

How to Build a 3D Printed Laptop

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Why a 3-D Laptop?

- ❖ It's affordable
- ❖ Can be used for basic purposes (ex. web surfing and using text editors)
- ❖ It's more eco-friendly than traditional manufacturing if the correct filament is used (Holzer, 2011)
- ❖ Allows for inexpensive repairs
- ❖ 3D printed material are heat resistant, perfect for computer use
- ❖ It can be built using STL files, which are open source, easy to use, and allow for complete

Ensure all parts are working together. <https://pcpartpicker.com> is a great resource to use before you order your parts

Gather all your parts to prepare for assembly.

Measure and print your case. Our 3D designed case can be modified to fit any size screen you need! Figure 1 and 2 show this case.

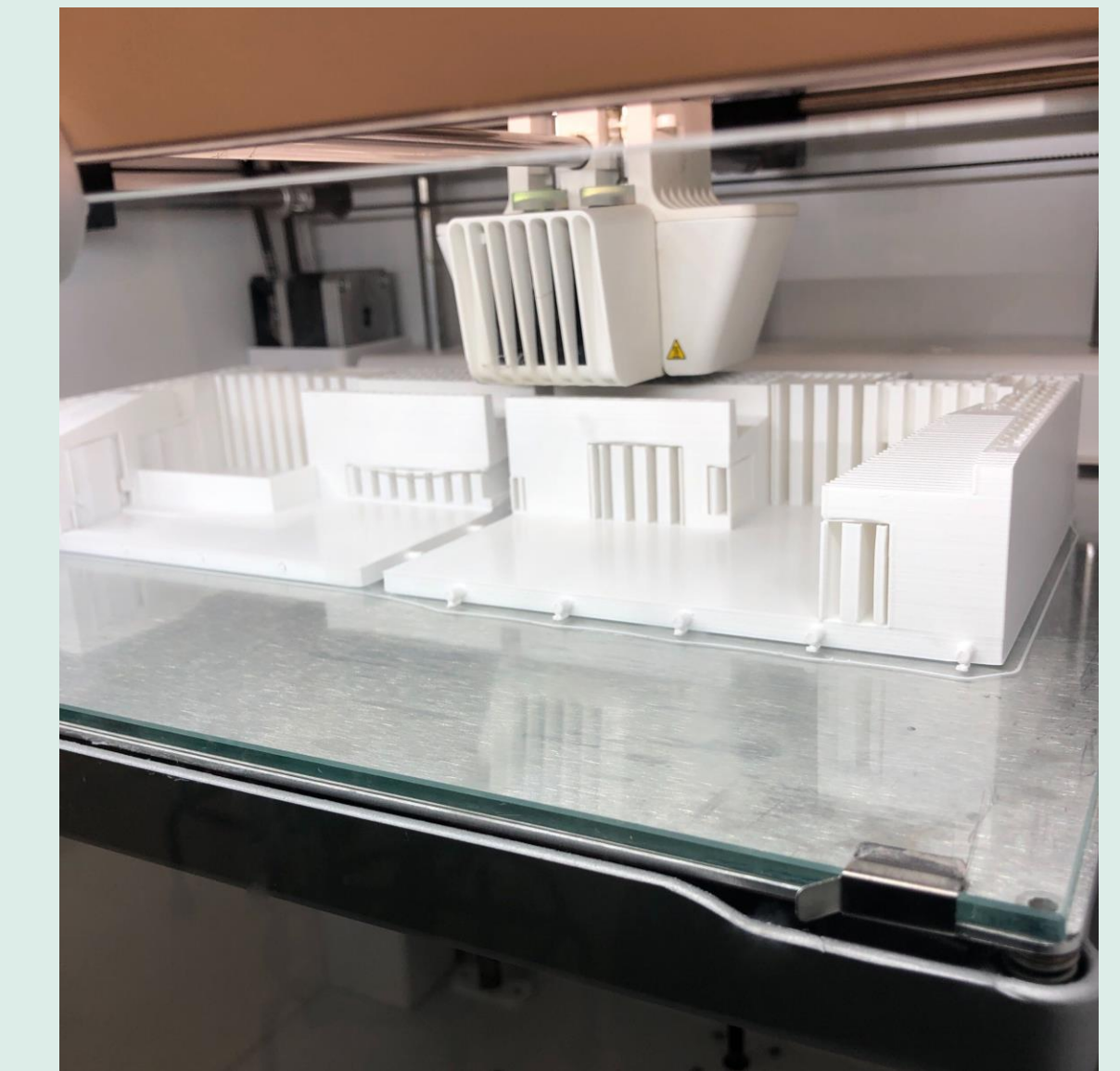


Figure 1. 3-D printer printing laptop case

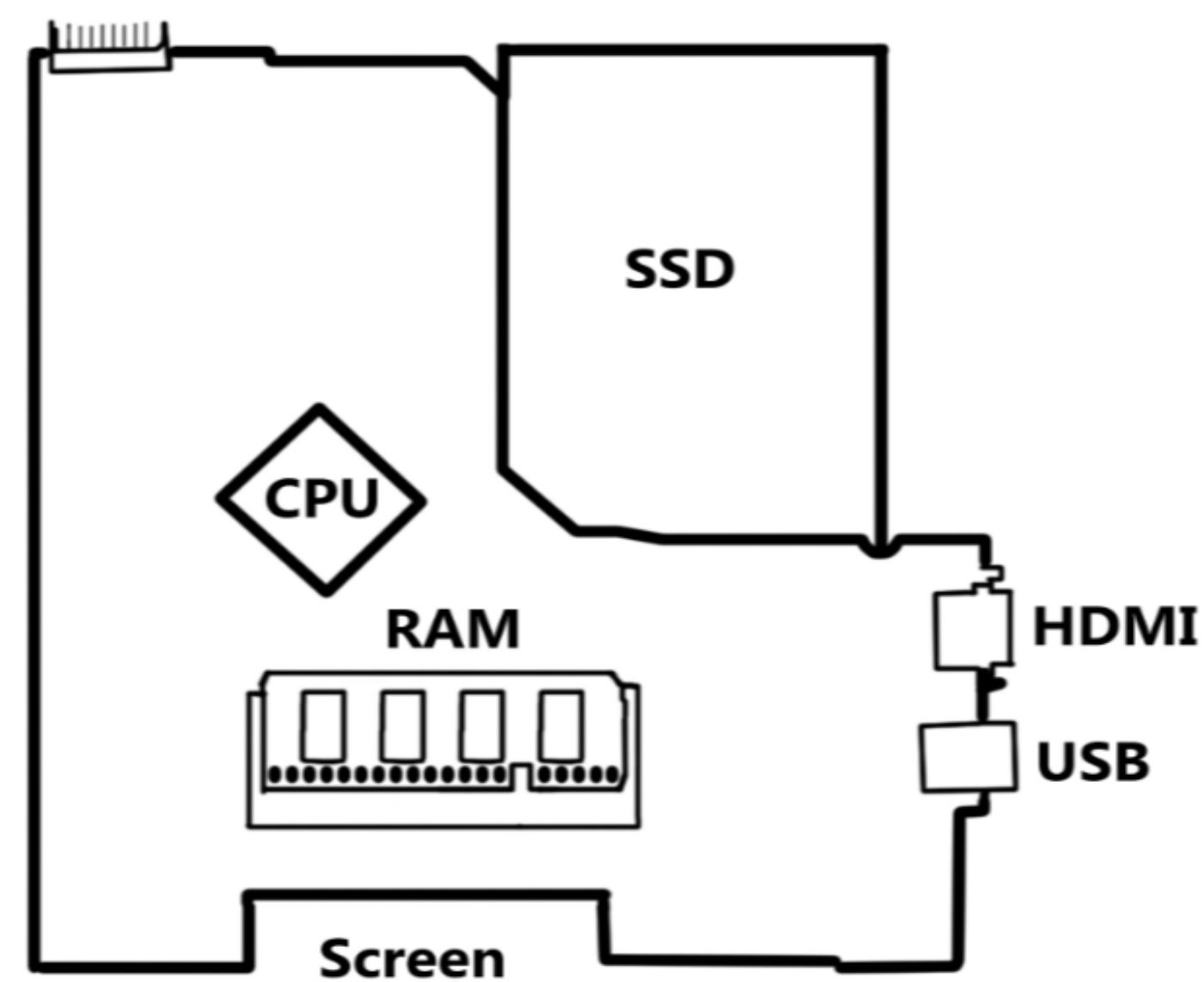


Figure 4. Top down view of the component layout

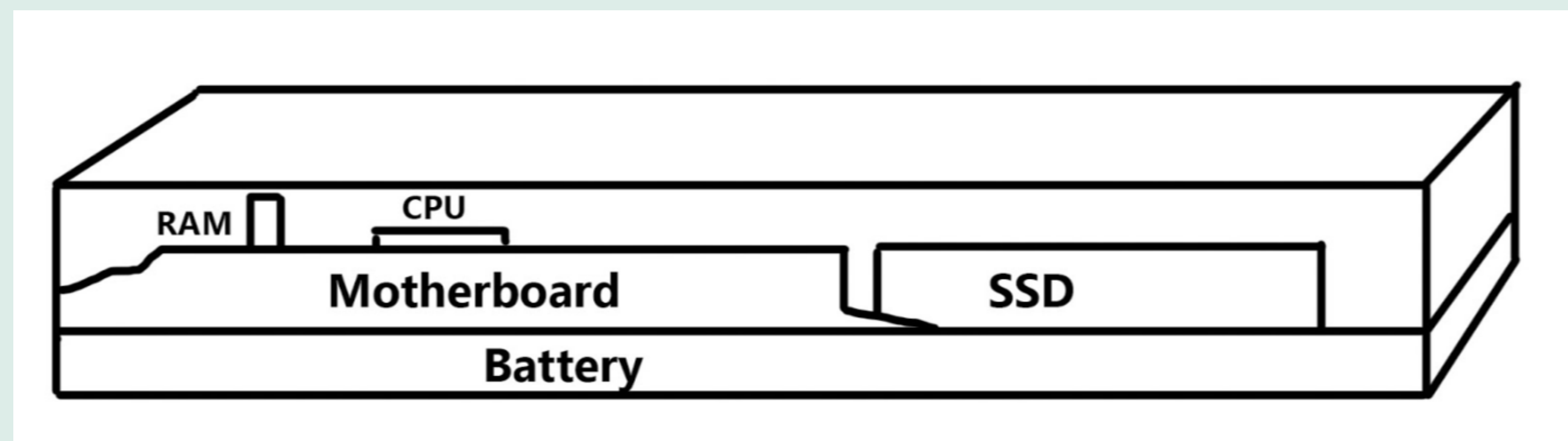


Figure 5. This is a side view of the layout of the components

Place your parts in your casing. Refer to figures 4 and 5

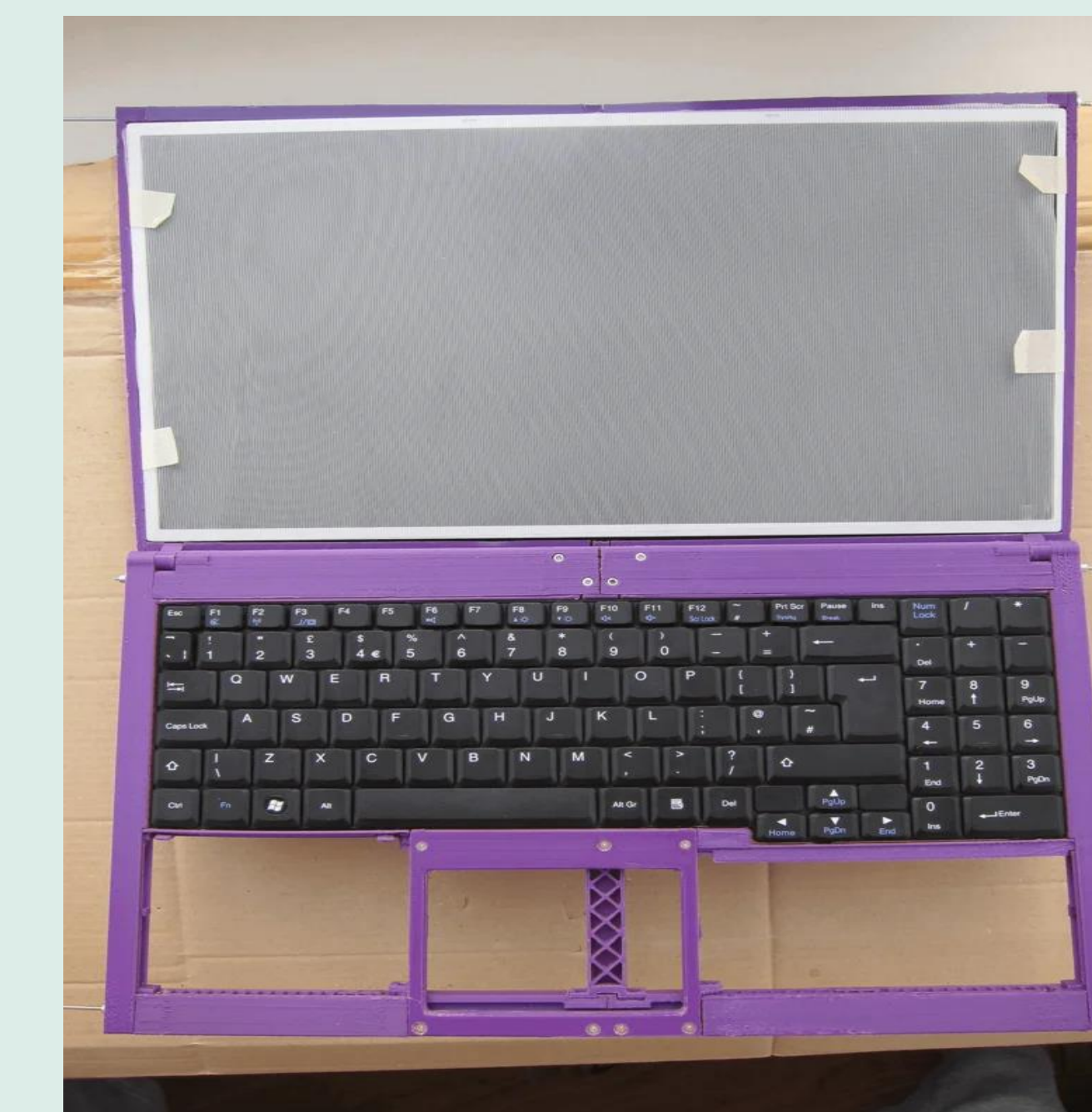


Figure 2. Example of 3-D printed case

What parts will I need?

- ❖ 4GB of RAM
 - ❖ PLA filament for 3D printer
 - ❖ SSD
 - ❖ Solar panels
 - ❖ Screen
 - ❖ Motherboard with CPU
 - ❖ Bluetooth keyboard/mouse
- Estimated Cost: \$150-200



Figure 3. An approximate layout of the inside of our parts

The most challenging aspect of this computer is the solar panels. Fortunately, our casing comes with inserts for the solar panels, to ensure optimum angles (Benghanem, 2011). This design requires 4 individual solar cells that will attach in 4 slots on the case

Attaching the solar panels to our case is a two-step process. Before closing parts into the case, you must solder the solar panels to the battery case. This is outlined in the diagram above (Figure 6)

Why these parts?

- ❖ These parts will give you basic functionality including web browsing and text editing, while keeping the cost low

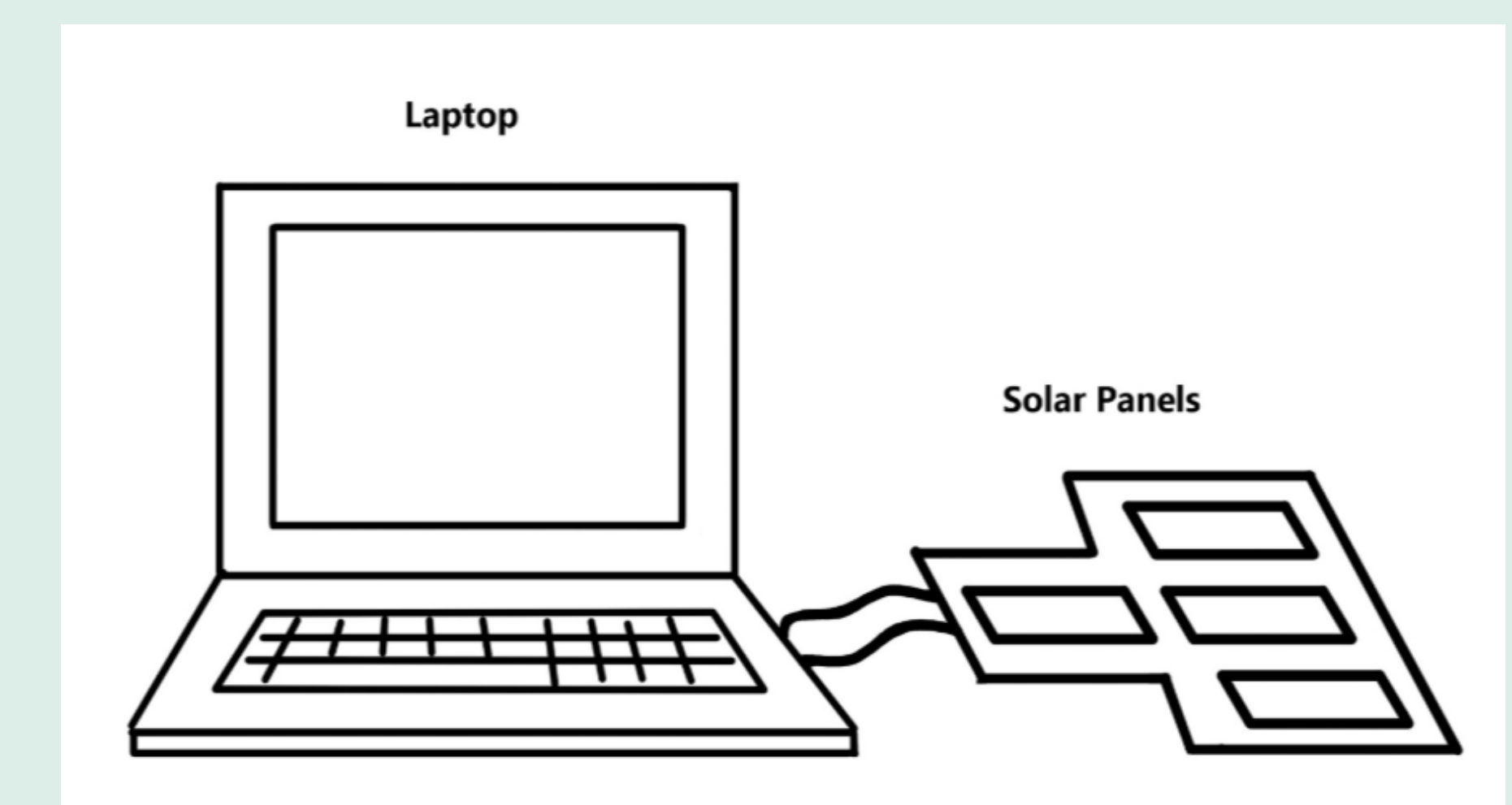


Figure 6. How the solar panels will attach

Conclusion

- ❖ This project has the potential to massively reduce manufacturing waste
- ❖ There are also environmental benefits from the power saving solar panels
- ❖ In the future, we would like to make this project larger scale to reach more people

References

- Holzer. What Does Eco-Friendly Mean? 2011 [accessed 2019 Sep 24].
- Benghanem M.. Optimization of tilt angle for solar panel: Case study for Madinah, Saudi Arabia. Applied Energy. 2011, 88(4):1427-1433. doi:10.1016/j.apenergy.2010.10.001.