

Final Major Project

“Prefab Alternative Shelters For Refugees”



3D Design

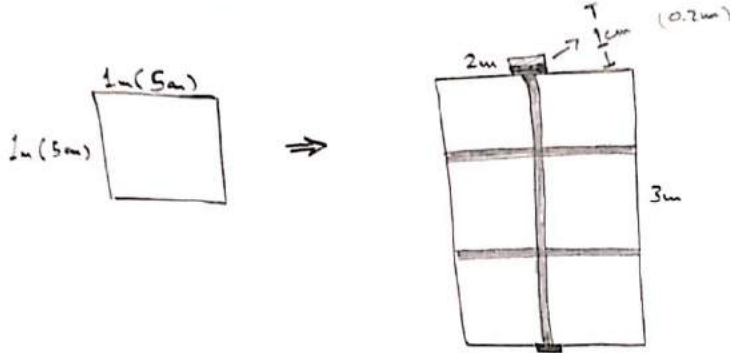
By: Muhannad Darwish

What is the final outcome for the FMP?

- ✓ The outcome is a model of a square shelter and it is a small scale of a real shelter I designed for the Syrian refugees who live in miserable tents.
- ✓ The design is made to suit a big family (5-8 people) and I chose the size to be 8m for length, 8m for width, 3m for the height and 0.5m lifted off the ground.
- ✓ I used the scale (1:20) to get the model, and that gave me 40cm for the length, 40cm for the width, 15cm for the height and 2.5cm lifted off the ground.
- ✓ I suggested using recycled plastic and recycled wood plastic to make the shelter from.
- ✓ I designed the design in a particular way that can be disassembled and re-installed to make it easy to transport, to build, and be modular, light, recyclable, cheap and durable.
- ✓ The model is made from MDF boards in different accurate sizes of pieces designed on illustrator and been cut by a laser cutter.
- ✓ The model is an outcome of big research about 1-war & refugees, 2-camps condition, 3-less is more, 4-biomimetic, 5-materials.

➤ Sketchbook

"The mechanic of assembly"

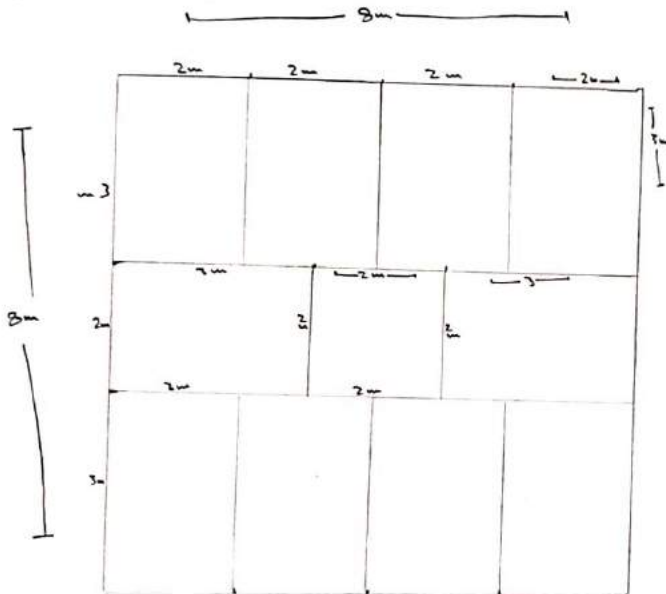


(1:20)

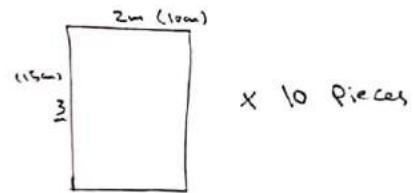
- 2m → 10cm
- 2m → 10cm
- 3m → 15cm
- 0.5m → 2.5cm
- 0.2m → 1cm
- 4m → 20cm
- 5m → 25cm

x16 Pieces for the walls.
(4 for each wall)

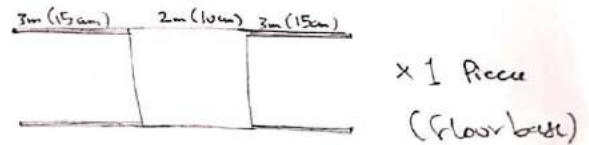
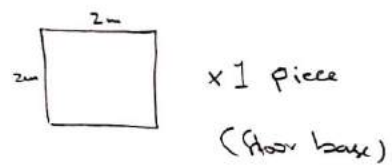
- The floor needs



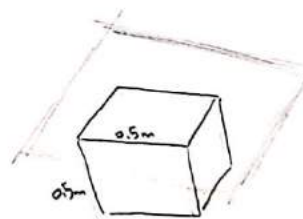
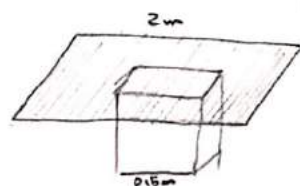
→ This will fill into →



⇒



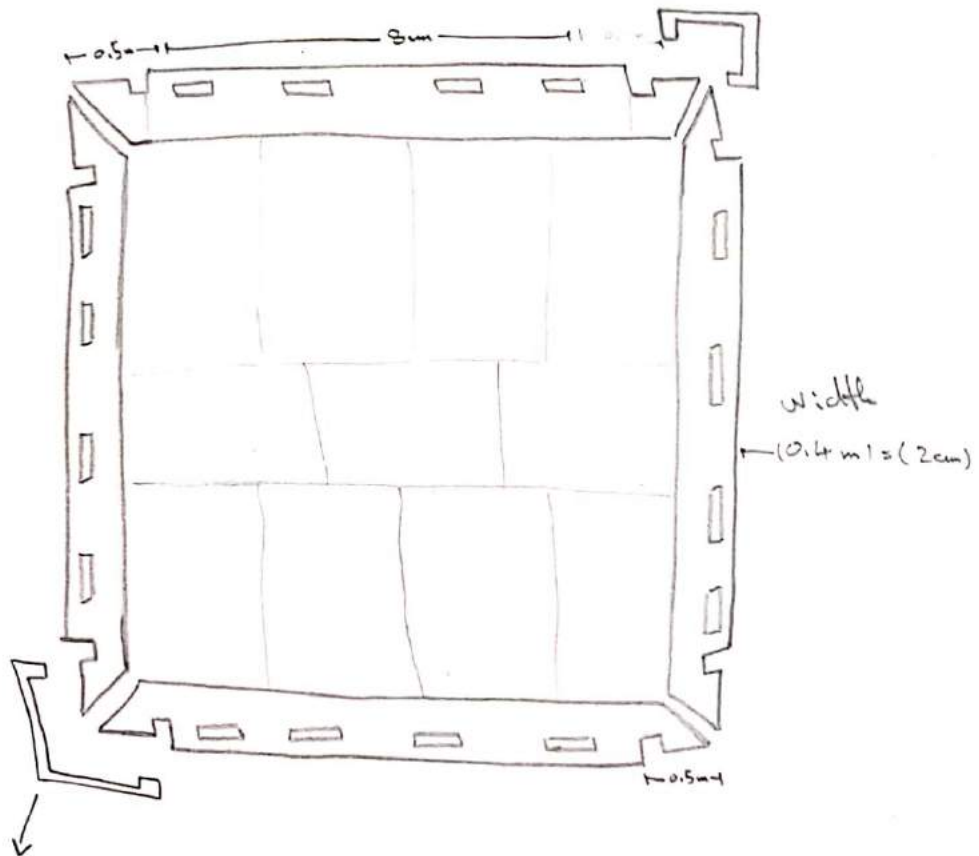
- There will be a cube piece under the floor base to support the other 4 Pillars to be lifted off the ground



- Board thicknesses
20cm $\xrightarrow{1:20}$ 1cm

- The small piece under each wall piece will fit into each gap

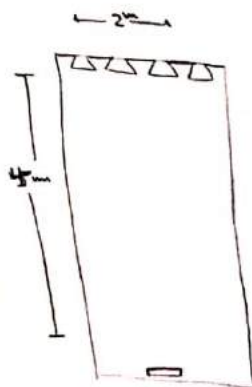
→ here →



50cm height off the ground
20cm for the board thicknesses
3m for the walls

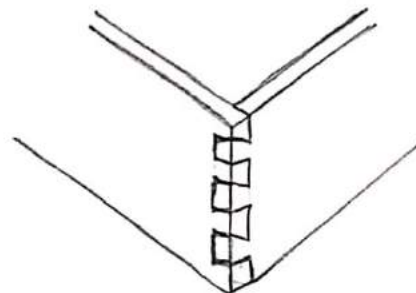
Pillar

* The ceiling *



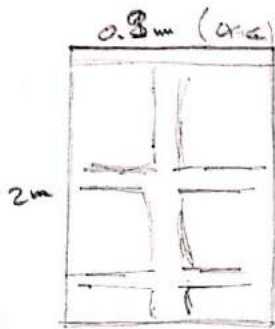
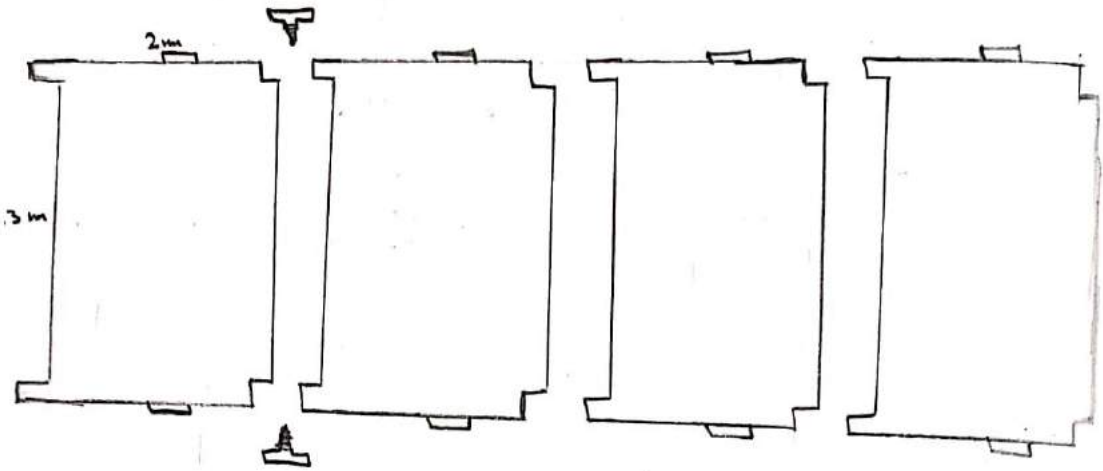
(22cm)

* 8 Pieces
for the ceiling
(4 for each side)

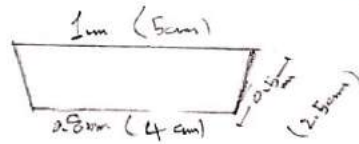


* dovetail joint

- another possibility for the wall's design



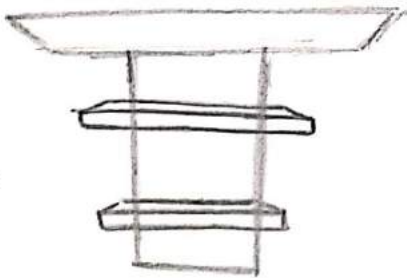
Door



door step

This piece will be instead of the door for the stairs, and as a door step

* stairs



* front view

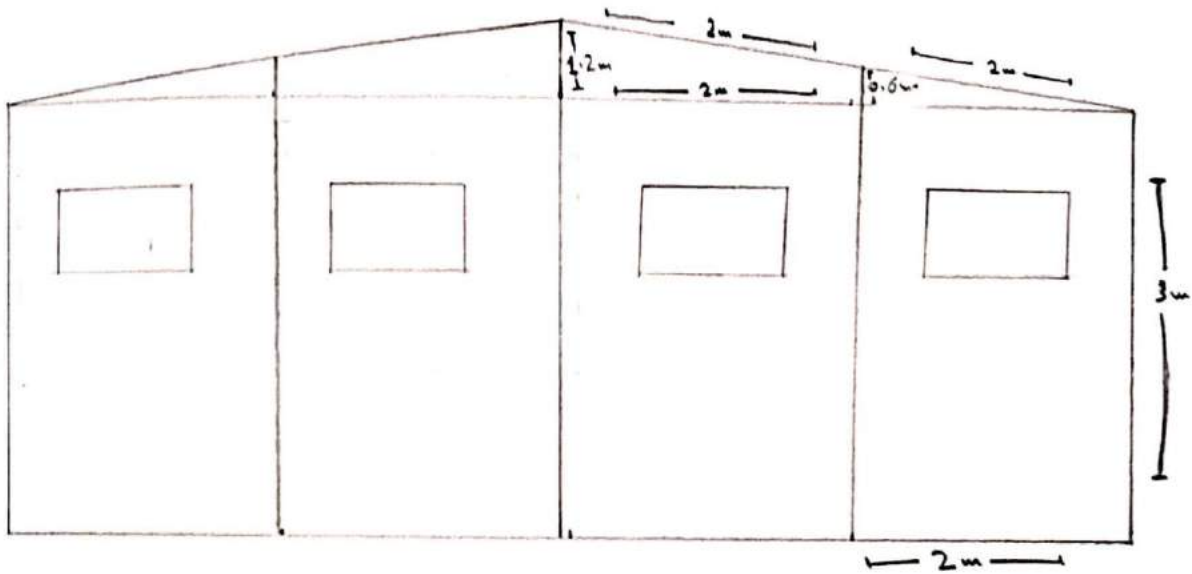


steps holder

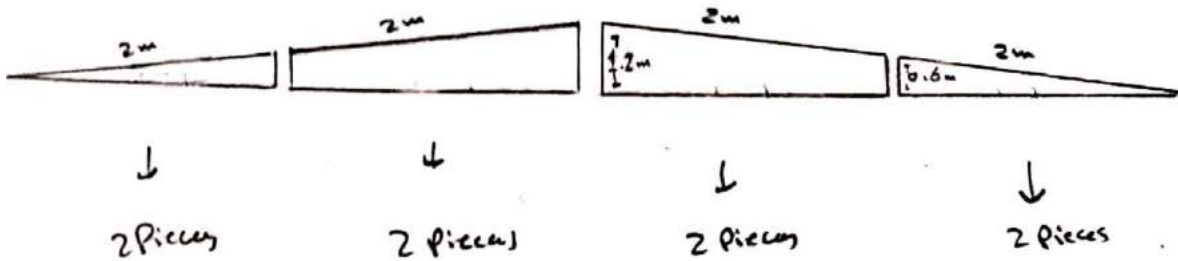


* side view

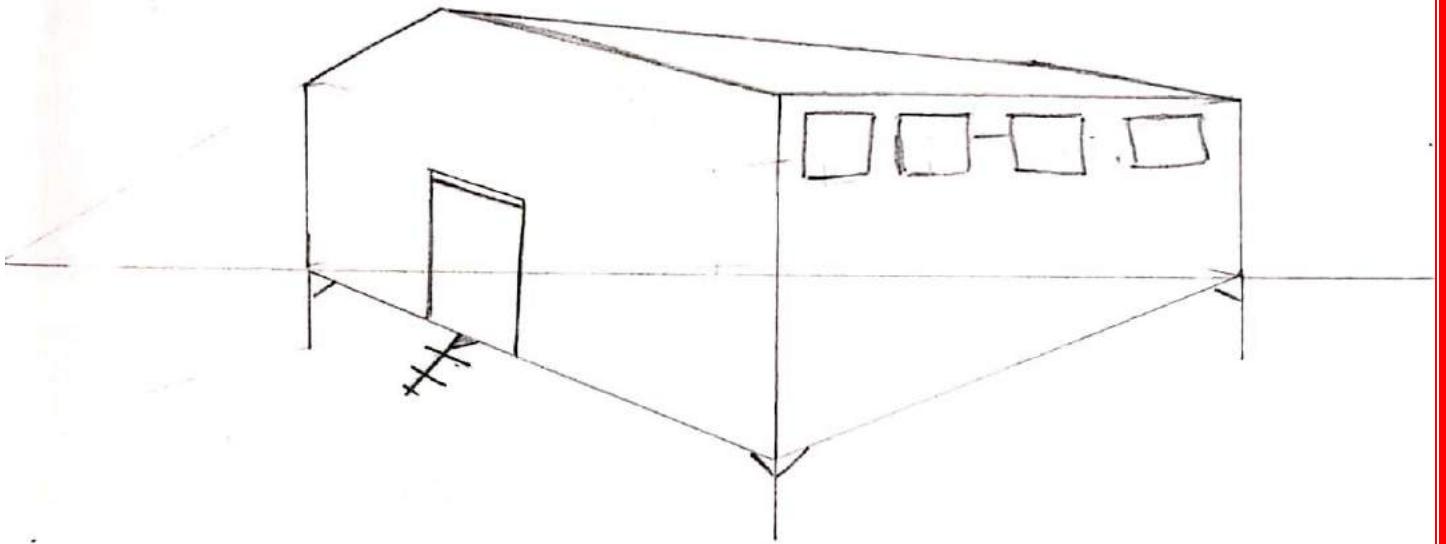
Back View



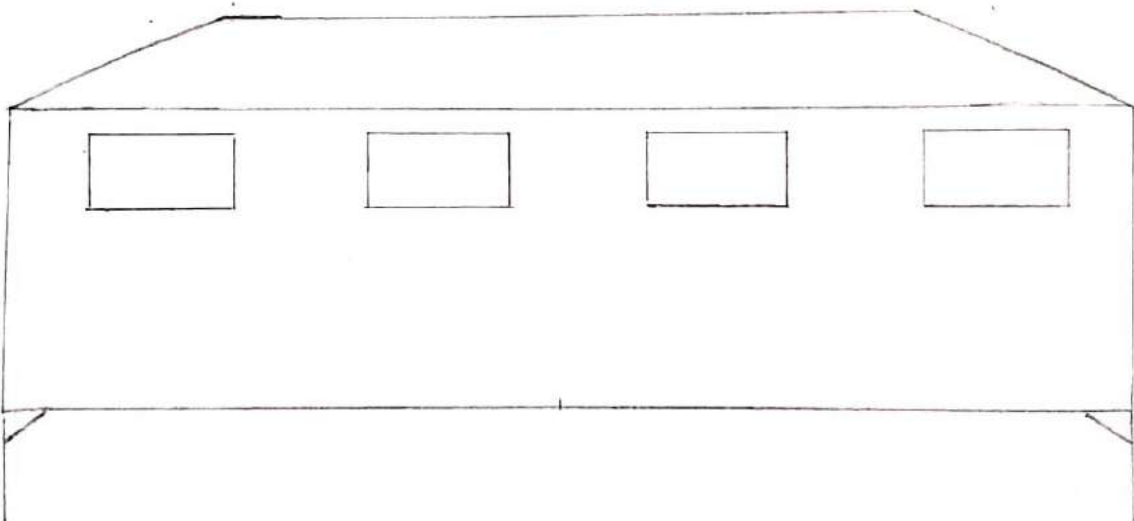
- Front house triangle is 4 Pieces $\frac{7}{5}$ 8 Pieces
 - Back house triangle is 4 Pieces $\frac{7}{5}$ 8 Pieces



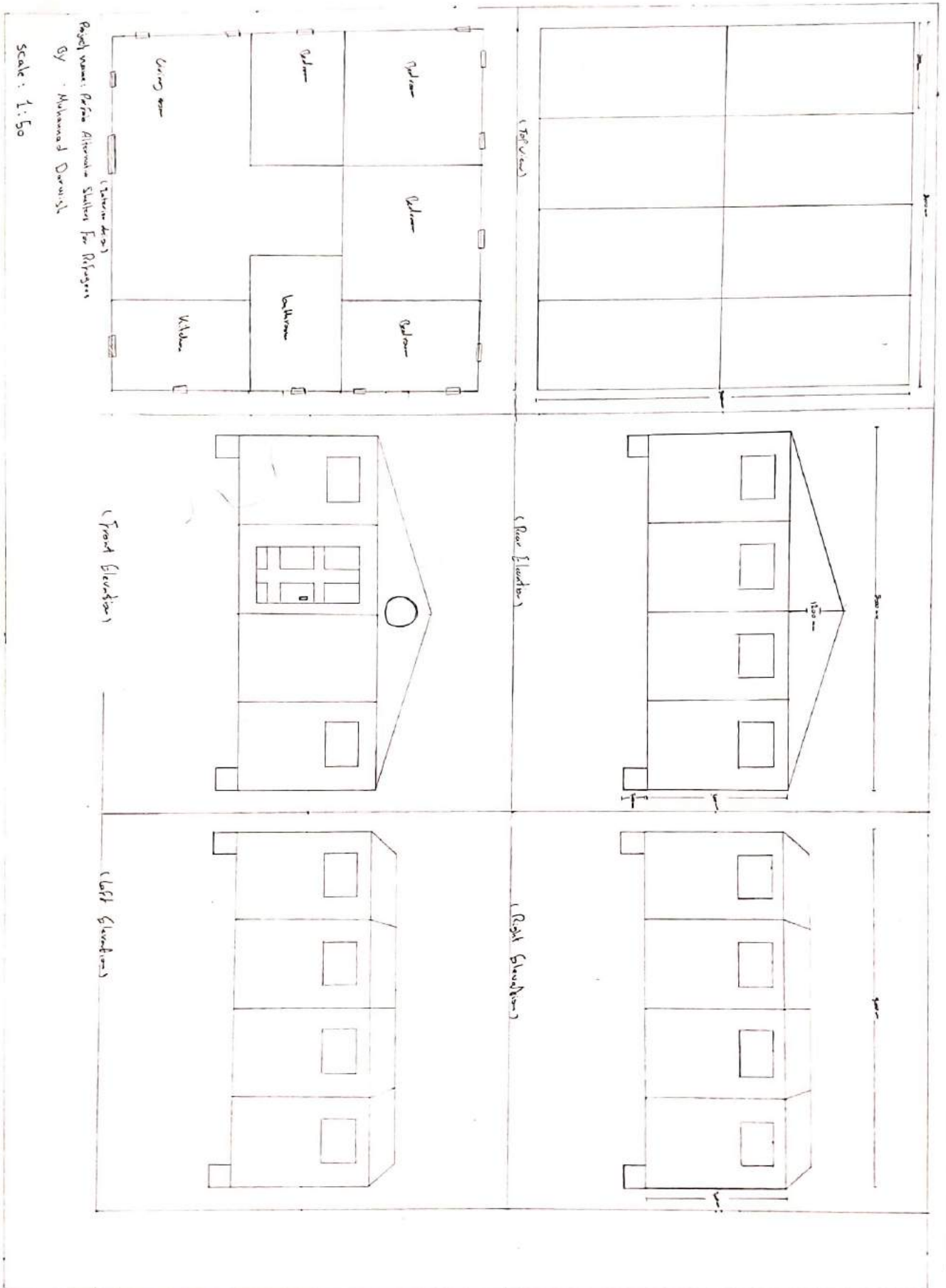
3D perspective (exterior design of the square)



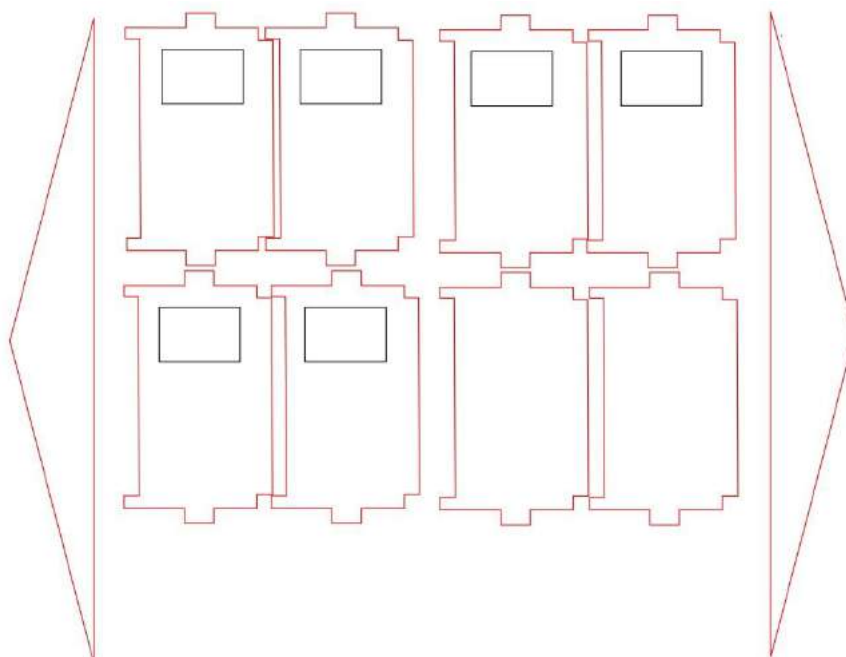
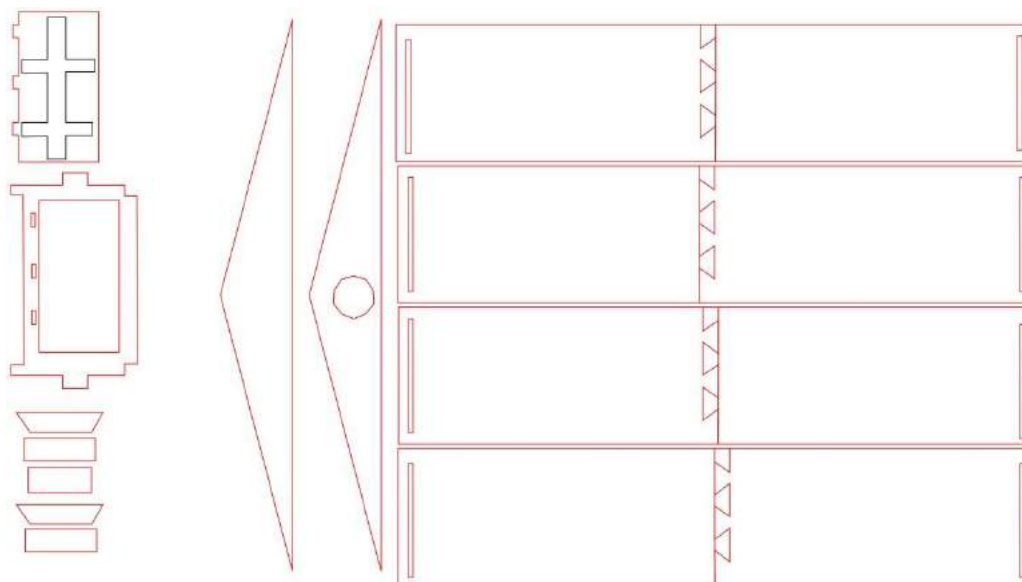
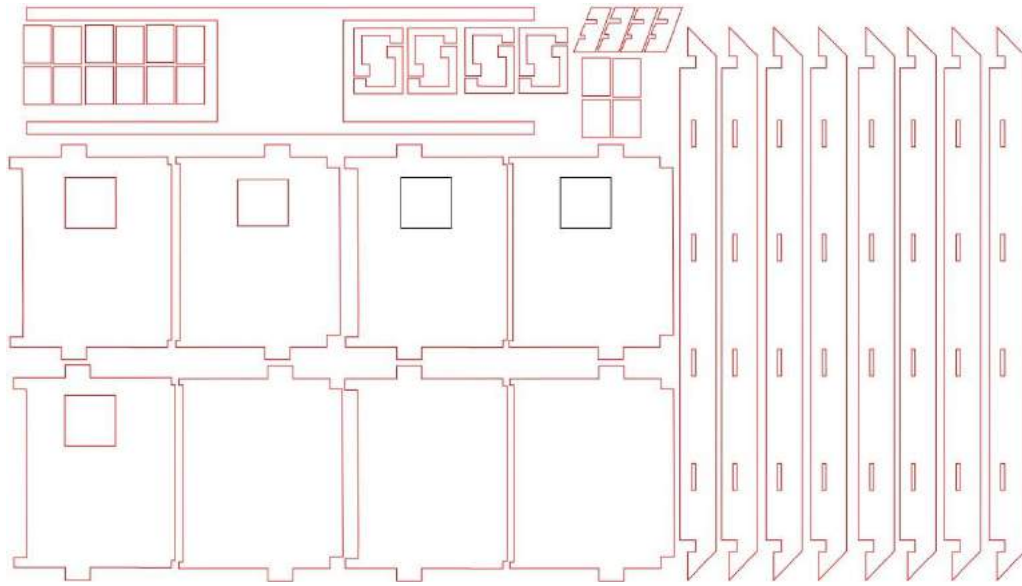
2D perspective (Side view)



➤ Plan & Elevation

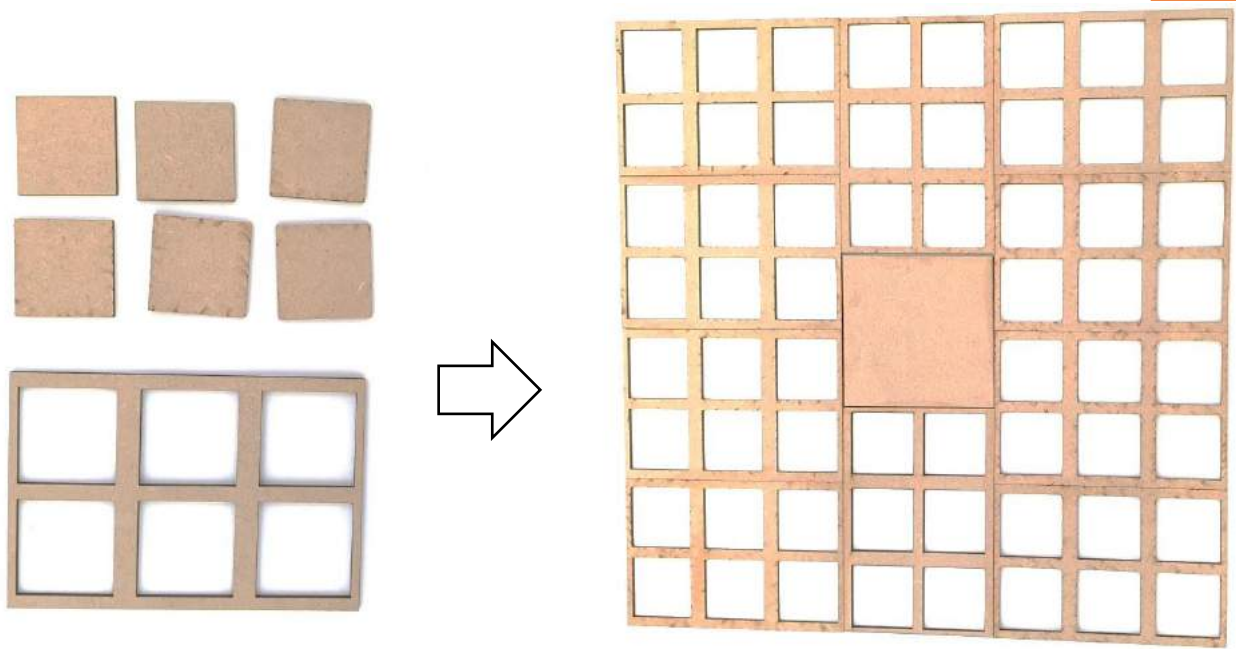


➤ Digital designs for shelter's parts to be cut by laser cutter

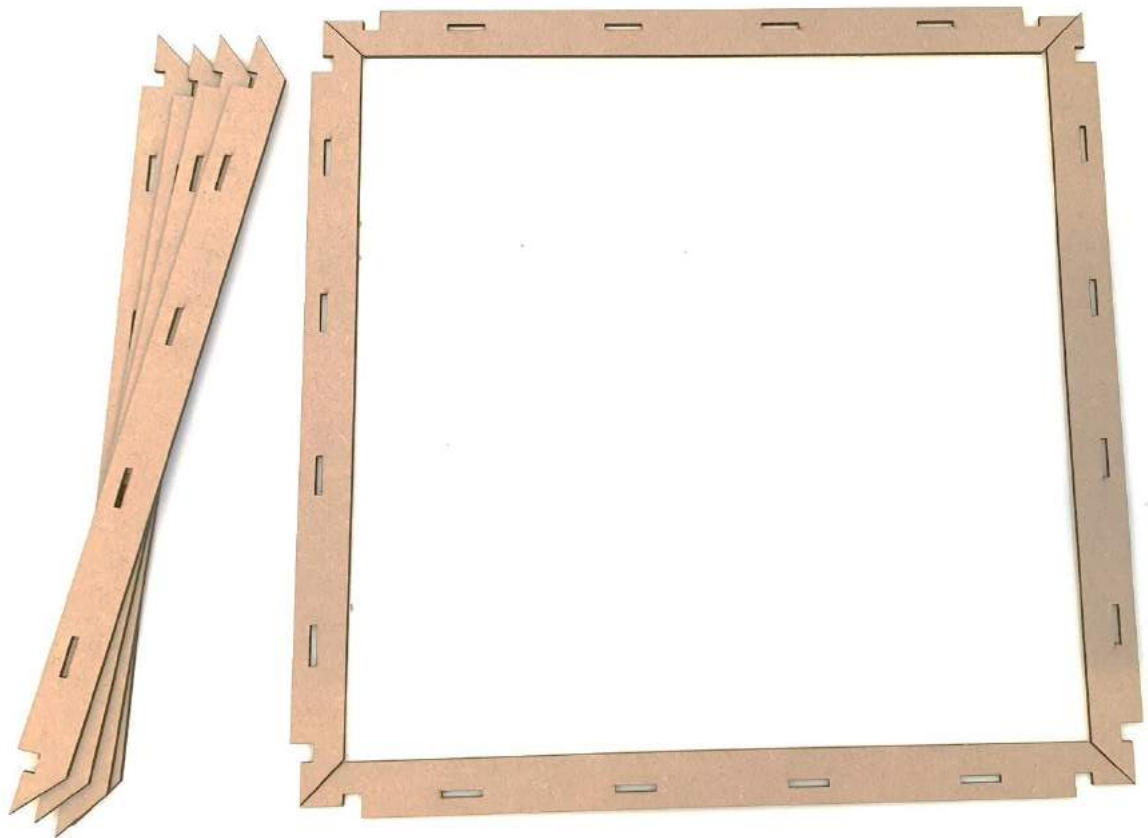


➤ Pieces and the way of assemble them

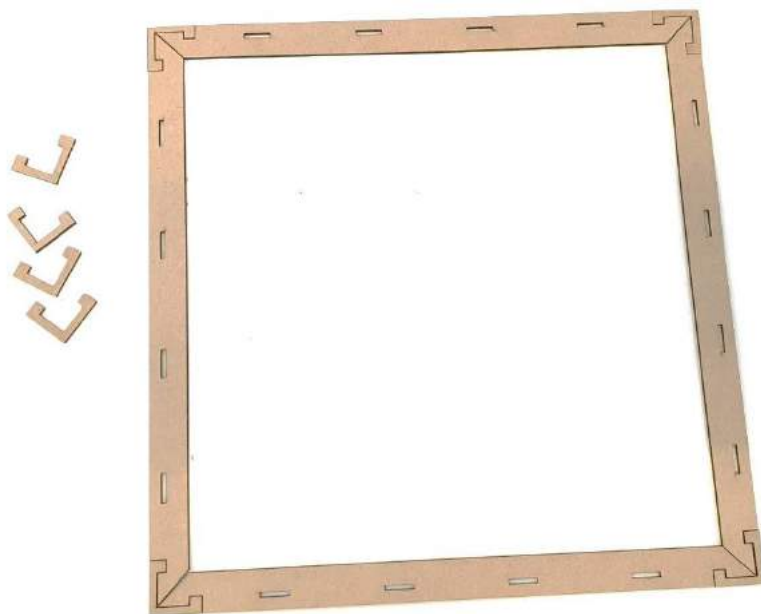
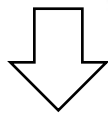
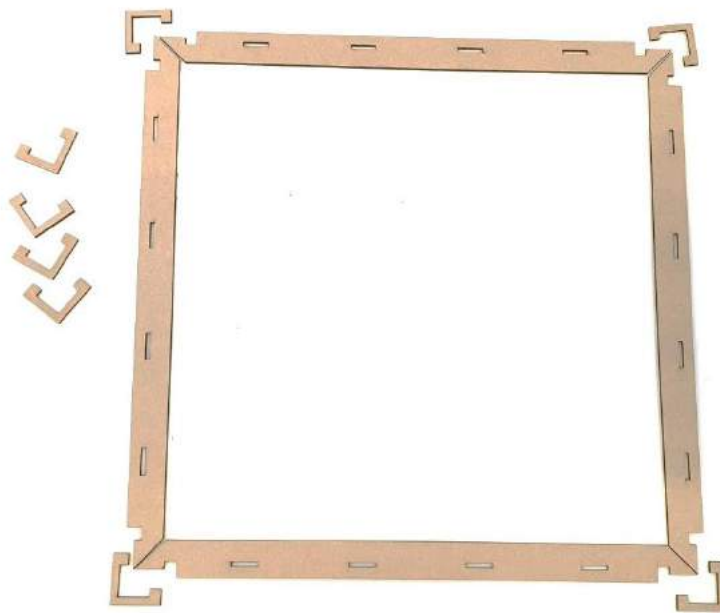
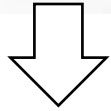
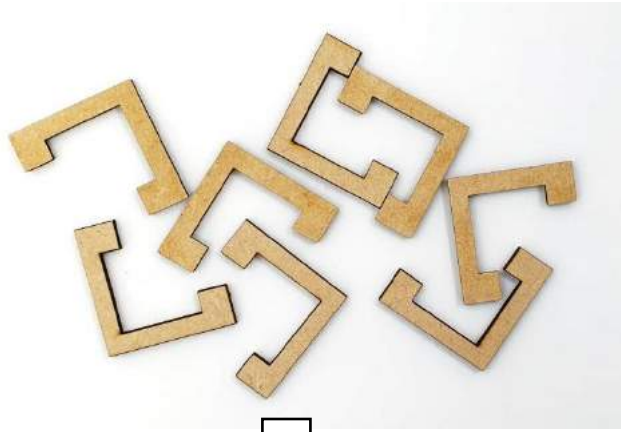
#the floor



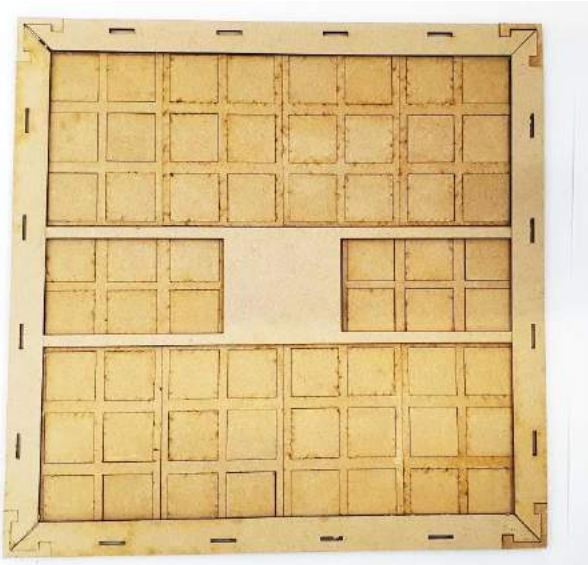
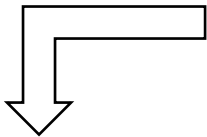
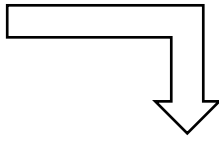
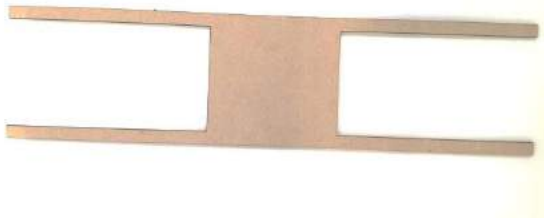
#the floor, wall and roof holders



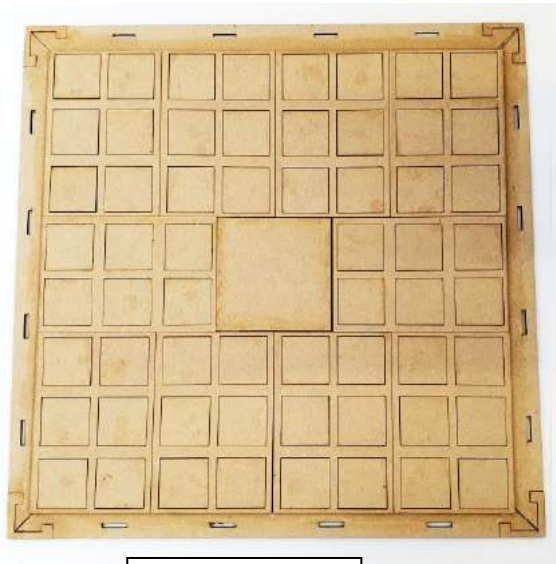
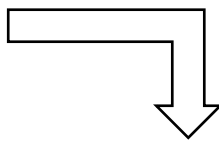
#the floor, wall and ceiling holders



#the floor

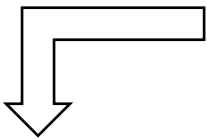
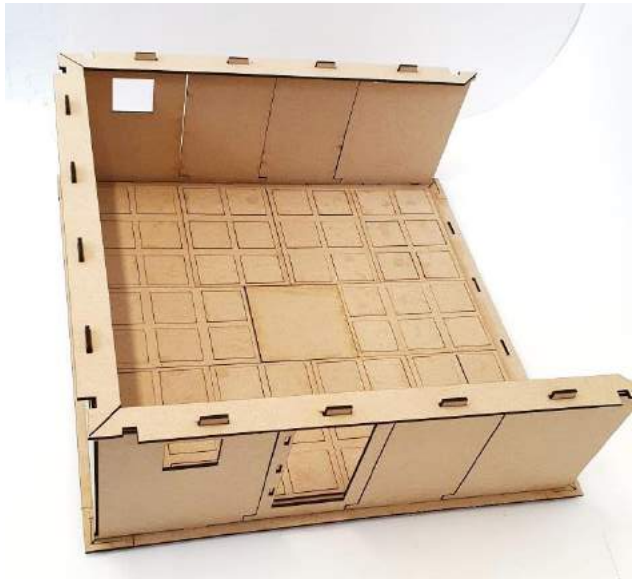
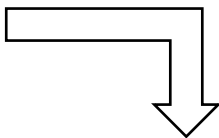
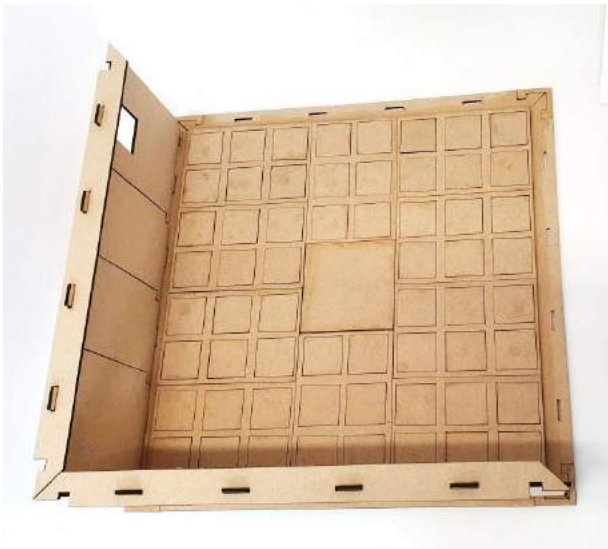
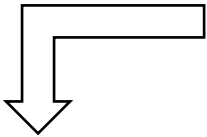
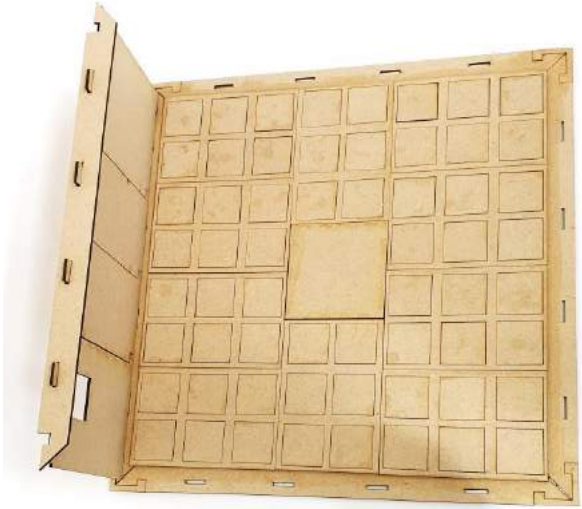
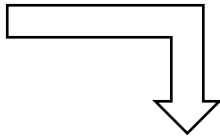
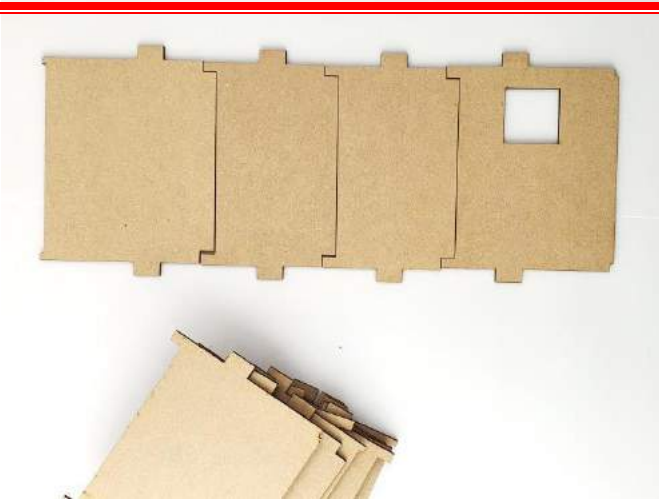


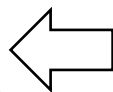
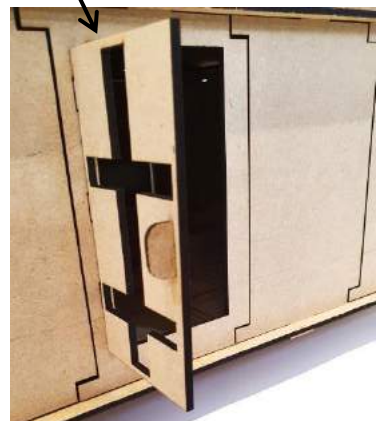
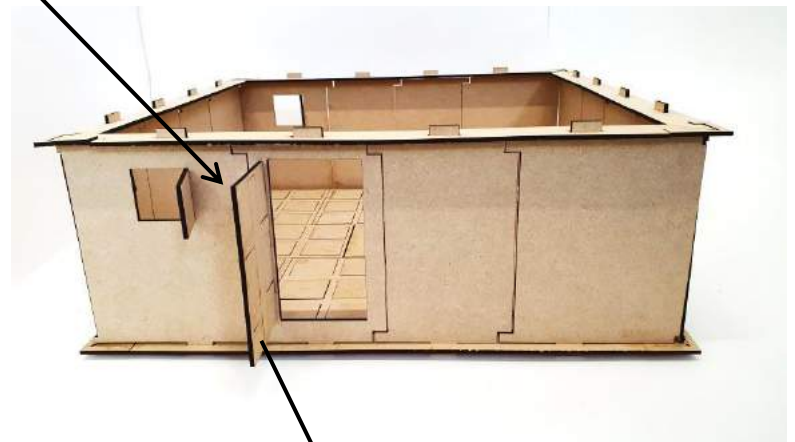
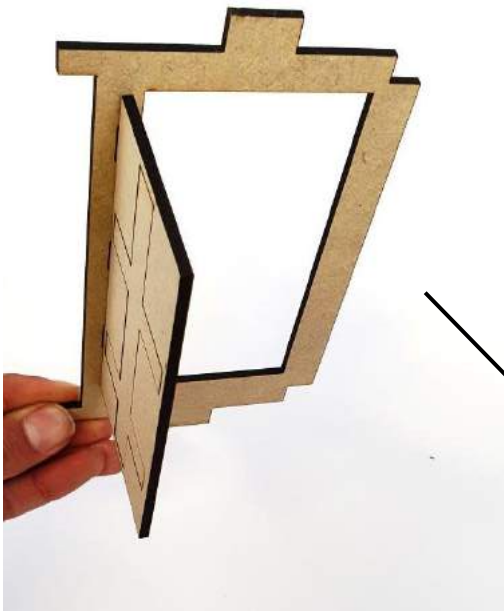
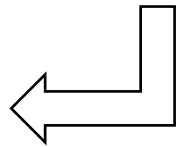
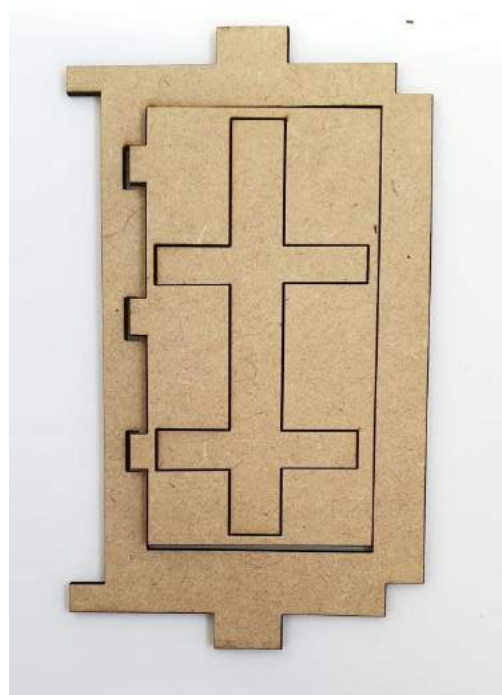
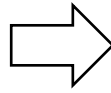
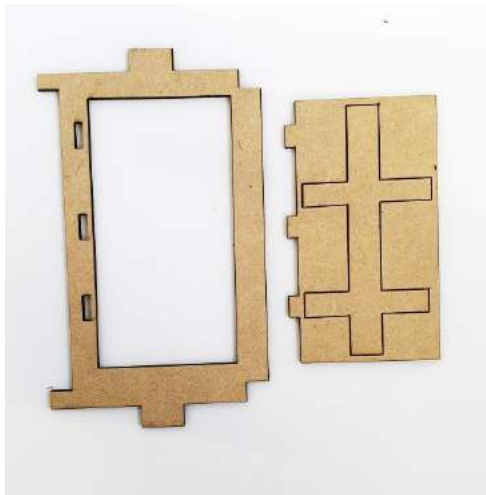
Lower view



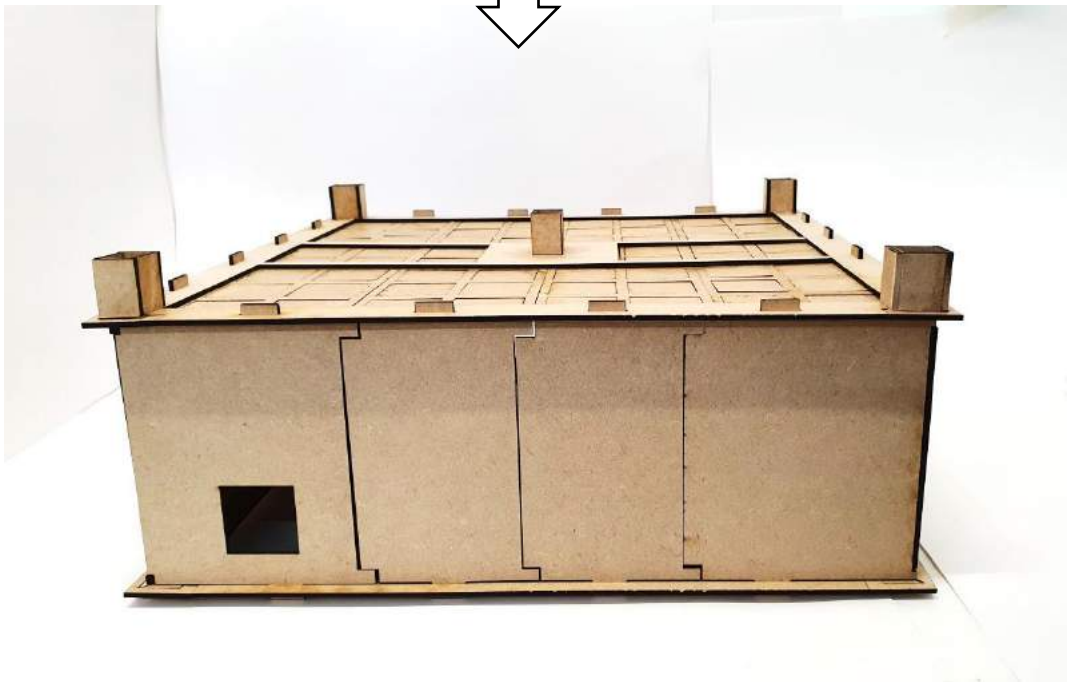
Upper view

#the wall

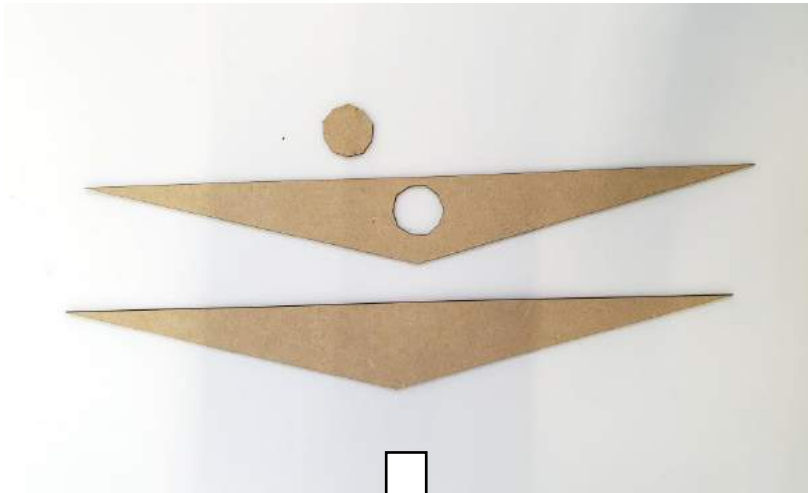




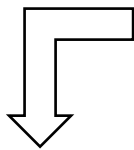
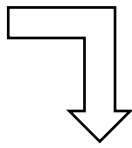
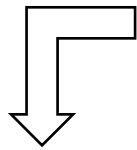
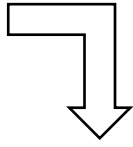
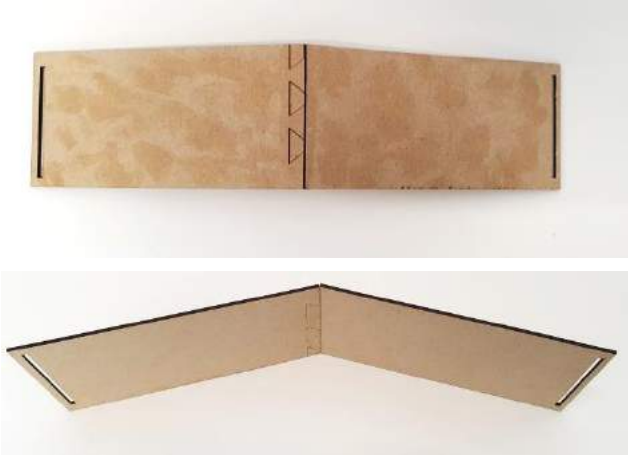
#the pillars

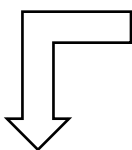
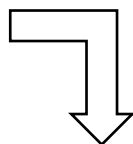
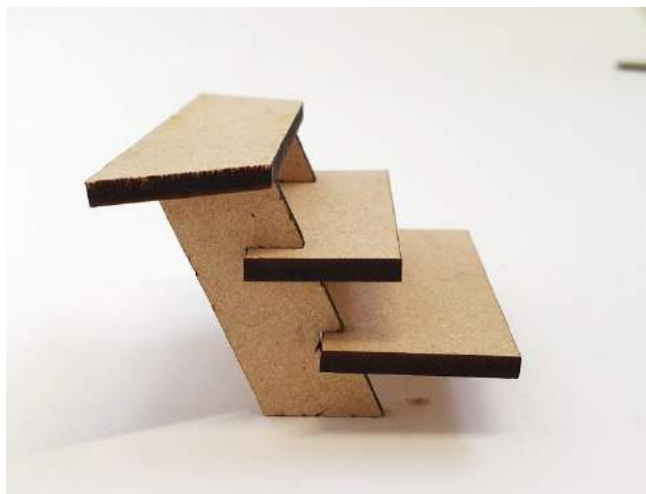
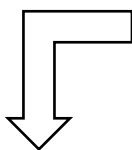
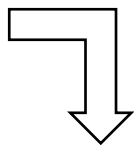


#roof trusses

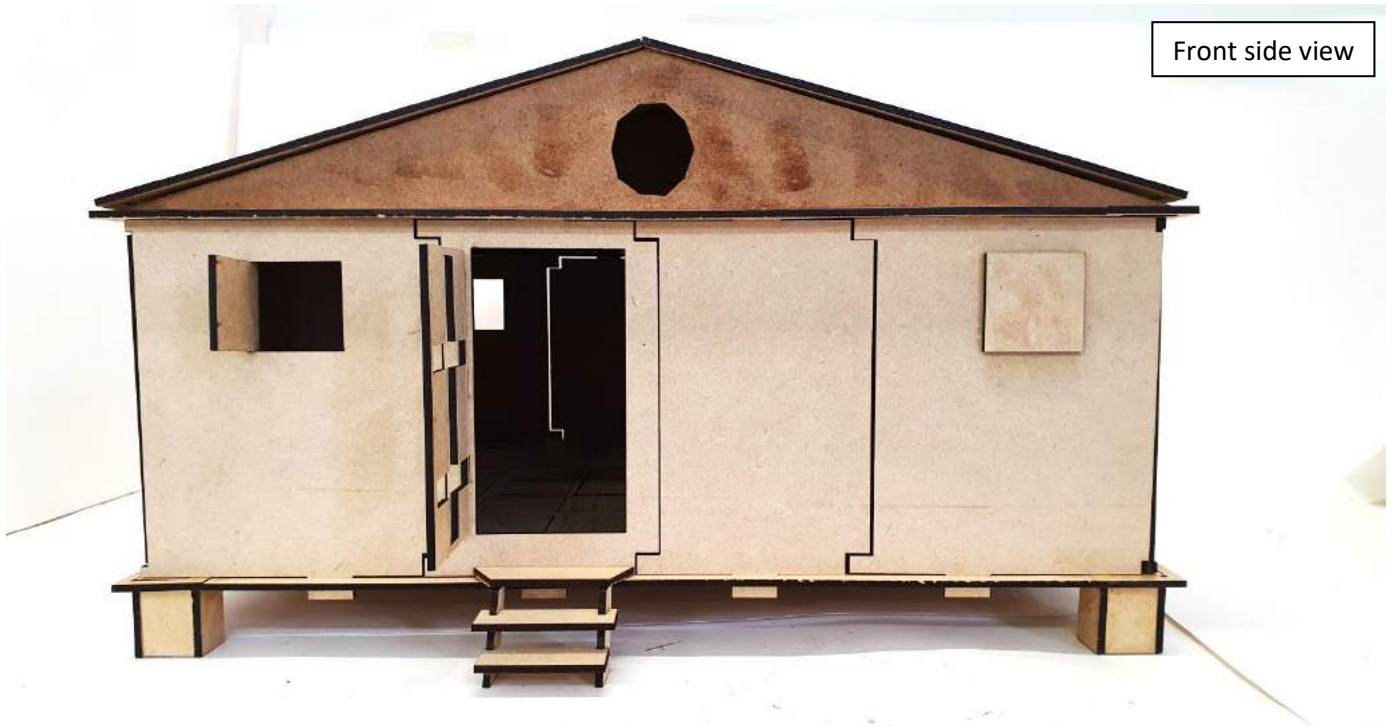


#the roof





➤ Outcome



Right side view



Left side view







➤ Photoshop possible installations for camps

Top side view



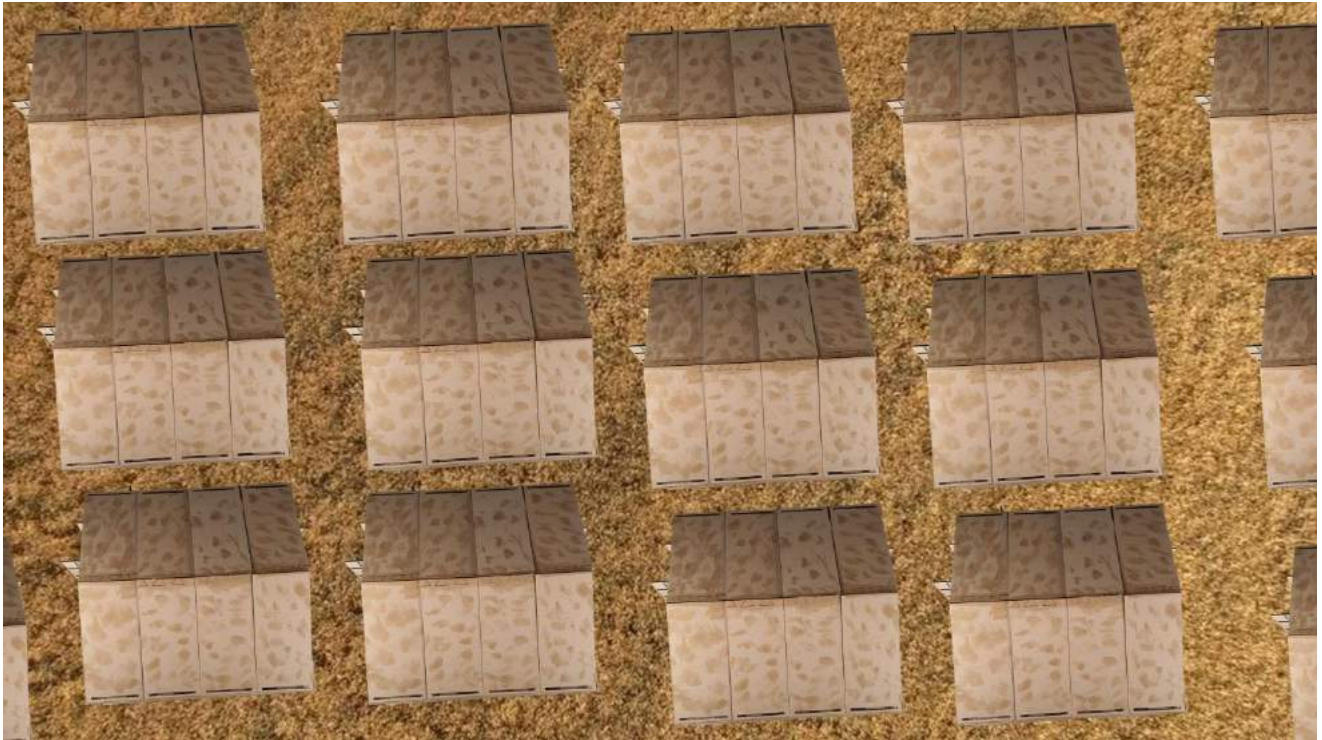
Top view



Top view



Top view



Top view



Top side view

