



Design thinking

Chapter 5-The System Unit

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Introduction of design thinking

- Smaller world
- Develop creativity level
- Increase thinking skill
- Comprehensive visualization
- Learn to organize everything

Design Thinking Process

Stage 1:Empathy



We held interviews with several people, who are students in UTM and also familiar with devices and technology to hear their opinions regarding the system unit problem.

Question:

- *What are the problems you usually face toward the device and system nowadays?*
- *What kind of problems you face regarding the laptop charging issue?*

■ Stage 2-Define

- *Collect the information from the users*
- *Response on the Charging Issue*
 - The charger was left at home
 - It too heavy too bring
 - The battery is out before I can connect the charger
 - No socket at the place

■ Stage 3-Ideate

- Each of us presented the ideas to solve the problem
- Name of the product: ***LASEC(laptop secondary charger)***
- How does it work?: The laptop will need to connect to Wi-Fi and it will captures Wi-Fi signal to convert into voltage.

■ Stage 4-Prototype

- *Convert our idea to reality*
- *started by analysing fundamental steps and material needed*



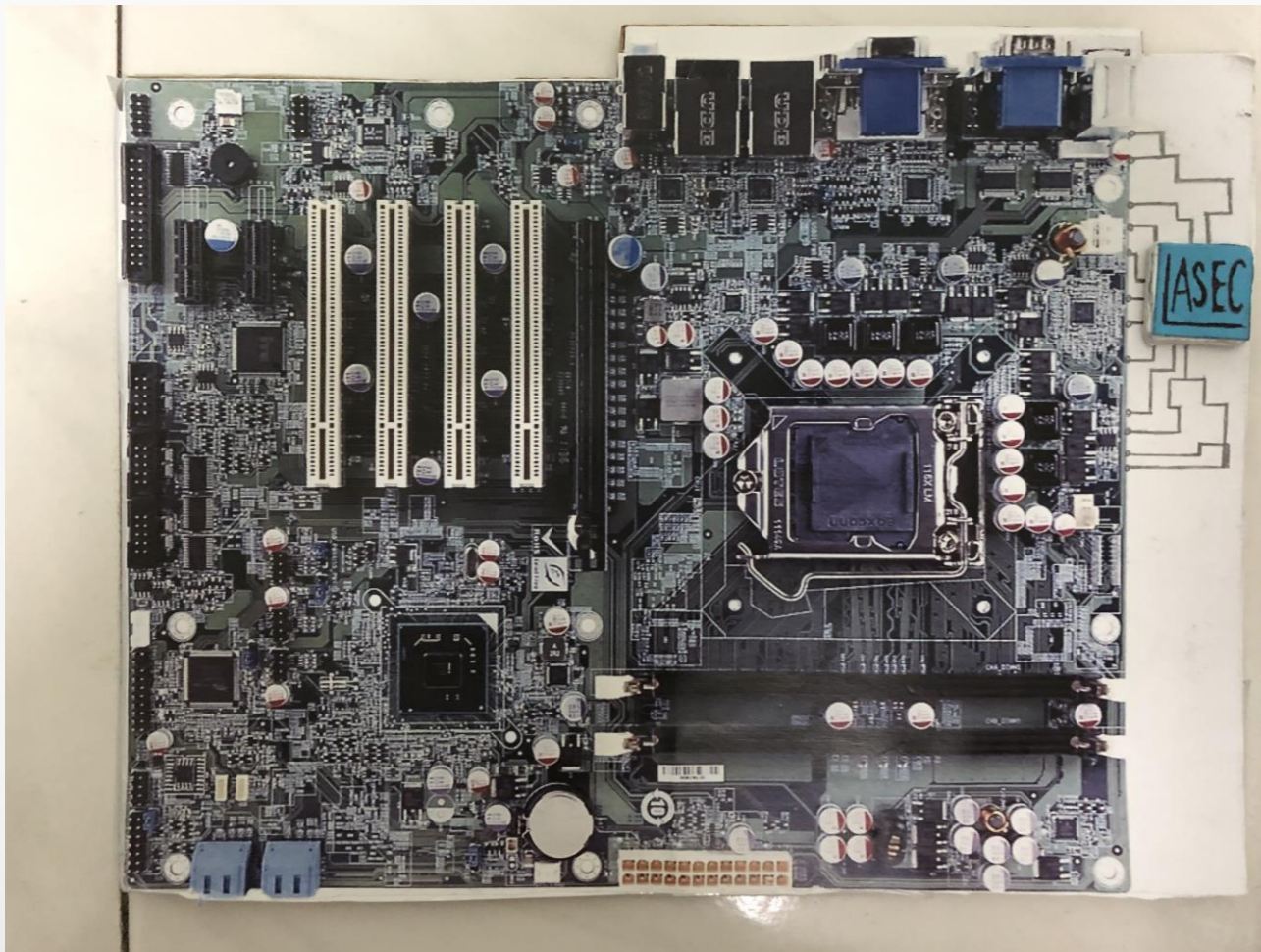
■ Stage 5-Test

- *We showed our prototype and explained how LASEC function to our users*
- *They were satisfied with our idea and they also gave us some feedback to let us made some improvements.*

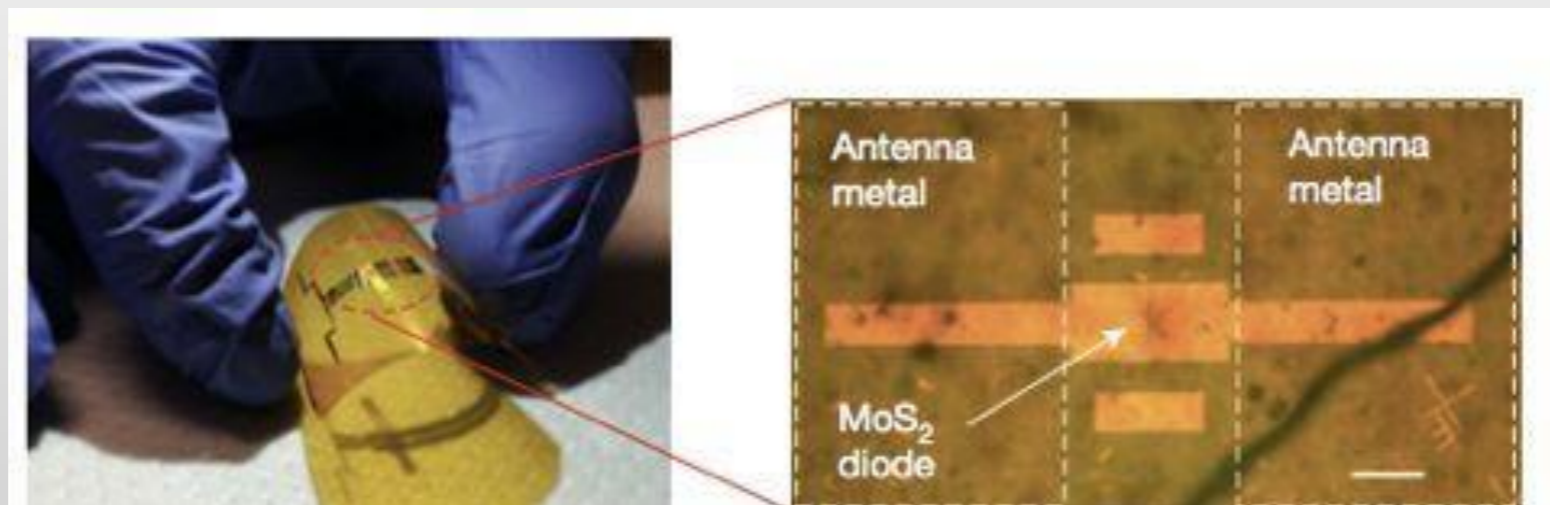
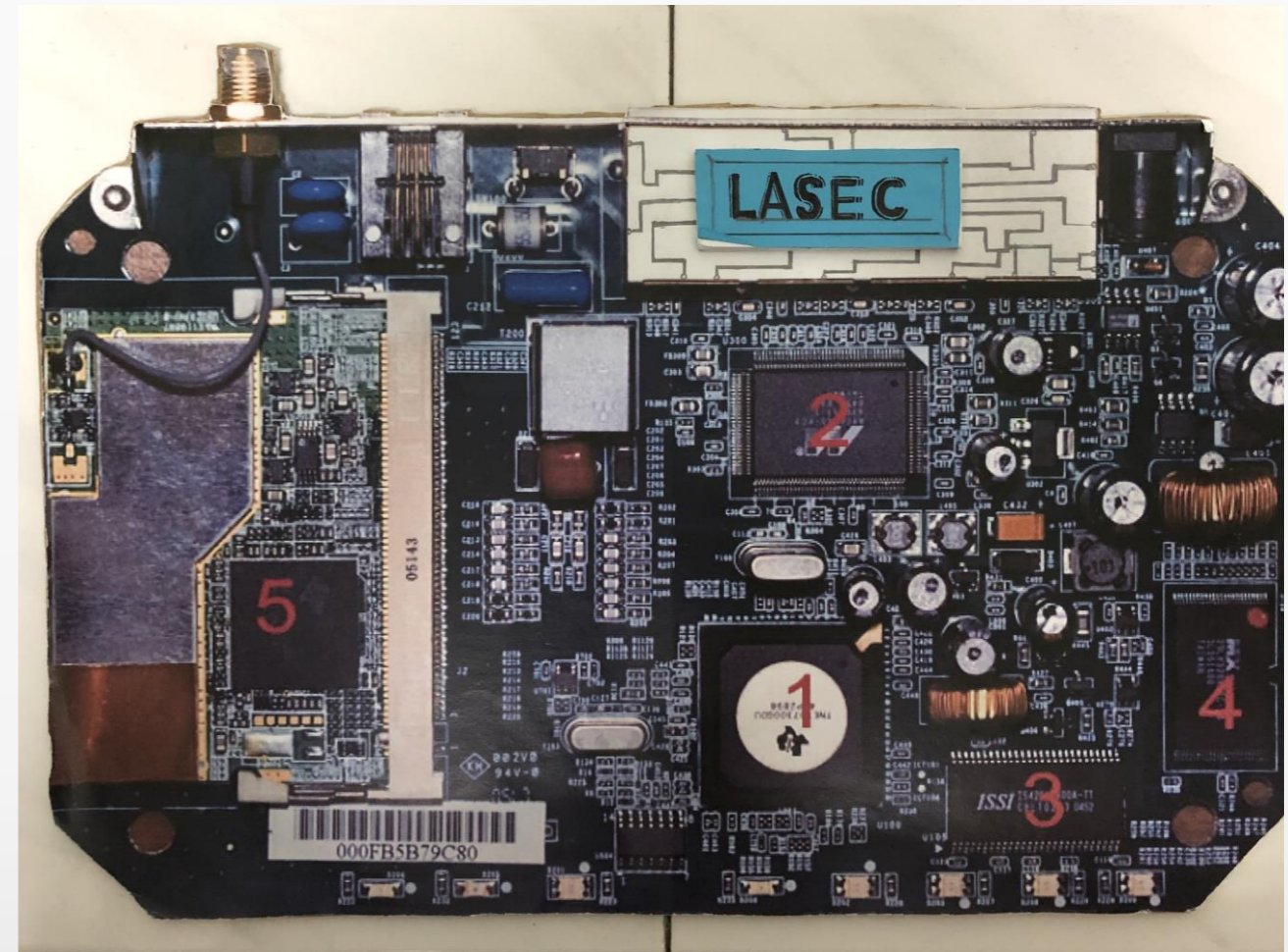
Laptop Secondary Charger(LASEC)

HOW LASEC WORK?

Motherboard in laptop



Router



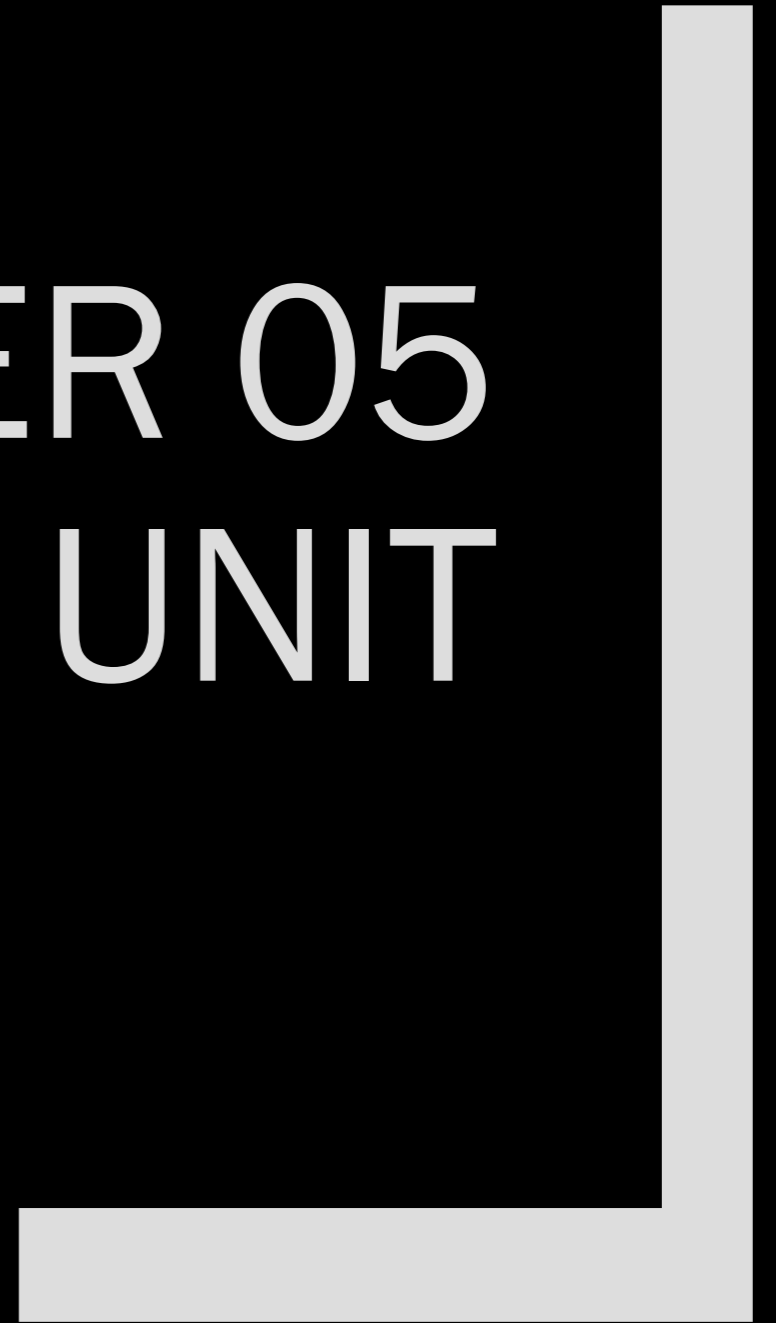
Rectenna

THE ADVANTAGES OF LASEC

- No need to buy individually
 - Easily connect via Wi-Fi
 - Everyone can use
 - User Friendly
 - No need to bring those heavy cable
 - No tension about battery die
 - Battery charges in a short time
-

CHAPTER 05

THE SYSTEM UNIT



System Unit Types

1. Desktops

- System unit is in a separate case
 - Tower Units
 - All-in-Ones
 - All components including monitor



Desktop



Media Center

2. Laptops

- Portable and much smaller
 - Ultrabooks – laptop and tablet in one
 - Gaming – high end graphics



Notebook



Netbook

3. Tablets

- Mini tablet

4. Smartphone

- Most popular device – handheld computer
- Extend the capabilities of cell phones



Tablet PC



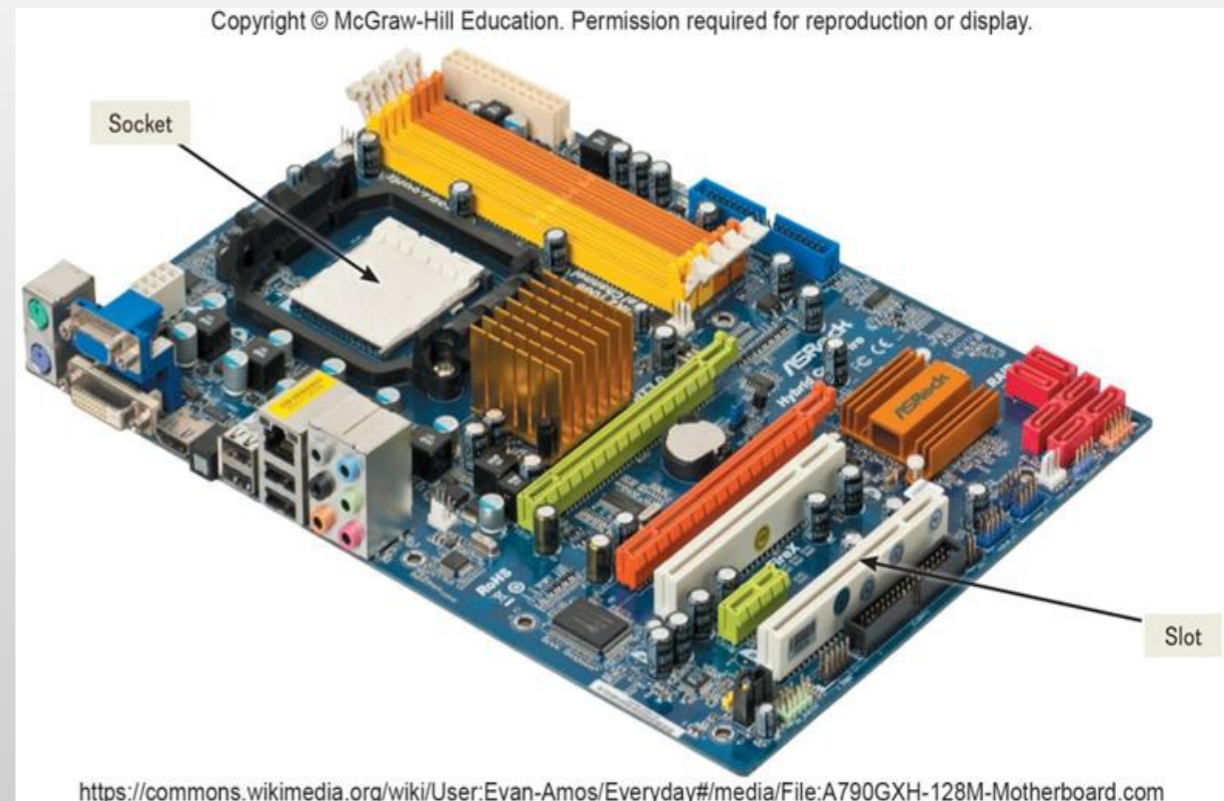
Handheld

5. Wearables

- Contain embedded computers

System Unit

- System Board
 1. Main board or motherboard
 2. Controls communications
 3. Components connect to the system board
 4. Data path
 5. Traffic monitor



System Board Components

➤ Sockets

- Connection point for chips

➤ Chips

- Tiny circuit boards etched onto squares of silicon
- Silicon chip, semiconductor, or integrated circuit
- Mounted on carrier package

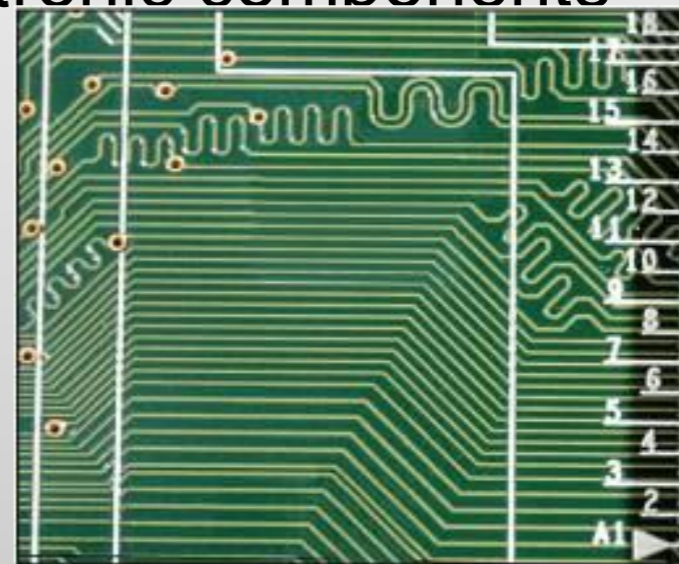


➤ Slots

Provide a connection point for specialized cards or circuit boards

➤ Bus lines

Provide pathways that support communication among the various electronic components



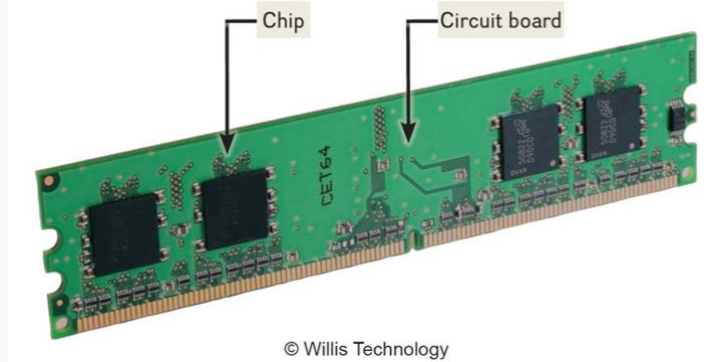
Microprocessor



- Central Processing Unit (CPU) or Processor
 - Contained on a single chip call a Microprocessor
 - Brains of the computer
- Two Basic Components of the CPU
 - Control unit
 - Tells the computer system how to carry out a program's instruction
 - Arithmetic-logic unit (ALU)
 - Performs arithmetic and logical operations

Memory

- Holding area for data, instructions, and information
- Contained on chips connected to the system board
- Three well-known types of memory chips:
 - RAM (Random Access Memory)
 - ROM (Read Only Memory)
 - Flash Memory



Memory

Random Access Memory (RAM)

- A chips hold programs and data that the CPU is presently processing
 - Volatile or temporary – contents are lost when computer is powered off
- Cache memory – temporary, high-speed holding area between the memory and CPU
 - Additional RAM can be added using an expansion module called a DIMM (Dual in-line memory module)

Read-only memory(ROM)

- Read-only memory (ROM)
 - Information stored by the manufacturer
 - Non-volatile and cannot be changed
- CPU can read, or retrieve data and programs in ROM but the computer cannot change ROM
- Contain special instructions
 - Start the computer
 - Access memory
 - Handle keyboard input

Memory

Flash memory

- Flash memory combines of the features of:
 - Like RAM, it can be updated
 - Like ROM, it is non-volatile
 - Contains startup information
 - BIOS (basic input/output system)
 - Amount of RAM
 - Type of keyboard, mouse, and secondary storage devices connected



Power Supply

- Computers require direct current (DC) power converting alternating current (AC) from wall outlets or batteries
 - Desktop computers have a power supply unit in the system unit
 - Laptops use AC adapters in the system unit
 - Tablets and mobile devices use internal AC adapters
 - Smartphones can use wireless charging platforms



Conclusion

The learning outcome are achieved

- 1) Gained learning experience for us while working on this project.
- 2) Gave me a real insight into improving our thinking skills.
- 3) The joy of working involved while tackling the various problems and challenges.