

# 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

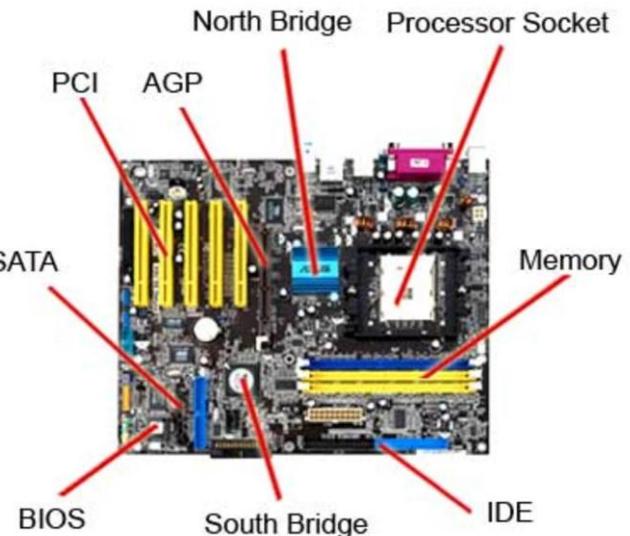
## Installing Power Supply

- 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

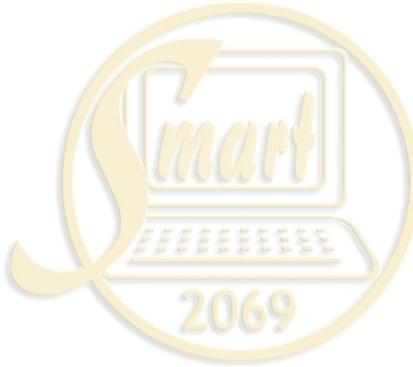


## Features of motherboard

- 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.

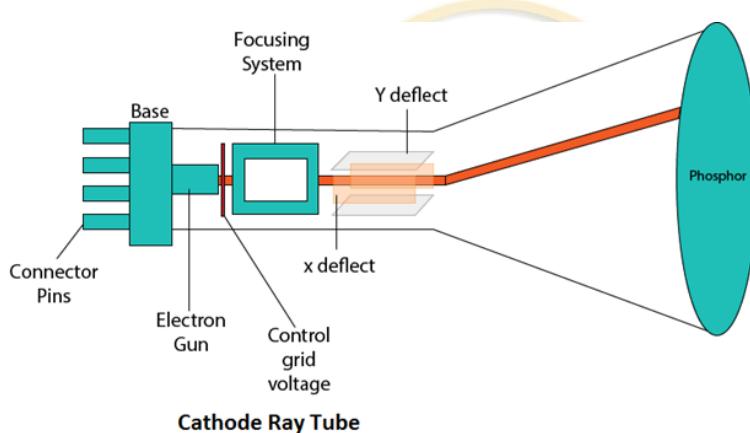
## Different types of Display Devices

- 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

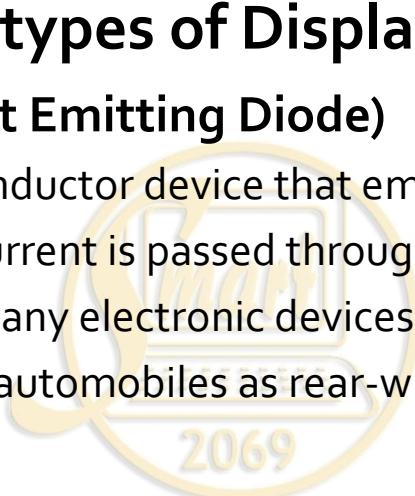


## Different types of Display Devices

- **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

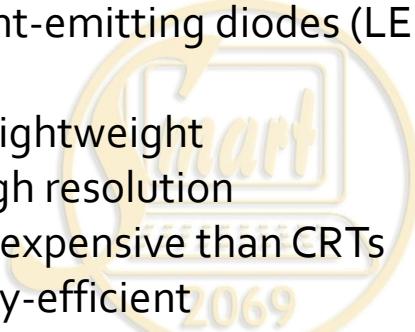
## Different types of Display Devices

- **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

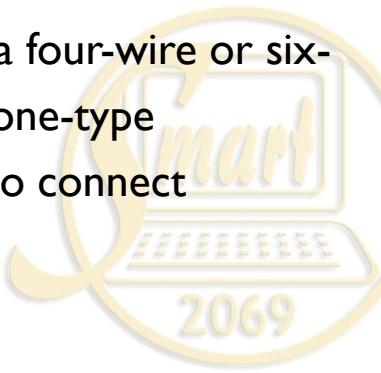
## Different connector types

- **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

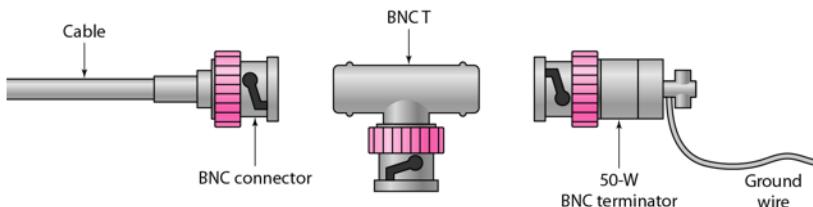
- **RJ11**
  - Containing a four-wire or six-wire telephone-type connector to connect telephones



## Different connector types

- **BNC**

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



## Different connector types

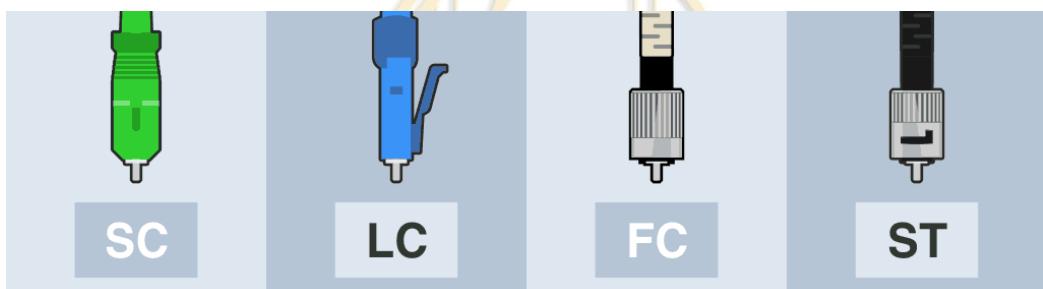
- **HDMI**

- 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

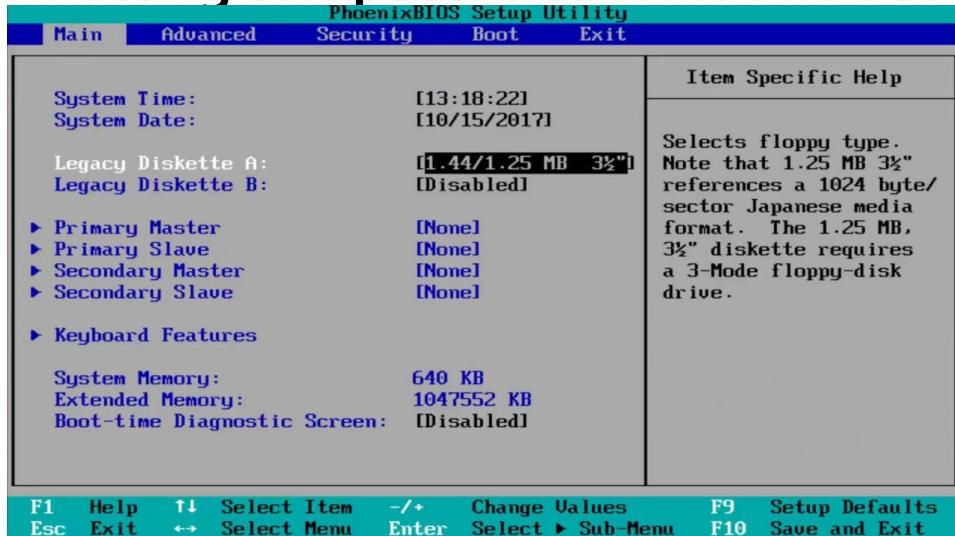
#### 2. Upgrade

To upgrade to new version of windows

#### 3. Side by side

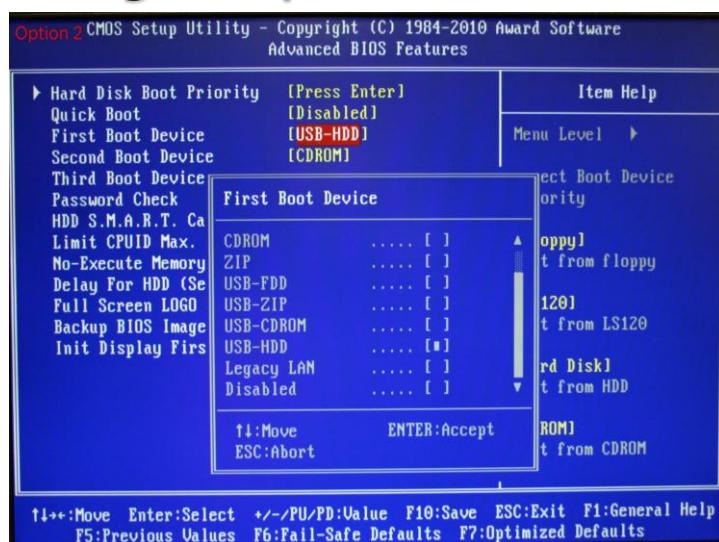
To install two different versions of windows

## Formatting computer and Windows Set up



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

## Formatting Computer and Windows setup



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

## Formatting Computer and Windows setup

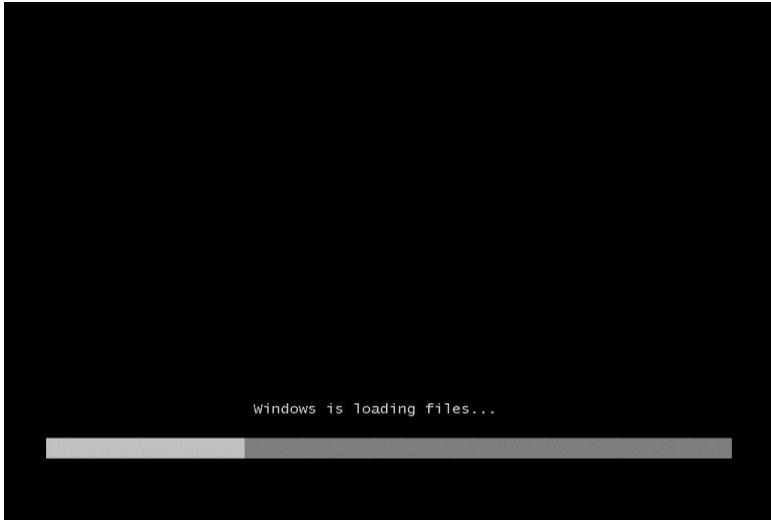
- Enter 'BIOS' by hitting 'Delete' or 'F2'
- And make first boot device as 'CD/DVD'
- Press 'F10' to save setting and exit
- Computer Restarts
- After a message to 'press any key to boot from CD' press any key on keyboard

## Windows 7 setup

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

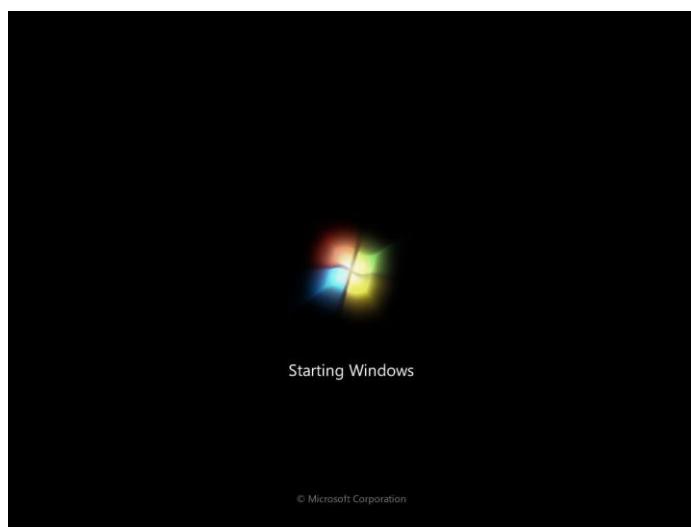
कम्प्युटर अपरेटर तयारी कक्षा, स्मार्ट इन्फोटेक, कीर्तिपुर, काठमाडौं । सम्पर्क: ९८४१६४९९९३, ९८४३५२१६४०

## Windows 7 setup



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

## Windows 7 setup



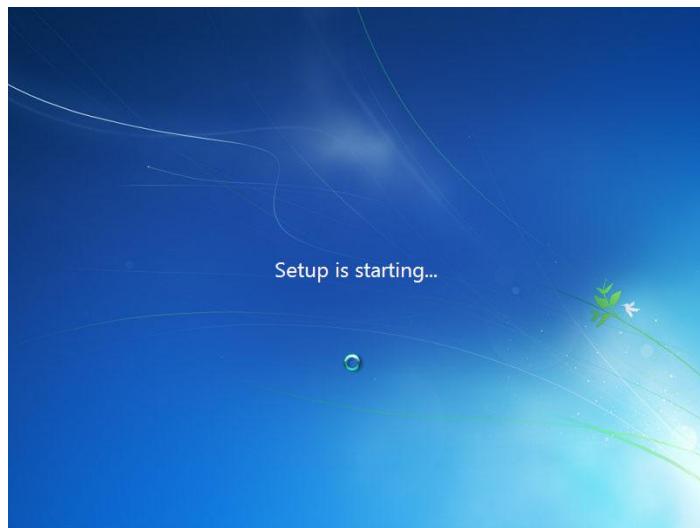
कम्प्युटर अपरेटर तयारी कक्षा, स्मार्ट इन्फोटेक, सम्पर्क: ९८४१६४९९९३, ९८४३५२१६४०

## Windows 7 setup



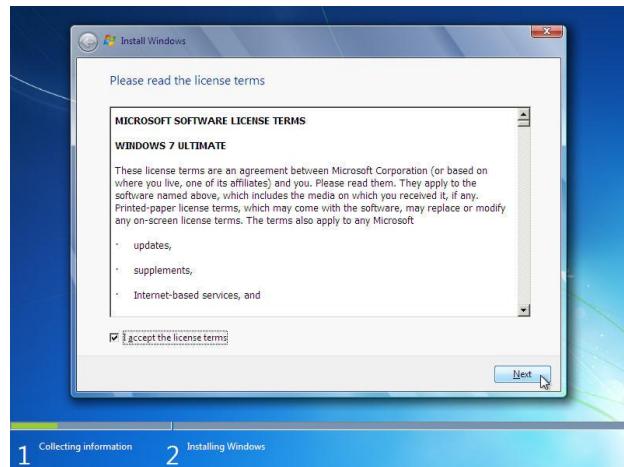
कम्प्युटर अपरेटर तयारी कक्षा, स्मार्ट इन्फोटेक, सम्पर्क: ९८४१६४९९९३, ९८४३५२१६४०

## Windows 7 setup



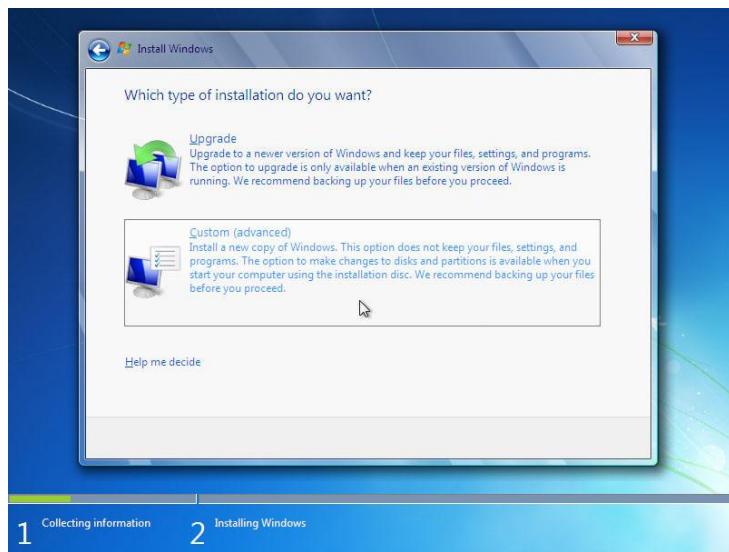
कम्प्युटर अपरेटर तयारी कक्षा, स्मार्ट इन्फोटेक, सम्पर्क: ९८४१६४९९९३, ९८४३५२१६४०

## Windows 7 setup



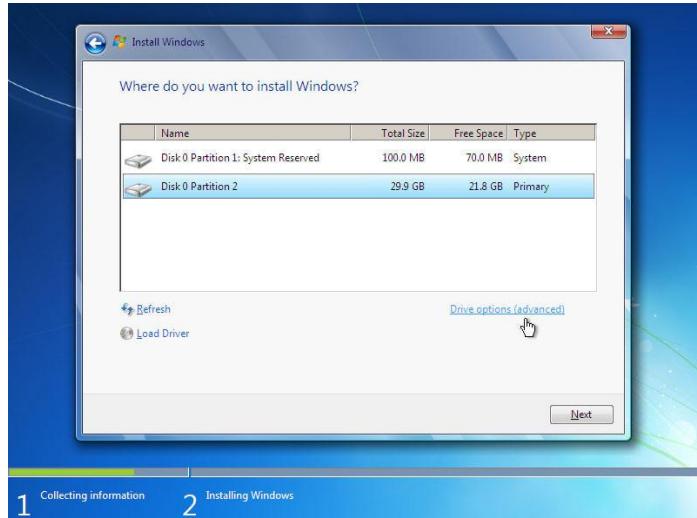
कम्प्युटर अपरेटर तयारी कक्षा, स्मार्ट इन्फोटेक, सम्पर्क: ९८४१६४९९९३, ९८४३५२१६४०

## Windows 7 setup



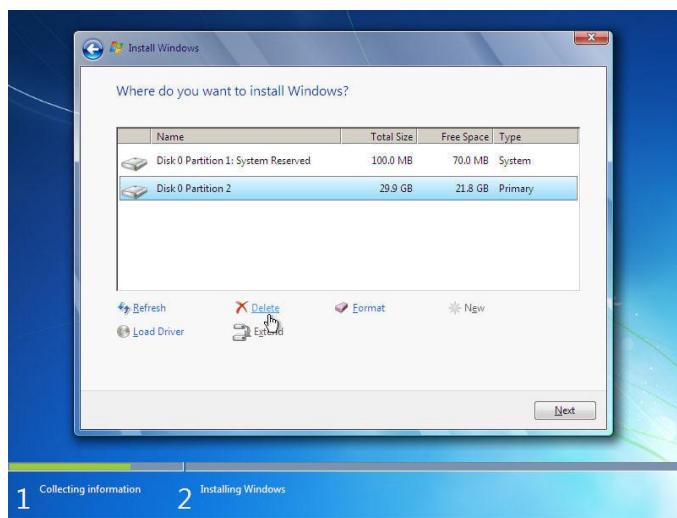
कम्प्युटर अपरेटर तयारी कक्षा, स्मार्ट इन्फोटेक, सम्पर्क: ९८४१६४९९९३, ९८४३५२१६४०

## Windows 7 setup



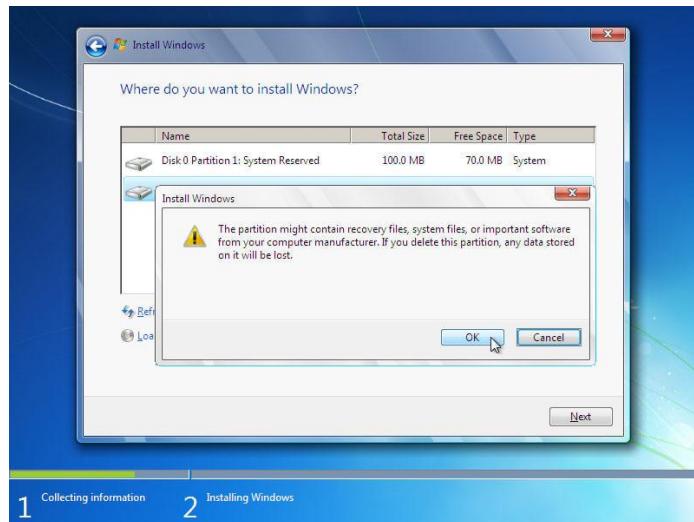
कम्प्युटर अपरेटर तयारी कक्षा, स्मार्ट इन्फोटेक, सम्पर्क: ९८४१६४९९९३, ९८४३५२१६४०

## Windows 7 setup



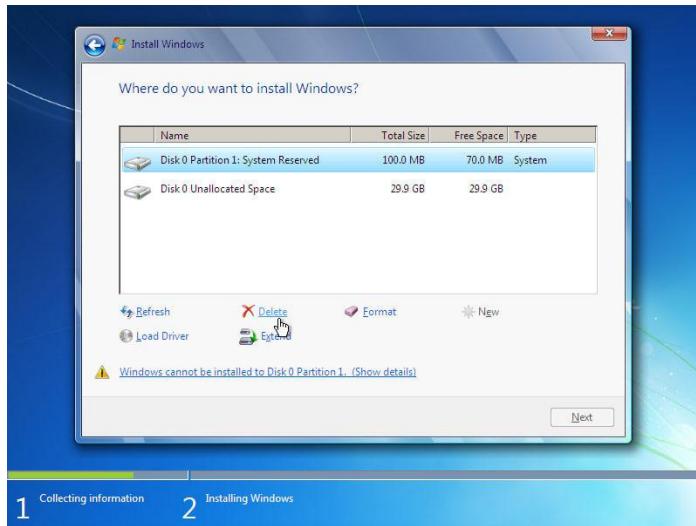
कम्प्युटर अपरेटर तयारी कक्षा, स्मार्ट इन्फोटेक, सम्पर्क: ९८४१६४९९९३, ९८४३५२१६४०

## Windows 7 setup



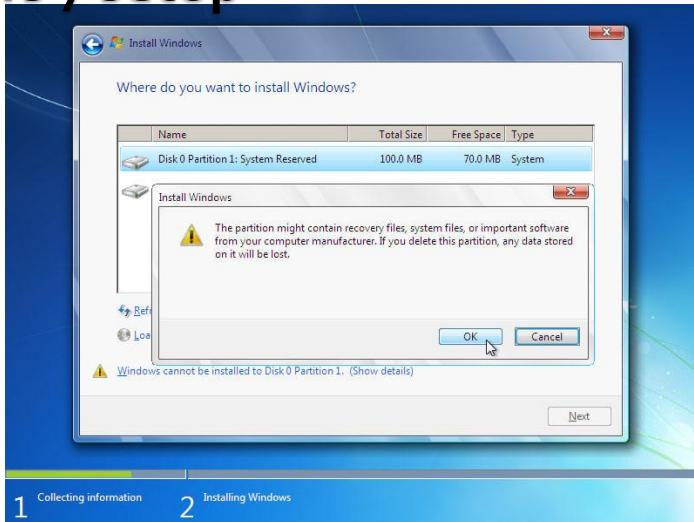
कम्प्युटर अपरेटर तयारी कक्षा, स्मार्ट इन्फोटेक, सम्पर्क: ९८४१६४९९९३, ९८४३५२१६४०

## Windows 7 setup

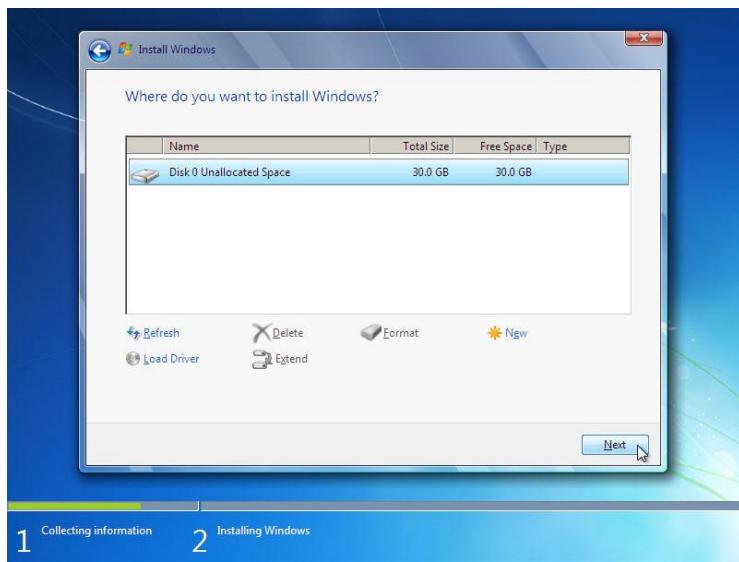


कम्प्युटर अपरेटर तयारी कक्षा, स्मार्ट इन्फोटेक, सम्पर्क: ९८४१६४९९९३, ९८४३५२१६४०

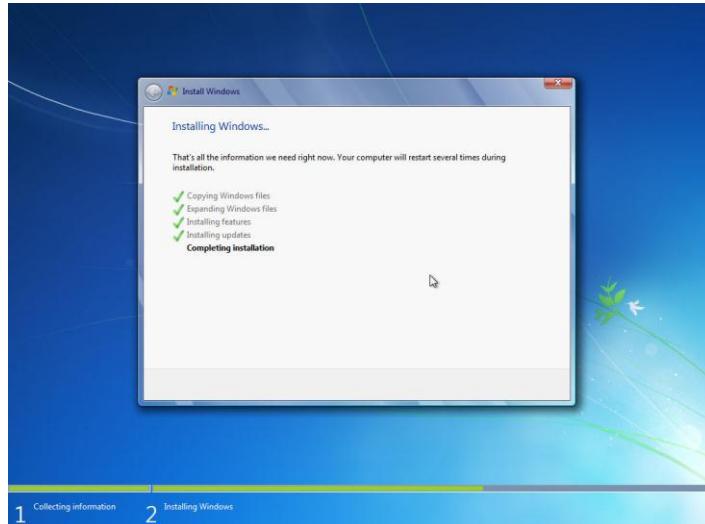
## Windows 7 setup



## Windows 7 setup

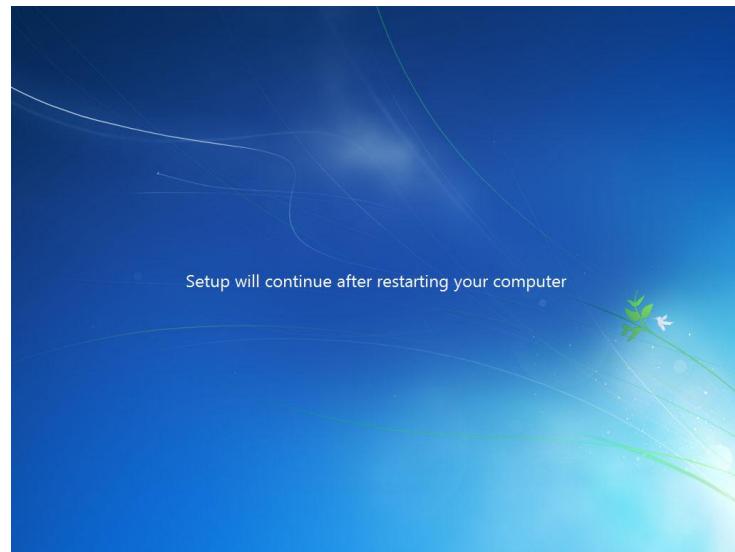


## Windows 7 setup



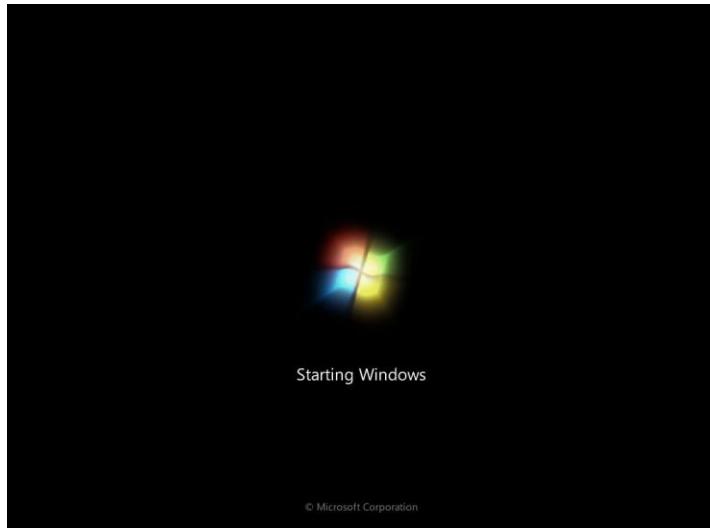
कम्प्युटर अपरेटर तयारी कक्षा, स्मार्ट इन्फोटेक, सम्पर्क: ९८४१६४९९९३, ९८४३५२१६४०

## Windows 7 setup



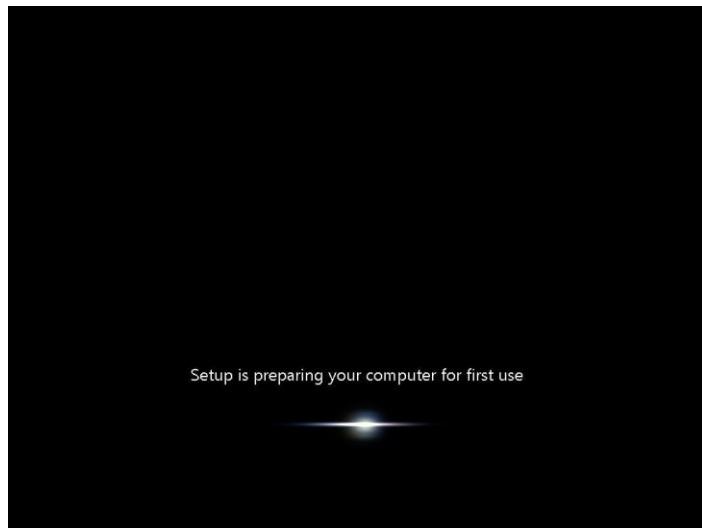
कम्प्युटर अपरेटर तयारी कक्षा, स्मार्ट इन्फोटेक, सम्पर्क: ९८४१६४९९९३, ९८४३५२१६४०

## Windows 7 setup



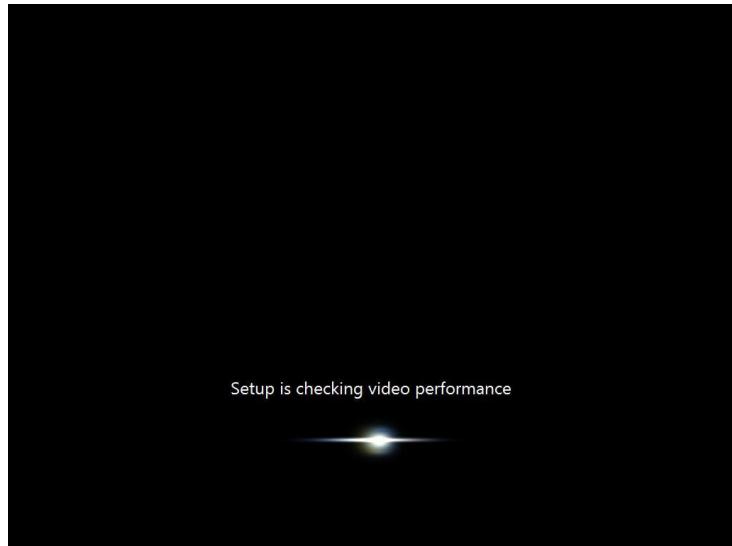
कम्प्युटर अपरेटर तयारी कक्षा, स्मार्ट इन्फोटेक, सम्पर्क: ९८४१६४९९९३, ९८४३५२१६४०

## Windows 7 setup



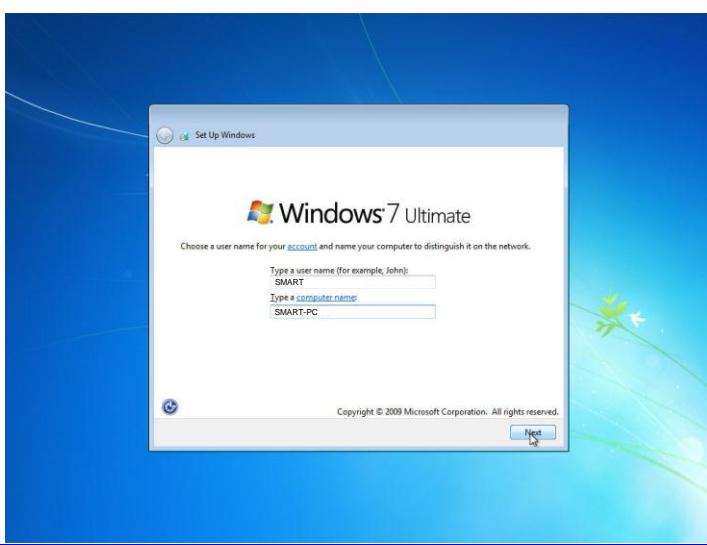
कम्प्युटर अपरेटर तयारी कक्षा, स्मार्ट इन्फोटेक, सम्पर्क: ९८४१६४९९९३, ९८४३५२१६४०

## Windows 7 setup



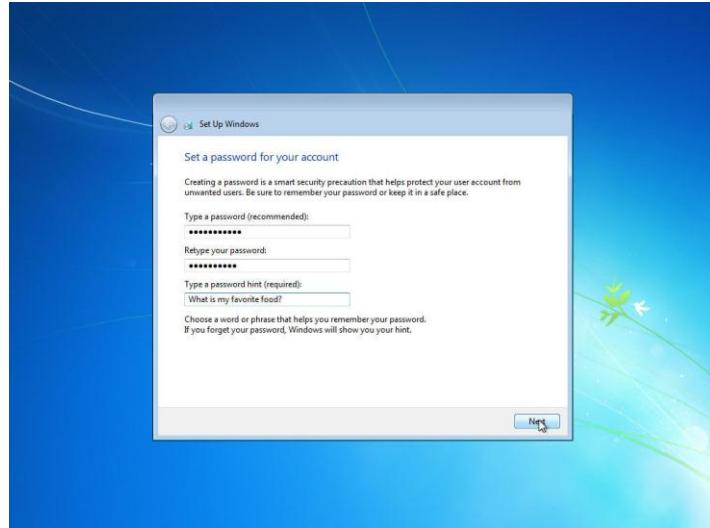
कम्प्युटर अपरेटर तयारी कक्षा, स्मार्ट इन्फोटेक, सम्पर्क: ९८४१६४९९९३, ९८४३५२१६४०

## Windows 7 setup



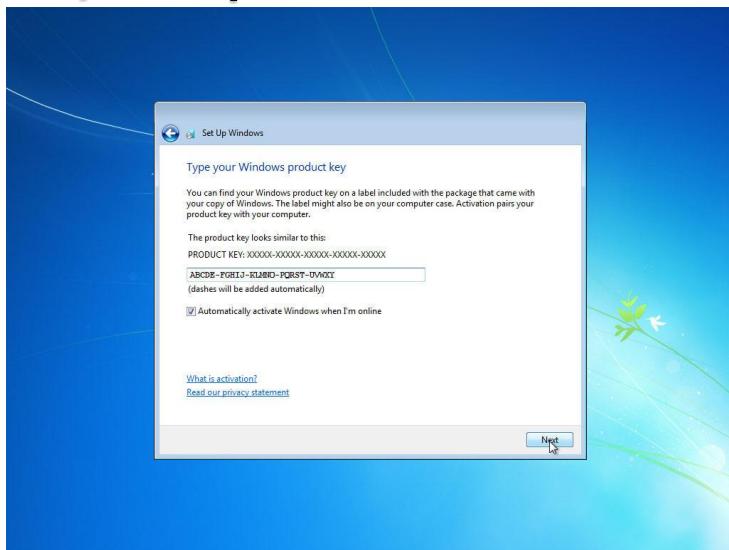
कम्प्युटर अपरेटर तयारी कक्षा, स्मार्ट इन्फोटेक, सम्पर्क: ९८४१६४९९९३, ९८४३५२१६४०

## Windows 7 setup



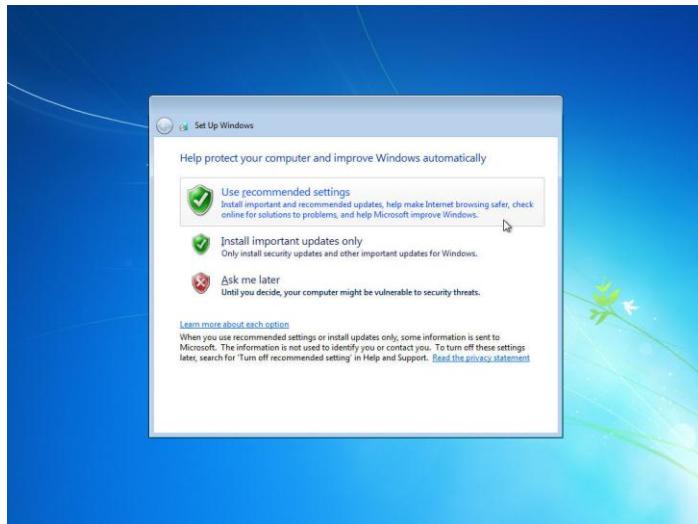
कम्प्युटर अपरेटर तयारी कक्षा, स्मार्ट इन्फोटेक, सम्पर्क: ९८४१६४९९९३, ९८४३५२१६४०

## Windows 7 setup



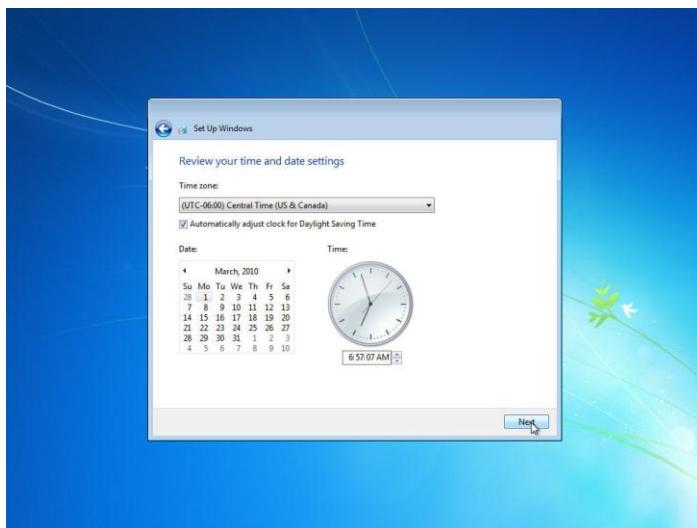
कम्प्युटर अपरेटर तयारी कक्षा, स्मार्ट इन्फोटेक, सम्पर्क: ९८४१६४९९९३, ९८४३५२१६४०

## Windows 7 setup



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

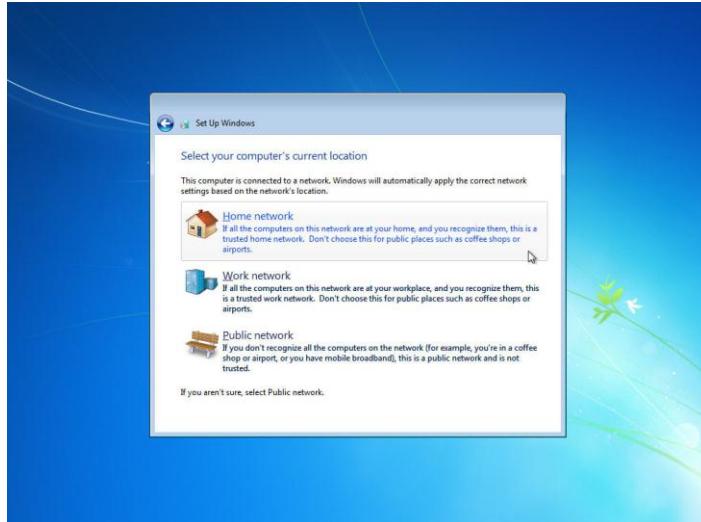
## Windows 7 setup



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

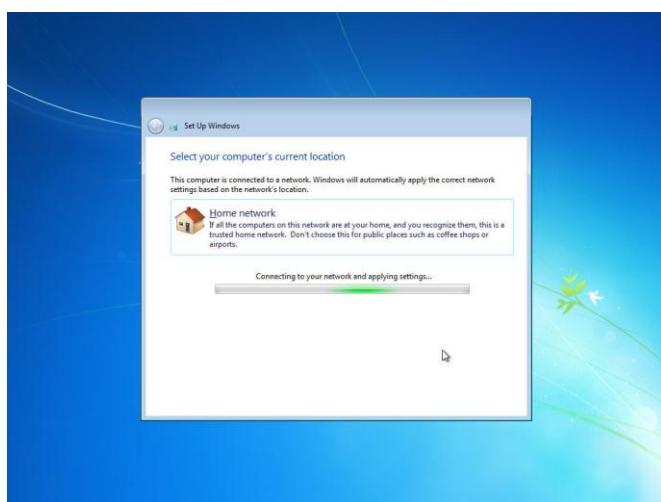
कम्प्युटर अपरेटर तयारी कक्षा, स्मार्ट इन्फोटेक, कीर्तिपुर, काठमाडौं । सम्पर्क: ९८४१६४९९९३, ९८४३५२१६४०

## Windows 7 setup



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

## Windows 7 setup



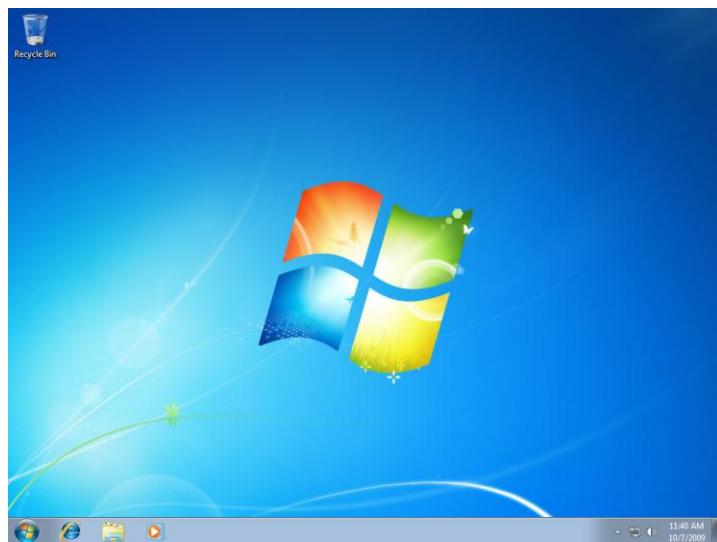
कम्प्युटर अपरेटर तयारी कक्षा, स्मार्ट इन्फोटेक, सम्पर्क: ९८४१६४९९९३, ९८४३५२१६४०

## Windows 7 setup



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

## Windows 7 setup



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

## Installing Drivers

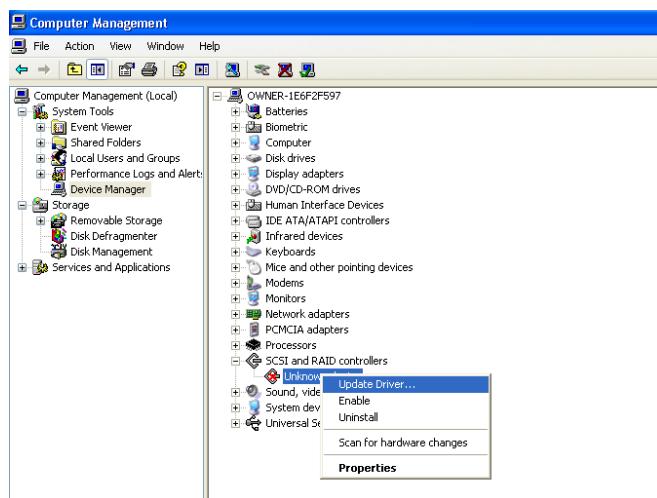
### Method 1:

- 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

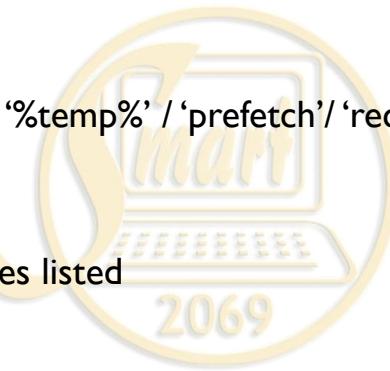
## Hard disk clean up and maintenance

### 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

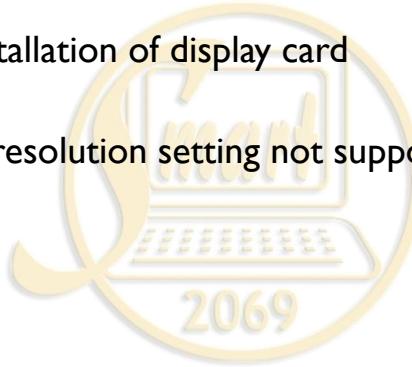


## Some Troubleshootings: No Display In Computer

- 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

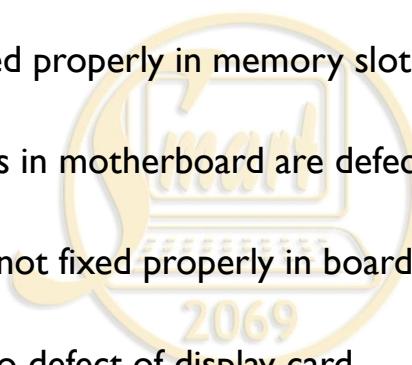
## Some Troubleshootings : Unclear Display

- 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

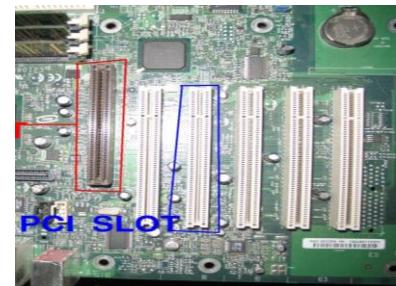
- ❖ Device manager: devmgmt.msc
- ❖ Disk Defragment: dfrg.msc
- ❖ Disk Management: diskmgmt.msc
- ❖ Display Properties: desk.cpl
- ❖ Disk Partition Manager: diskpart
- ❖ Help and support: helpctr
- ❖ Internet Explorer: iexplorer

## 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



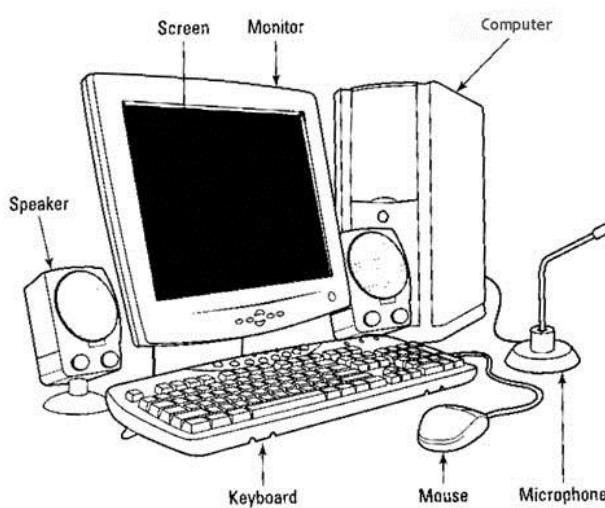
## Expansion Slots

### AGP (Accelerated Graphics Port)

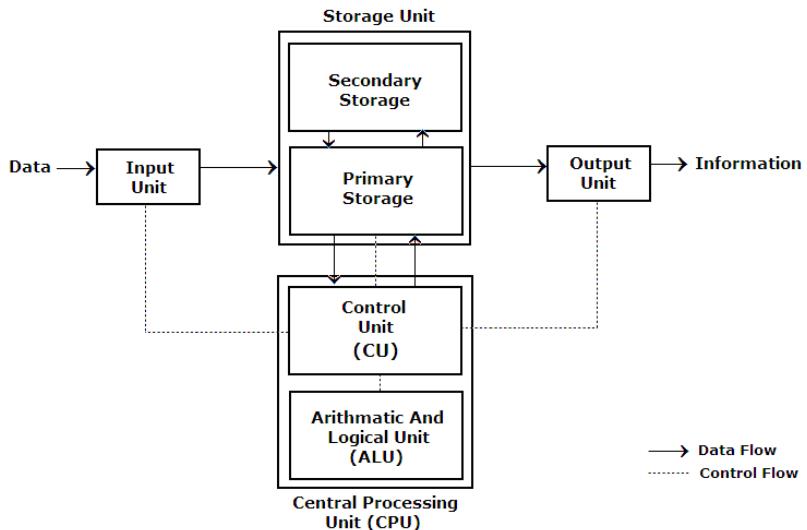
- AGP is a type of expansion slot designed specifically for graphics cards. AGP cards are able to render graphics faster than comparable PCI graphics cards.



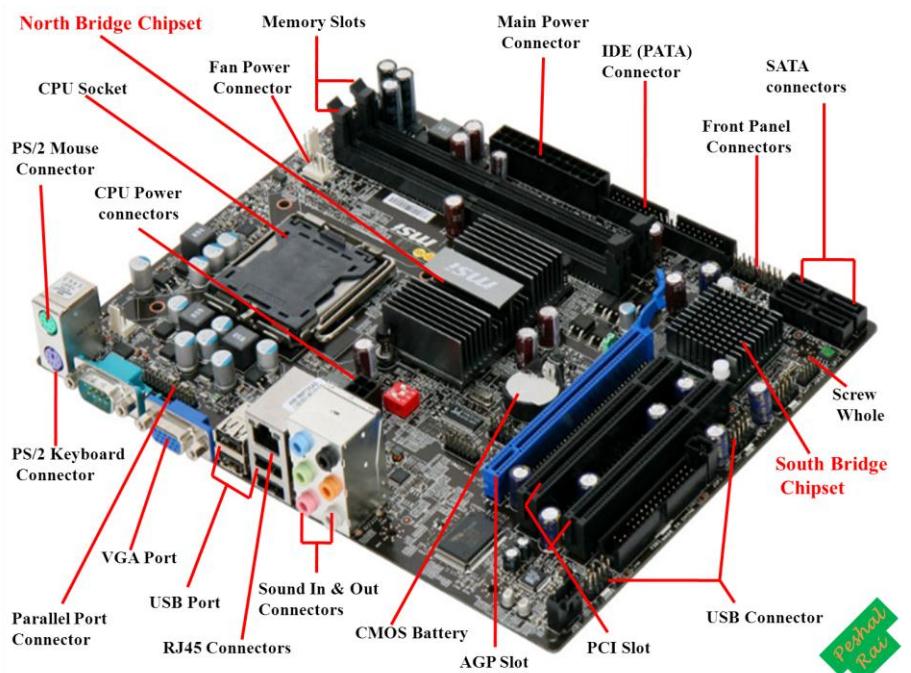
## Block Diagram of Computer Set



## Block Diagram of Computer System

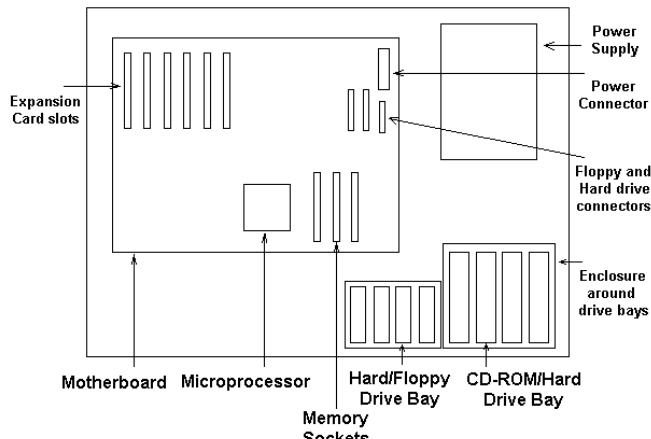


## Block Diagram of Motherboard

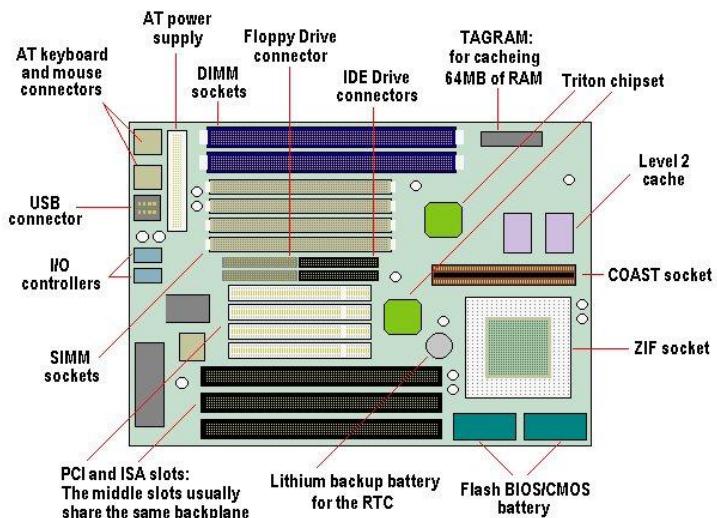


## Block Diagram of Motherboard

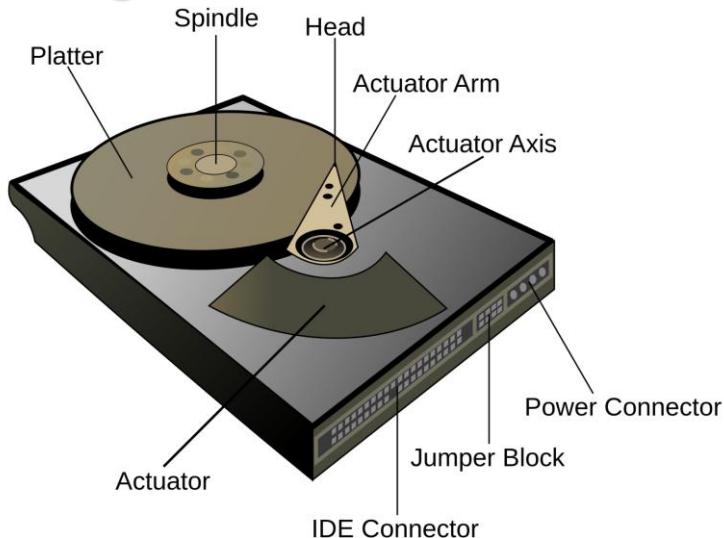
Inside the Case



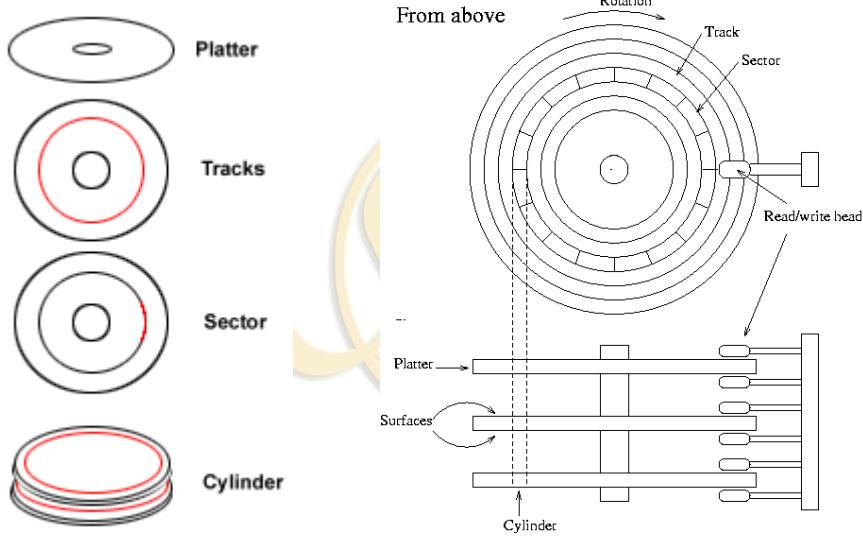
## Block Diagram of Motherboard



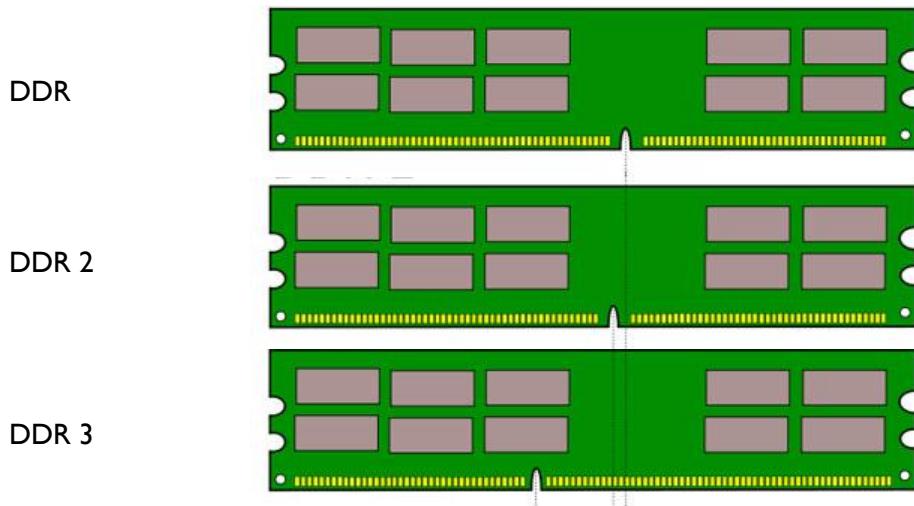
## Block Diagram of Hard disk



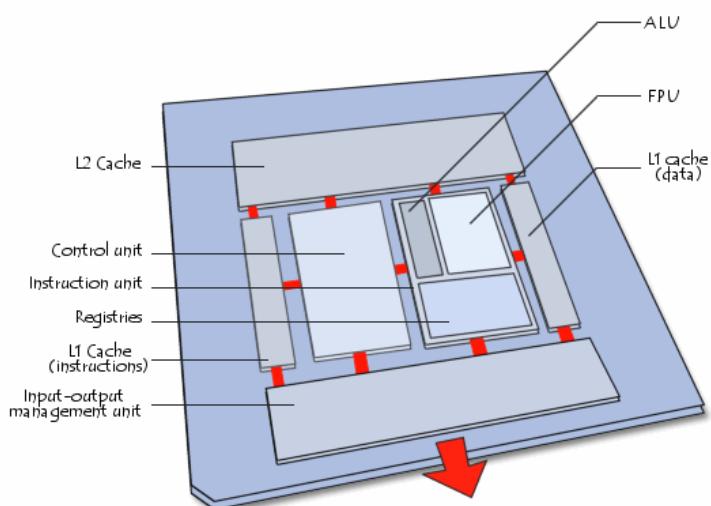
## Block Diagram of Hard disk



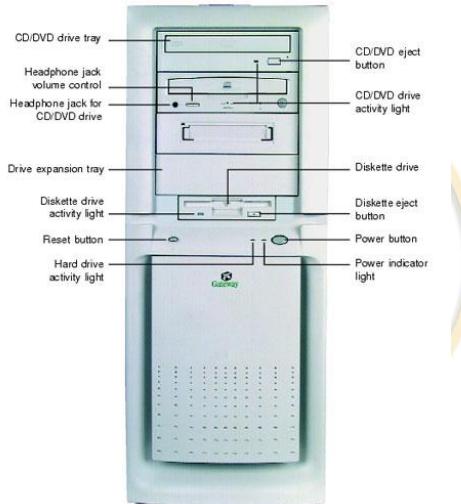
## Block Diagram of RAM



## Block Diagram of Processor

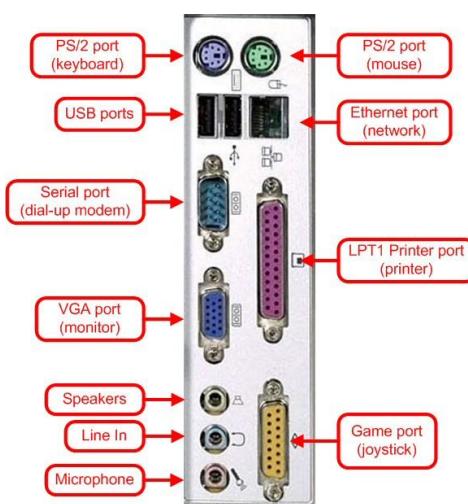


## Block Diagram of Front Panel



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

## Block Diagram of Rear (back) Panel

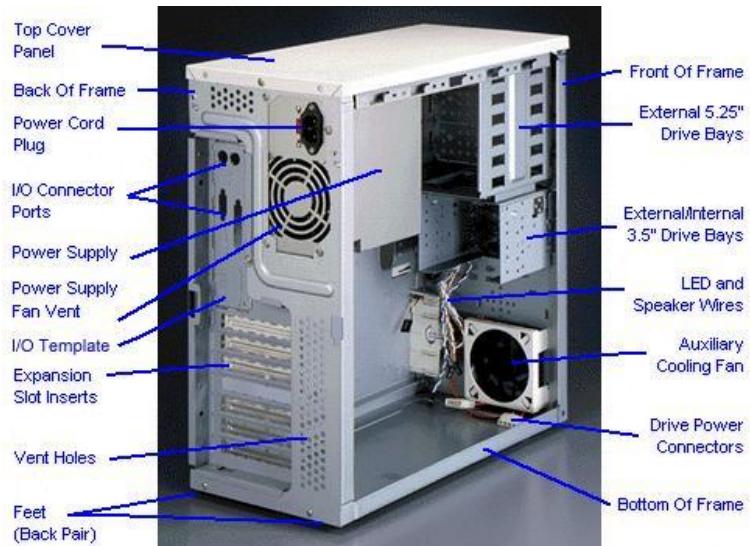


कम्प्युटर अपरेटर तयारी कक्षा, स्मार्ट इन्फोटेक, सम्पर्क: ९८४१६४९९९३, ९८४३५२१६४०

# 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



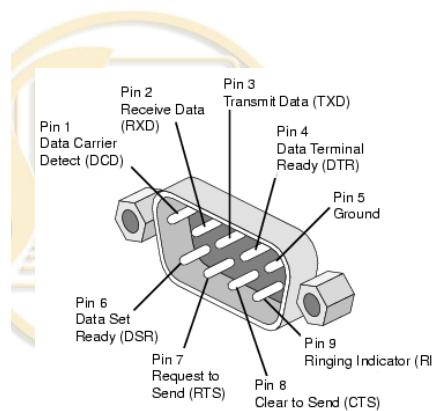
कम्प्युटर अपरेटर तयारी कक्षा, स्मार्ट इन्फोटेक, सम्पर्क: ९८४१६४९९९३, ९८४३५२१६४०

## NIC Card

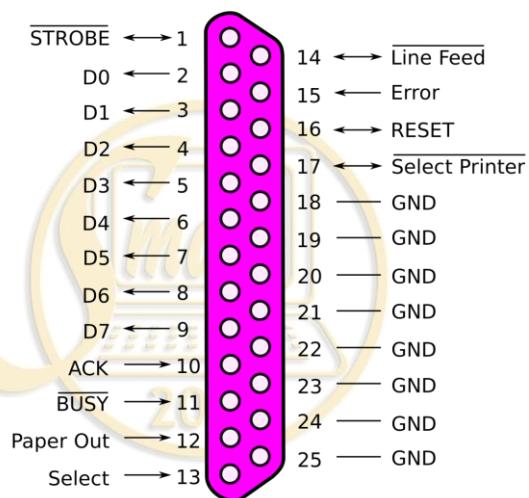


कम्प्युटर अपरेटर तयारी कक्षा, स्मार्ट इन्फोटेक, सम्पर्क: ९८४१६४९९९३, ९८४३५२१६४०

## Serial Port



## Parallel Port

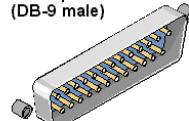


## Serial vs. Parallel Port

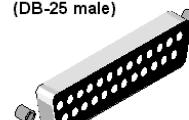
### Serial & Parallel Ports on a PC



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.