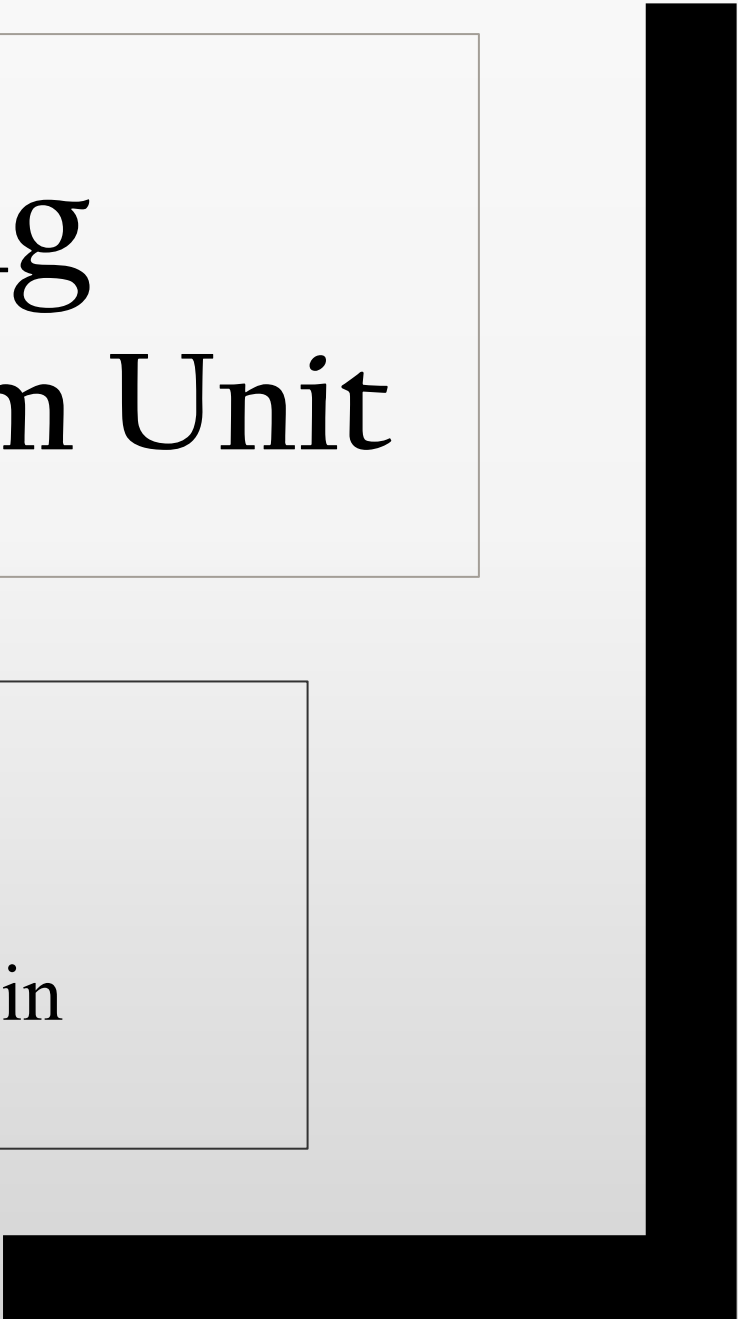




# Design thinking

## 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

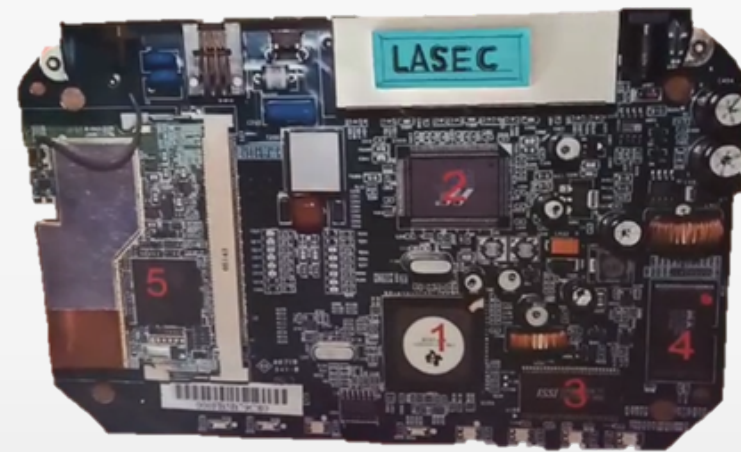
- *Collect the information from the users*
- *Response on the Charging Issue*
  - The charger was left at home
  - It too heavy too bring
  - The battery is out before I can connect the charger
  - No socket at the place

## ■ 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.*

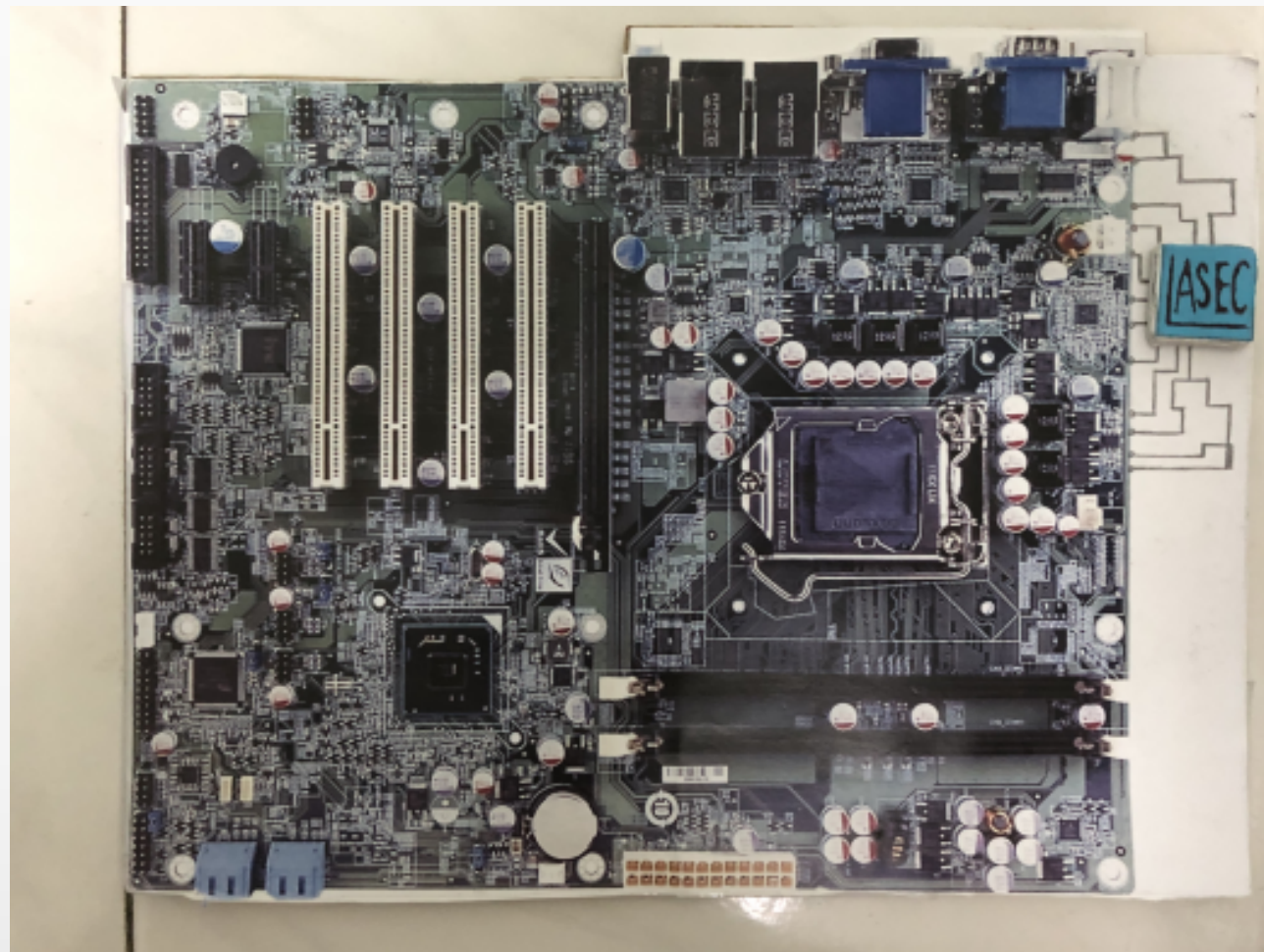
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## **Laptop Secondary Charger(LASEC)**

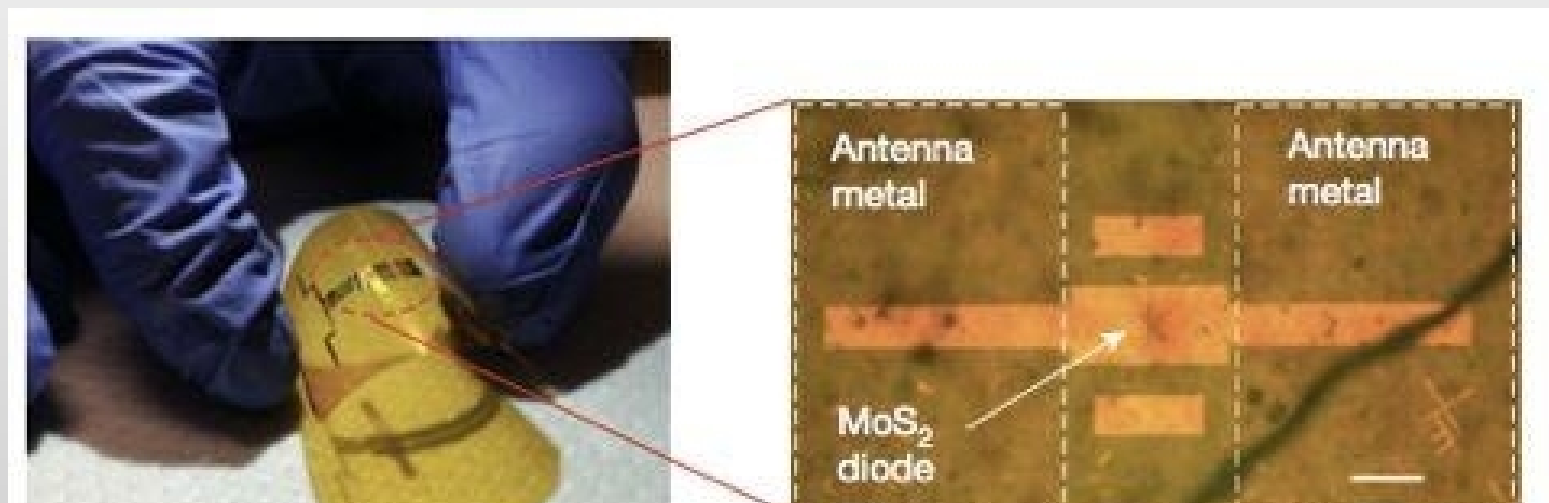
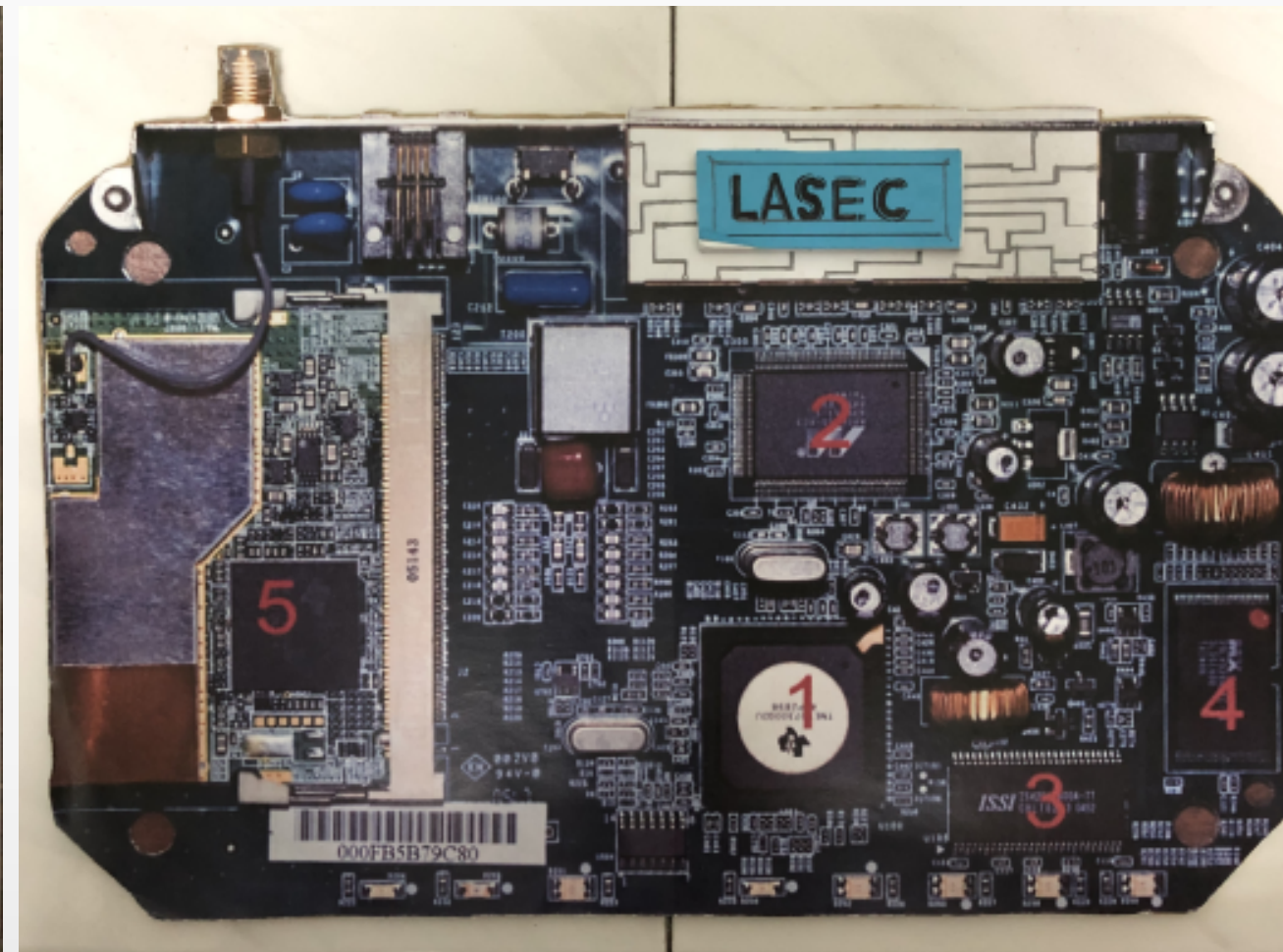
HOW LASEC WORK?



Motherboard in laptop



Router



Rectenna

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# THE ADVANTAGES OF LASEC

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- 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

## 2. Laptops

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

## 3. Tablets

- Mini tablet

## 4. Smartphone

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

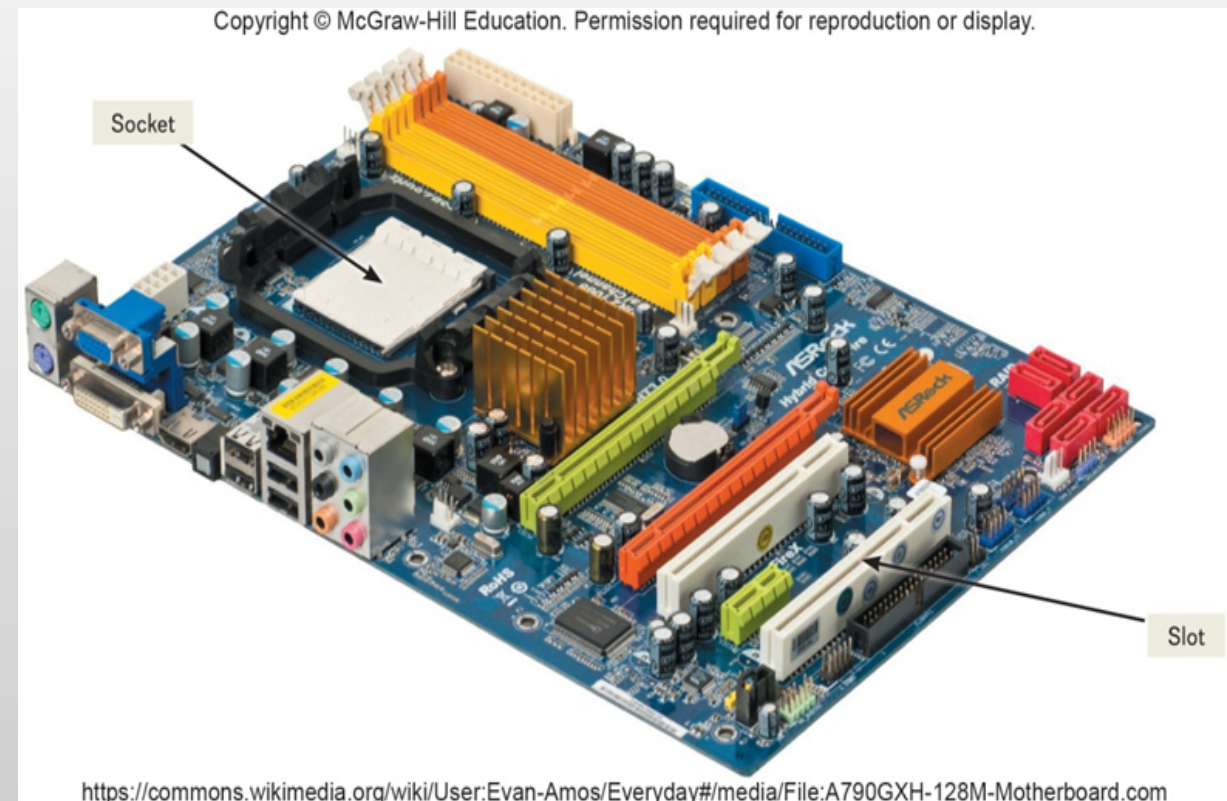
## 5. Wearables

- 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



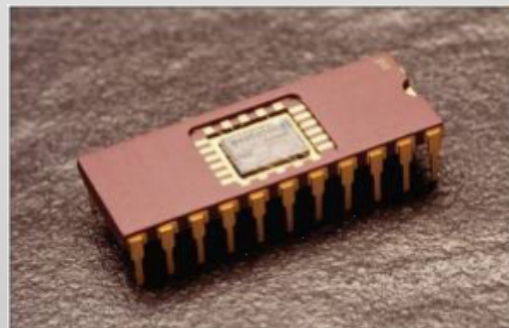
# System Board Components

## ➤ Sockets

- Connection point for chips

## ➤ Chips

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

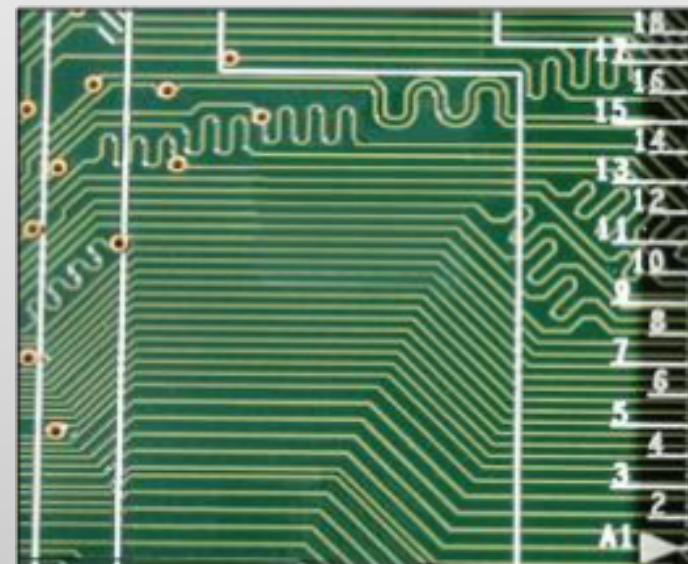


## ➤ Slots

Provide a connection point for specialized cards or circuit boards

## ➤ Bus lines

Provide pathways that support communication among the various electronic components



# Microprocessor

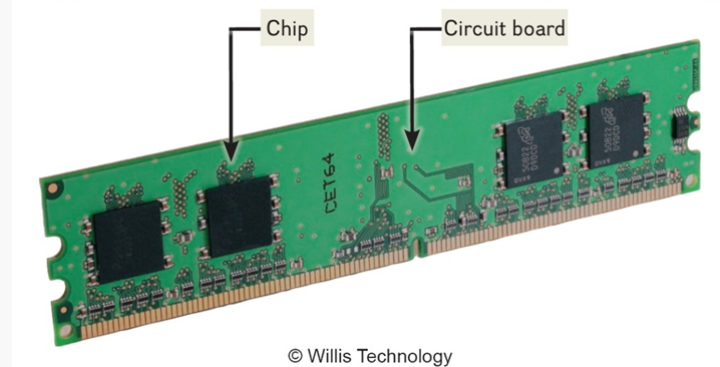


- Central Processing Unit (CPU) or Processor
  - Contained on a single chip call a Microprocessor
  - Brains of the computer
- Two Basic Components of the CPU
  - Control unit
    - Tells the computer system how to carry out a program's instruction
  - Arithmetic-logic unit (ALU)
    - Performs arithmetic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