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Computer Systems & Application

Identifying Personal Computer Components

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Chapter Description

- Aims
  - Defining correctly computer component and their functions.

- Expected Outcomes
  - Learner's are able to identify basic computer peripherals
  - Leaner's can identify the basic computer hardware failure

- Other related Information
  - How to Assemble a Basic Desktop PC
  - How To Assemble A Desktop PC/Assembly

- References
  - Heaton, Jeff. 2006. Build a computer from scratch. St. Louis: Heaton Research
  - Singh, Vishnu P. 2009. Computer Hardware Course. New Delhi: Computech Publications.

Contents

- Introduction
- Motherboard
- Computer Memory
- Graphic Card
- Random Access Memory (RAM)
- Computer Display
- Optical Drive
- Network Adapter
- Conclusion

Introduction

- Computer play a huge role in modern world

- From personal usage to secretive military operation

- An advantage to learn how its works and knew what lies inside

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Motherboard

- The main printed circuit board (PCB)

- Known as mainboard, system board, baseboard, planar board or logic board).

- It hold and allow communication between many crucial electronic component such as central processing unit (CPU) and memory.

- Provide connectors for other peripherals.

Motherboard Physical

Picture Taken From :
https://upload.wikimedia.org/
wikipedia/commons/thumb/c/
c2/Mainboard_Elitegroup_K7S
5A.jpg/784px-
Mainboard_Elitegroup_K7S5A.
jpg
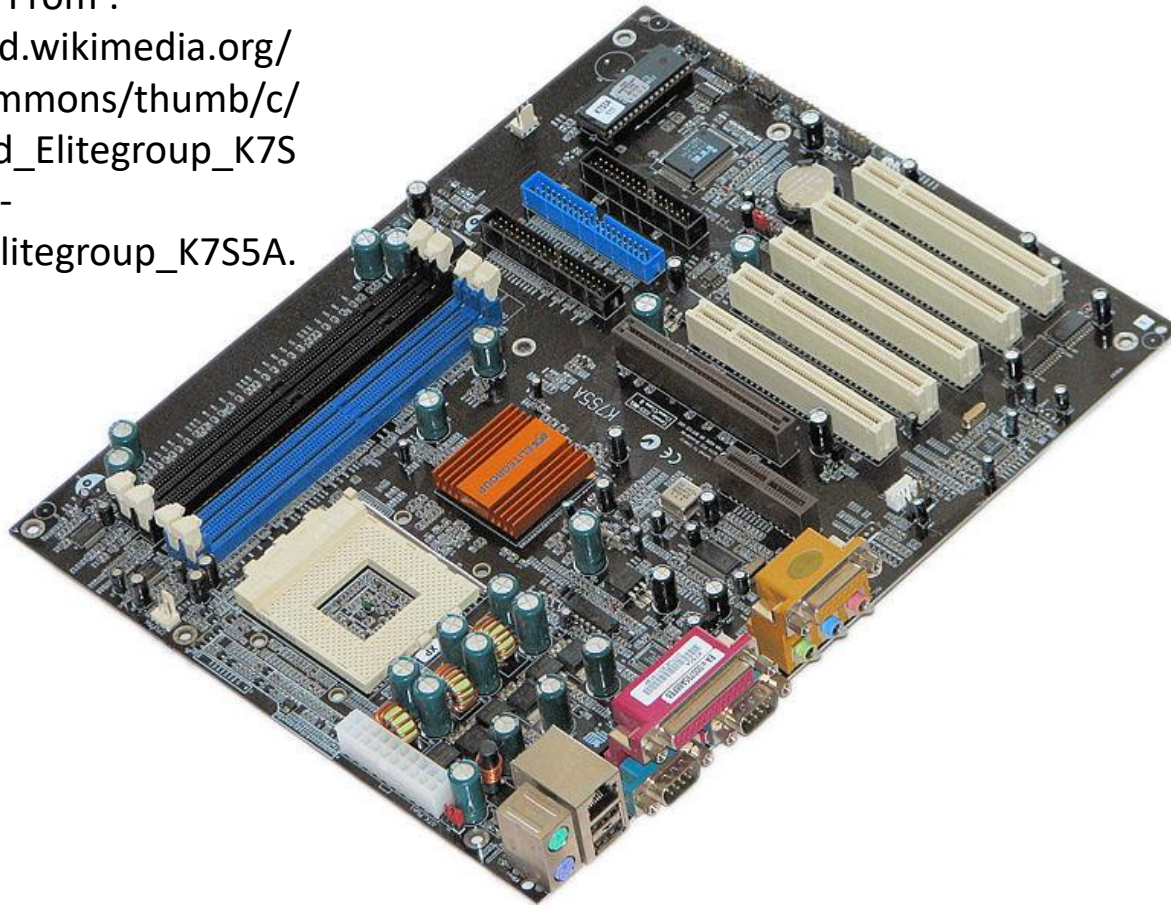
Motherboard Location

- Located on the back side or the bottom of the computer case.

- Allocates power and allow communication to the CPU,RAM and all other computer hardware component.

Motherboard Assembling

Install devices and a video card then adjust your wiring

Connect the front USB Port and fans

Connect the power supply and front panel.

Close up the computer; return the side panel of the case to the original position and screen. Turn computer on and prepare for operating system.

Place the motherboard on the standoffs

Install the standoffs

Install the component; If motherboard on a removable tray, install CPU, CPU Cooler & RAM. If not, install component after wiring.

Ground yourself; discharge electrostatic charge & wear antistatic wrist strap

Replace the I/O panel shield

Open computer case

Find the standoffs; it keeps the motherboard above the case

Motherboard Function

- Control the flow of external data through the port; USB and IDE and guide the data to the hard drive.

- Serves as the central circuit hub that connects all the peripherals and components.

- Regulates the power receive by the hard drive, graphic card, CPU and system memory from power supply.

Computer Memory

- Memory is the part of computer in which data or programmed instructions can be store for retrieval

- Physical device that capable of storing information temporarily or permanently

- RAM (random access memory)

Memory Physical

Taken from
https://upload.wikimedia.org/wiki
pedia/commons/thumb/3/3a/Nin
tendo-Super-NES-Cartridge-
Boards.jpg/320px-Nintendo-
Super-NES-Cartridge-Boards.jpg

Computer Memory Location

- Located in the upper right corner of any consumer-level motherboard.

- These slots are long slender grooves with the width of only a few millimeters.

Computer Memory Location

1. • Shut down your computer

2. • Unplug all of the cables connected to it.

3. • Remove the side of the computer case so you can access the motherboard. The RAM slots are adjacent to the CPU socket

4. • Look for the big heat sink at the top of the motherboard

5. • You'll see either two or four memory slots next to it.

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Graphic Card

- The graphics components are the part of your computer that control and enhance how graphics (pictures, videos, programs, animation, 3D) are displayed on your computer screen.

- Often, the graphics components are on a separate card that plugs into a slot on the motherboard, which is the main part of the computer. That's why the graphics components are commonly called the graphics card.

Source:
https://help.sketchup.com/en/article/36251

Graphic Card Physical

Taken from
https://cdn1.techadvisor.co.uk/
cmsdata/reviews/3642990/msi
_gtx_1070_x_8g_4_thumb800.
png

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Graphic Card Location

- It is located in the computer's PCI Express with other system slots. PCI Express slots come in various speeds and can work with non-graphics cards. The fastest slots, however, typically reside closest to the CPU in anticipation of their use with graphics cards.

- The graphic card can also be swapped with other graphic cards that are more powerful so that it can handle heavy task such as gaming, video and photo editing.

Graphic Card Assembling

Step 1: physically open the computer case

Step 2: locate the expansion slot

Step 3: install the graphic card on the pci express

Step 4: turn on the computer and and install the required the card drivers respectively

Step 5: Test the graphic card for faulty errors
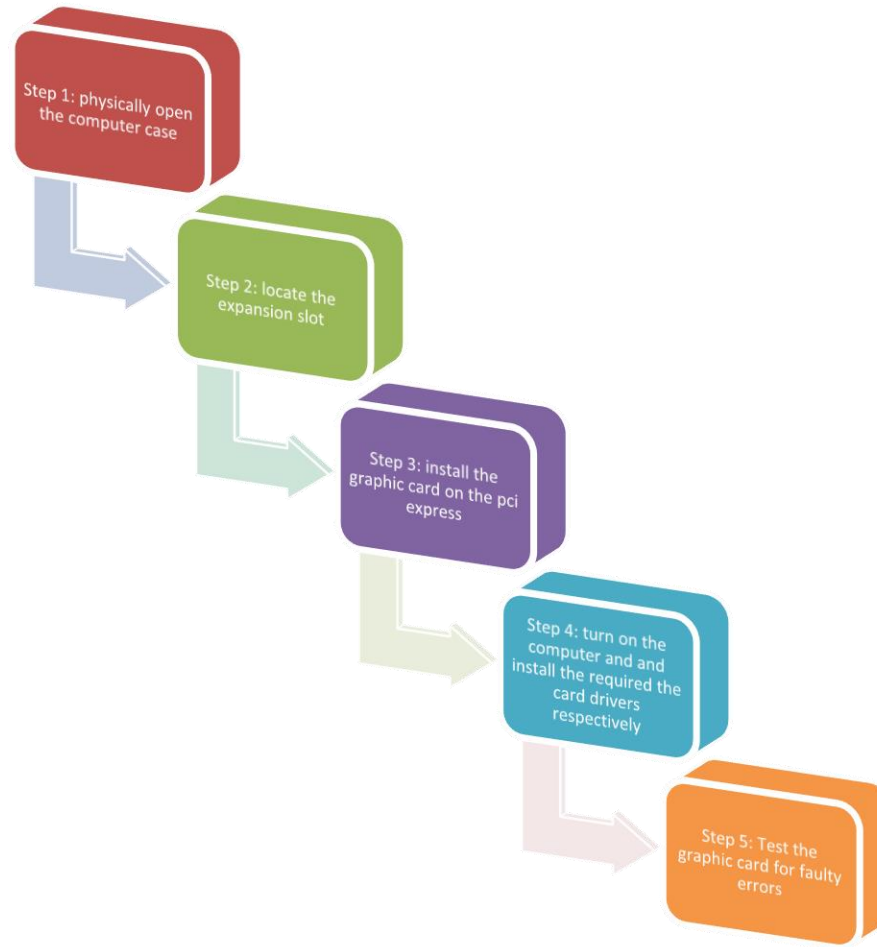
Random Access Memory (RAM)

- Hardware the store computer capabilities to do arithmetic in binary

- Come with octave size – 8, 16, 32, 64

- Capacity count in byte – normally Gigabyte (GB)

- More memories means, more work could be done in certain times
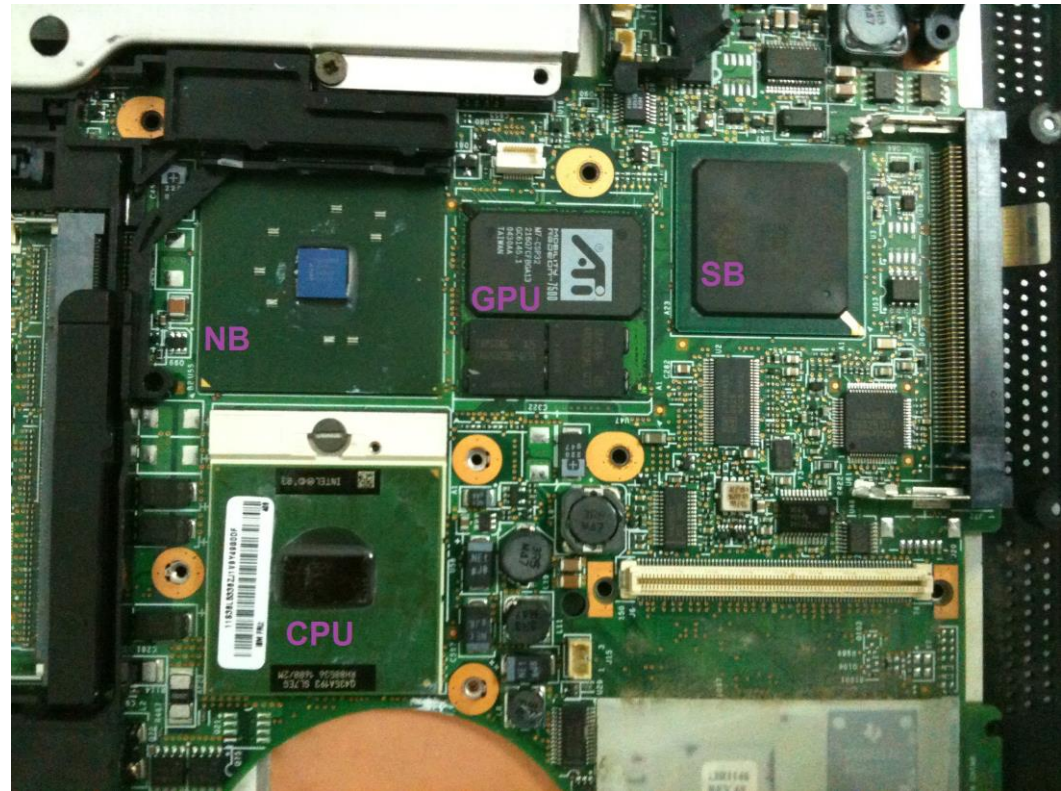
RAM Physical

Taken from
https://qph.ec.quoracdn.net/main-qimg-
fcee455232a69038e57df750367f7b2a

RAM Location

Taken from https://upload.wikimedia.org/wikipedia/commons/8/85/IBM_T42_Motherboard_IMG_2591a.jpg

Assembling RAM

Shut down your computer and unplug all of the cable connected to it. Then remove the side of the computer case so you can access the motherboard

RAM slot are adjacent to the CPU socket. Look for the big heat sink at the top of motherboard and you will see either 2 or 4 memory slots next to it.

Before you can install the new memory you have to remove the old kit. Start by toggling the plastic retention clips at either end of the memory slots so you can pull out the old RAM.

While you are there remove any dust from the memory slots either by blasting the area with compressed air or by vacuuming gently.

Now its time to put in the new RAM kit. Make sure the memory module is correctly oriented.

Finally, close up your computer case plug everything back in, and turn on your computer.

Computer Display

- computer output surface and projecting mechanism that shows text and often graphic images to the computer user, using a cathode ray tube (CRT), liquid crystal display (LCD), light-emitting diode, gas plasma, or other image projection technology

Computer Display Physical

Taken from
http://www.publicdomainpictures.
net/pictures/20000/velka/comput
er-monitor-isolated-
113001152897GC.jpg

Computer Display Location

- Located on the monitor screen , when the input information is supplied as an electrical signal , the display is called an electronic display

Assembling Computer Display

MAKE SURE IS DOES YOUR MONITOR IS POWER ON AND CHECK THE VIDEO CABLE IS CONNECTED OR NOT .

IF YOU HAVE A GRAPHIC CARD INSTALLED IN YOUR MOTHERBOARD , THEN YOU SHOULD REMOVE IT AND PLUG YOUR MONITOR CABLE AND TRY TO START YOUR COMPUTER AGAIN .

INTERNAL HARDWARE CHECKUP

CMOS BATTERY CHECKUP

IF YOU HAVE 2 RAMS INSTALLED IN YOUR COMPUTER THEN REMOVE 1 OF THEM AND TRY TO TURN ON YOUR COMPUTER .

Optical Drive

- A laser light to read data from or write data to an optical disc

- Become more obsolete year by year

- The latest technology is Blue Ray from Sony

Optical Drive Physical

Taken from
https://upload.wikimedia.org/wikiped
ia/commons/thumb/f/f3/Sony-
Internal-PC-DVD-Drive-
Opened.jpg/1024px-Sony-Internal-PC-
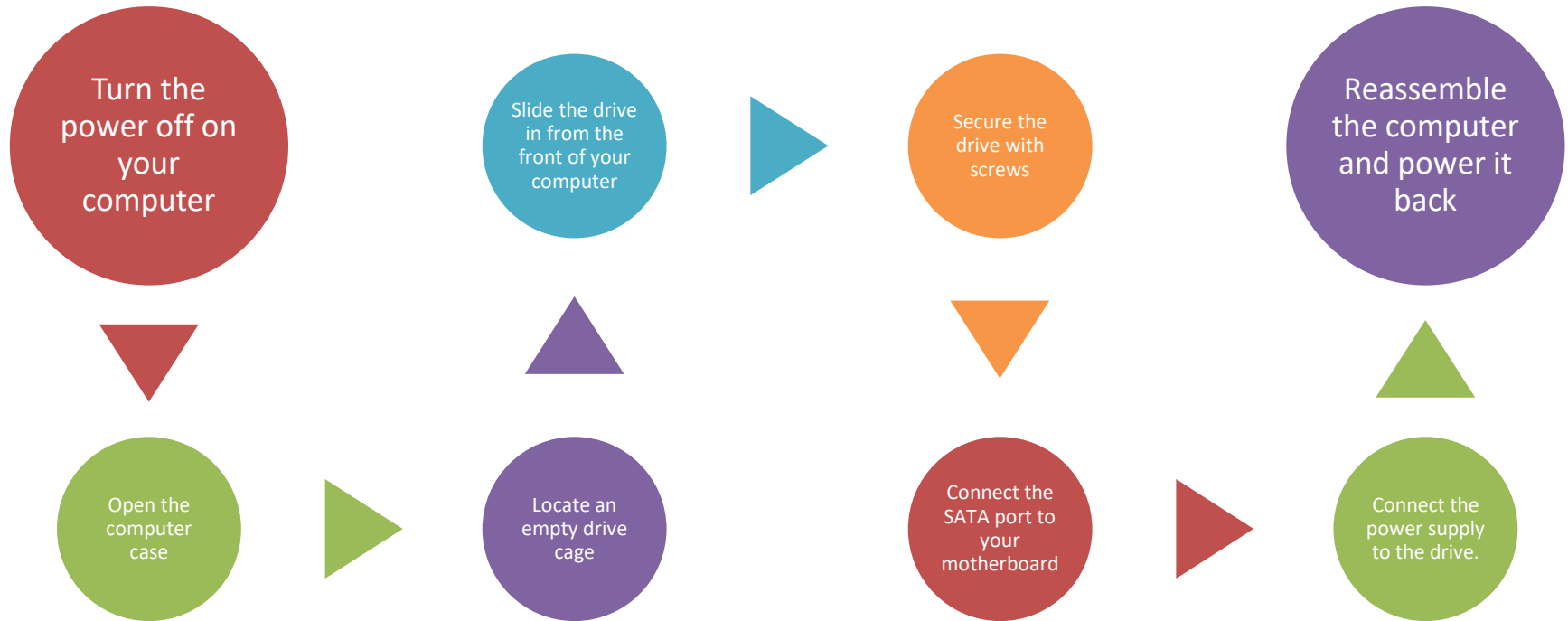DVD-Drive-Opened.jpg

Optical Drive Location

- It stay in various location in computer

- Based on the structure of computer casing

Assembling Optical Drive

Turn the power off on your computer

Open the computer case

Locate an empty drive cage

Slide the drive in from the front of your computer

Secure the drive with screws

Connect the SATA port to your motherboard

Connect the power supply to the drive.

Reassemble the computer and power it back

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Network Adapters

- A network adapter is the component of a computer's internal hardware that is used for communicating over a network with another computer.

- It enable a computer to connect with another computer, server or any networking device over a LAN connection.

- A network adapter can be used over a wired or wireless network.
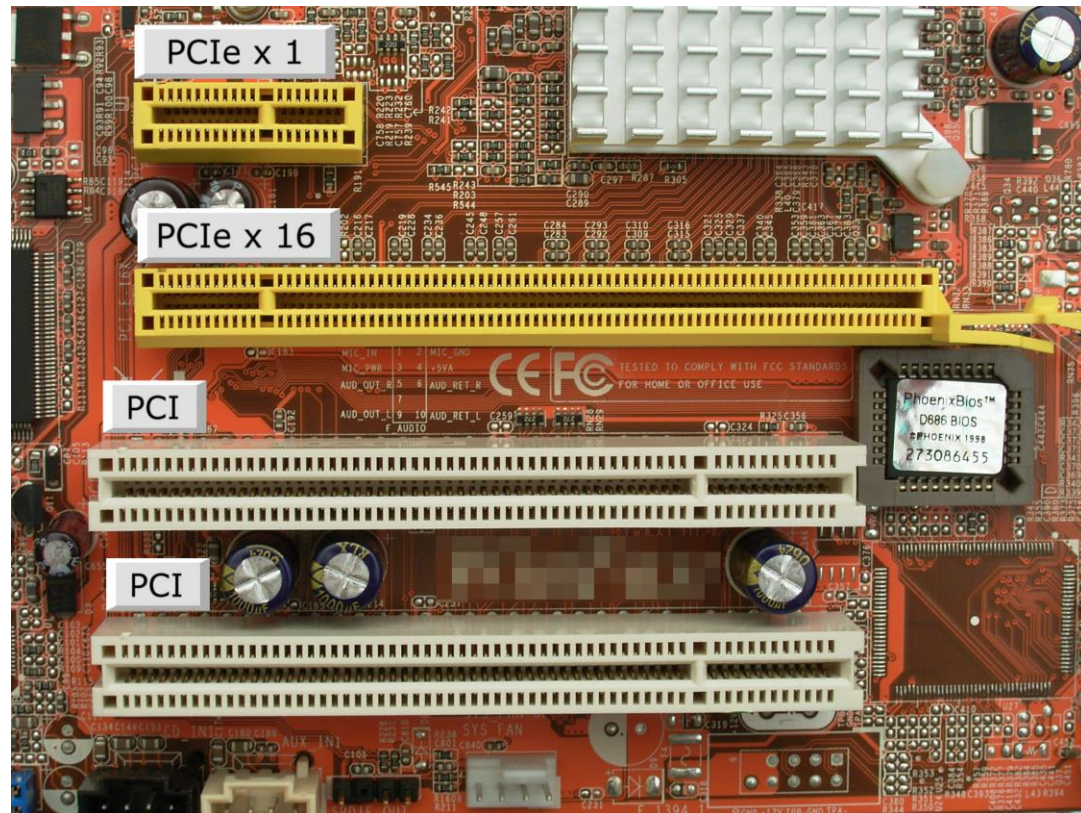
Network Adapter Physical

https://upload.wikimedia.org/wikipedia/commons/4/46/3Com_3C509BC_Ethernet_NIC.jpg

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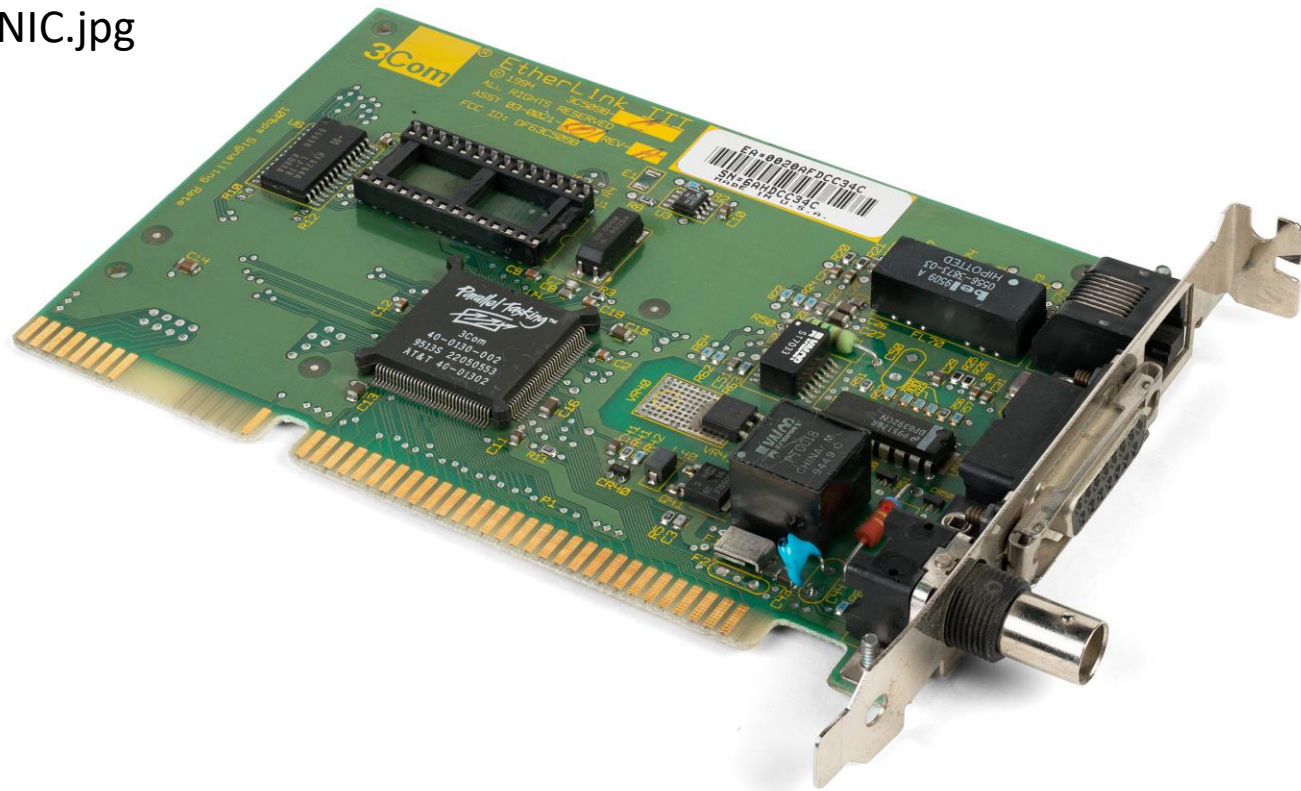
Network Adapter Location

Taken from https://upload.wikimedia.org/wikipedia/commons/0/0c/PCI_und_PCIe_Slots.jpg

Assembling Network Adapter

- Similar as memory card, just different slot

Conclusion

You have learned

- All computer hardware is interconnected each other

- Some component is crucial – can harm others

- Some component is compulsory – computer wont started

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