

कम्प्युटर अपरेटर तयारी कक्षा

स्मार्ट इन्फोटेक

गुणस्तरीय कम्प्युटर तालिमको अर्को नाम

सम्पर्क: कीर्तिपुर, काठमाडौं। ९८४१६४९९९३, ९८४३५२१६४०

Power Supply

- Called PSU (Power Supply Unit)
- Also called SMPS (Switched Mode Power Supply)
- Converts AC power to low-voltage DC power
- It consists of following parts:
 - A connection for the power cord to the computer.
 - A fan opening to heat out of the power supply.
 - A red switch to change the power supply voltage.
 - A rocker switch to turn the power supply on and off

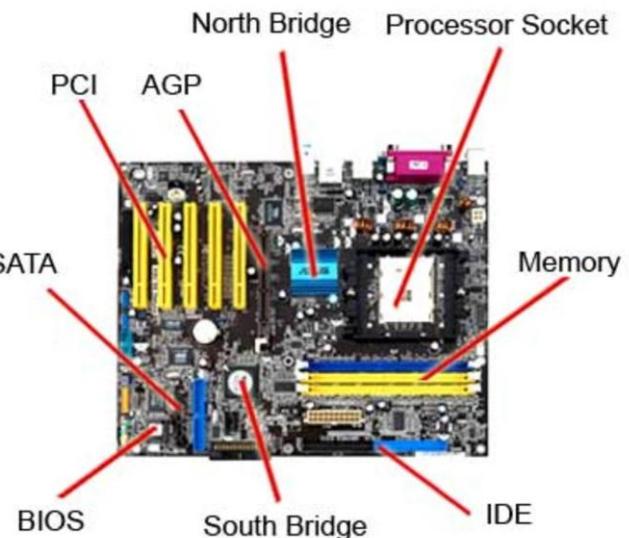
Installing Power Supply

- Open the case
- Align the PSU in the case so that the four mounting holes align properly.
- Fasten the power supply.
- Set the voltage switch.
- Plug the power supply into the motherboard.
- Connect power to the devices.
- Replace the computer cover or return the panel to the case.
- Plug in the power and turn on the computer

Motherboard

- Main circuit board of computer
- Also called system board
- Called Mobo in shortcut
- Printed circuit board (PCB)
- Consists of expansion slots/boards for RAM, Graphic Cards and other components
- Allocates power and allows communication between the CPU, RAM, and all other hardware components.

Motherboard



Features of motherboard

- Motherboard supports various types of components.
- Motherboard supports a single type of CPU and few types of memories.
- Video cards, hard disks, sound cards have to be compatible with the motherboard to function properly.
- Motherboards, cases, and power supplies must be compatible to work properly together.

Popular motherboard manufacturer

- Intel
- ASUS
- AOpen
- ABIT
- Biostar
- Gigabyte
- MSI



UPS

- UPS (Uninterruptible Power Supply) is a battery supported power protect device that controls the electric voltage and supplies clean and continuous power to the computer system even during power failure.

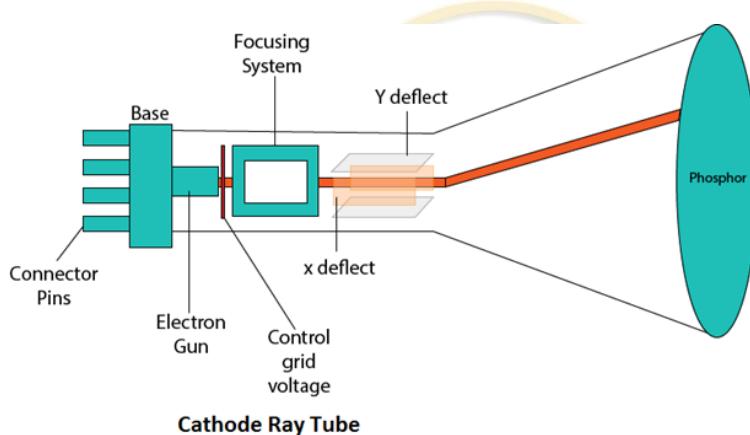
Different types of Display Devices

- CRT
 - Cathode Ray Tube
 - Contains millions of tiny red, green, and blue phosphor dots that glow when struck by an electron beam
 - Old display technology for computers, televisions, calculators, and other electronic equipment



Different types of Display Devices

- CRT

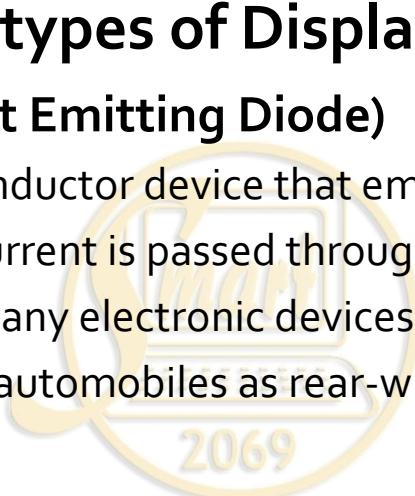


Different types of Display Devices

- **LCD (Liquid Crystal Display)**
 - A type of flat panel display that uses LCD technology to show clear images
 - Used in computer monitors, instrument panels, cell phones, digital cameras, TVs, laptops, tablets, and calculators
 - Support for large resolutions and better picture quality

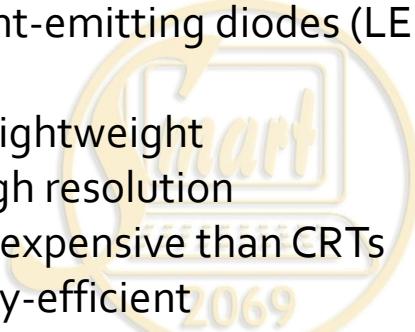
Different types of Display Devices

- **Features of LCD**
 - Use less power
 - Are thin and lightweight
 - Are available in much smaller sizes than their predecessors
 - Have great features such as high resolution, high refresh rate etc.



Different types of Display Devices

- **LED (Light Emitting Diode)**
 - A semiconductor device that emits light when an electric current is passed through it
 - Used in many electronic devices as indicator lamps, in automobiles as rear-window and brake lights



Different types of Display Devices

• Features of LED

- It uses light-emitting diodes (LEDs) to produce images
- Thin and lightweight
- Have a high resolution
- Are more expensive than CRTs
- Are energy-efficient
- They produce vibrant colors

Different types of Display Devices

- **Plasma Display (PDP)**
 - A computer video display in which each pixel on the screen is illuminated by a tiny bit of plasma or charged gas
 - Support higher resolutions up to 1920 x 1080.
 - Excellent contrast ratio.
 - Wide viewing angle.
 - High refresh rate that reduces video blur

Different types of Display Devices

- **OLED (Organic Light Emitting Diodes)**
 - More efficient, brighter, thinner, and better refresh rates feature
- **DLP (Digital Light Processing)**
 - A technology, which is used for presentations by projecting images from a monitor onto a big screen
- **TFT (Thin Film Transistors)**
 - All pixels are controlled with the help of one to four transistors

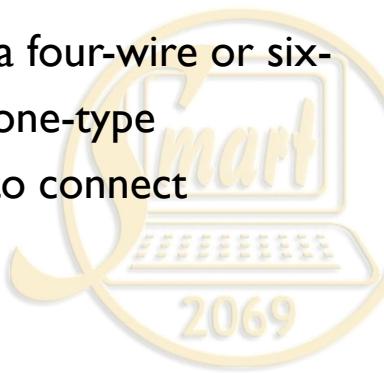
Different connector types

- **RJ45**
 - Connector in Ethernet cables or network devices
 - Used to connect twisted pair cable
 - Consists of 8-position, 8-contact (8P8C)
 - Two wiring schemes: T568A and T568B



Different connector types

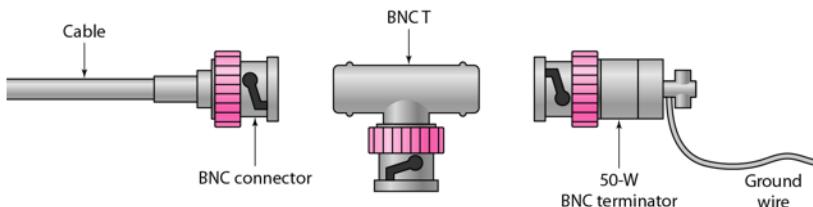
- **RJ11**
 - Containing a four-wire or six-wire telephone-type connector to connect telephones



Different connector types

- **BNC**

- Bayonet Neill-Concelman
- Connector use with coaxial Ethernet cable
- To connect cable TV



Different connector types

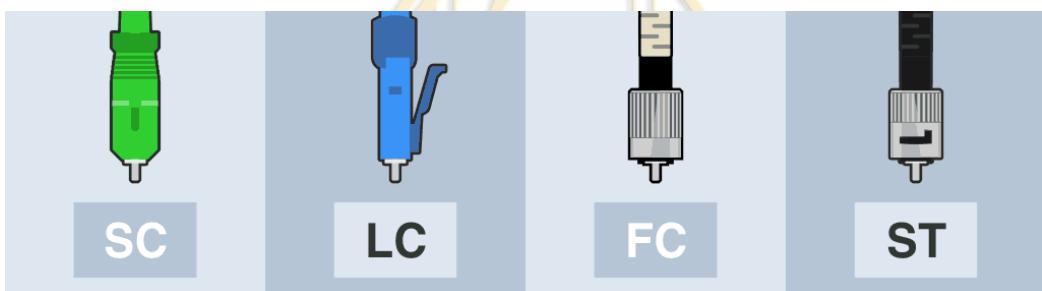
- **HDMI**

- High Definition Multimedia Interface
- Capable of transmitting high-quality and high-bandwidth streams of audio and video between devices
- Used with modern AV devices such as an HDTV, Projector, DVD player, or Blu-ray player



Different connector types

- Optical Fiber Connector



Different connector types

- Optical Fiber Connector
 - “FC” stands for... Ferrule Connector.
 - single mode fibers
 - “ST” stands for... Straight Tip
 - For multimode fibers
 - “LC” stands for... Lucent Connector or Little Connector
 - For monomode and multimode fibers
 - “SC” stands for... Suscriptor Connector or Square Connector
 - For single mode and multimode fibers

Some utility commands

- Systeminfo: displays important information about system
- SFC: system file checker
 - SFC /SCANNOW: checks the integrity of system file
- msconfig: System Configuration Utility,
 - maintain and troubleshoot Windows startup programs
- Gpedit.msc: Group Policy Editor,
 - configure Windows settings

Some utility commands

- Regedit.msc: Registry Editor
 - Windows Registry Editor (regedit) is a graphical tool in the Windows operating system (OS) that allows authorized users to view the Windows registry and make changes
- Dxdiag: DirectX Diagnostic Tool.
 - Used to reports detailed information about the DirectX components and drivers installed on your system.
 - Also help troubleshoot video or sound-related hardware problems

Installing Device Driver

- Right click computer icon on desktop ('This PC' in windows 10)
- Click 'manage'
- Go to 'device manager'
- Right click any device option to install driver
- Click 'update device driver'

System Restore

- Turn on system protection and create system restore point
 - Right Click computer icon on desktop
 - Properties
 - System protection
 - Select the drive where OS is installed under 'protection setting'
 - Click 'configure'
 - Click 'Turn On System Protection' > OK
 - Click 'Create' to create restore point'
 - Give name for the point > OK

System Restore

- Restore system to earlier state where restore point is set
 - Right Click computer icon on desktop
 - Properties
 - System protection
 - Click 'System Restore'
 - Select desired restore point created before
 - Next



Formatting computer and Windows Set up

Formatting computer means removing old system files and installing new system (OS) in computer.

Types of windows installation

1. Clean Installation

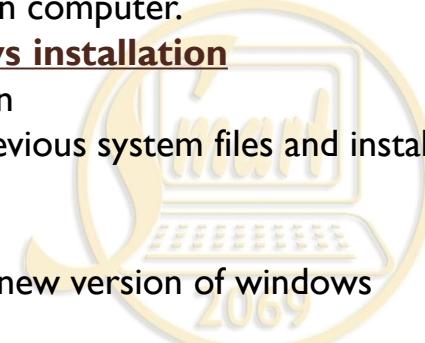
To remove previous system files and installing fresh copy of windows

2. Upgrade

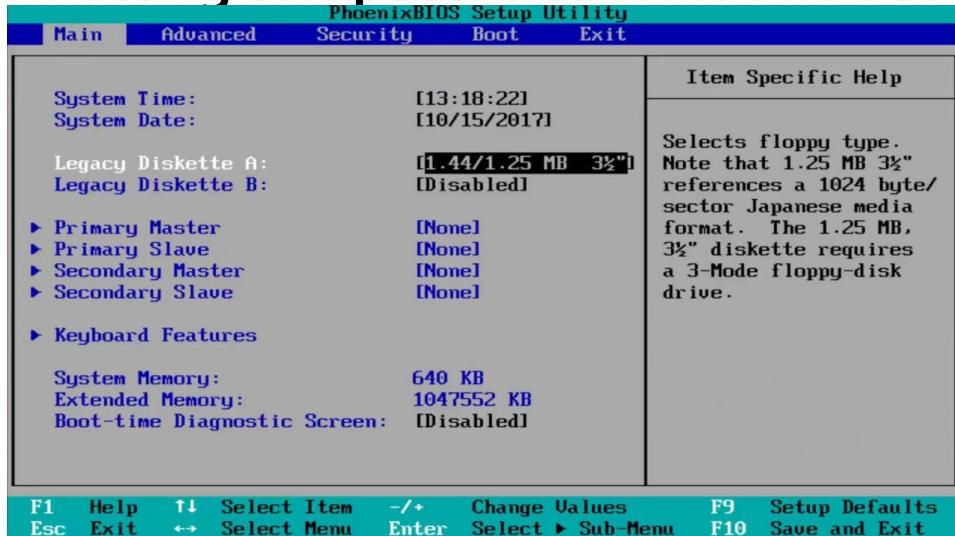
To upgrade to new version of windows

3. Side by side

To install two different versions of windows

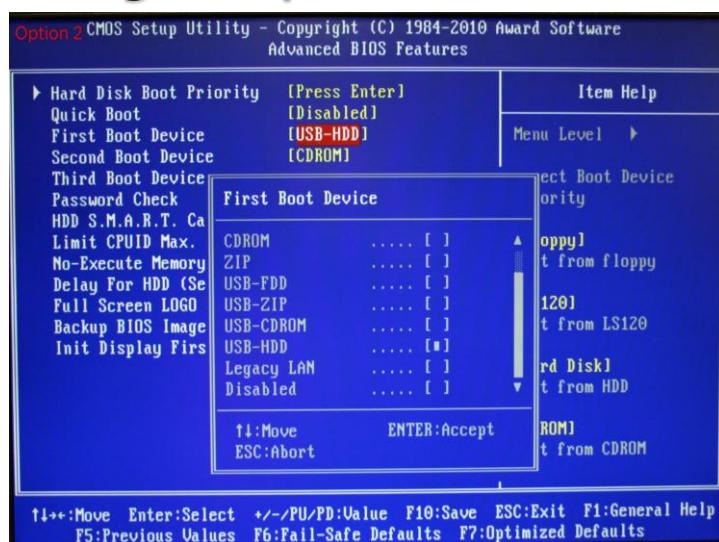


Formatting computer and Windows Set up



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Formatting Computer and Windows setup



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Formatting Computer and Windows setup

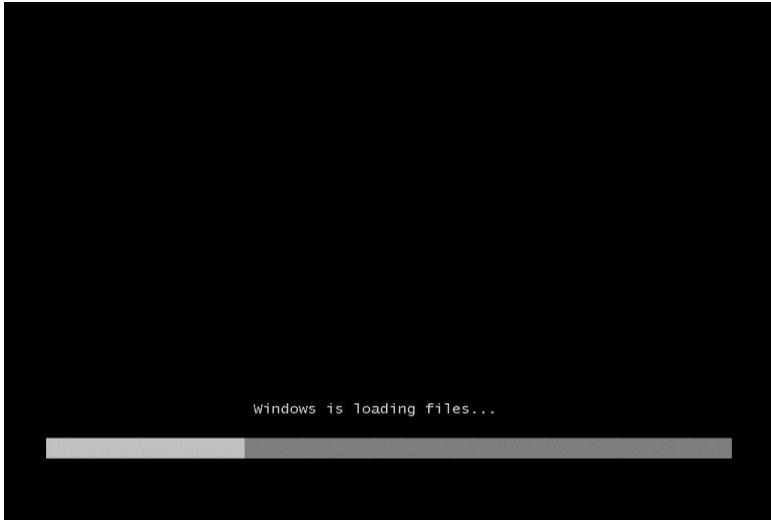
- Enter 'BIOS' by hitting 'Delete' or 'F2'
- And make first boot device as 'CD/DVD'
- Press 'F10' to save setting and exit
- Computer Restarts
- After a message to 'press any key to boot from CD' press any key on keyboard

Windows 7 setup

Press any key to boot from CD or DVD... .

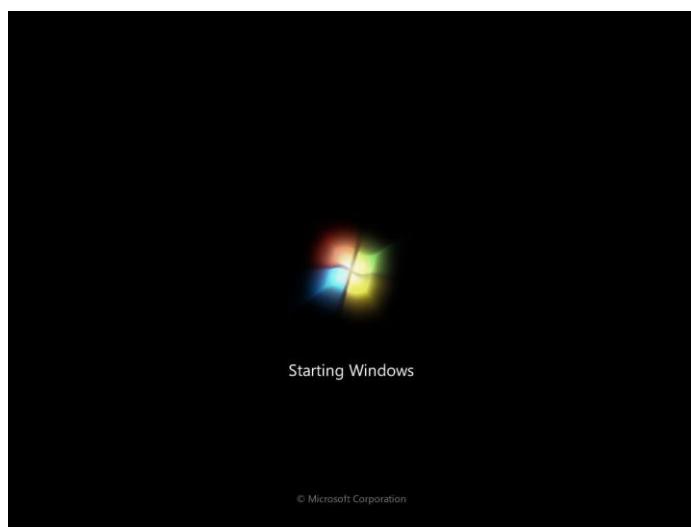
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Windows 7 setup



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Windows 7 setup



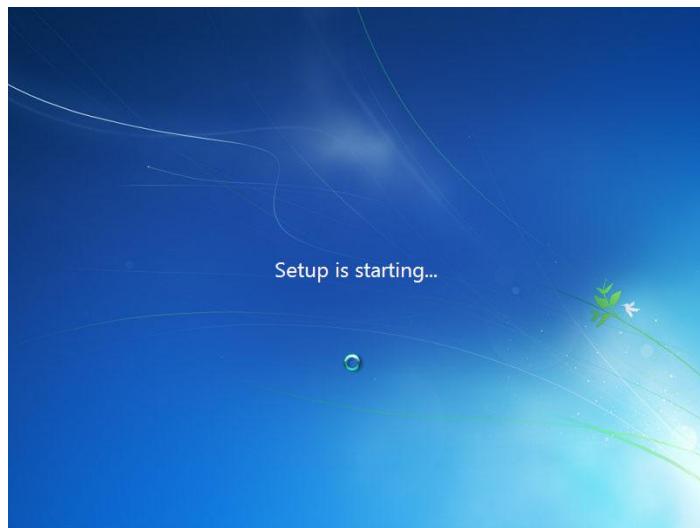
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Windows 7 setup



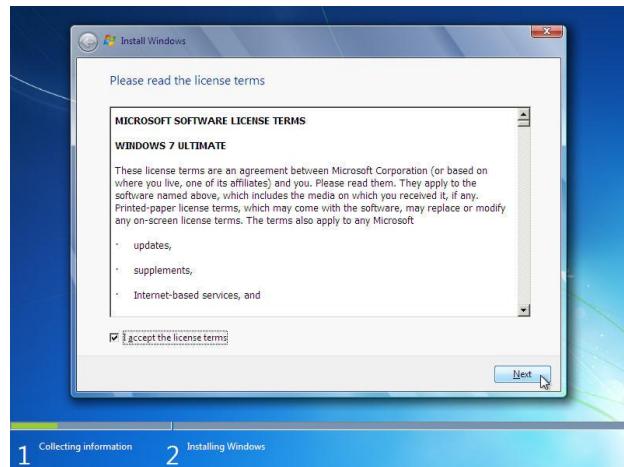
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Windows 7 setup



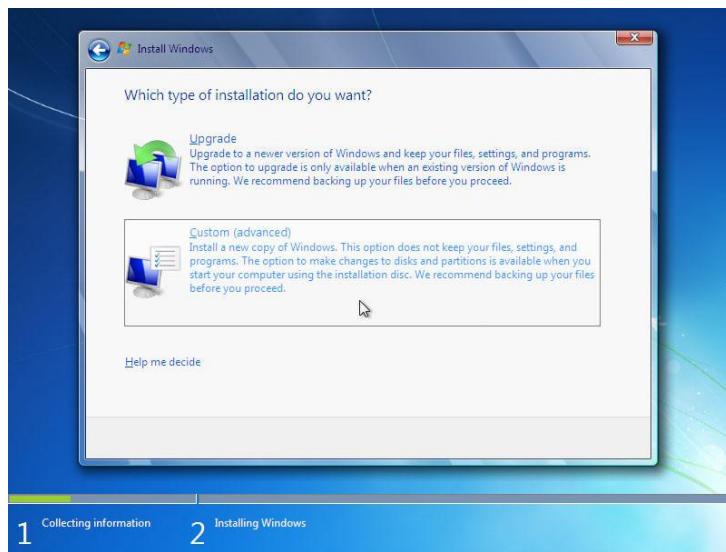
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Windows 7 setup



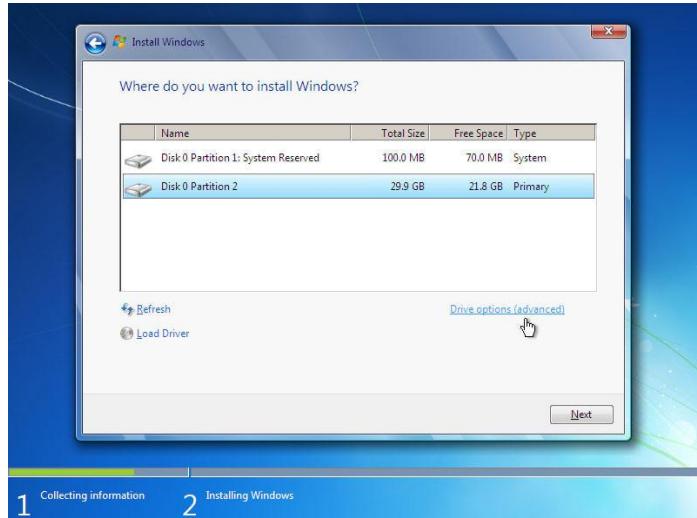
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Windows 7 setup



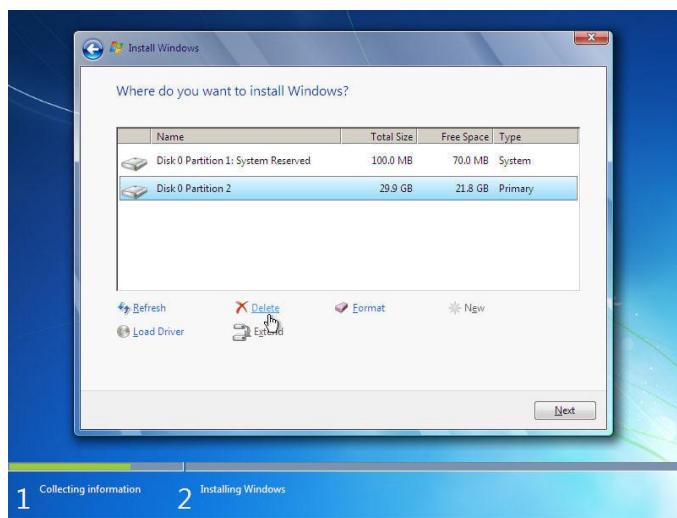
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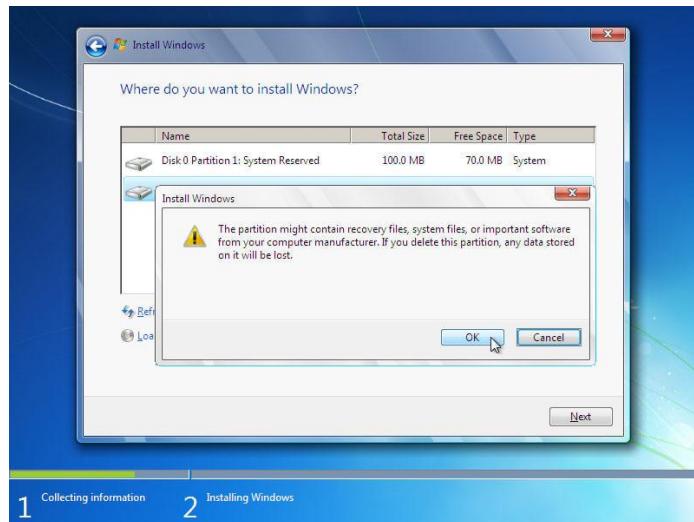
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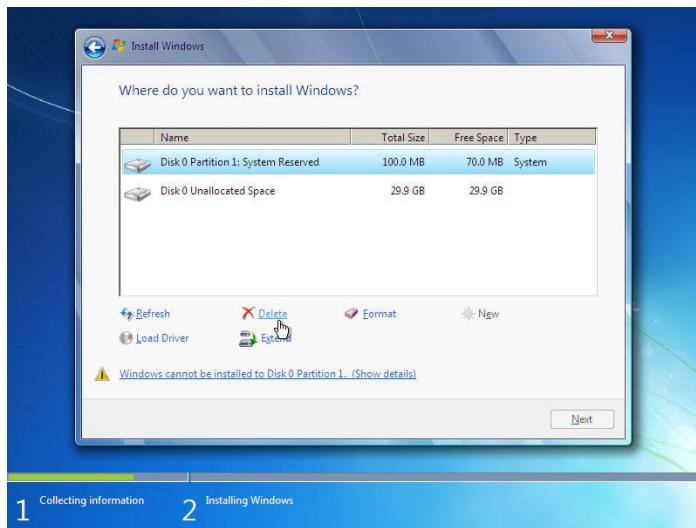
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Windows 7 setup



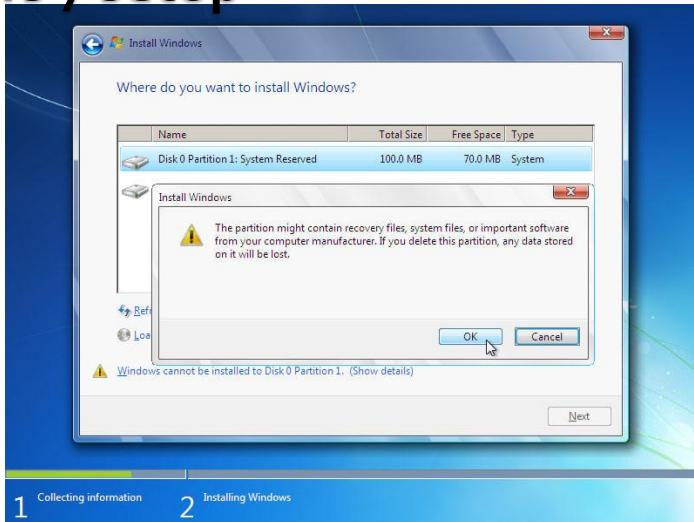
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Windows 7 setup

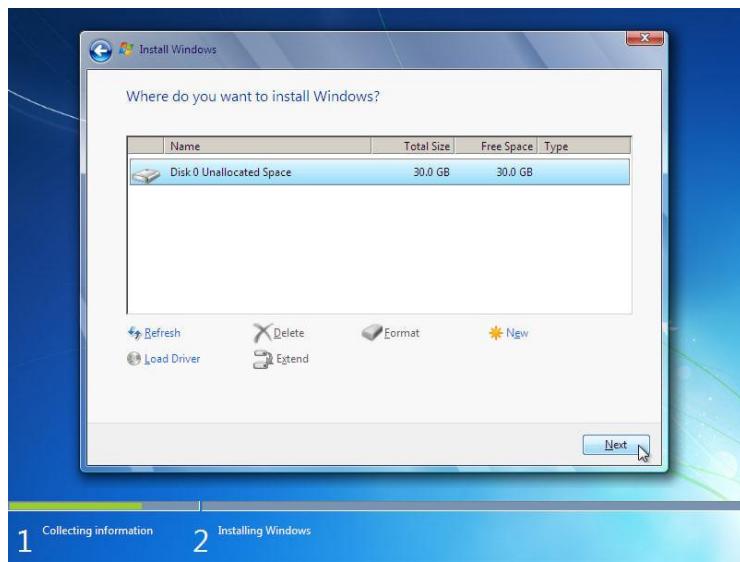


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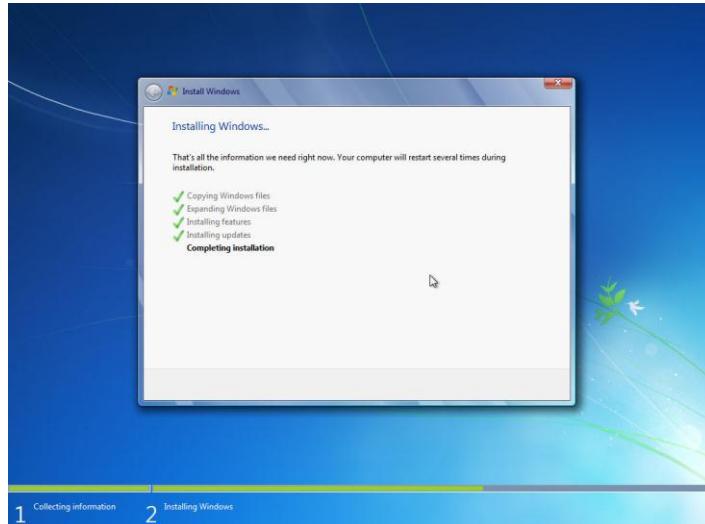
Windows 7 setup



Windows 7 setup

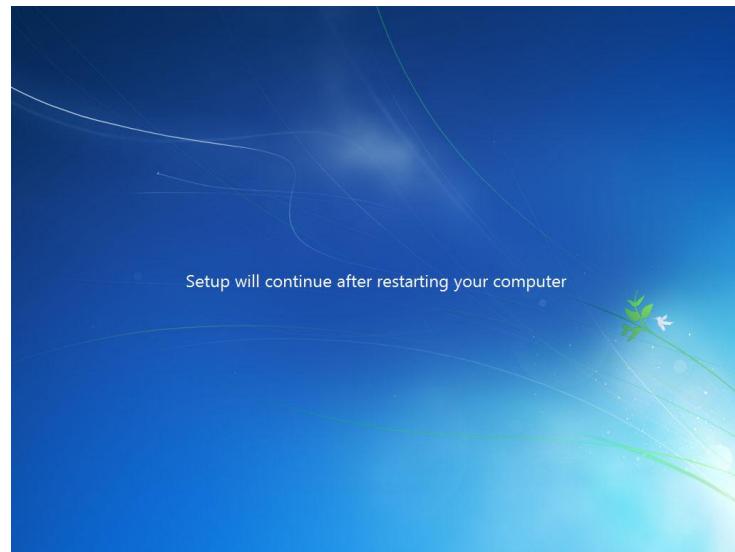


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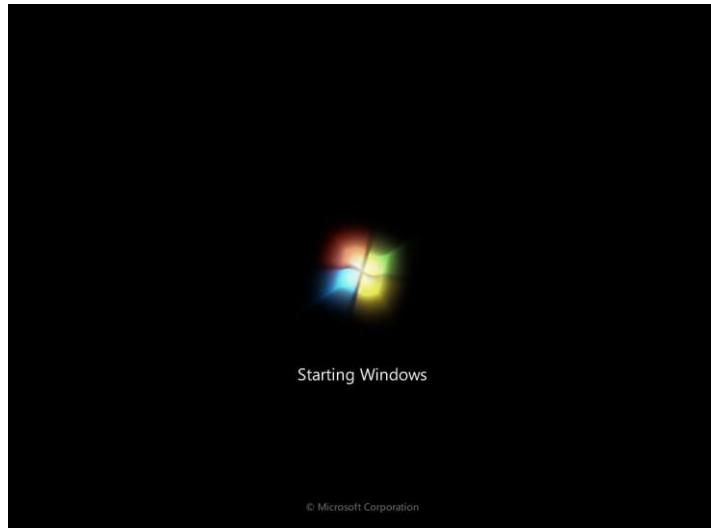
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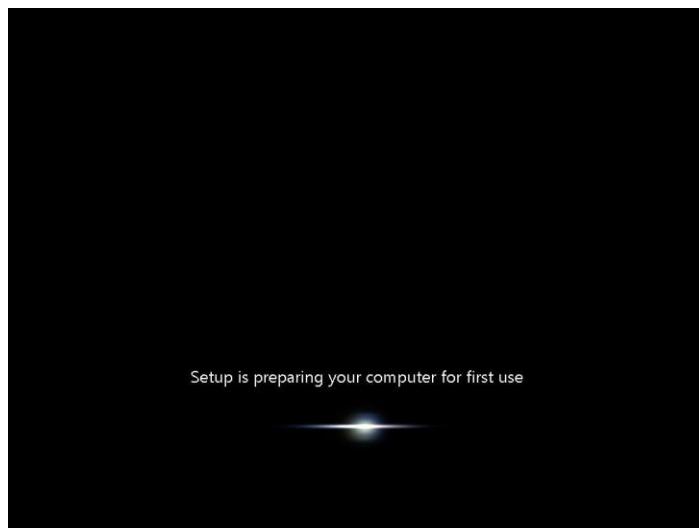
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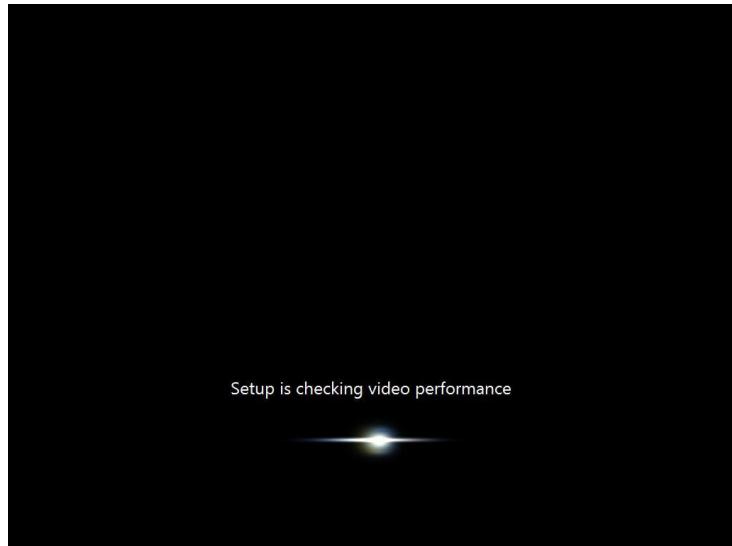
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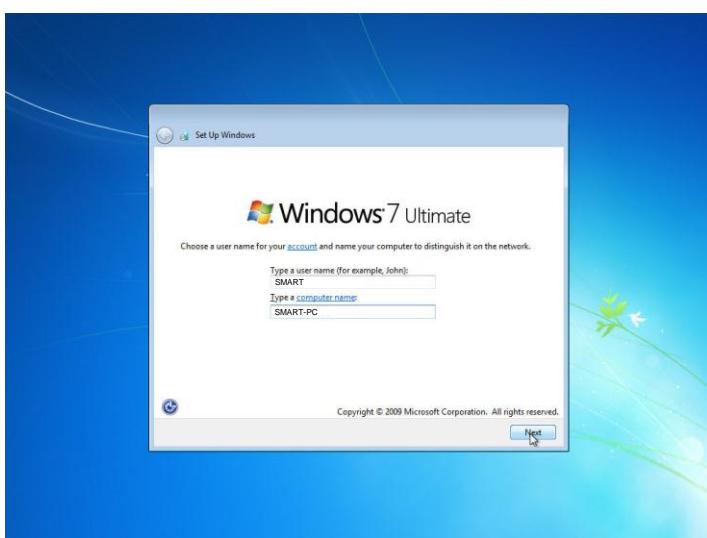
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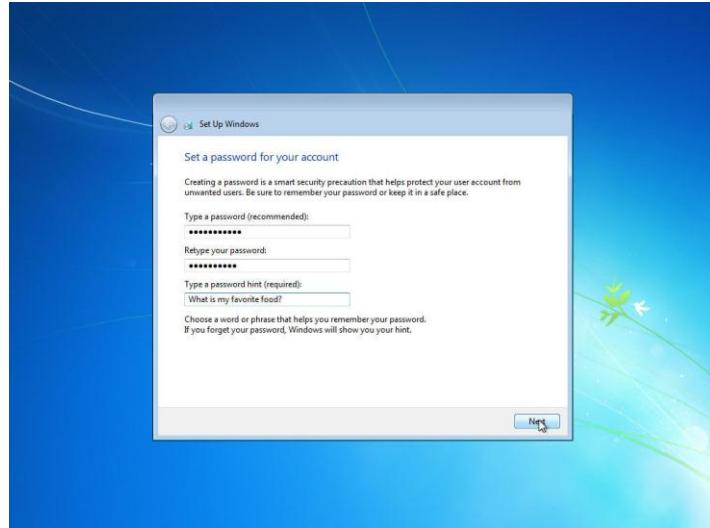
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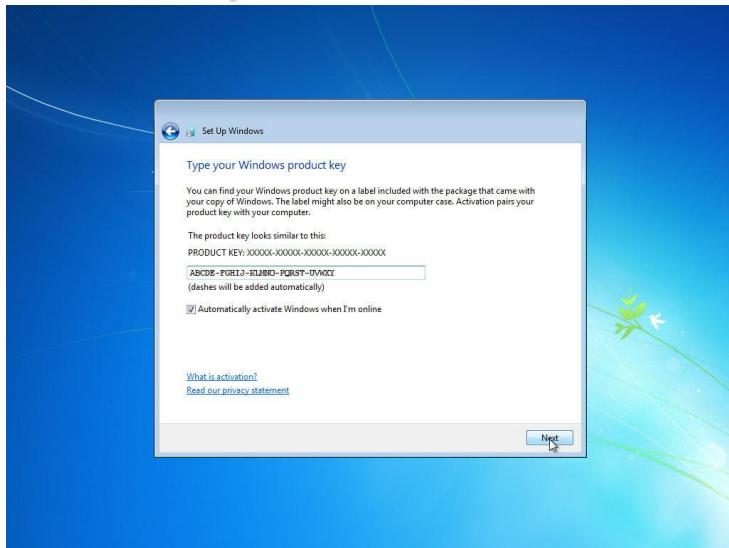
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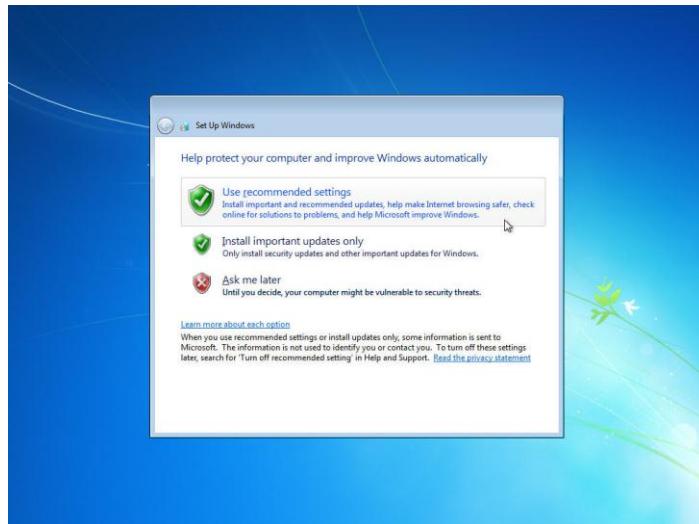
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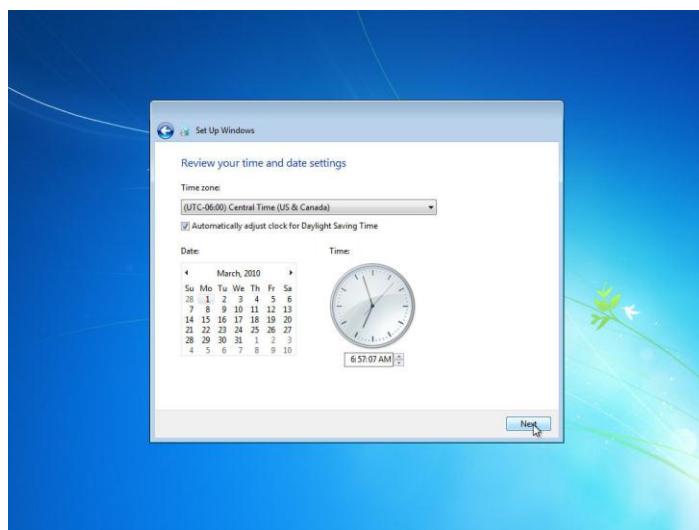
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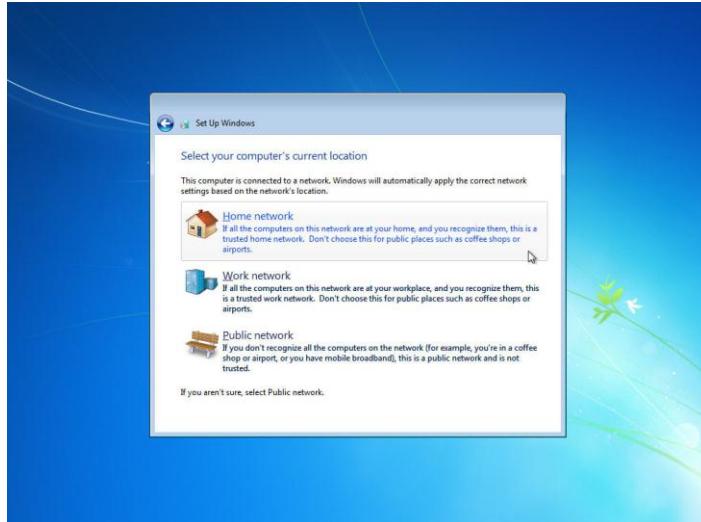
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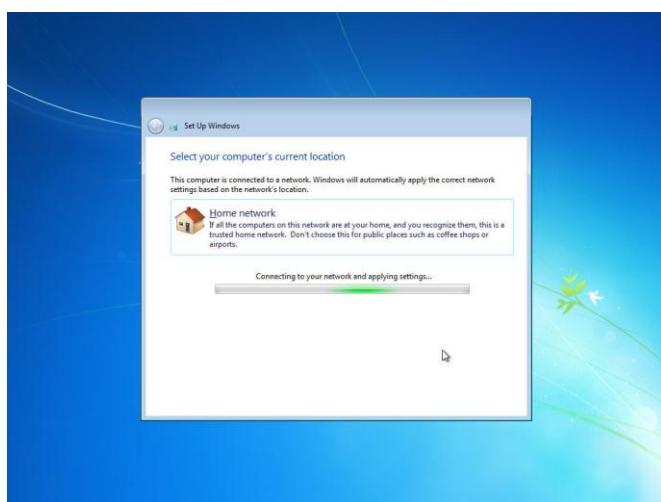
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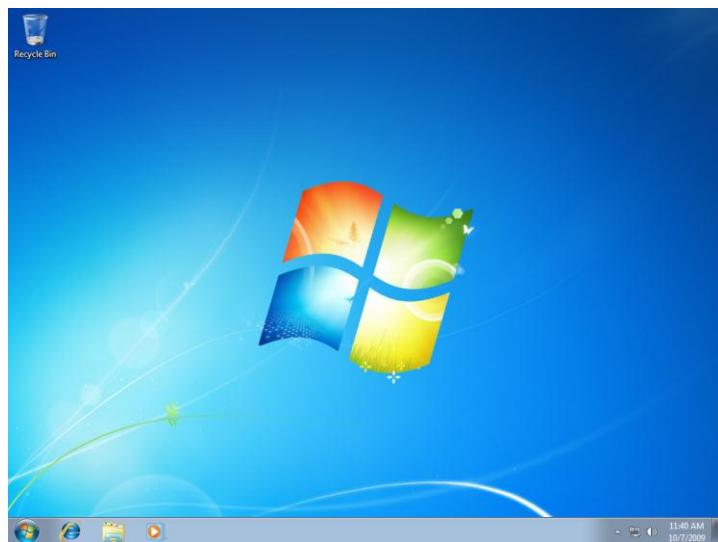
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Windows 7 setup



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Installing Drivers

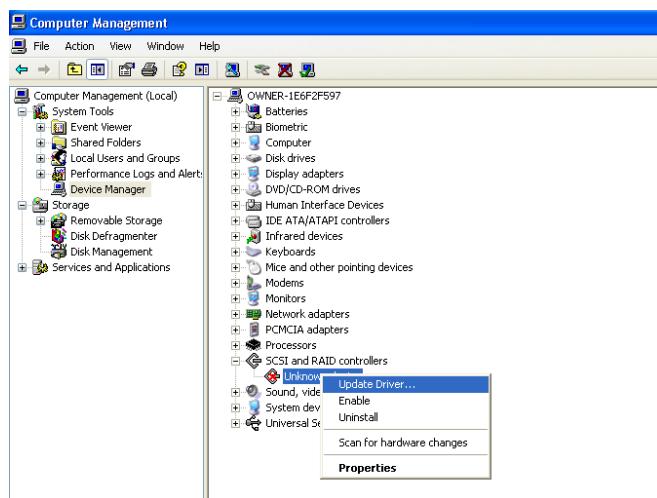
Method 1:

- Insert motherboard CD
- If CD opens itself select the option 'Install Drivers' and follow the steps

Method 2:

- Open 'Device Manager' (Right click 'My Computer' > 'Manage > Device Manager')
- Right click the device with yellow sign
- 'Update Driver' > 'Next'
- Select 'automatic installation' option > 'Next' > 'Finish'

Installing Drivers



Installing Drivers

Method 3:

- Open CD from 'my computer'
- Open the VGA/Sound or desired Driver folder
- Double click set up file of desired driver
- Follow the steps

If problem exists in after installing driver

- Right click the driver option in 'Device Manager'
- 'Uninstall Driver'
- Ok

Again,

- Right click > Scan for hardware change

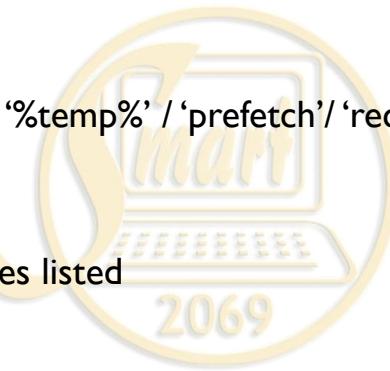
Hard disk clean up and maintenance

Disk Cleanup

- To clean/remove temporary files automatically
- Start > Programs > Accessories > System Tools > Disk Cleanup
- Select drive to clean up
- Check the files to remove
- OK

General File Cleanup

- Start > Run
- Type 'Temp' / '%temp%' / 'prefetch' / 'recent'
- Ok
- Delete the files listed

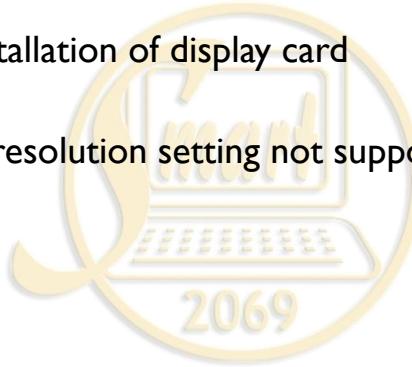


Some Troubleshootings: No Display In Computer

- Loose connection of monitor with display card
- Display card not fixed properly in display card slot
- Memory chip not fixed properly in memory slots
- Resolution of monitor is set up very high
- May be due to defect of display card
- Power supply does not supply rated voltage
- Defective monitor
- Defective motherboard
- Reverse connection of data cable with HDD

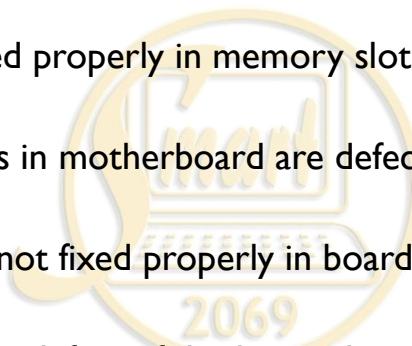
Some Troubleshootings : Unclear Display

- Improper installation of display card
- Due to high resolution setting not supported by monitor



Some Troubleshootings: Beep Sound on booting, No display

- RAM not fixed properly in memory slot
- Memory slots in motherboard are defective
- Display card not fixed properly in board
- May be due to defect of display card



Some Trouble shootings: Hard Disk Fails

- Data cable not connected properly
- Data cable connected in reverse side
- Power cable not connected in HDD
- Voltage supplied by power supply is not proper
- Improper jumper setting of hard disk (for master and slave setting)
- Hard disk may be damaged

Some Trouble shootings: Computer Restarts Itself

- Power supply unit does not regulate voltage properly
- May be due to voltage fluctuation
- Hard disk is full of data and programs
- Motherboard may be defected
- CPU cooler is not working properly
- Processor may be defected
- Due to virus infection

Some Trouble shootings: Computer Hangs

- Virus infection in your programs and documents
- Memory may be defected
- Conflict of one peripheral with other peripherals
- Due to improper power output from power supply port
- Improper installation of drivers of peripherals
- Insufficient memory in system
- Insufficient space in hard disk

Some Trouble shootings: Computer Hangs contd.

- CPU cooler not working properly
- Not compatible peripheral with motherboard used
(eg: sound card, display card, modem etc.)
- Bad sectors in hard disk drive
- Defect of keyboard and mouse
- Due to high resolution

Some Troubleshootings: Compute Slow Problem

- Insufficient memory required by your programs
- Insufficient free disk space in your hard disk
- Due to virus infection
- Lower speed processor in your system
- Too many programs running at same time
- Lots of programs kept in start up
- Cache memory disabled in CMOS program

Some Troubleshootings: Sound is unclear

- Connection of sound card with speaker is not proper
- Sound card not fixed properly in the motherboard
- Sound card driver not installed properly
- Sound device disabled in CMOS program
- Volume levels are set in low lever or mute
- Sound card may be defected
- Speaker may be defective

Run Command

- ❖ Calculator : calc
- ❖ Command Prompt: cmd
- ❖ Character Map: charmap
- ❖ Check Disk : chkdsk
- ❖ Control Panel: control
- ❖ Computer Management: compmgmt.msc
- ❖ Date and Time properties: timedate.cpl

Run Command

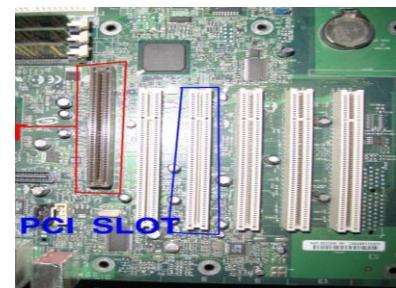
- ❖ Device manager: devmgmt.msc
- ❖ Disk Defragment: dfrg.msc
- ❖ Disk Management: diskmgmt.msc
- ❖ Display Properties: desk.cpl
- ❖ Disk Partition Manager: diskpart
- ❖ Help and support: helpctr
- ❖ Internet Explorer: iexplorer

Expansion Slots

- Any of the slots on a motherboard that can hold an expansion card to expand the computer's functionality
- Slot is a socket on the motherboard that is used to insert an expansion card (or circuit board), which provides additional features to a computer such as video, sound, advanced graphics, Ethernet or memory

Expansion Slots

PCI (Peripheral Component Interconnect)



- It is a common motherboard slot type that is commonly found in modern PCs. It supports wide range of expansion cards including NICs, modems etc.

Expansion Slots

PCMCIA (Personal Computer Memory Card International Association)

- PCMCIA cards are also referred to as PC cards. It is primarily used on laptops though some manufacturers have installed them into desktops. PC cards support removable credit-card size devices i.e, extra memory, hard drives, modems, network adapters, sound cards, etc

PCMCIA



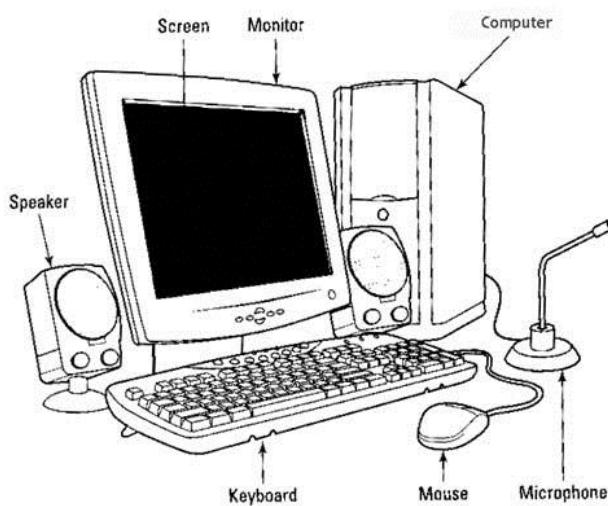
Expansion Slots

AGP (Accelerated Graphics Port)

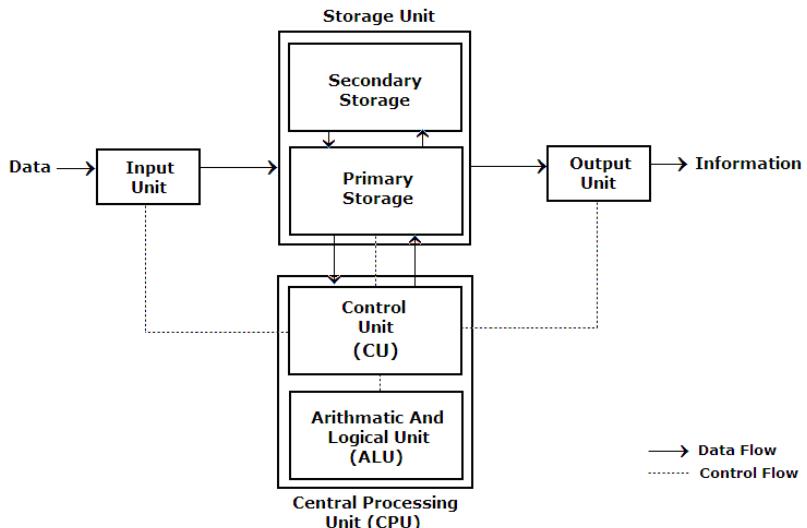
- AGP is a type of expansion slot designed specifically for graphics cards. AGP cards are able to render graphics faster than comparable PCI graphics cards.



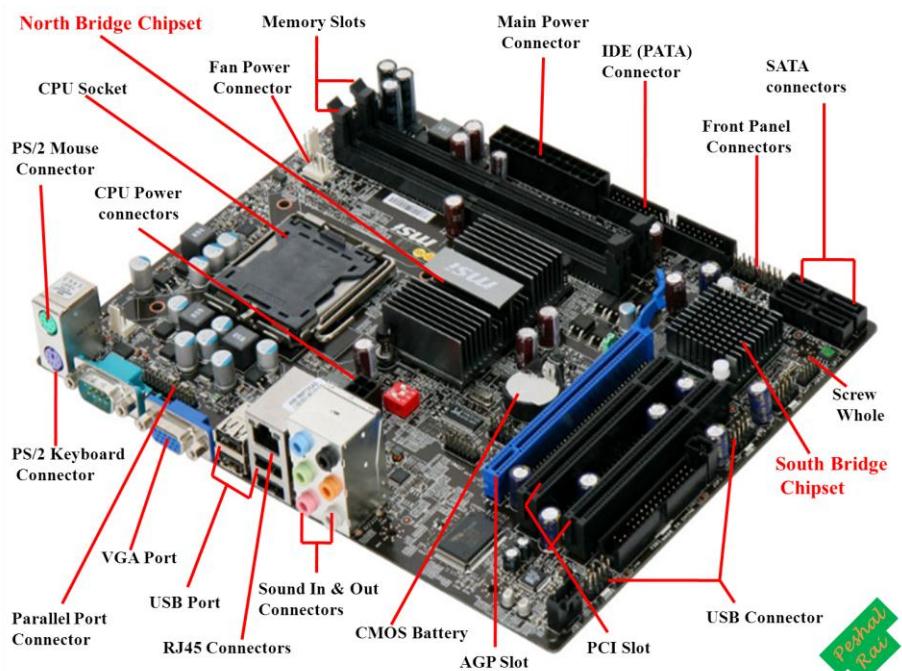
Block Diagram of Computer Set



Block Diagram of Computer System

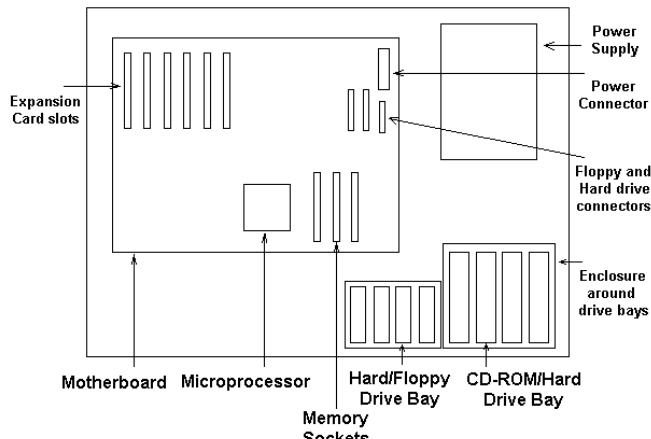


Block Diagram of Motherboard

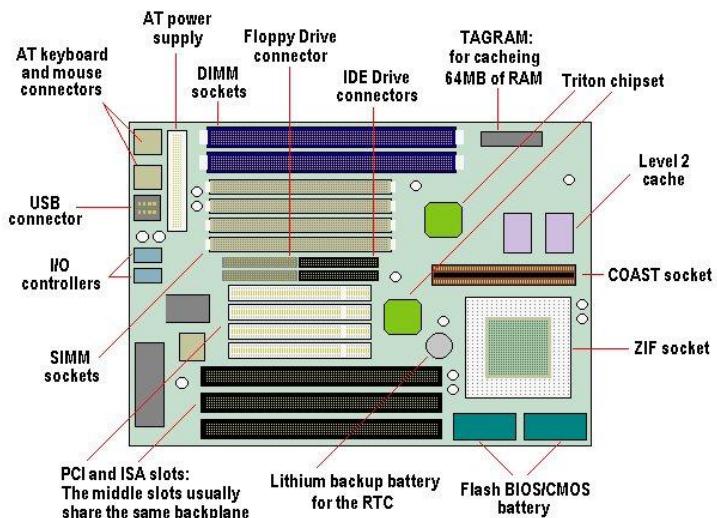


Block Diagram of Motherboard

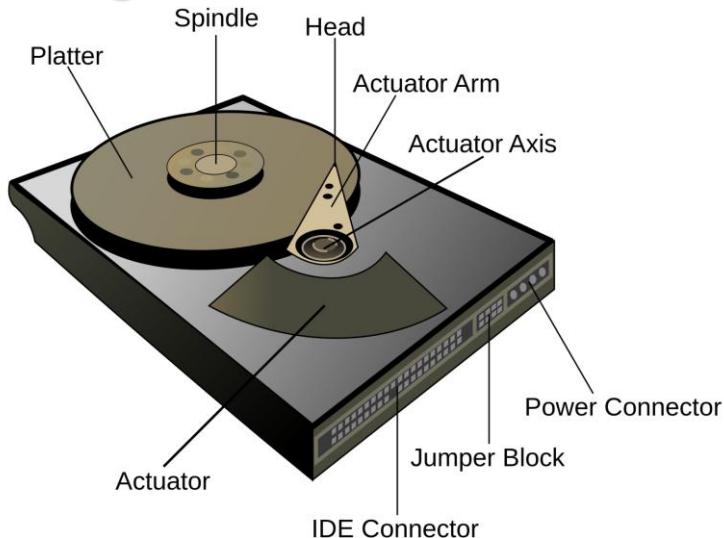
Inside the Case



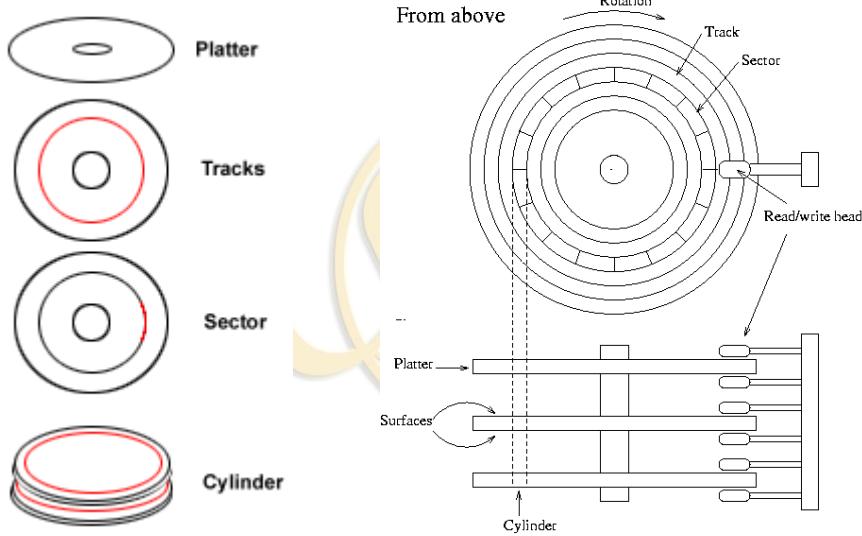
Block Diagram of Motherboard



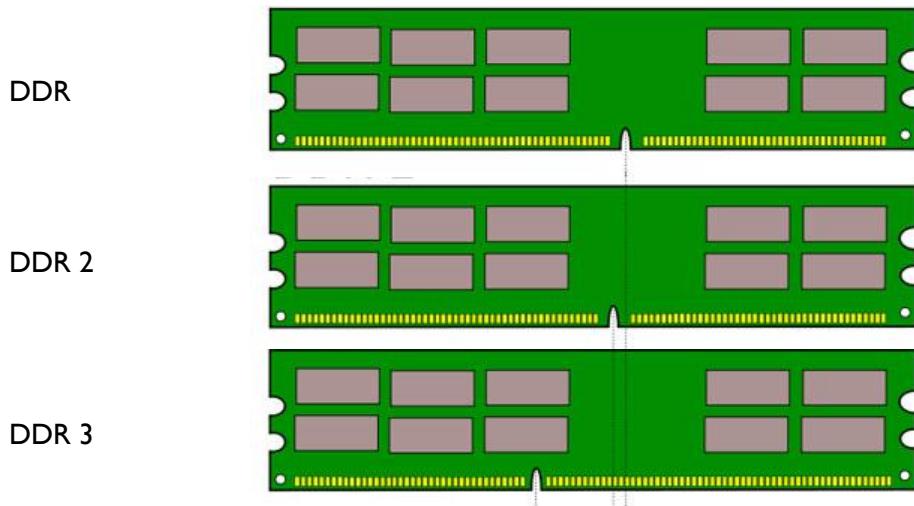
Block Diagram of Hard disk



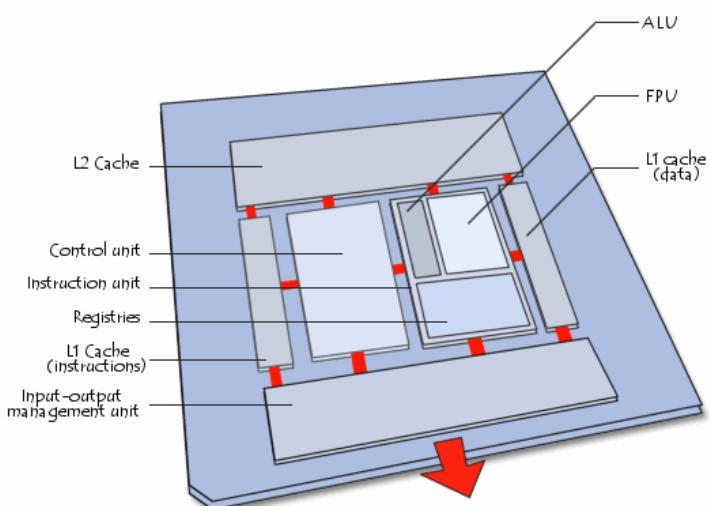
Block Diagram of Hard disk



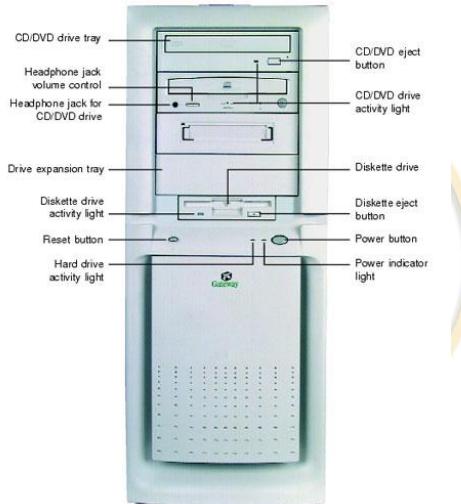
Block Diagram of RAM



Block Diagram of Processor

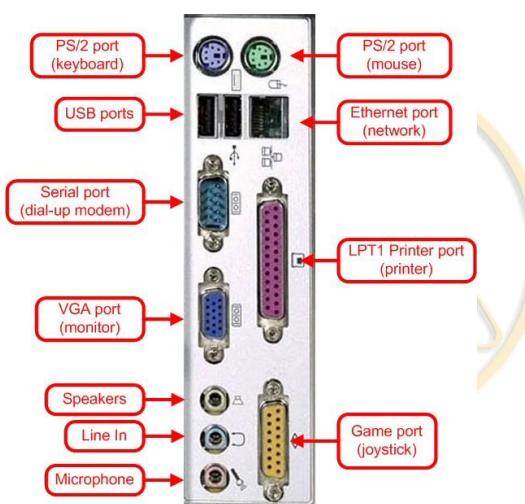


Block Diagram of Front Panel



कम्प्युटर अपरेटर तयारी कक्षा, स्मार्ट इन्फोटेक, सम्पर्क: ९८४१६४९९९३, ९८४३५२१६४०

Block Diagram of Rear (back) Panel

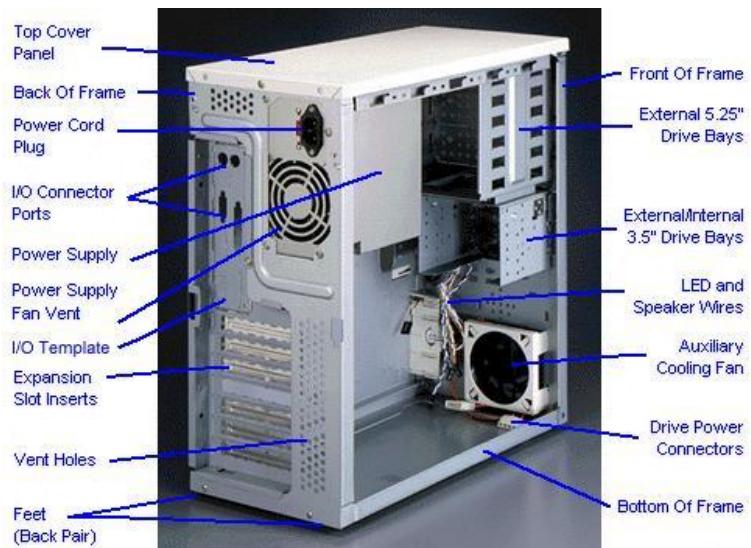


कम्प्युटर अपरेटर तयारी कक्षा, स्मार्ट इन्फोटेक, सम्पर्क: ९८४१६४९९९३, ९८४३५२१६४०

Computer Parts and Devices

कम्प्युटर अपरेटर तयारी कक्षा, स्मार्ट इन्फोटेक, सम्पर्क: ९८४१६४९९९३, ९८४३५२१६४०

Casing



कम्प्युटर अपरेटर तयारी कक्षा, स्मार्ट इन्फोटेक, सम्पर्क: ९८४१६४९९९३, ९८४३५२१६४०

Cooling Fan



कम्प्युटर अपरेटर तयारी कक्षा, स्मार्ट इन्फोटेक, सम्पर्क: ९८४१६४९९९३, ९८४३५२१६४०

Processor



कम्प्युटर अपरेटर तयारी कक्षा, स्मार्ट इन्फोटेक, सम्पर्क: ९८४१६४९९९३, ९८४३५२१६४०

SMPS (Switched Mode Power Supply)



कम्प्युटर अपरेटर तयारी कक्षा, स्मार्ट इन्फोटेक, सम्पर्क: ९८४१६४९९९३, ९८४३५२१६४०

Hard Disk



कम्प्युटर अपरेटर तयारी कक्षा, स्मार्ट इन्फोटेक, सम्पर्क: ९८४१६४९९९३, ९८४३५२१६४०

CMOS Battery



Graphics Card



Sound Card



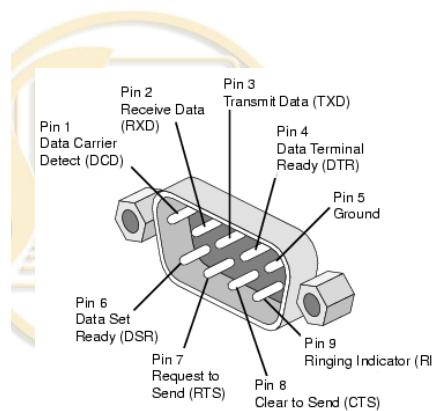
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NIC Card

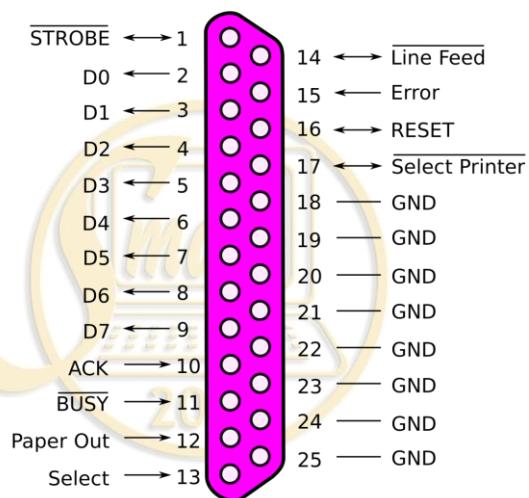


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Serial Port



Parallel Port

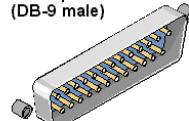


Serial vs. Parallel Port

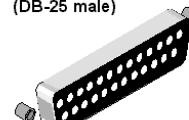
Serial & Parallel Ports on a PC



Serial port
(DB-9 male)



Serial port
(DB-25 male)



Parallel port
(DB-25 female)

A PC usually comes with two serial ports (COM1, COM2) and one parallel port (LPT1).

On the back of the PC, the serial ports are either two male DB-9 connectors or one DB-9 and one DB-25. The parallel port is a DB-25 female connector.