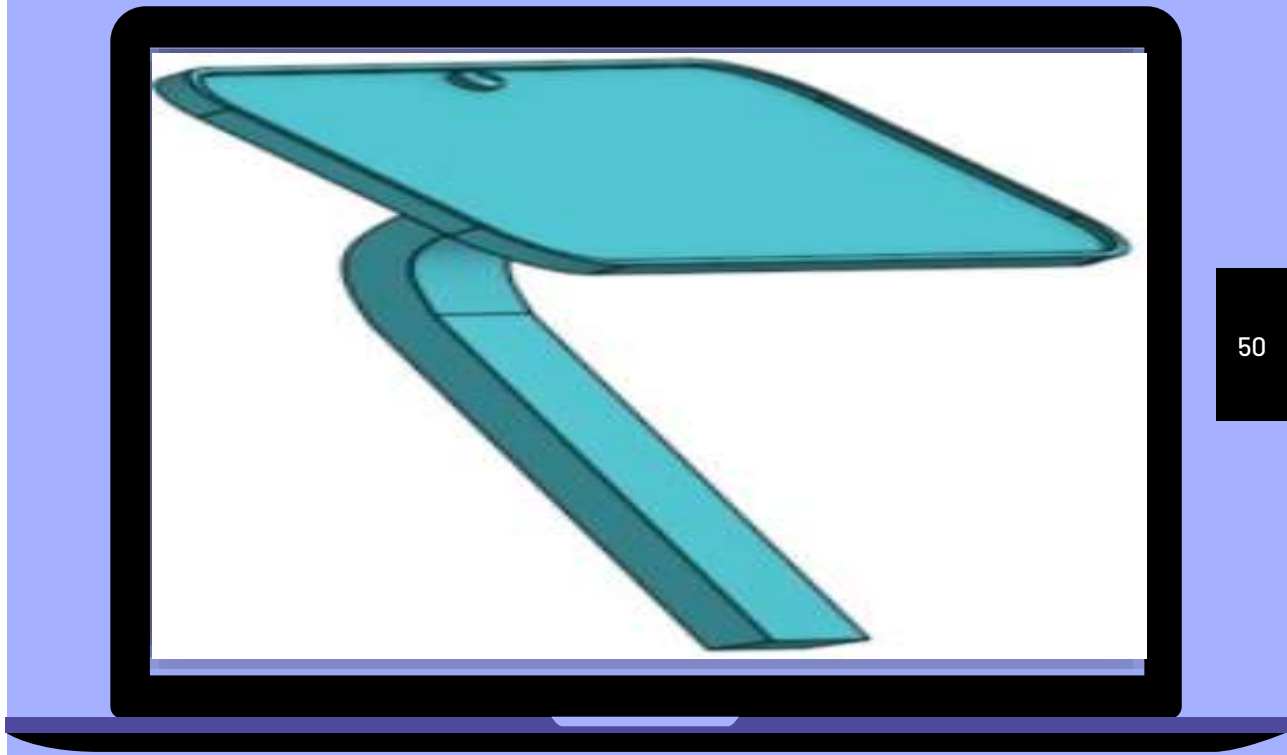
WEIGHT
SHEET
1 of 1

Smartphone & Stand



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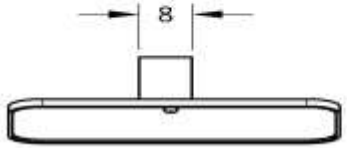

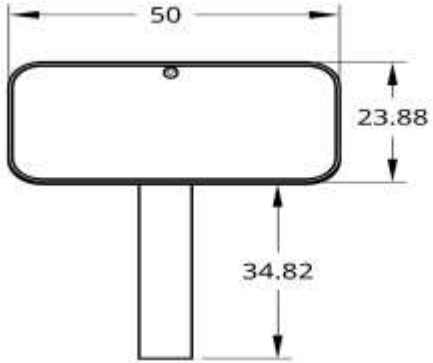

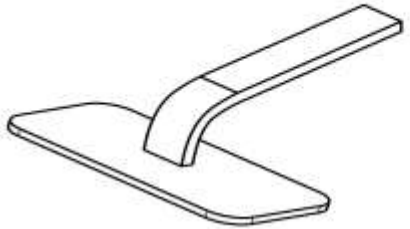

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS		NAME	DATE
ANGULAR: ± °	DRAWN	MOHAMMAD ASAD	07/10/2021
SURFACE FINISH: √	CHECKED		
	APPROVED		
DO NOT SCALE DRAWING			
BREAK ALL SHARP EDGES AND REMOVE BURRS			
THIRD ANGLE PROJECTION	MATERIAL	FINISH	

TITLE:

SIZE A | DWG NO. | REV

SCALE 1:1 | WEIGHT | SHEET 1 of 1

(A)

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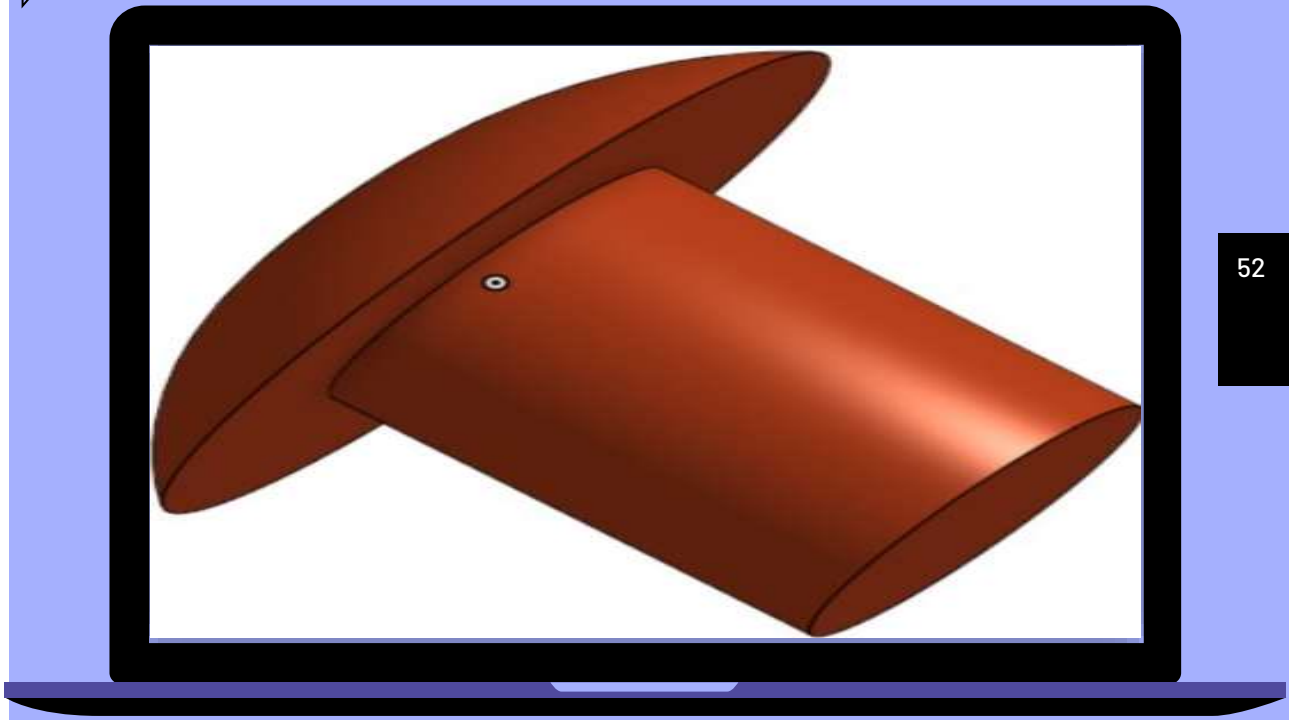

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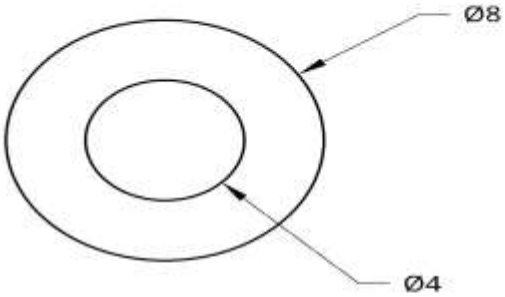
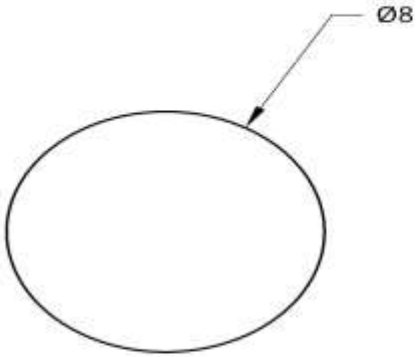
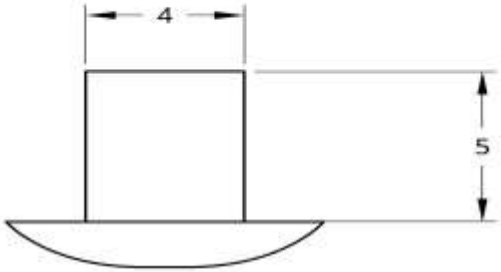
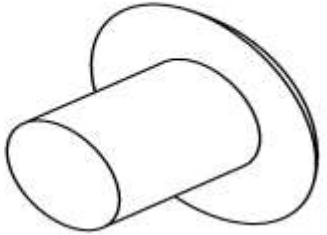








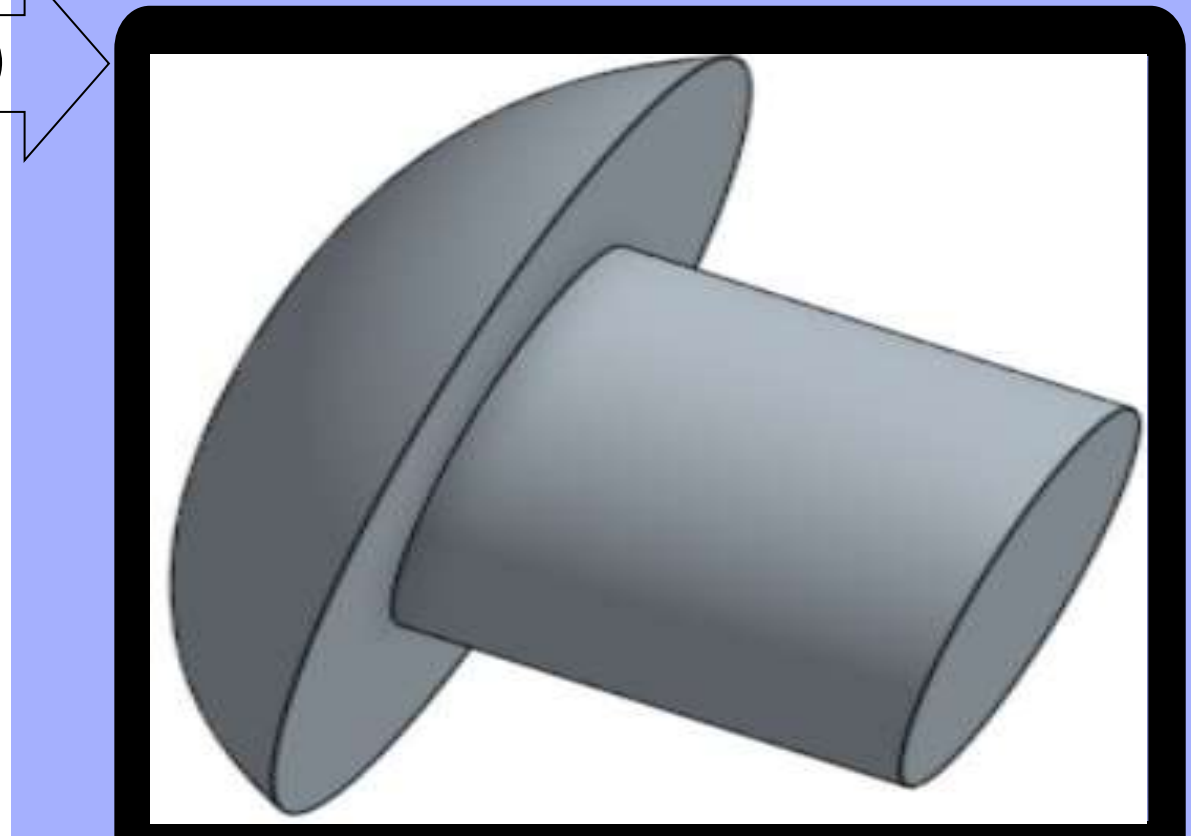
UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS		NAME	DATE
ANGULAR: ± °	DRAWN	MOHAMMAD ASAD	07/10/2021
SURFACE FINISH: √	CHECKED		
	APPROVED		
DO NOT SCALE DRAWING			
BREAK ALL SHARP EDGES AND REMOVE BURRS			
THIRD ANGLE PROJECTION	MATERIAL	FINISH	

TITLE:

SIZE A | DWG. NO. | REV.

SCALE 6:1 | WEIGHT | SHEET 1 of 1

(B)



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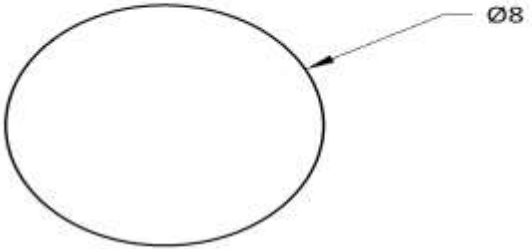
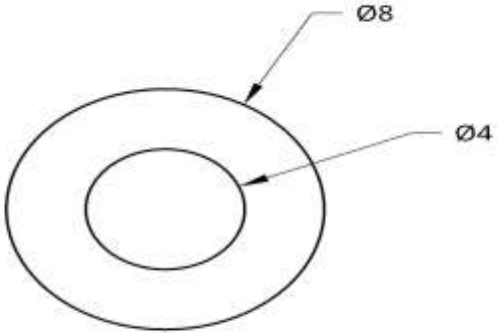
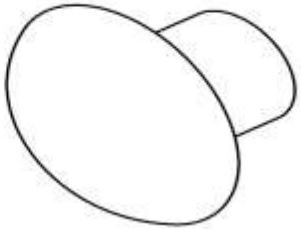
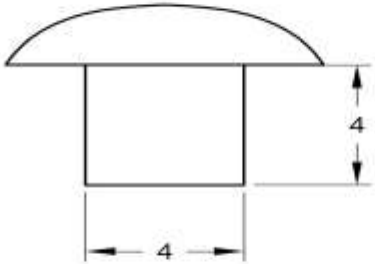








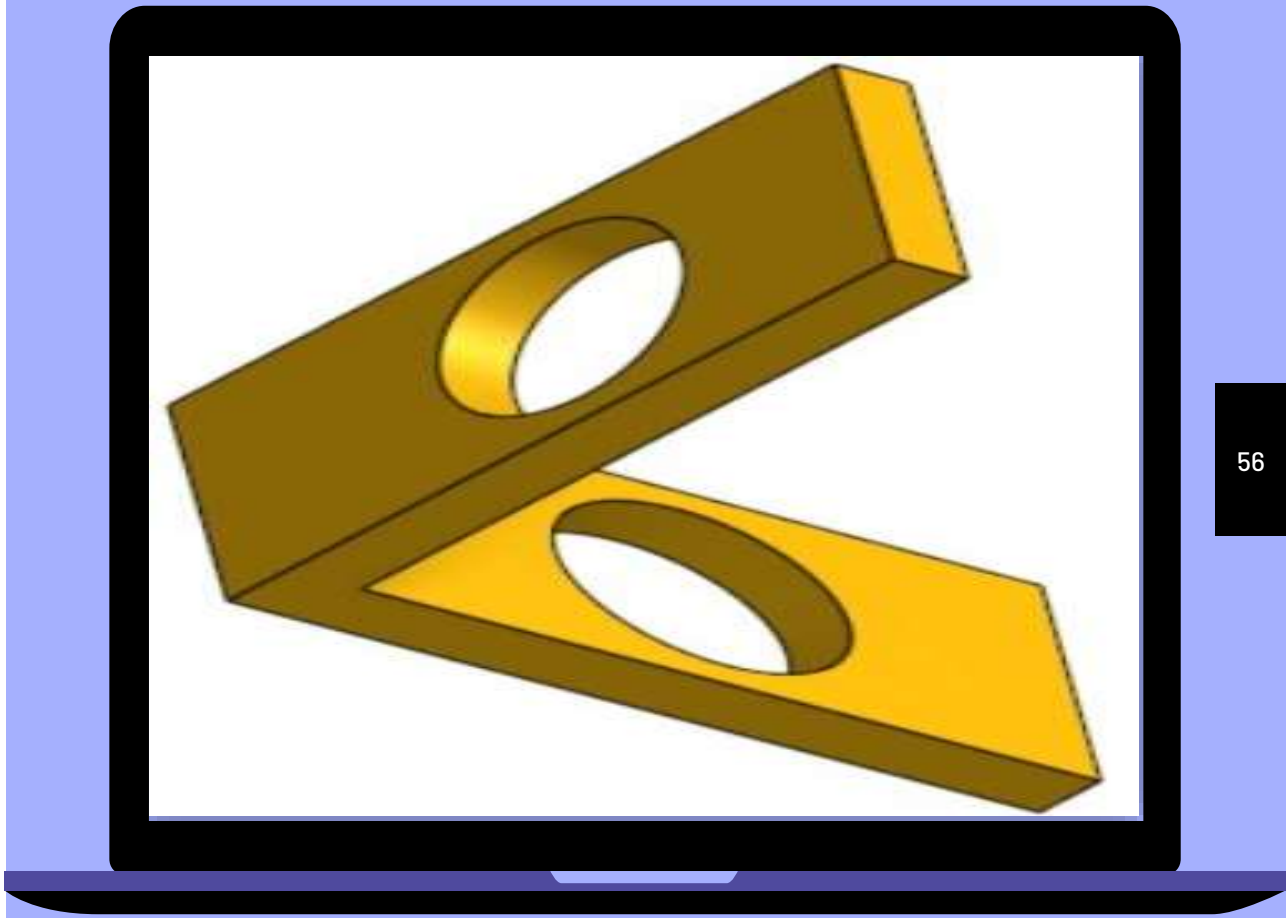
UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS		NAME	DATE
ANGULAR: ± °	DRAWN	MOHAMMAD ASAD	07/10/2021
SURFACE FINISH: √	CHECKED		
	APPROVED		
DO NOT SCALE DRAWING			
BREAK ALL SHARP EDGES AND REMOVE BURRS			
THIRD ANGLE PROJECTION	MATERIAL	FINISH	

TITLE:

SIZE A | DWG NO. | REV

SCALE 6:1 | WEIGHT | SHEET 1 of 1

FIXTURE



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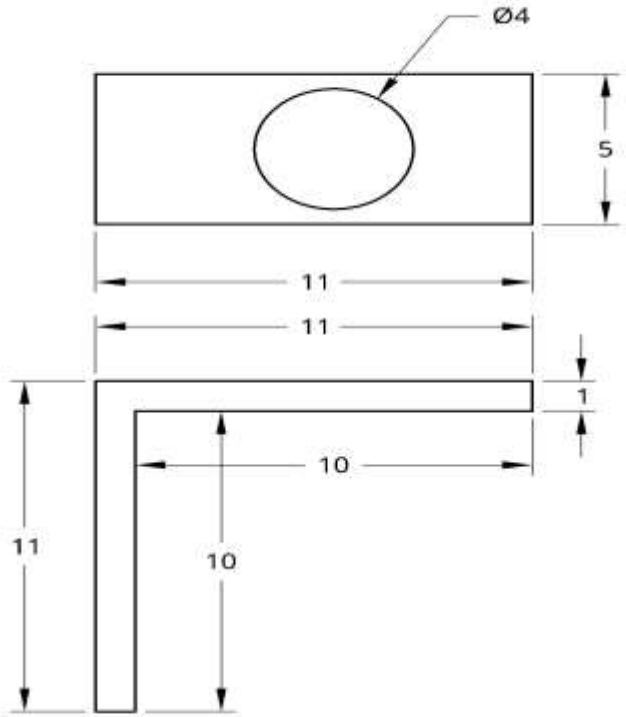

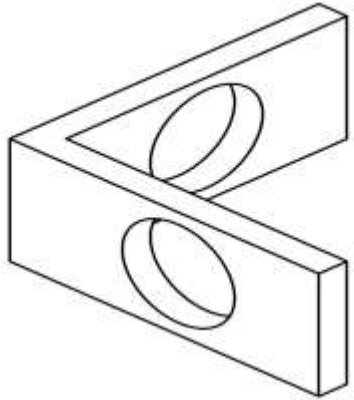

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ANGULAR: ± °	DRAWN	MOHAMMAD ASAD	07/10/2021
SURFACE FINISH: √	CHECKED		
	APPROVED		
DO NOT SCALE DRAWING			
BREAK ALL SHARP EDGES AND REMOVE BURRS			
THIRD ANGLE PROJECTION	MATERIAL	FINISH	

TITLE:

SIZE A | DWG NO. | REV

SCALE 6:1 | WEIGHT | SHEET 1 of 1

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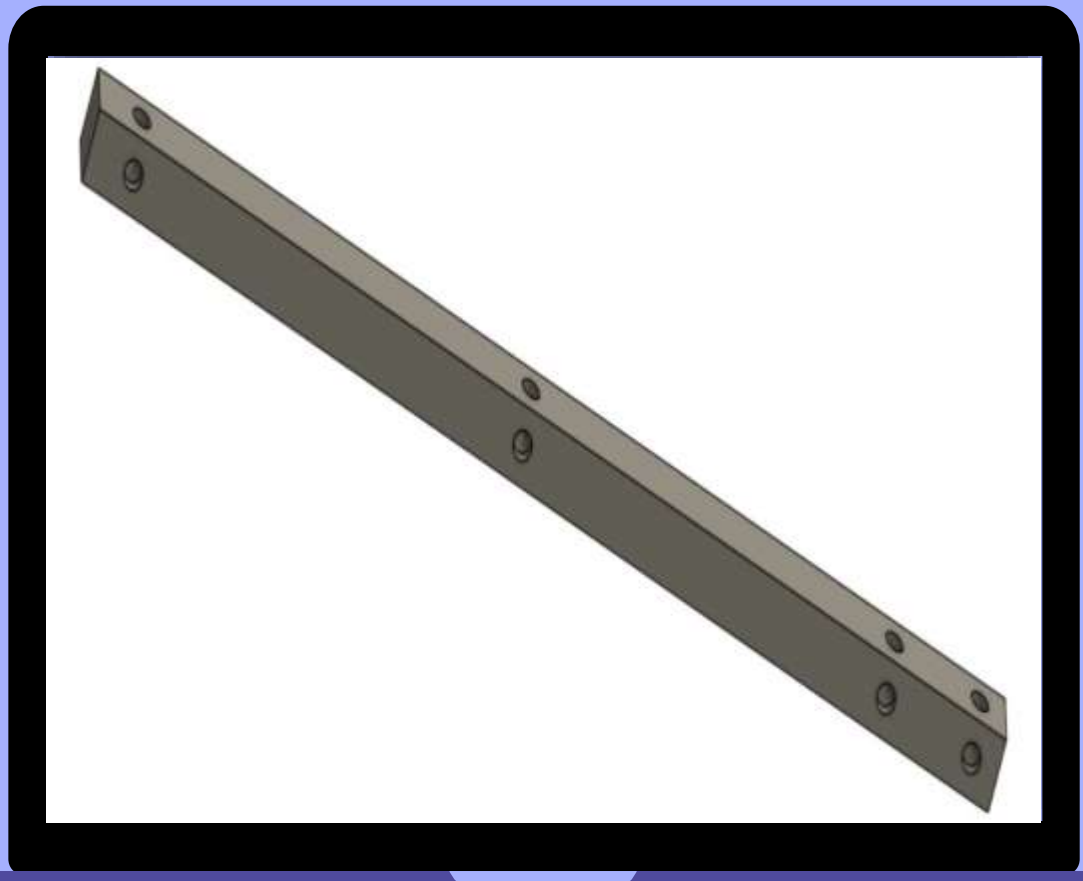

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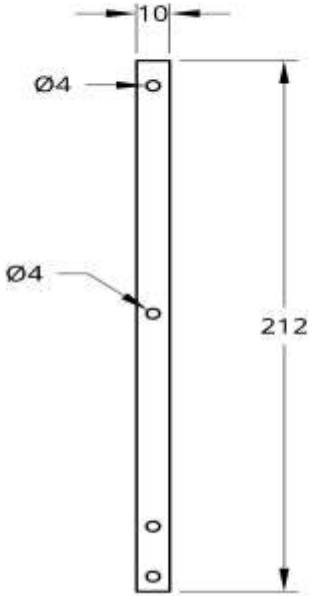

SCALE 1:2

SCALE 1:2

SCALE 1:2

SCALE 1:2

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	DRAWN	MOHAMMAD ASAD	07/10/2021
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	APPROVED		
DO NOT SCALE DRAWING			
BREAK ALL SHARP EDGES AND REMOVE BURRS			
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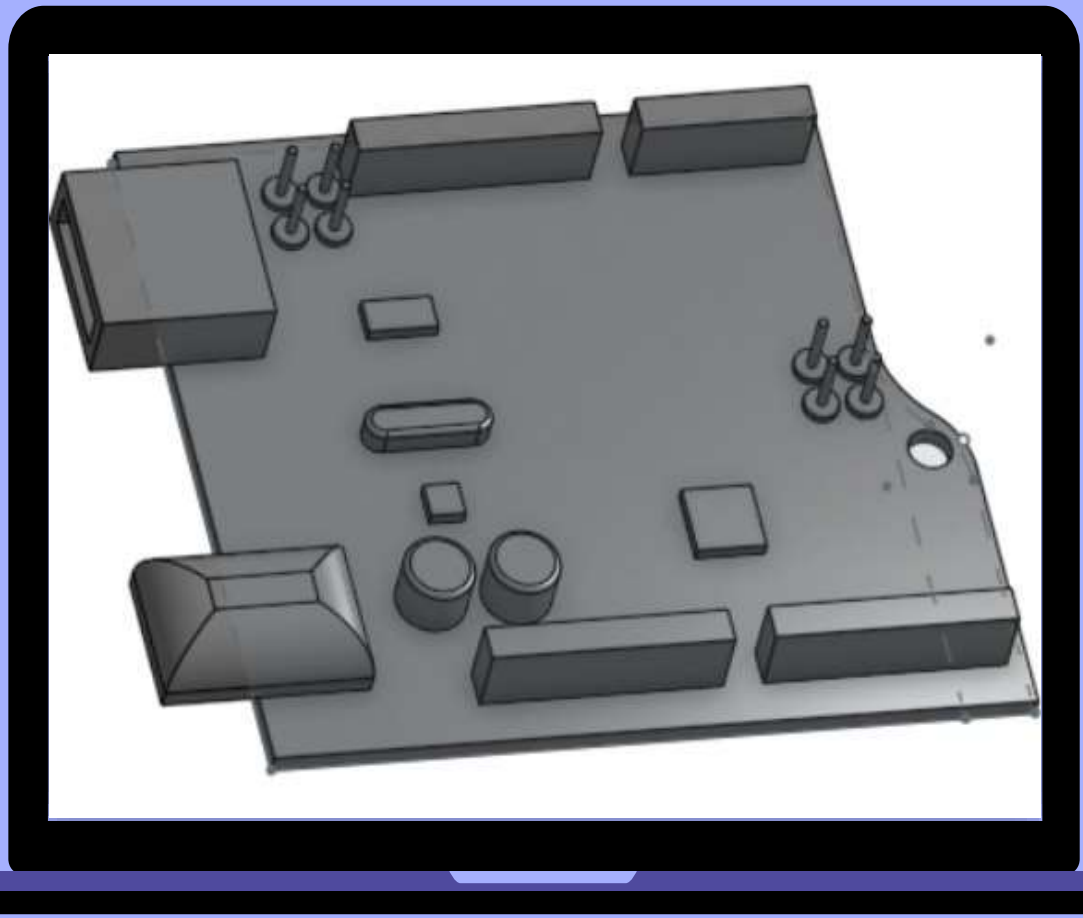
TITLE:

SIZE A | DWG NO. | REV

SCALE 1:3 | WEIGHT | SHEET 1 of 1

ARDUINO



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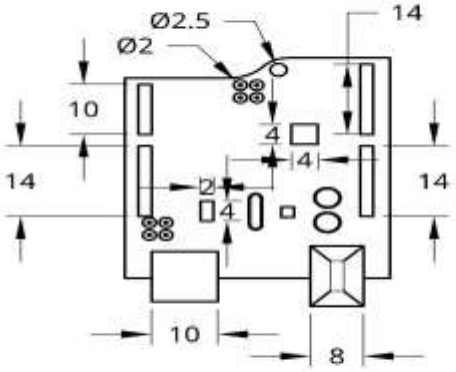

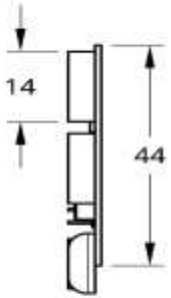

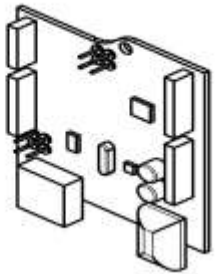

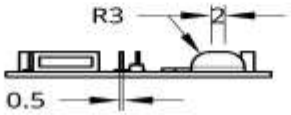

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS		NAME	DATE
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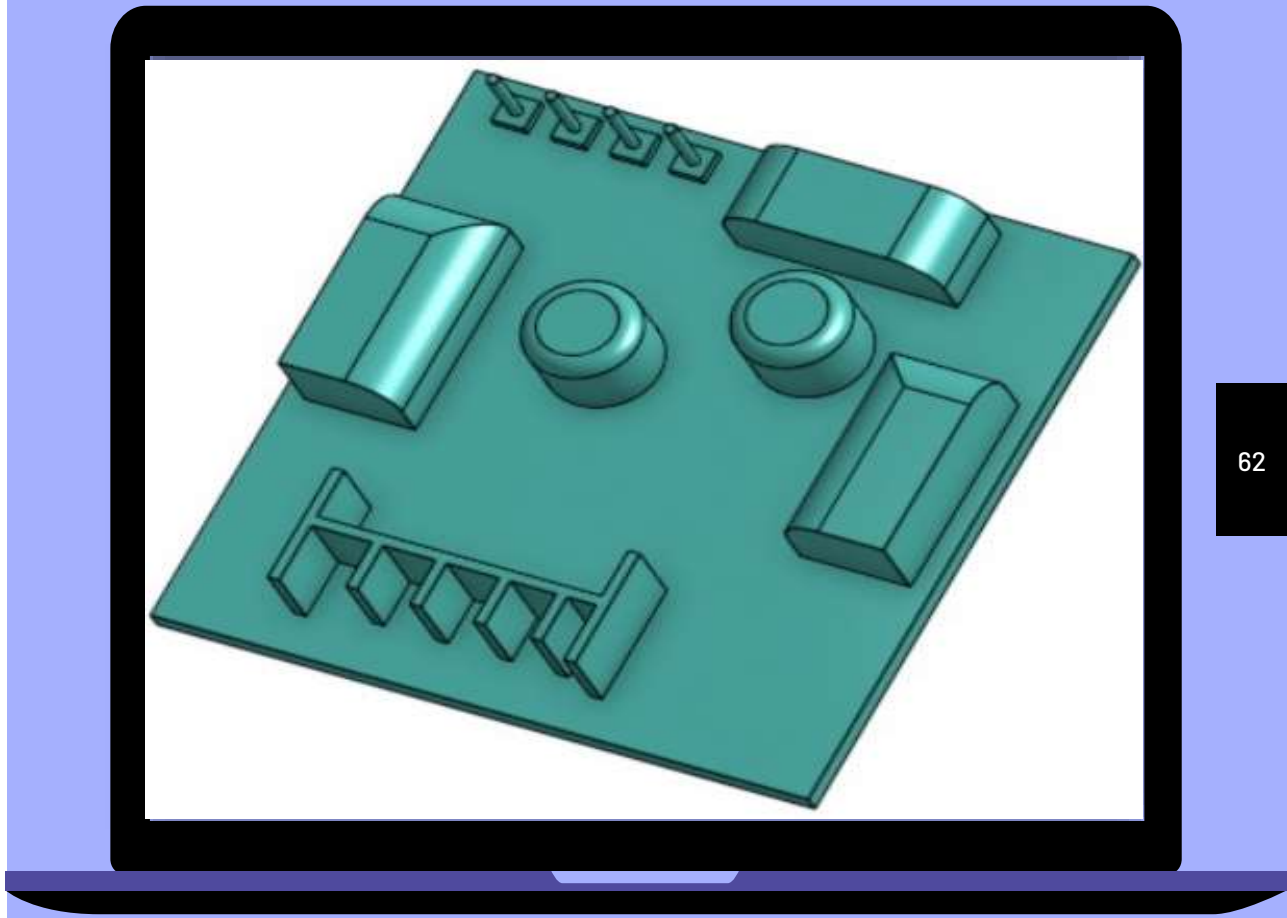
DO NOT SCALE DRAWING			
BREAK ALL SHARP EDGES AND REMOVE BURRS			
THIRD ANGLE PROJECTION	MATERIAL	FINISH	

TITLE:

SIZE A | DWG NO. | REV

SCALE 1:1 | WEIGHT | SHEET 1 of 1

MOTOR DRIVER



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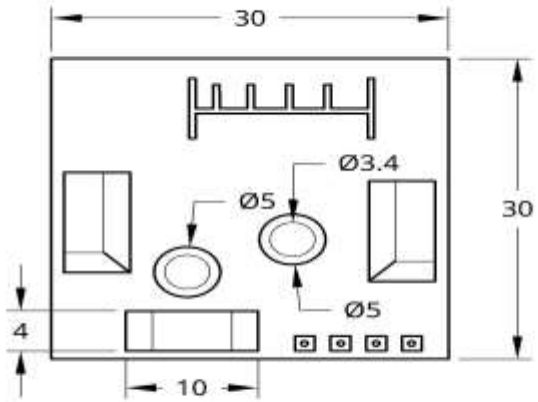

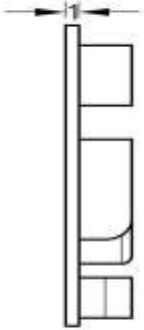

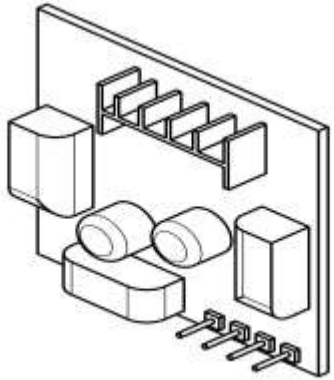

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DO NOT SCALE DRAWING			
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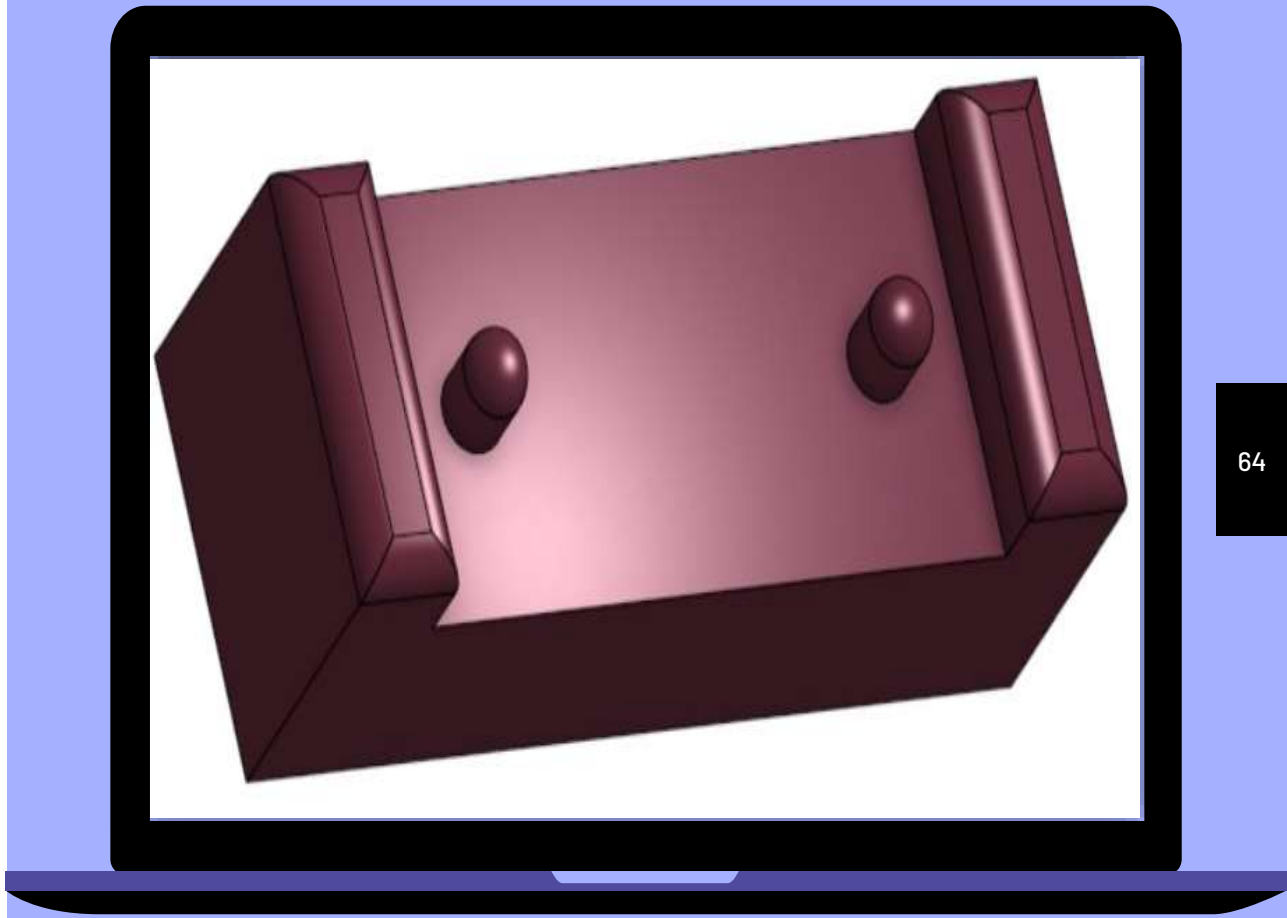
THIRD ANGLE PROJECTION	MATERIAL	FINISH	

TITLE:

SIZE A | DWG NO. | REV

SCALE 2:1 | WEIGHT | SHEET 1 of 1

BATTERY



Link: -

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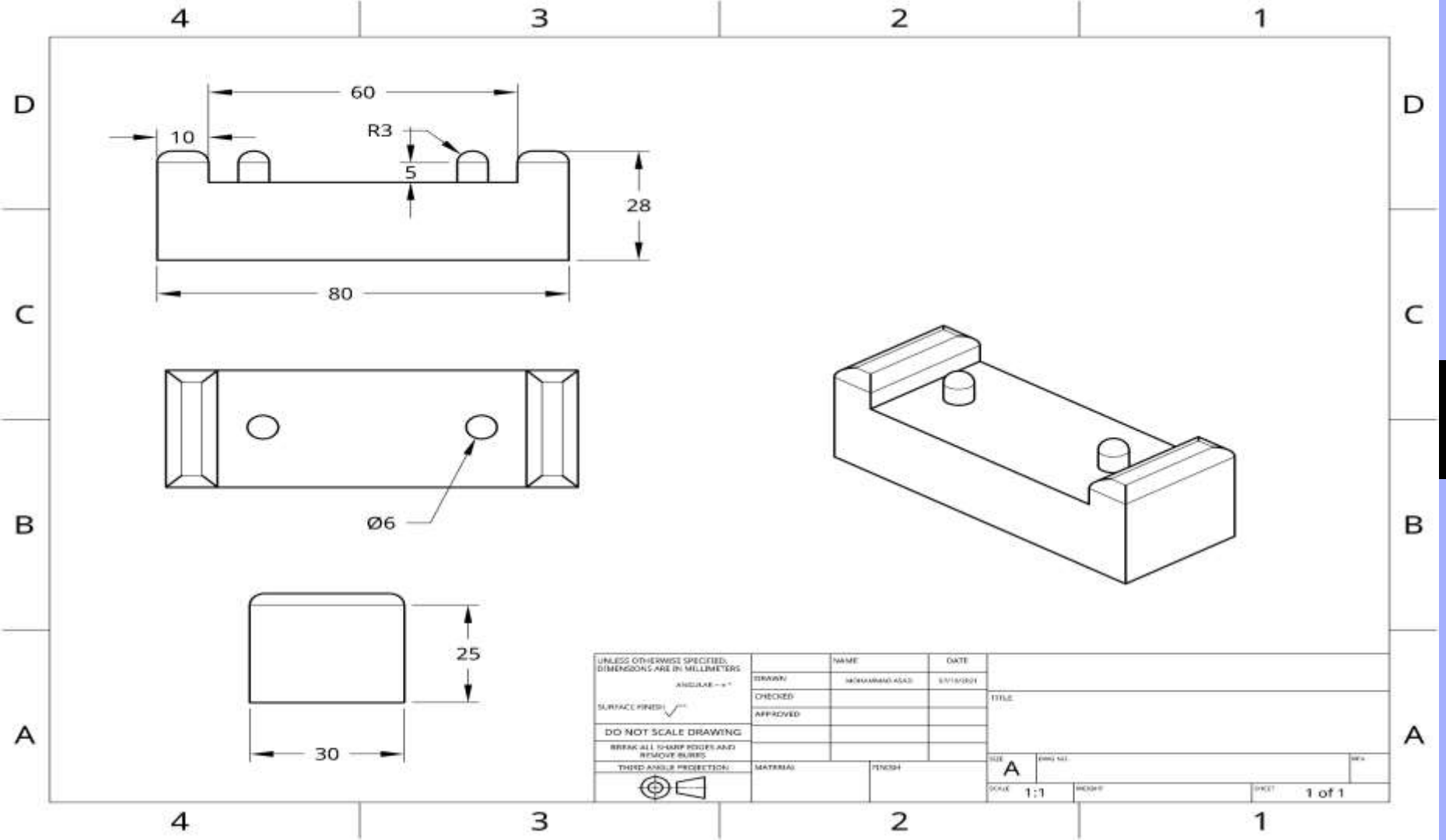
4
3
2
1
D
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60
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80
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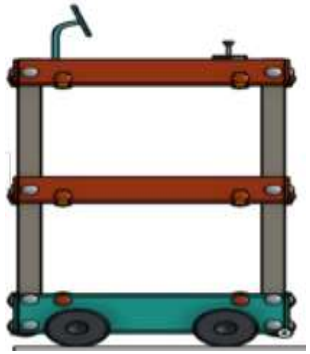
UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN MILLIMETERS
ANGULAR: ± °
SURFACE FINISH:
DO NOT SCALE DRAWING
BREAK ALL SHARP EDGES AND REMOVE BURRS
THIRD ANGLE PROJECTION
NAME
DATE
DRAWN
MOHAMMAD ASAD
CHECKED
APPROVED
MATERIAL
FINISH
TITLE:
SIZE
A
SCALE 1:1
SHEET 1 of 1



FINAL MODEL

Link: -

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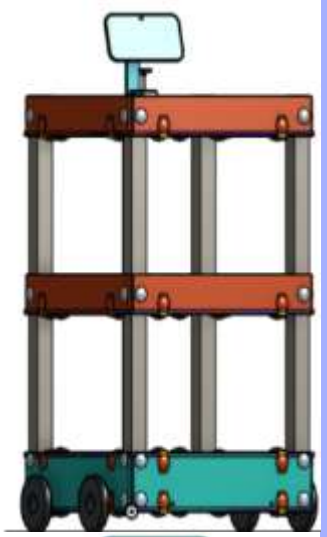
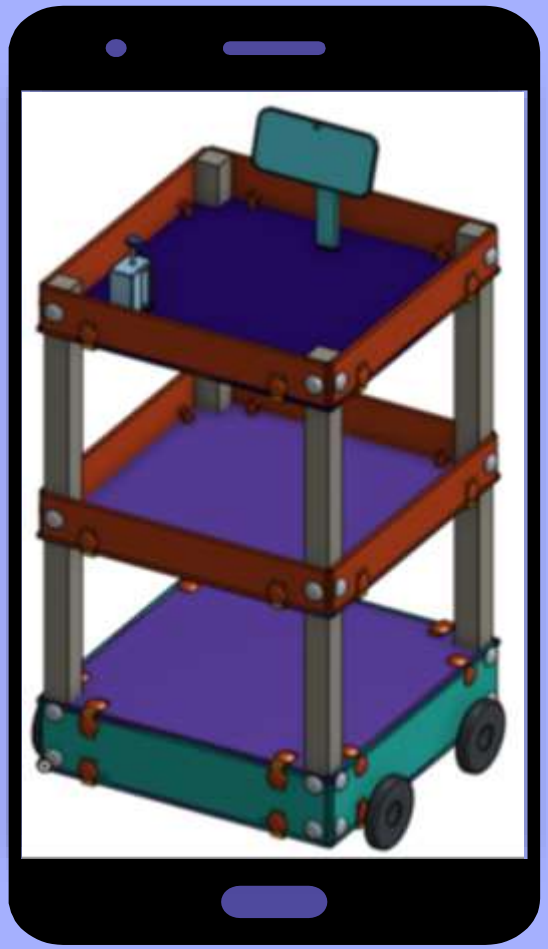
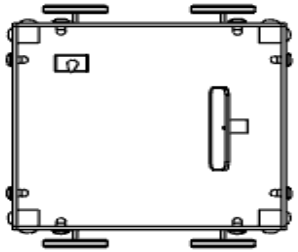
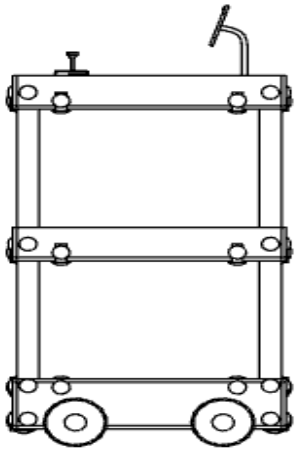
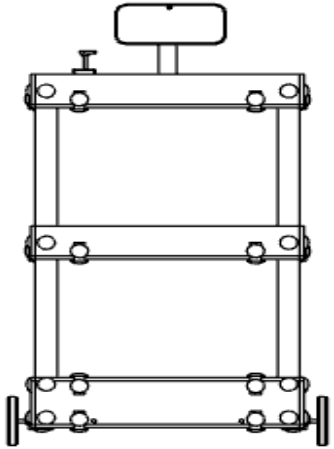
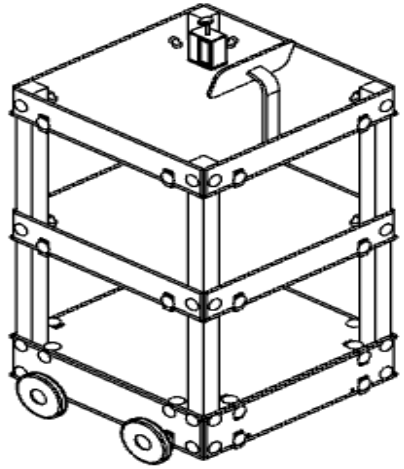






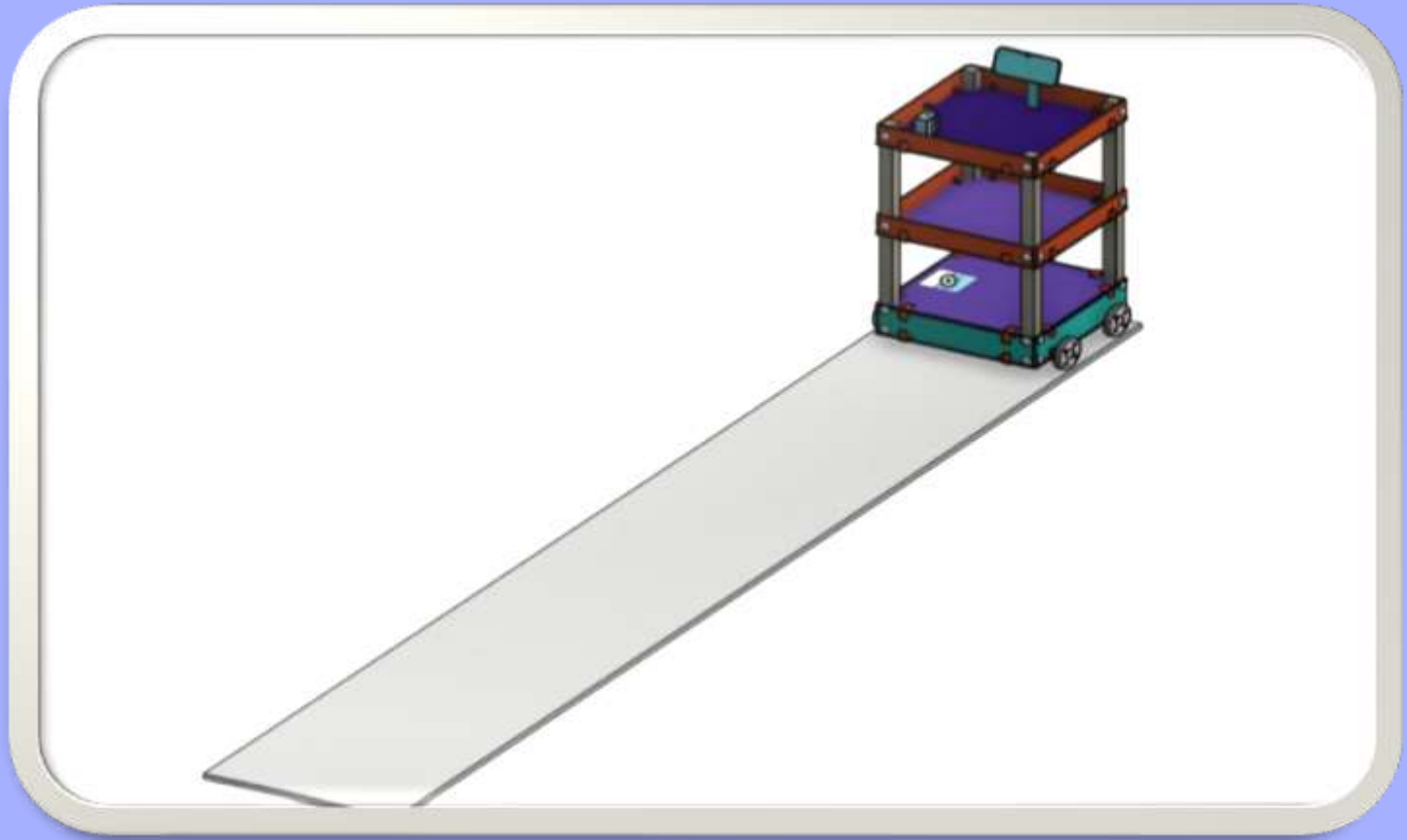




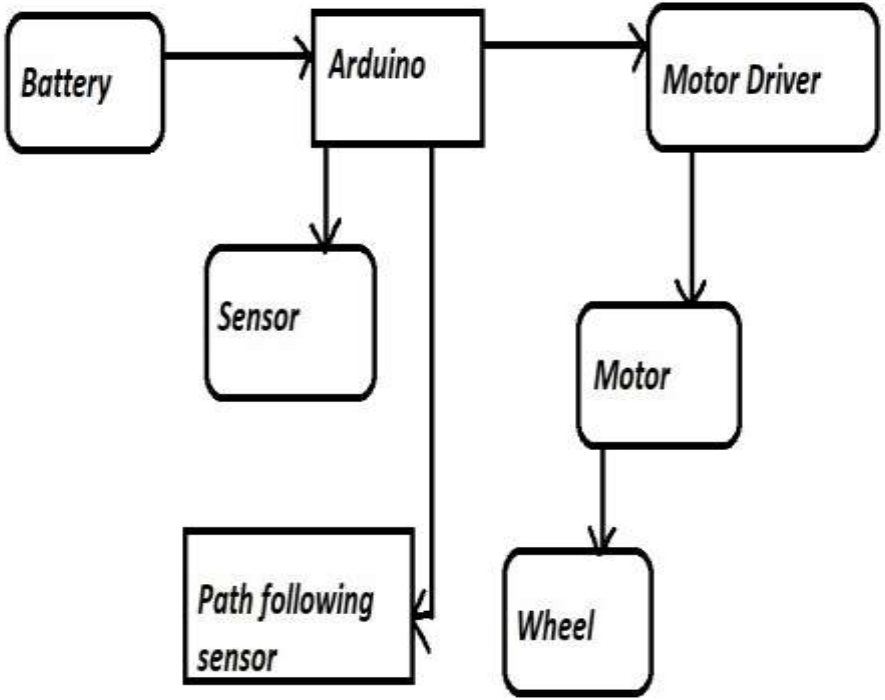


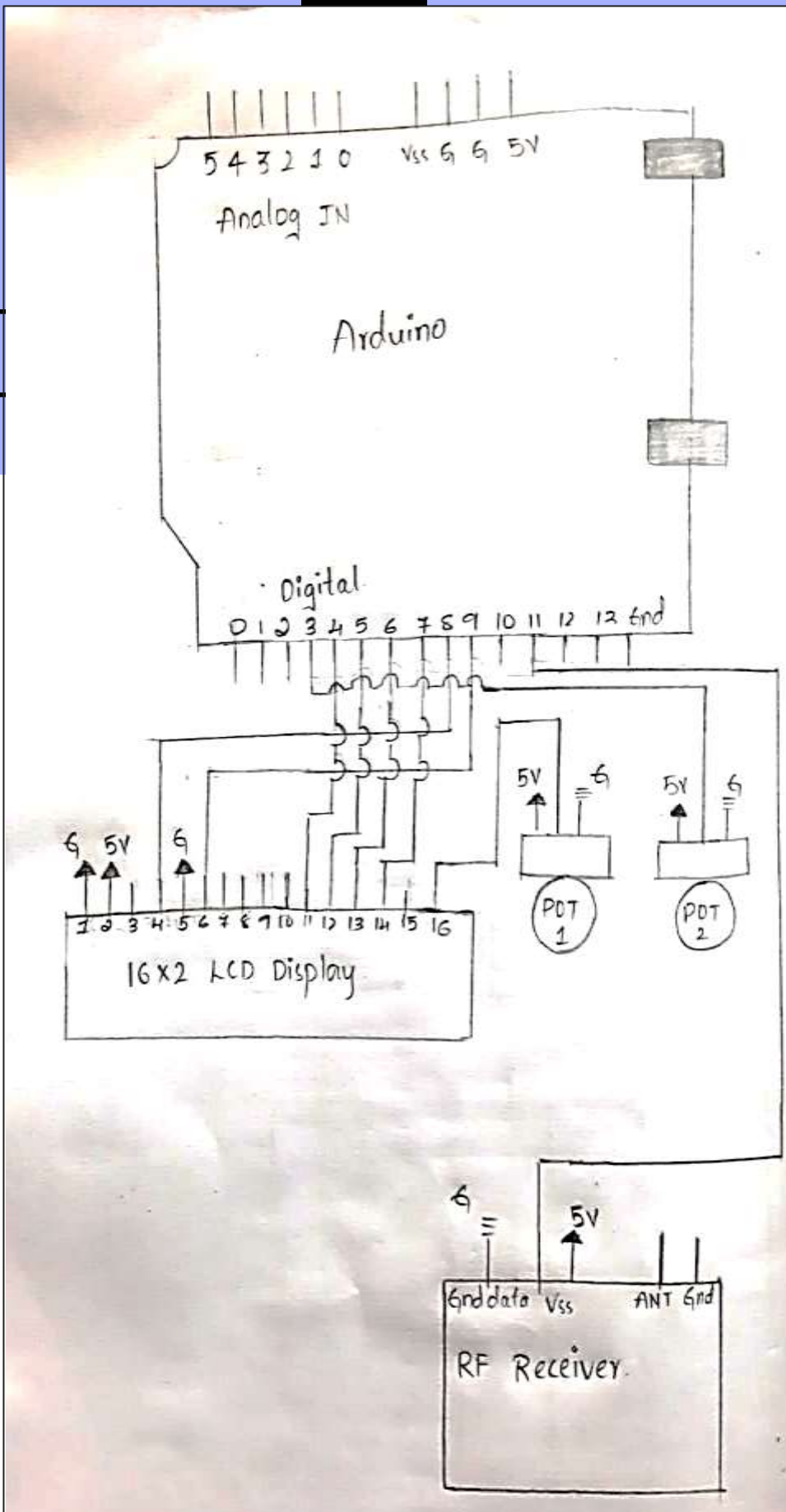
UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN MILLIMETERS ANGULAR: ± ° SURFACE FINISH: ✓		NAME	DATE
	DRAWN	MOHAMMAD ASAD	06/7/2021
	CHECKED		
	APPROVED	---	---
DO NOT SCALE DRAWING			
BREAK ALL SHARP EDGES AND REMOVE BURRS			
THIRD ANGLE PROJECTION	MATERIAL	FINISH	

TITLE: --- --- ---		
SIZE: A	DWG NO: ---	REV: -
SCALE: 1:3	WEIGHT:	SHEET: 1 of 1



CIRCUIT DIAGRAM


Battery
Arduino
Motor Driver
Sensor
Motor
Path following sensor
Wheel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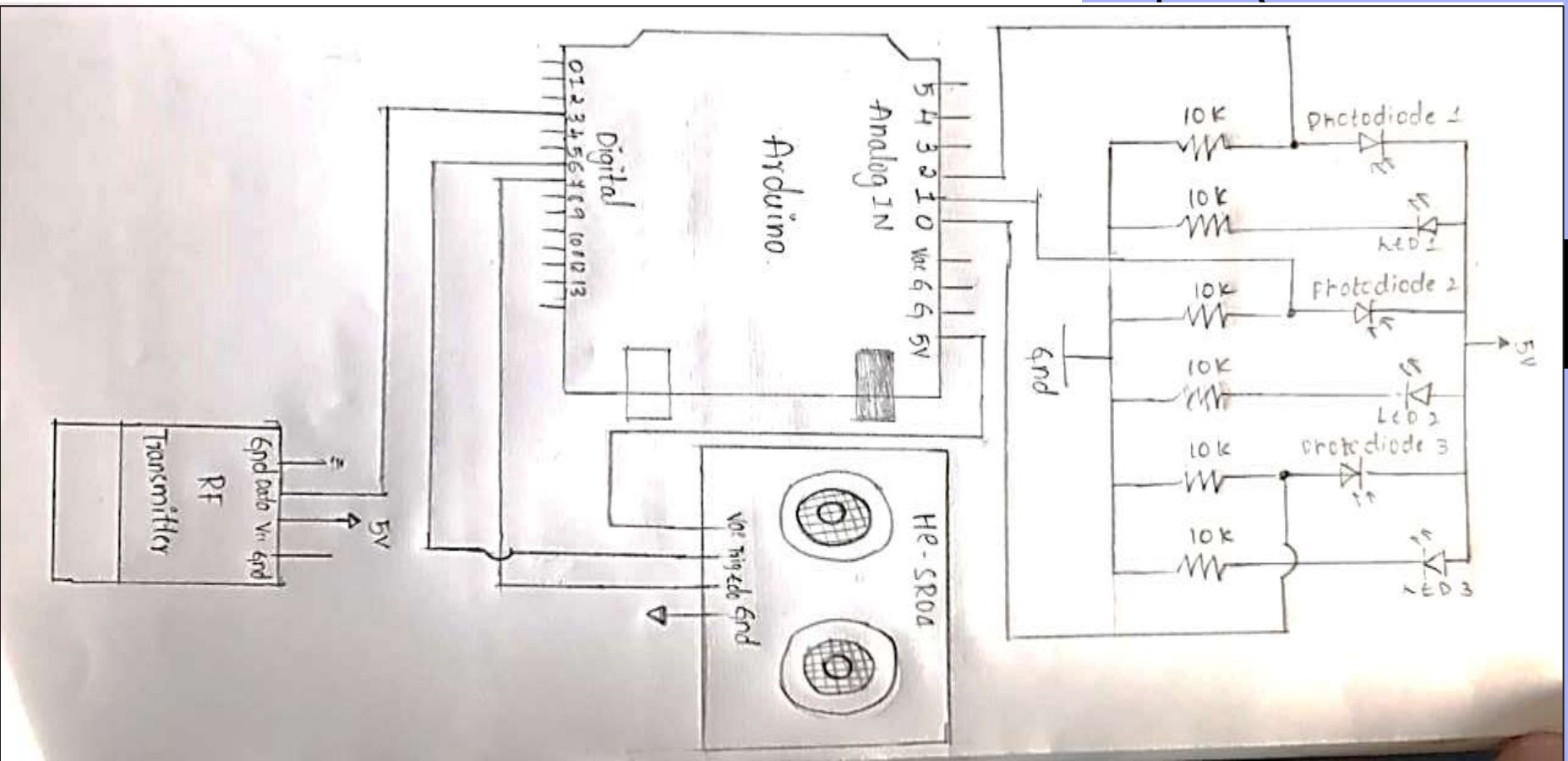
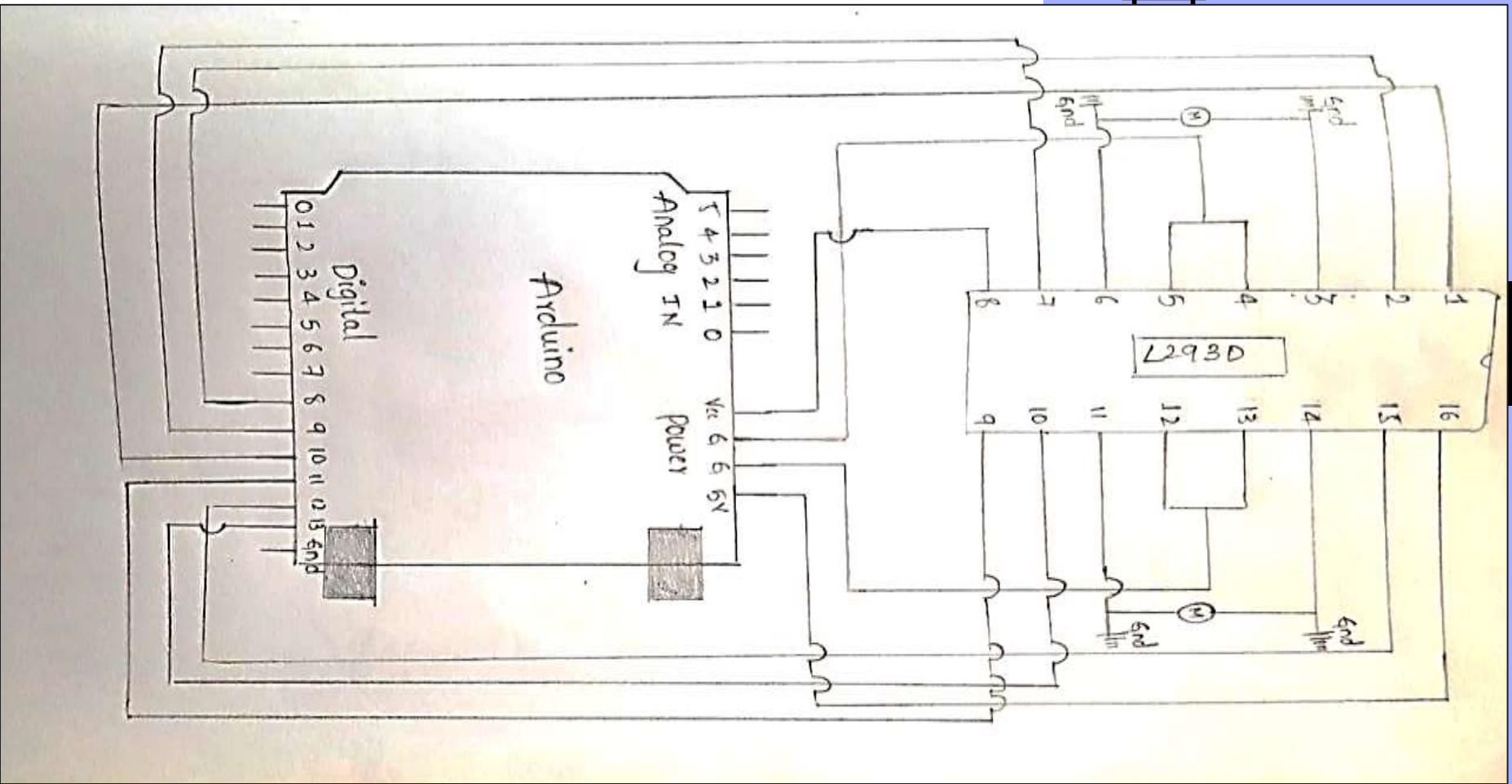
Vss G G 5V
Analog IN
Arduino
Digital
0 1 2 3 4 5 6 7 8 9 10 11 12 12 End
G 5V G
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
16X2 LCD Display
5V G
POT 1
5V G
POT 2
G
5V
Gnd data Vss
ANT Gnd
RF Receiver

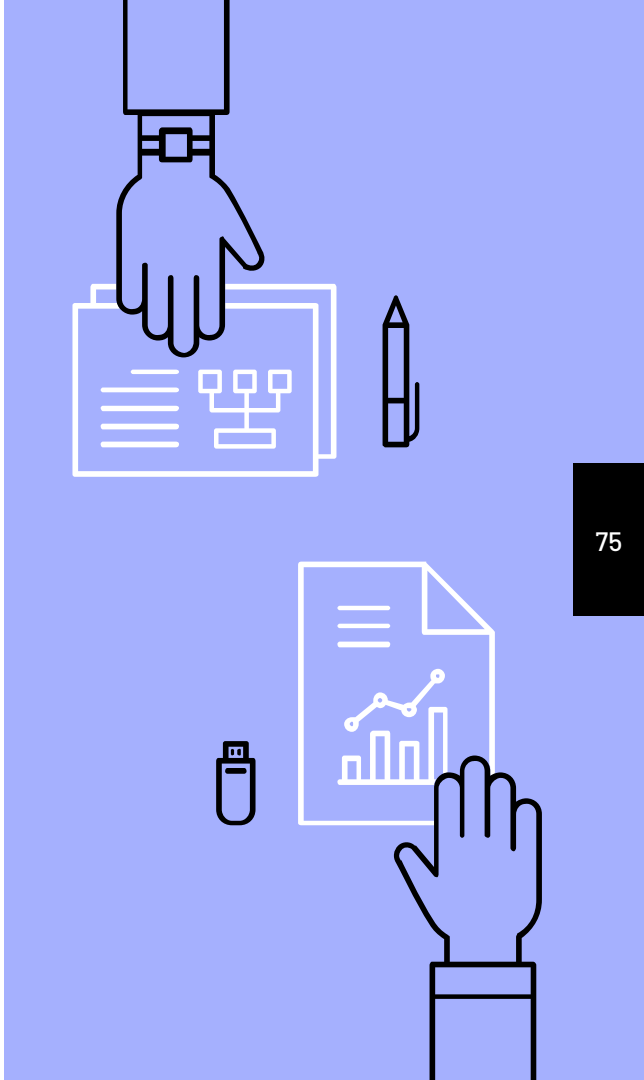
Transmitter, Ultrasonic sensor and IR sensor with Arduino



Motor Driver Circuit with Arduino

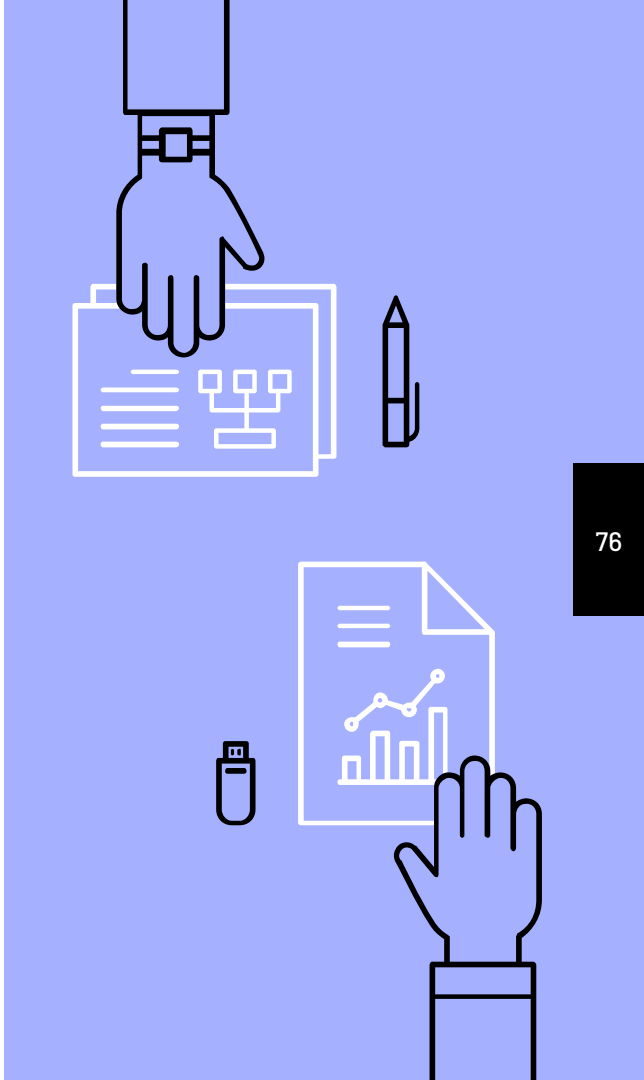


Group Members	Contribution
Minal Pandey	• Research and Analysis • Free Hand Sketches • Tools used for manufacturing of M-Bot • Draft/written work of report. • 3D modeling in Onshape • Drafting of Individual Components
Mridul Goyal	• Research and Analysis • Material selection for individual components. • Final Formatting of the report. • 3D modeling in Onshape • Drafting of Individual Components • Conclusion & Learnings
Mohammad Asad	• Research and Analysis • The manufacturing process of all the components • Analysis of electronic devices • 3D modeling in Onshape • Drafting of Individual Components • Circuit Diagram
Mitapally Sai Charan	• Sketch of M-Bot • Circuit Diagrams • Description of components
Mridul Gupta	• Description of components • List of figures



Future Scope

- Healthcare robots don't only exist in sci-fi movies, they are coming to healthcare. In jobs with repetitive and monotonous functions they could even obtain the capacity to completely replace humans.
- Our Medicare robot which will be helpful for healthcare workers in this coronavirus pandemic but the use is not limited till pandemic only, the diverse feature of our M-Bot make this robot very useful even after pandemic specially in hospitals.
- Robots are also used in hotels and restaurants to serve food to the customers. So we can also use this robot as a waiter in hotels for serving food.



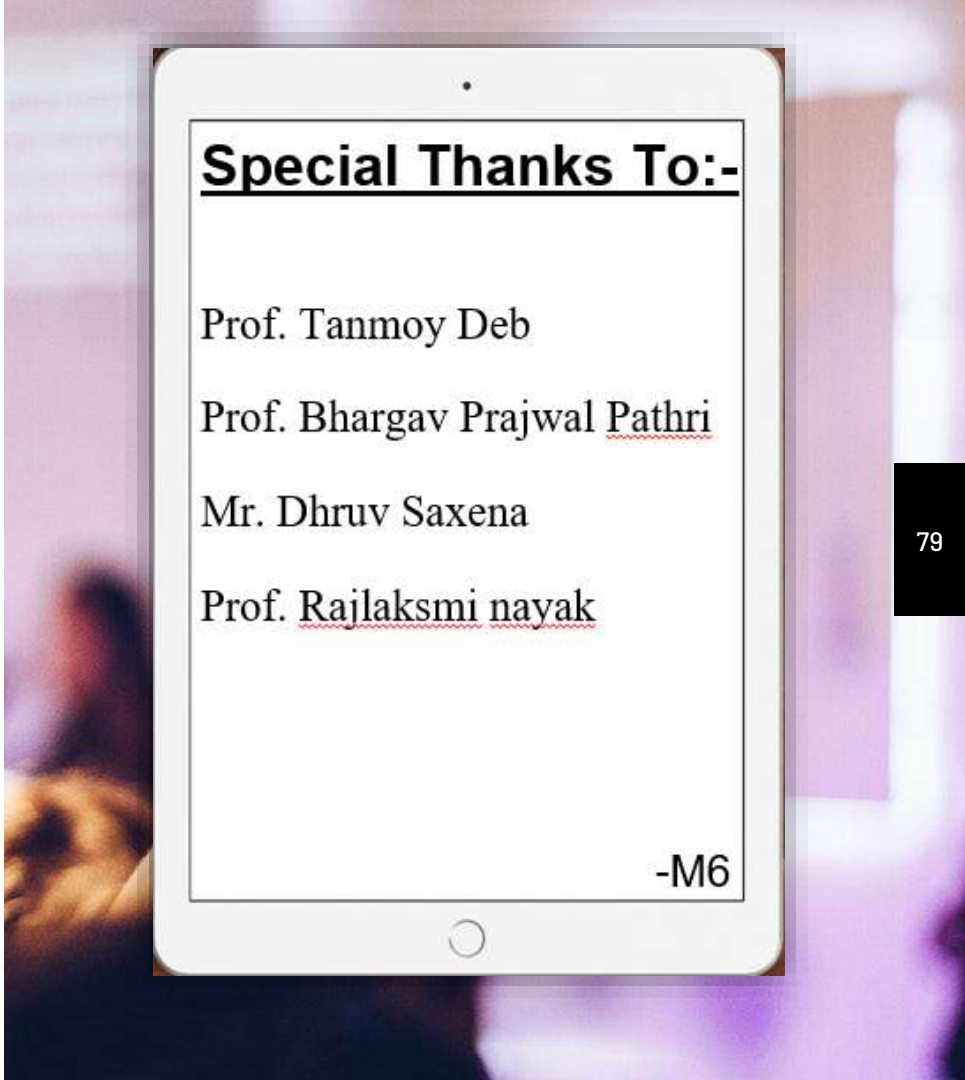
LEARNINGS

- We also learned about the Design Thinking.
- We learned how to work in a team.
- We learned the software On-shape.
- We learned about different electronic materials like motor, batteries, sensors, etc.
- We learned the software AutoCAD.
- We learned deeply about Covid-19.
- We also learned about ideation.
- We learned about different types of sensors and their works.
- We learned that to how to make orthographic projections of anything.

CONCLUSION

We are making and automated robot which is very much useful for a Doctors, Nurses, COVID-19 affected patient and all health care workers. It make their work easy and also decrease risk of life. We hope that by this robot the death of health care workers and Doctors decreases. We design the product in such way that any hospital in India or world can use this Robot they can make it by themselves just by the blue print of the robot. We also take care of the cost of our project (Near Rs. 5000) so any hospital or NGOs can also use this in their Health Camps. Body design of our product is so simple that it can be transport easily.

THANKYOU !!


Special Thanks To:-
Prof. Tanmoy Deb
Prof. Bhargav Prajwal Pathri
Mr. Dhruv Saxena
Prof. Rajlaksmi nayak
-M6

ANY QUESTIONS?