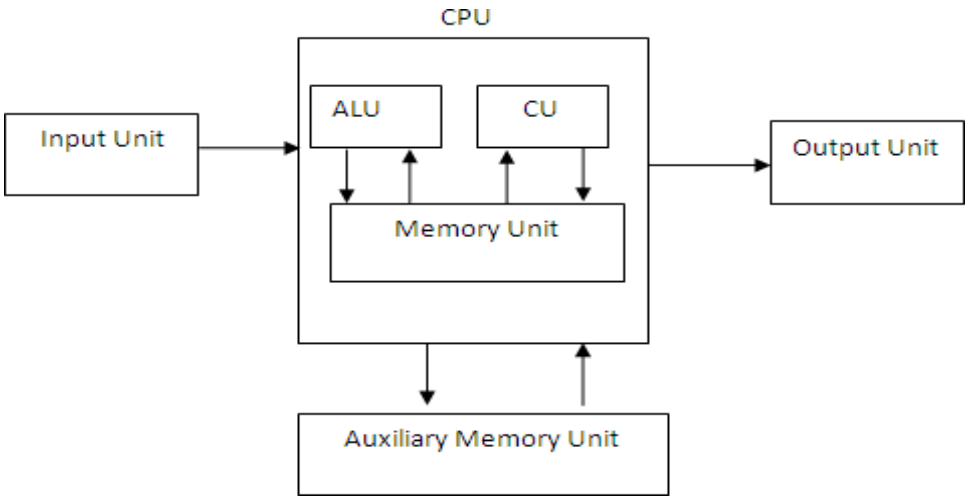
EXPERIMENT -1:

IDENTIFICATION OF PERIPHERALS

Computer Hardware :
Experiment 1: Identification of peripherals of a PC, Laptop, Server and Smart Phones:
Prepare a report containing the block diagram along with the configuration of each component and its functionality, Input/ Output devices, I/O ports and interfaces, main memory, cache memory and secondary storage technologies, digital storage basics, networking components and speeds

AIM: To identify the peripherals of a computer.



Block diagram of computer

Input Unit: Computers need to receive data and instructions in order to solve any problem. It accepts data in human readable form, converts it into machine readable form & sends it to CPU.A Computer may have one or more input devices like keyboard, mouse etc….

CPU (central processing unit) : It consists of three units
Control Unit (CU)
Arithmetic Logic Unit(ALU)
Memory Unit (MU)

Main Functions of CPU:

Controls the sequenceof operations as per the stored instructions.
Issue commands to allparts of the computer.
Storesvdata and instructions.
Process the data and sends results to output.

1. Control Unit: It controls all other units in the computer. The control unit instructs the input unit, where to store the data after receiving it from the user. It controls the flow of data and instructions from the storage unit to ALU. It also controls the flow of results from the ALU to the storage unit. The control unit is generally referred as the central nervous system of the computer.
2. ALU: All calculations are performed in the Arithmetic Logic Unit of the computer. It also does comparison and takes decision. The ALU can perform basic operations such as addition, subtraction, multiplication, division

& does logic operations.

3. Memory Unit: Instructions and data have to be stored at a place in the computer till they are needed.

Main Memory (or) Primary Memory (or) IAS (Immediate Access Storage).
Secondary Memory (or) Auxiliary Memory.

i. Main Memory: It is also called as primary memory (or) IAS. It is available inside the CPU. Data that is just entered and data that is currently being used are available in this memory. It is fast memory.

Different types of primary memory are.

a. RAM
b. ROM

a.)RAM (Random Access Memory): All the data entered into the system is directly stored in RAM. The user has direct access to this part of memory. The contents of this memory are not permanent because once the system is switched off or power goes the contents are erased, hence it is volatile memory.

RAM is of two different types.

- Dynamic RAM
- Static RAM

Dynamic RAM: It is volatile memory which stores information temporarily. It is constructed by using the charging & discharging of capacitors.

Static RAM: It is Non-volatile memory, constructed by using semi conductor materials. This RAM uses semiconductors, transistors, diodes for its construction.

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b.)ROM (Read Only Memory): In this part of memory some instructions are permanently loaded during the manufacturing of the computer. These instructions are globally used by the user. No changes can be done in this memory. Types of ROM

PROM (Programmable Read Only Memory): In this part of the memory the user can put the data according to his specification using a special device known as prom-programmer. However, once the chip has been programmed, the recorded information cannot be changed. This is non-volatile memory.

EPROM (Erasable Programmable Read Only Memory): It is similar to PROM, but erasing can take place by exposure to ultra violet light.

EEPROM (Electrically Erasable Programmable Read Only Memory): EEPROM can be easily reprogrammed by the application of small voltage.

ii. Secondary Memory: It is called as External storage devices or secondary storage devices. The main purpose of the external storage is to retain data and programs for further use. If information is stored in an external storage media then the operator can retrieve it as and when required, thus avoid repeat typing. It is non-volatile memory.

a.) Magnetic Tapes: It provides serial access; therefore you have to read all the previous records to reach a particular record. Information can be erased by recording new information in its place. The tape has a ferromagnetic coating on a plastic base and is similar to the tape used in tape recorders.

b.) Magnetic Disks: It allows direct access but can also be used in serial mode, if required. Each disk consists of a number of invisible concentric circles called tracks. Each track further is divided into sectors. Information is recorded on the tracks of a disk surface in the form of invisible tiny magnetic spots. They are divided into 2 types

i. **Floppy Disk:** This is most commonly used storage medium on PC. Information can be recorded or read by inserting it into a disk drive connected to the computer.

ii. **Hard Disk Drive:** It is used for storing large value of information popularly known as Winchester disk. These are very easy to read and write and store compared to the floppy disk. But the disadvantage is it cannot make backup copies and is also not transportable and expensive as

compared to floppies.

c.) Disk Drives: The mechanism that drives the magnetic disks is called the disk drive. In the case of Winchester disks the drive mechanism and the disks are integrated together to the form of Winchester drive.

Output Unit: Output is provided for machine-to-man communication. It receives the information from CPU in machine readable form and presents it to the user in a desired form.

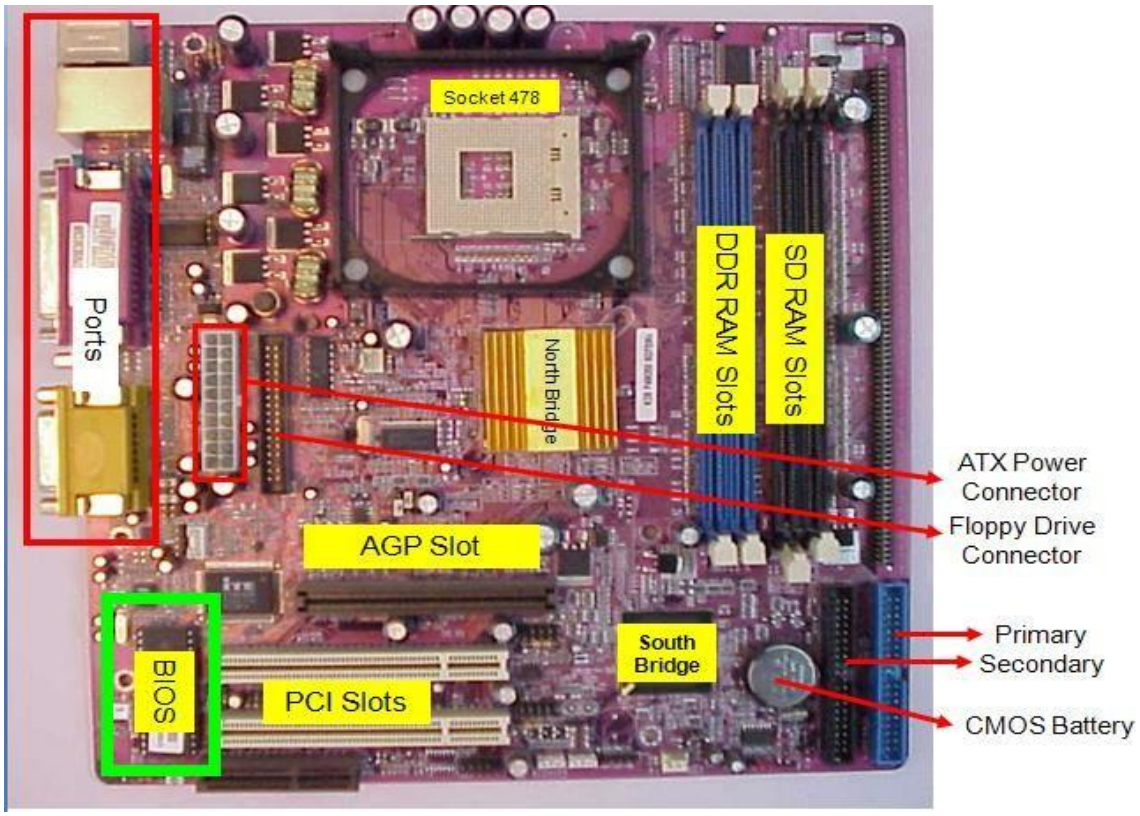
EX: Visual Display Unit (VDU), Printers.

Peripherals and its functions:

most important part of the CPU. All components are connected to one common place. It is also called

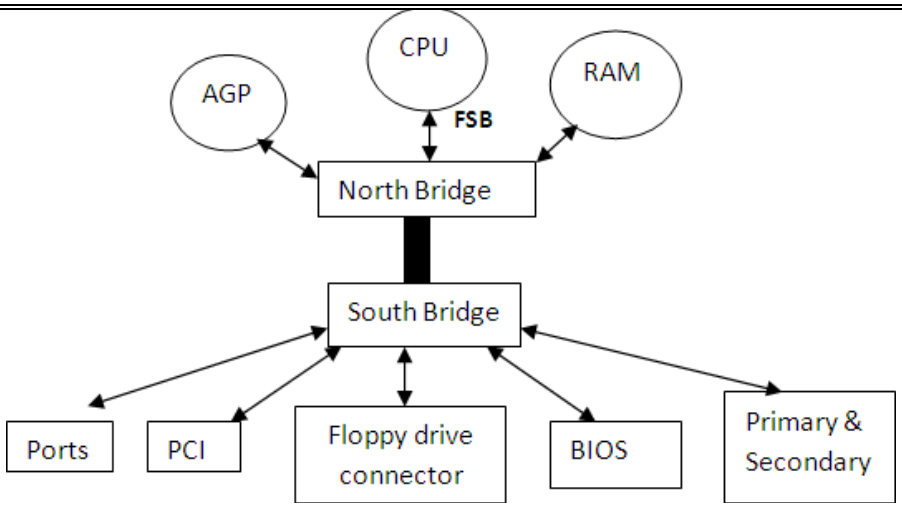
1. **System board/Motherboard**

   The Mother Board is the mobo (or) main board. The boards attached to mother board called daughter boards.



North Bridge and south bridge

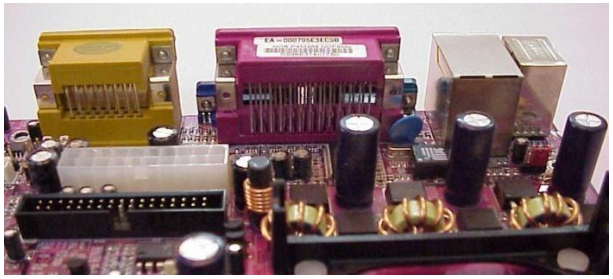
Southbridge manages the basic forms of input/output (I/O) such as Universal Serial Bus (USB), serial , audio, Integrated Drive Electronics (IDE).North Bridge used to manage data communications between a CPU and a motherboard. Different types of components connected to North Bridge and south bridge.



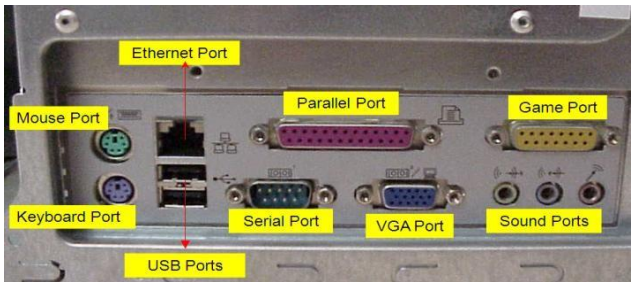
AGP: The **Accelerated Graphics Port** (often shortened to **AGP**) is a high-speed point-to-point channel for attaching a video card to a computer's motherboard, primarily to assist in the acceleration of 3D computer graphics.

FSB: Front Side Bus, **FSB** is also known as the **Processor Bus, Memory Bus**, or **System Bus** and connects the CPU with the main memory trough the north bridge.

Ports: a port serves as an interface between the computer and other computers or peripheral devices like printer, mouse, monitor etc.



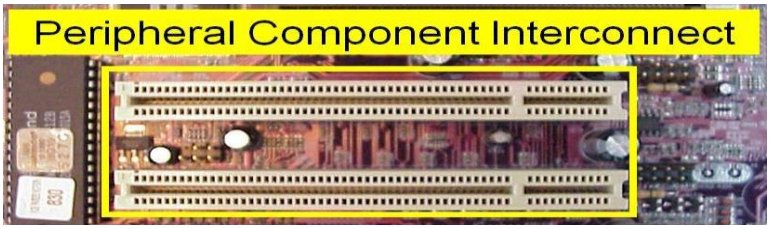
Back View



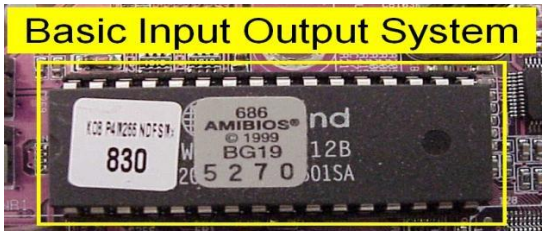
Front view

- **Serial port:** This port allows you connect different devices like printer, mouse, and keyboard and connect system to internet. It allows **you to transmit data bit by bit**.
- **Parallel port:** This port allows you connect different devices like printer, mouse, and keyboard and connect system to internet. **It allows you to transmit entire data bits at a time.**
- **VGA port: (Video Graphics Array), VGA** is a popular display standard port used to connect different displays like monitor and projectors.
- **Ethernet port:** Ethernet is the most common type of connection computers use in a local area network (LAN).
- **Game port:** An I/O connector that is used to attach a joystick or other video game controller like play station.
- **USB (Universal Serial Bus):** USB has effectively replaced serial and parallel ports.USB ports are used to connect keyboards, mouse, DVD Writers, Flash drivers etc.

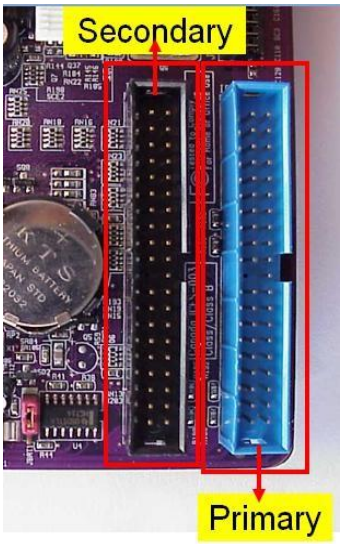
PCI: Conventional PCI (**Peripheral Component Interconnect**) is used for attaching hardware devices in a computer like modems, sound cards, video cards, network card.



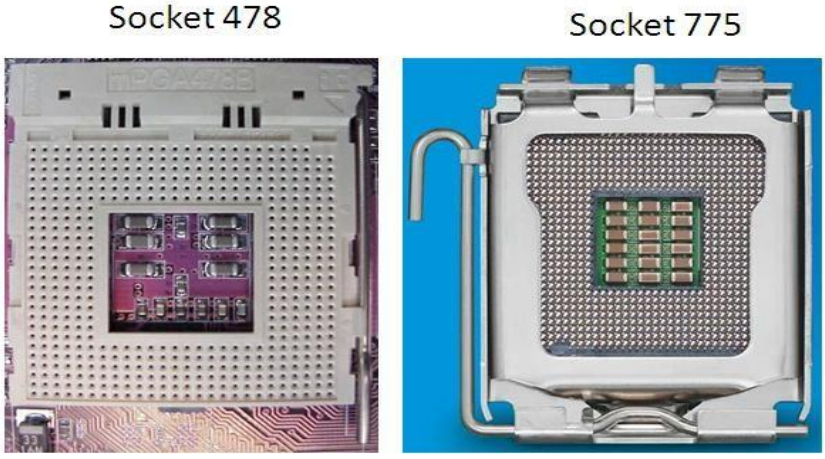
BIOS: BIOS (basic input output system) is the program a personal computer's microprocessor uses to get the computer system started after you turn it on. It also manages data flow between the computer's operating system and attached devices such as the hard disk , video adapter , keyboard , mouse , and printer .



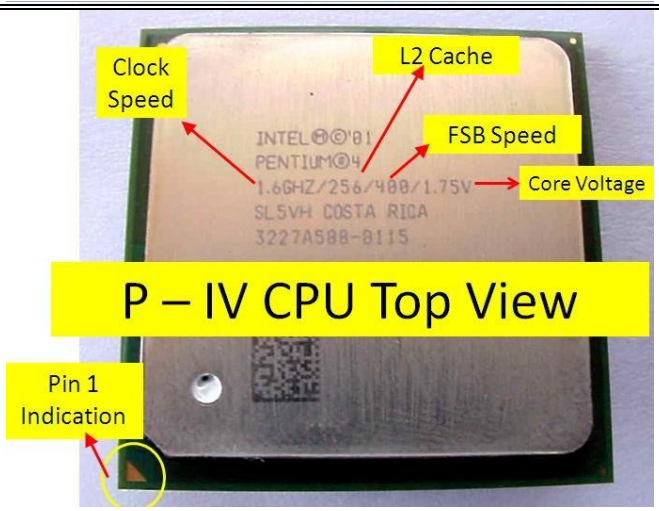
Primary and secondary slots: Blue color slot(primary) is used connect hard disk and Black color slot(secondary) is used connect CD drives



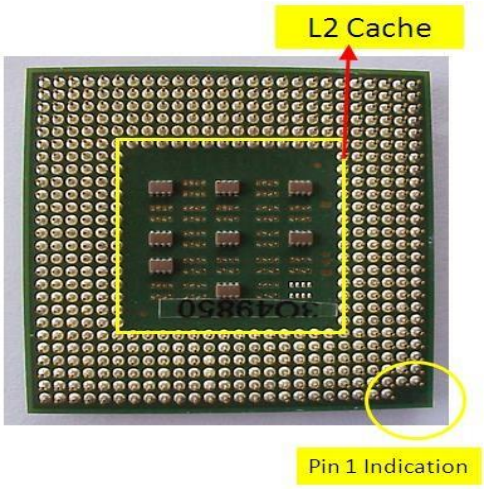
Socket 478: The socket 478 is used to connect the processor with pins and socket 775 is used to connect processor without pins



Processor: It is square shaped chip given as



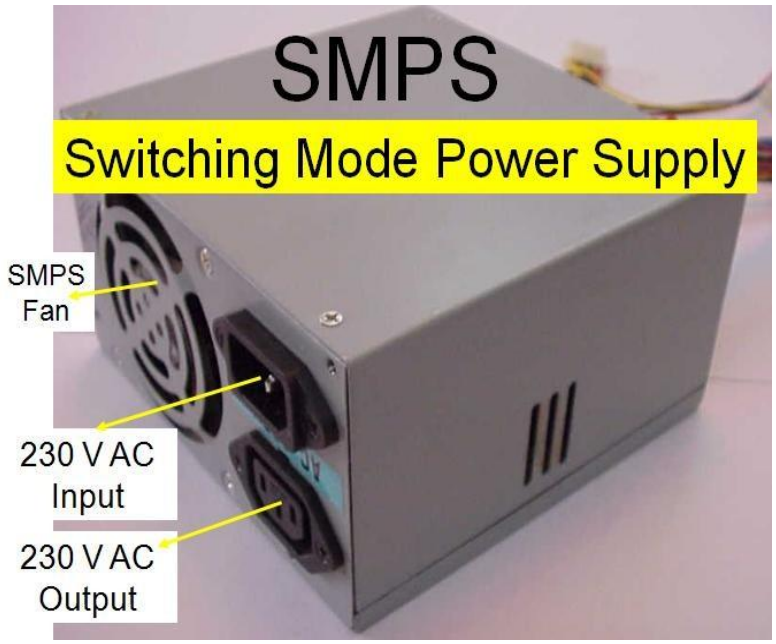
Front view



Back view

Clock speed represent processor speed, processor is fixed to socket according to pin1 indication

Power Supply - a case that holds a transformer, voltage control and fan



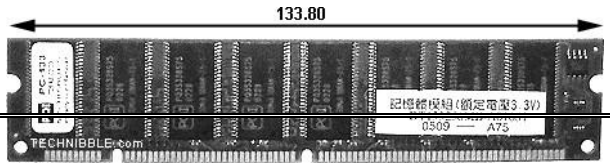
2. Random Access Memory (RAM)

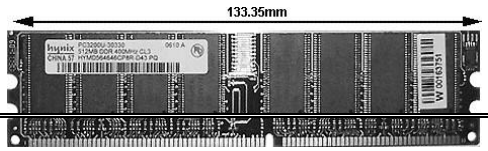
The RAM is the dynamic and primary memory of the CPU. This is a **temporary storage device** which is volatile i.e. data stored in it is lost when power goes down. The RAM basically is of two types

1) **Static RAM**: It is made of flip-flops and is very fast .It is very costly when compared to other types RAMs and also are large in size when compared with equal amounts of other RAMs.
2) **Dynamic RAM**: It is made of capacitors. It needs to be refreshed at regular intervals to preserve data on it. The dynamic RAMs are cheap in comparison with the SRAMs and variants of it are largely used in PCs.

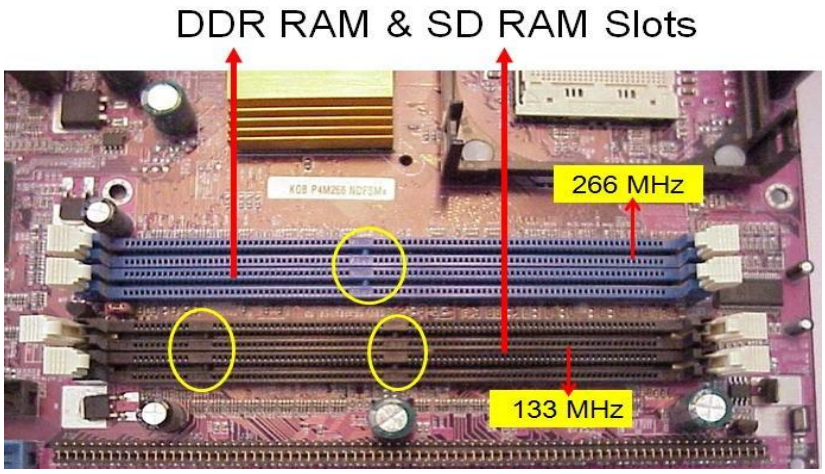
DRAM Types

1) Synchronous DRAM (SD RAM)
2) Double Data Rate RAM(DDR RAM)





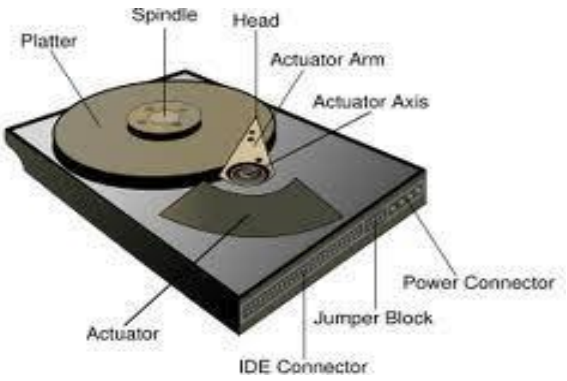
SD RAM DDR RAM

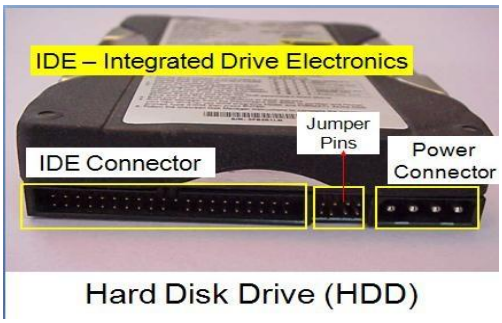


Storage Devices

Hard Disk drive: (HDD)

It can store huge amounts of data. The size of a hard disk is measured in Gigabytes (GB).We generally use hard disk of 40 GB or 80 GB capacity. A hard disk is connected to the IDE slots on the mother board.A hard disk uses rigid rotating platters (disks). It stores and retrieves digital data from a planar magnetic surface.



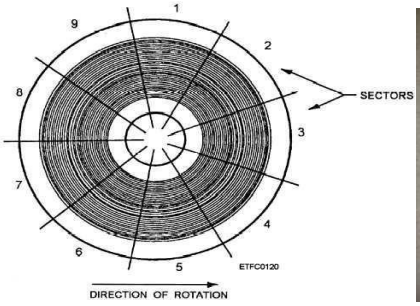


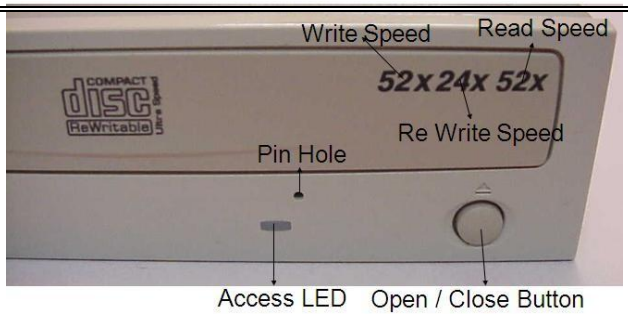
Hard Disk Drive (HDD)

Information is written to the disk through ***write head.*** The information can be read back in a reverse manner with ***read head*** that passes over it.

CD –(compact disc) is the most common type of removable media, cheap but fragile.

CD-ROM, , CD-RW, CD-R, DVD, DVD-ROM., DVD-RW, DVD-R,



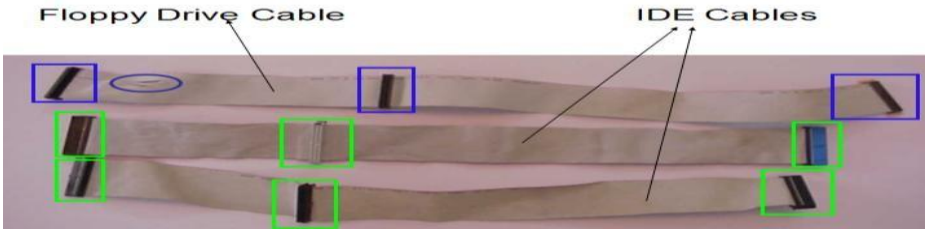


52X = 52 x 150 KBps = 7800 KBps

Floppy Disc Drive

A floppy disc drive is used to write and read floppy discs. The floppy can store data up to 1.44 MB.

Buses : PCI bus, PCI-E bus, ISA bus (outdated), USB, AGP



Complementary Metal-Oxide Semiconductor. **CMOS** is an on-board semiconductor chip powered by a CMOS battery inside computers that stores information such as the system time and date and the system hardware settings for your computer.

ATX power connector: Advanced technology Extended) it is used to connect SMPS to motherboard which powers other components

Networking - to connect the computer to the Internet and/or other computers

Speakers: Speakers are connected to sound port on the mother board and they output the sound.

Printers: Printers are also output devices which are used for printing data onto paper

Scanners: Scanners are input devices which are used to scan documents, images and store them on to the PC

UPS: Uninterrupted Power Supply or UPS is a device which can supply power to a PC for some limited time even after a power failure.

******* END *********

Experiment 2a: Virtual Machine setup:

o Setting up and configuring a new Virtual Machine

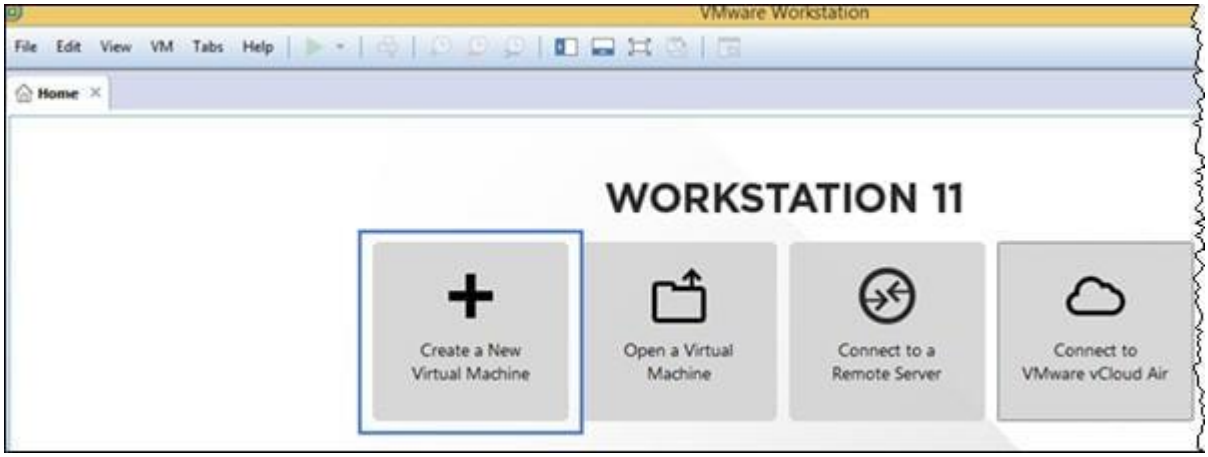
Steps to install and configure ***VMWare****:*

#1) Download VMWare workstation trial version setup file *from here*. Set up is around 307 MB. Currently, version 12 is available. Please note we have set up screens on version 11.

#2) Install VMWare on your machine. Setup is simple and requires to click **Next** button couple of times.

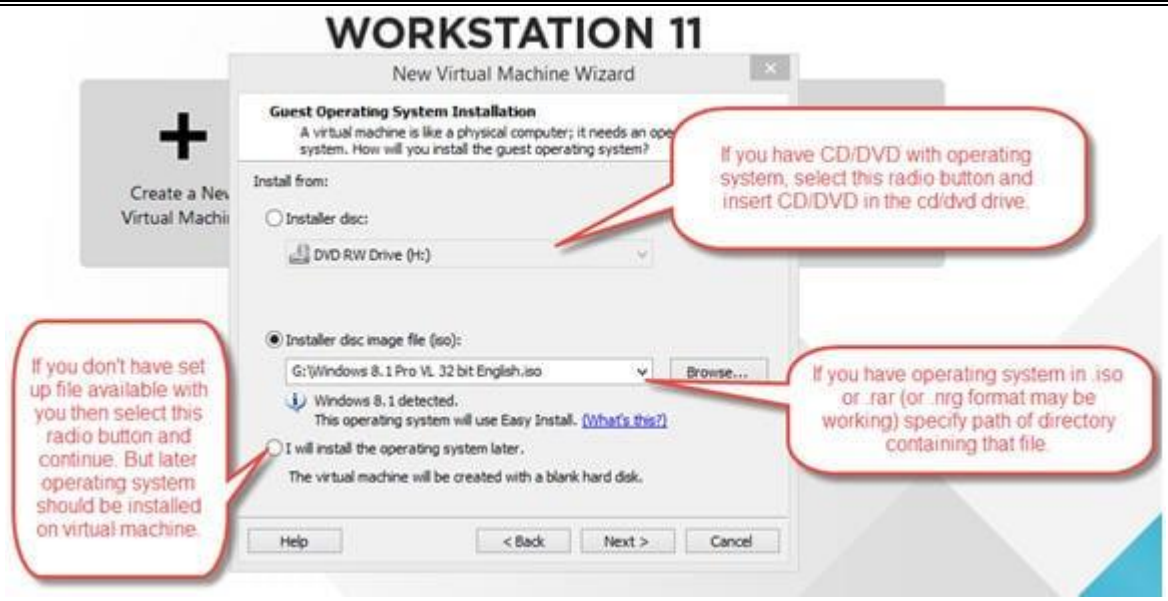
#3) After installation open VMWare workstation by using either start menu or shortcut created on the desktop.

#4) Click on "**Create a New Virtual Machine**".



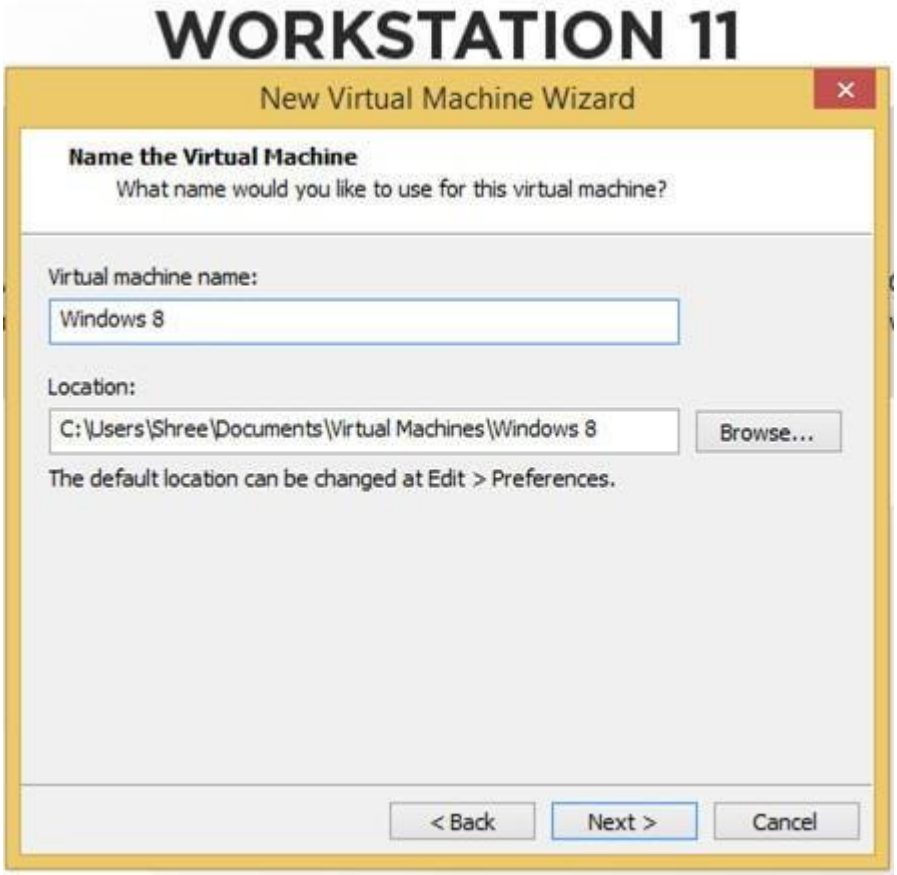
#5) With default "Typical" selected click on Next button.

#6) Specify the path of the operating system set up file.



#7) In the Next step you need to specify a Key or a serial number of operating system. If you are using trial version then that part can be skipped.

#8) Enter the name for the virtual machine and specify a path to the directory where you want to create your virtual machine. It is recommended that the drive you're selecting to install virtual machine should have sufficient space.



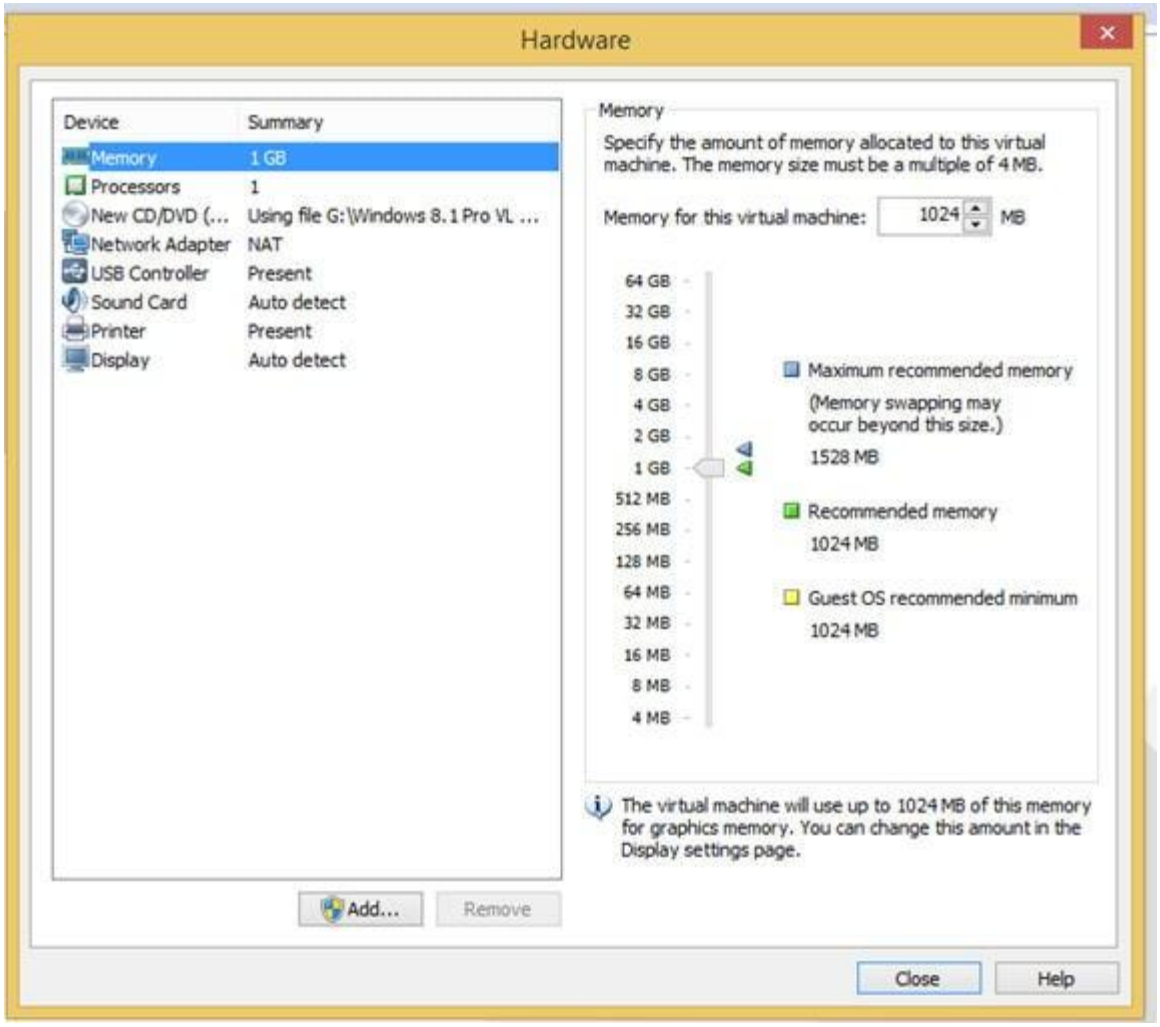
#9) Specify an **amount of disk space** you want to allocate for a virtual machine. Allocate disk space according to the size of software you are going to install on the virtual machine.

#10) On the next screen it will show configuration you selected for a virtual machine.

#11) It will allocate Hardware according to the default settings but you can change it by using **Customize Hardware** button in the above screen.

You can specify **what amount of RAM**, a processor has to be allocated for a virtual machine. Do not allocate complete RAM or complete Processor for a virtual machine. Also, do not allocate very less RAM or processor. Leave

default settings or allocate in such way that your application should be able to run on the virtual machine. Else it will result in a slow virtual machine.



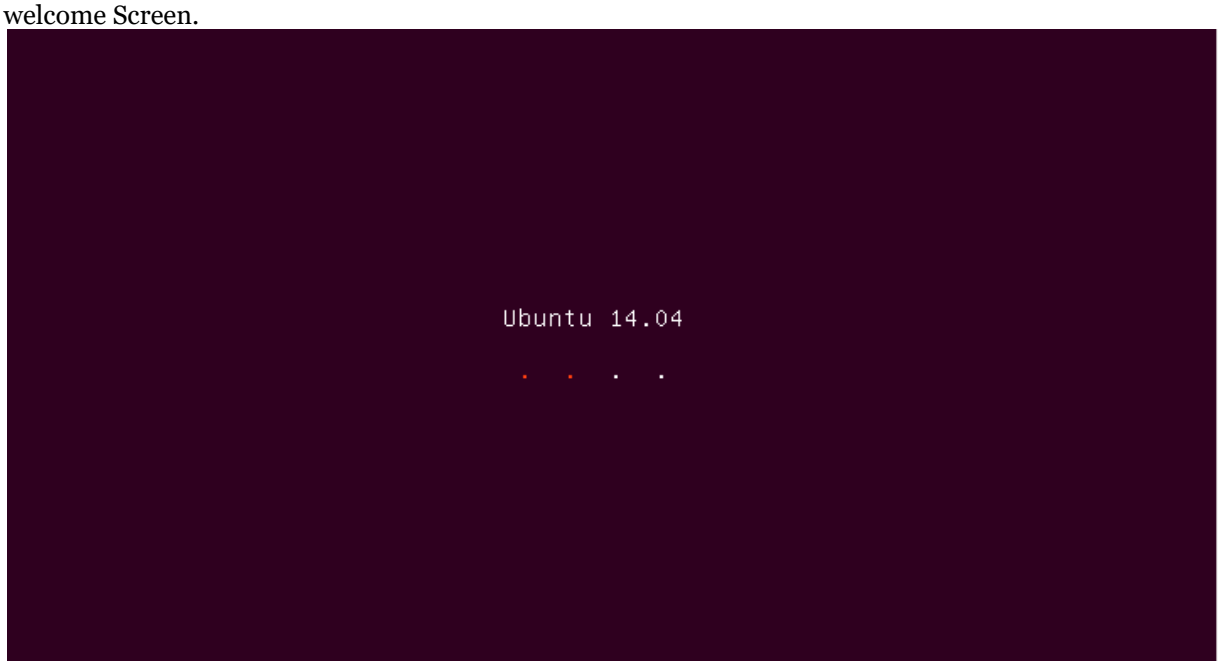
#12) Click on the **Finish** button to create the virtual machine at the specified location and with specified resources. If you have specified a valid file (.iso, .rar., .nrg) for the operating system it will take standard time to complete operating system set up on the virtual machine and then it will be ready to use your regular OS.

Experiment 2b: Operating System installation:

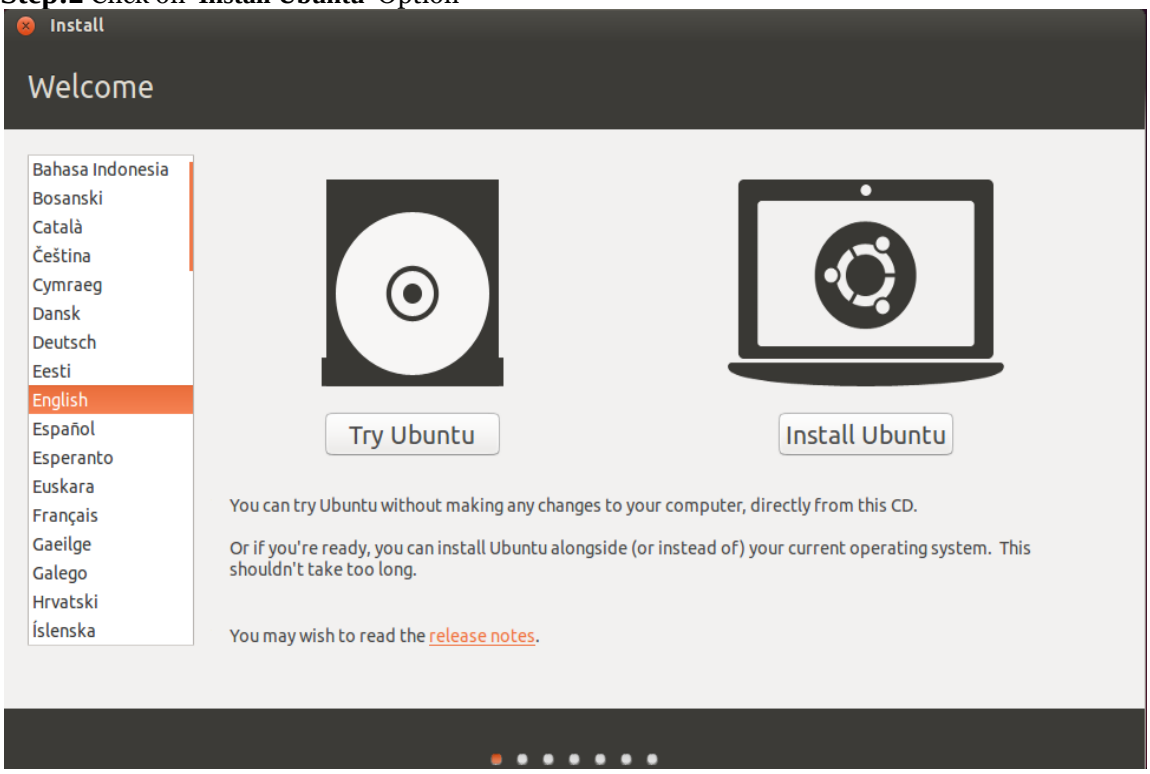
o Installing an Operating System such as Linux on Computer hardware.

:: installation steps of Ubuntu 14.04 . OS

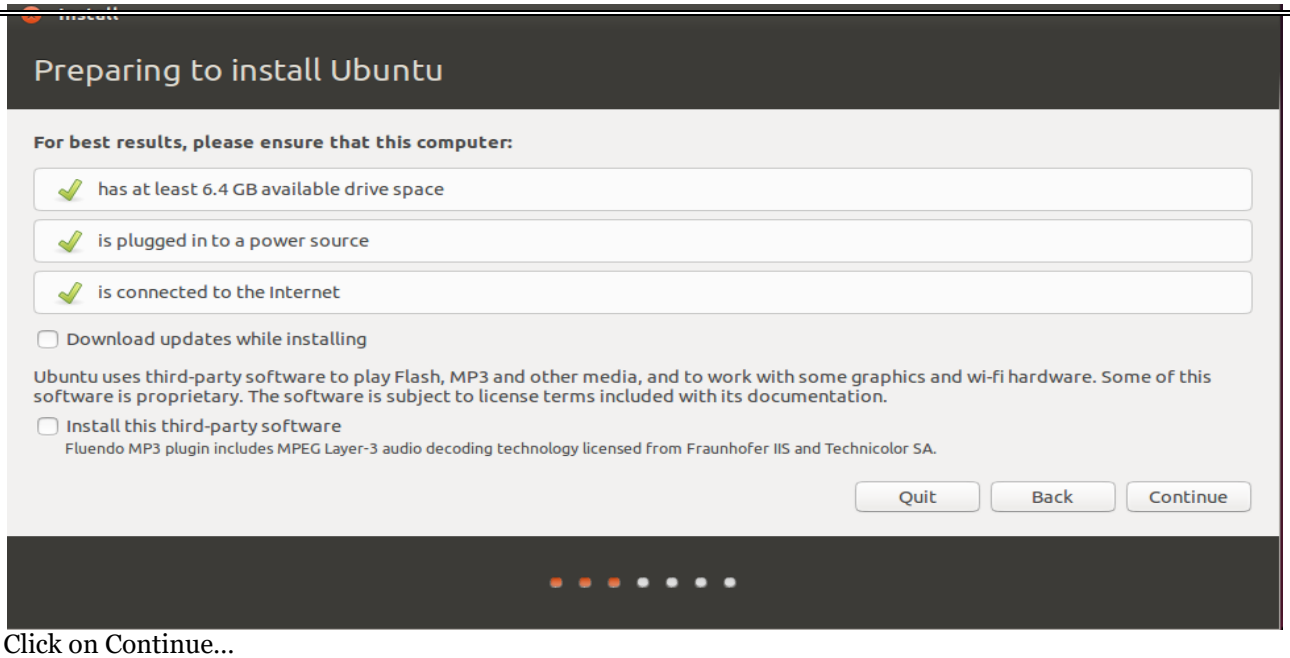
Step:1 Write the downloaded ISO file into USB drive or in DVD and boot your system with USB Drive / DVD & will get below welcome Screen.



Step:2 Click on '**Install Ubuntu**' Option

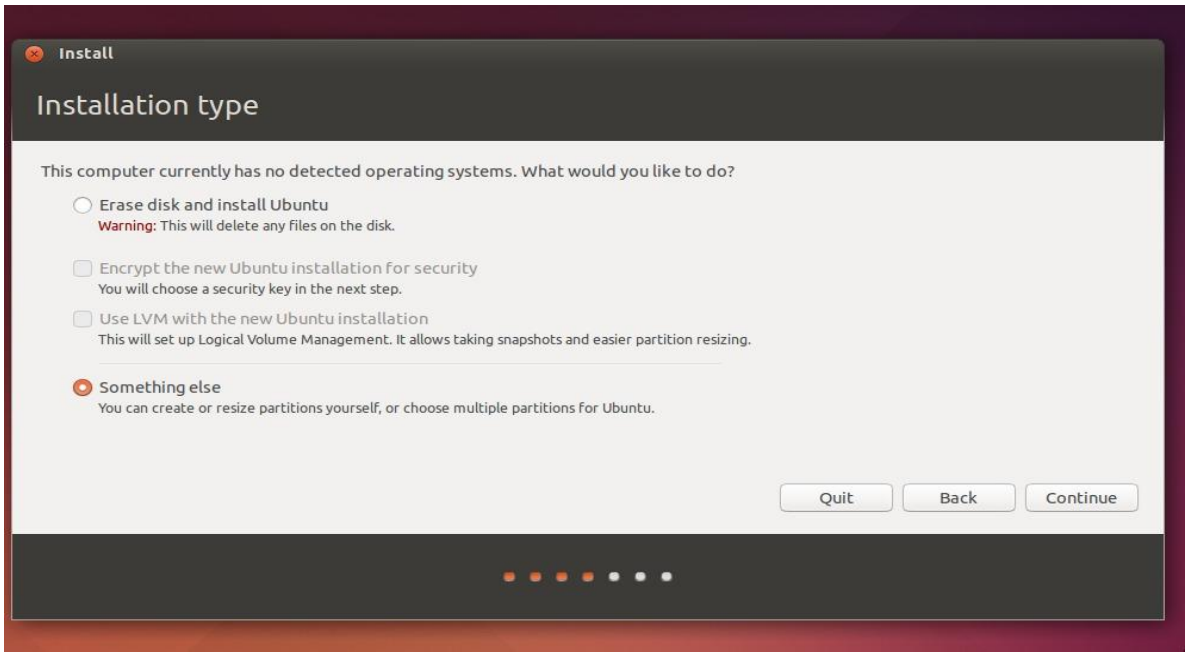


Step:3 Prepare to Install Ubuntu, make sure your system has enough free space (atleast 6.4 GB) , connected to Internet & power source

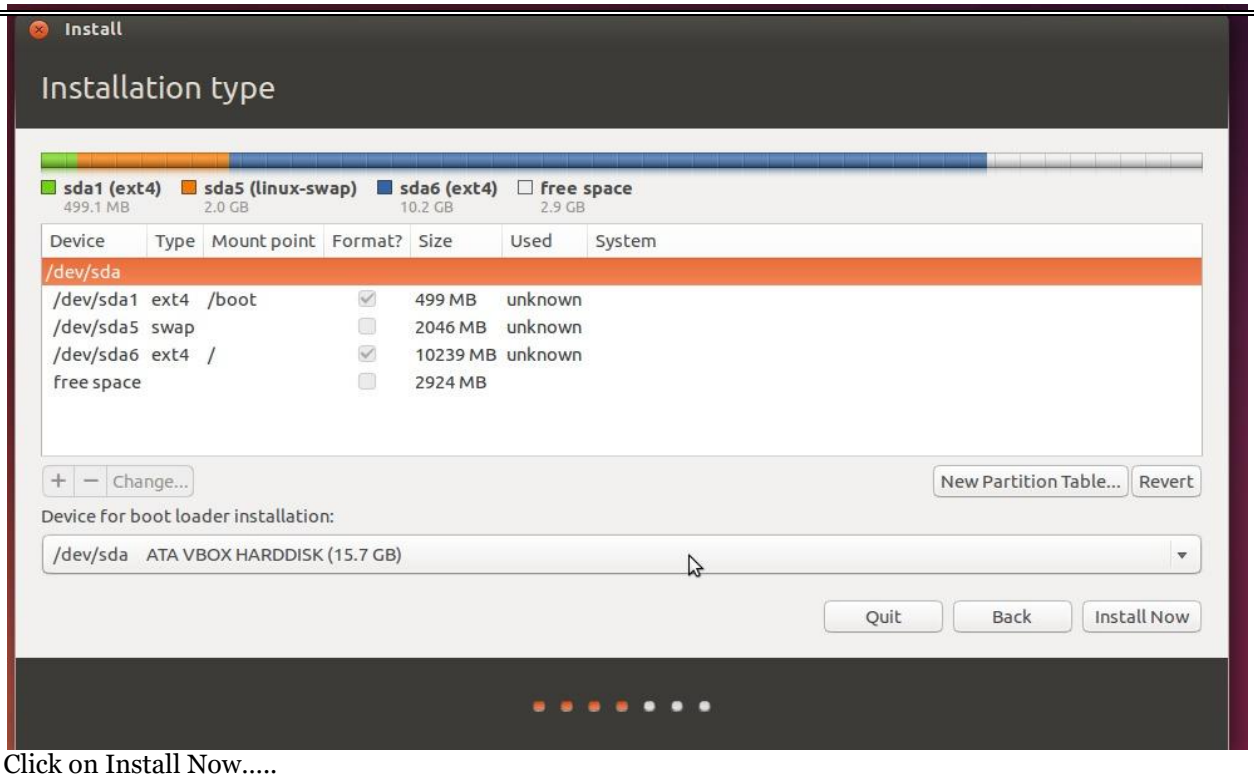


Click on Continue...

Step:4 Installation Type : You can select default option , in which data on disk will be erased , if you want your customize partition table ,then select 'Something else' option . If you want encrypt the drive , then select '**Encrypt the new Ubuntu installation for security**'.
In my case i am creating customize partition table by selecting 'something else'

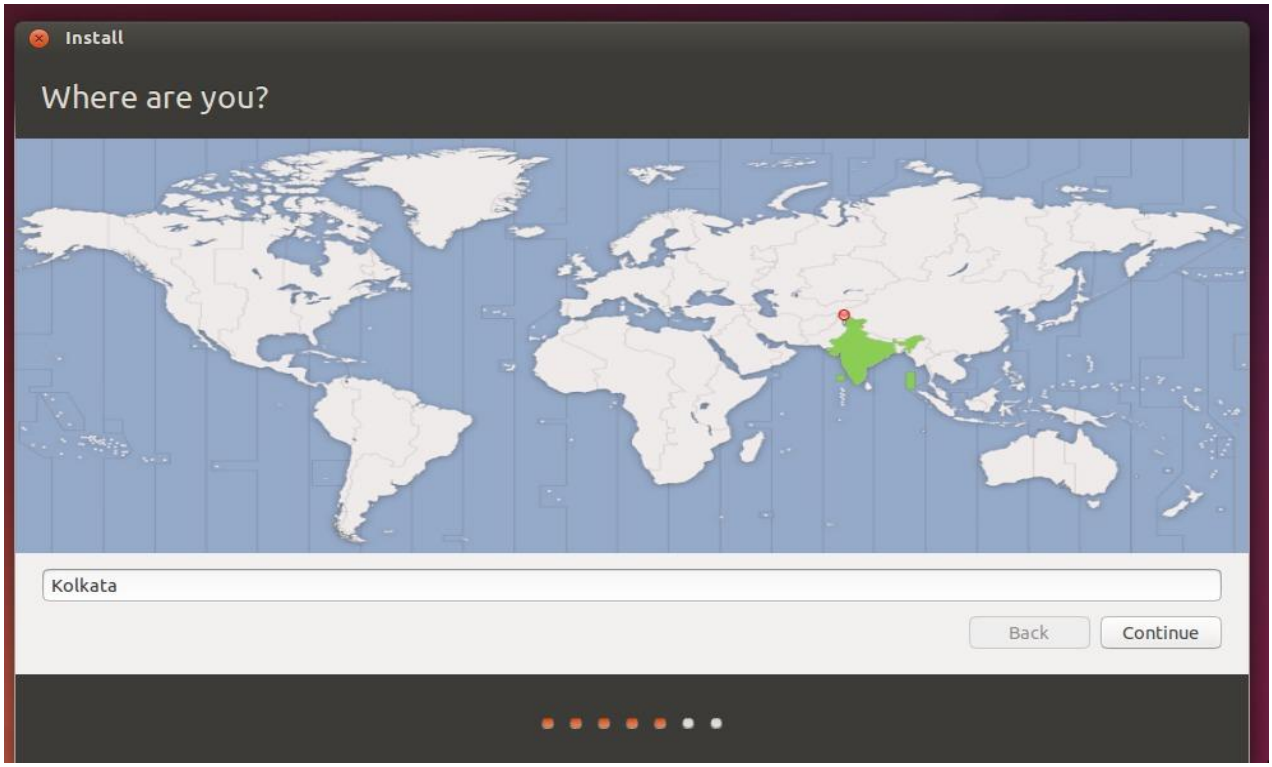


Step:5 Create Partitions as per your requirement. In my case i am creating **/boot – 500 MB , swap-2048 MB** and **/ – 10240 MB .**

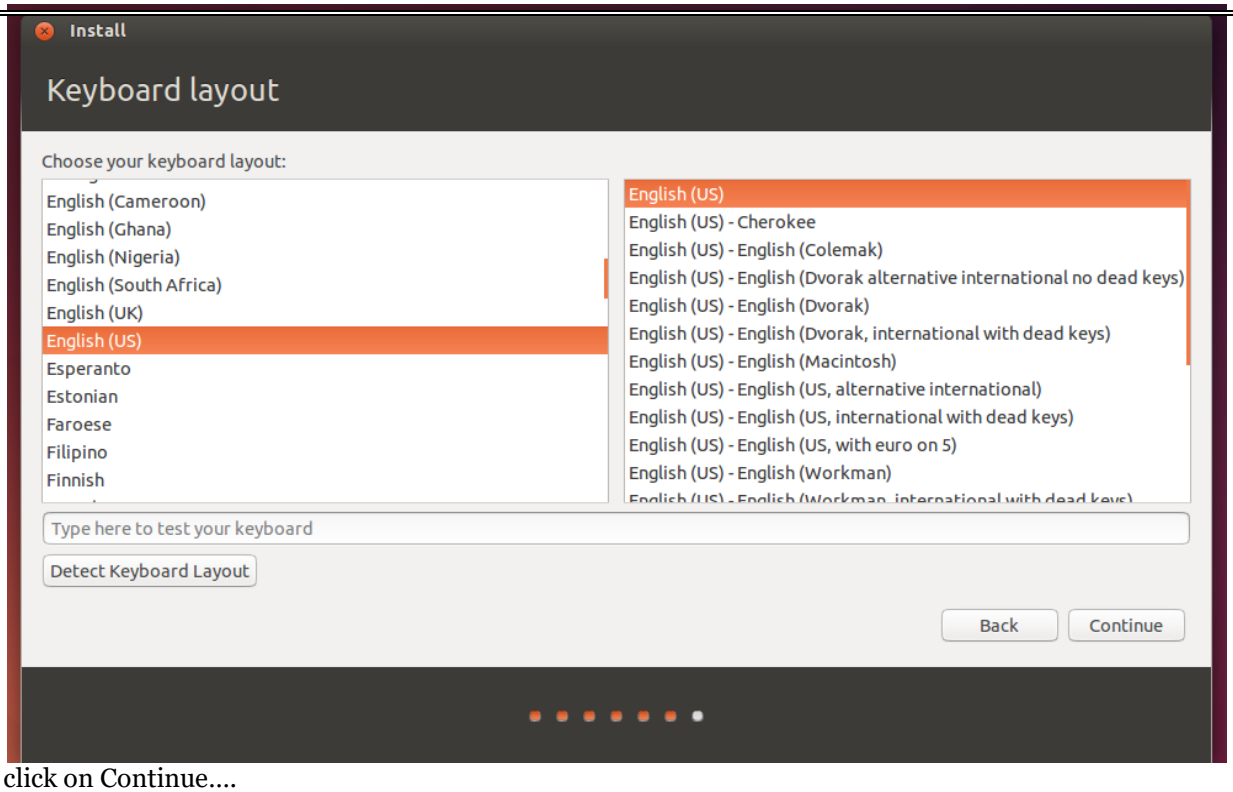


Click on Install Now.....

Step:6 Select your Respective **Time Zone**

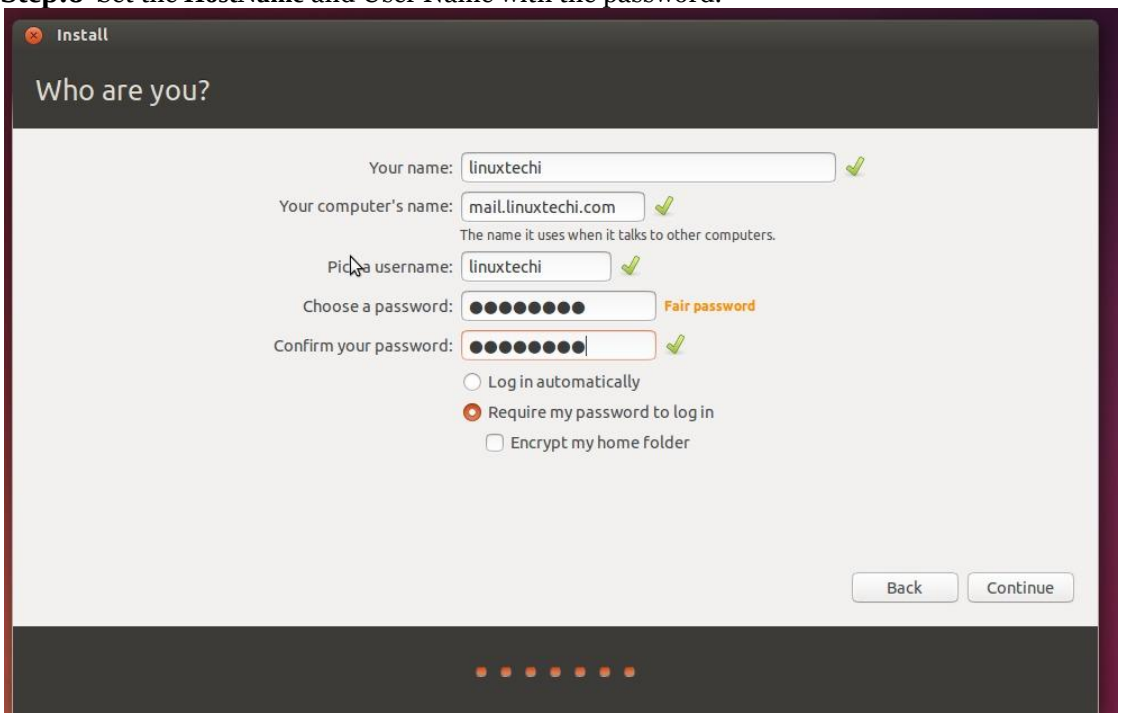


Step:7 Select Keyboard Layout



click on Continue....

Step:8 Set the **HostName** and User Name with the password.

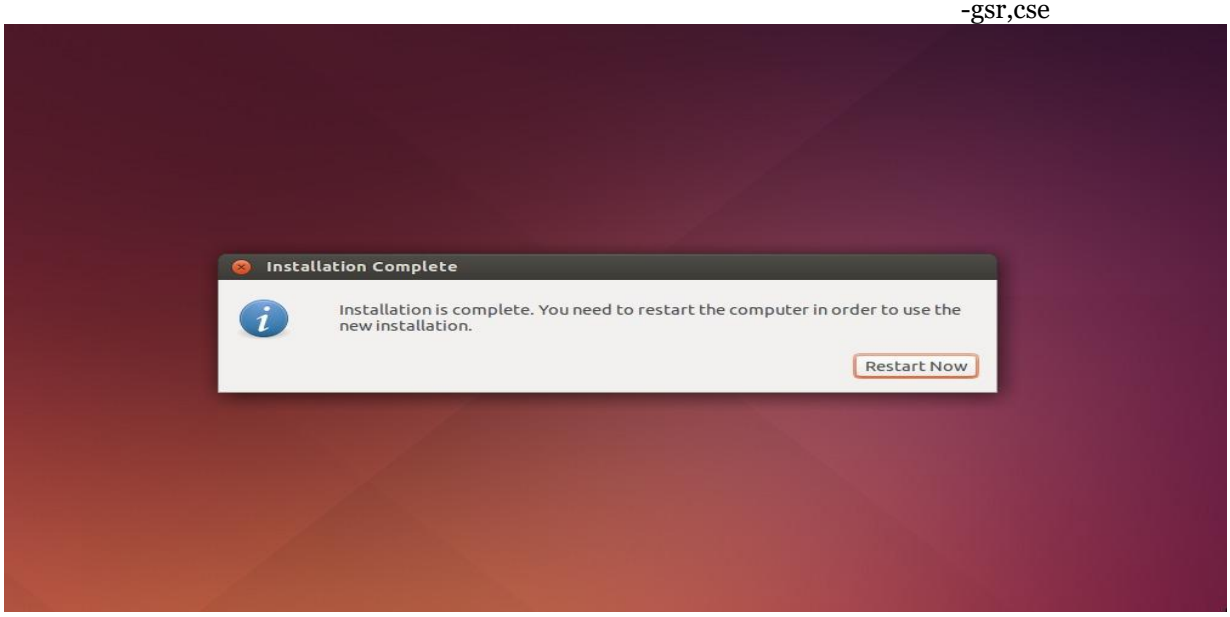


Click on Continue....

Step:9 Installation Started as shown below

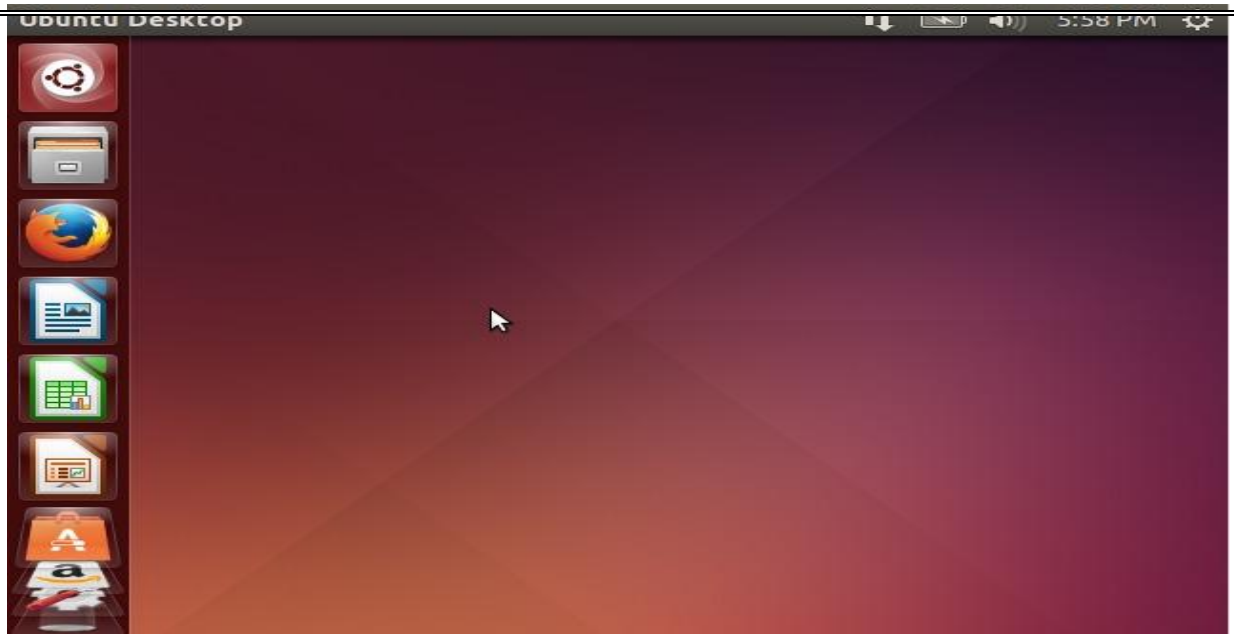
Step:10 After the installation is completed , it will ask you to reboot the Machine.

-gsr,cse



Step:11 Login **Prompt** after installation – Use same **credentials** that you have set during installation

Step:12 Screen After the Entering the Credentials



******* END **********

Aim: Installation of MS windows on a PC.

Experiment 2b: Operating System installation:
o Installing an Operating System such as Linux on Computer hardware.

Installation process for Windows XP

Installing Windows XP has been broken up into **3** sections. They are:

Part 1: Begin the installation

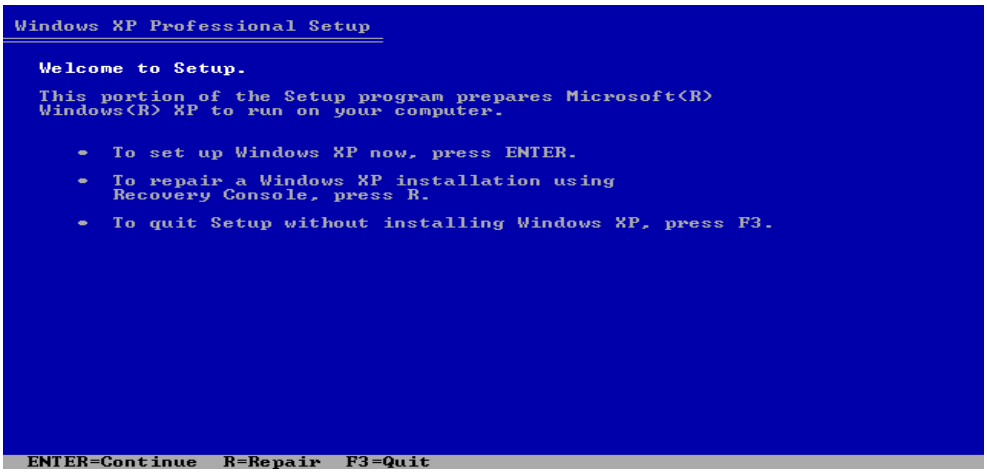
Part 2: Continue the installation

Part 3: Complete the installation

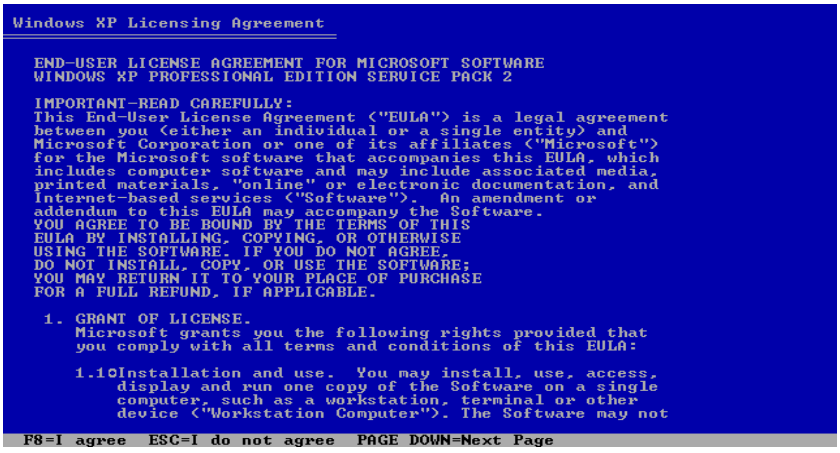
Part 1: Begin the installation

1. Insert the Windows XP CD into your computer and restart your computer.
2. If prompted to start from the CD, press SPACEBAR. If you miss the prompt (it only appears for a few seconds), restart your computer to try again.

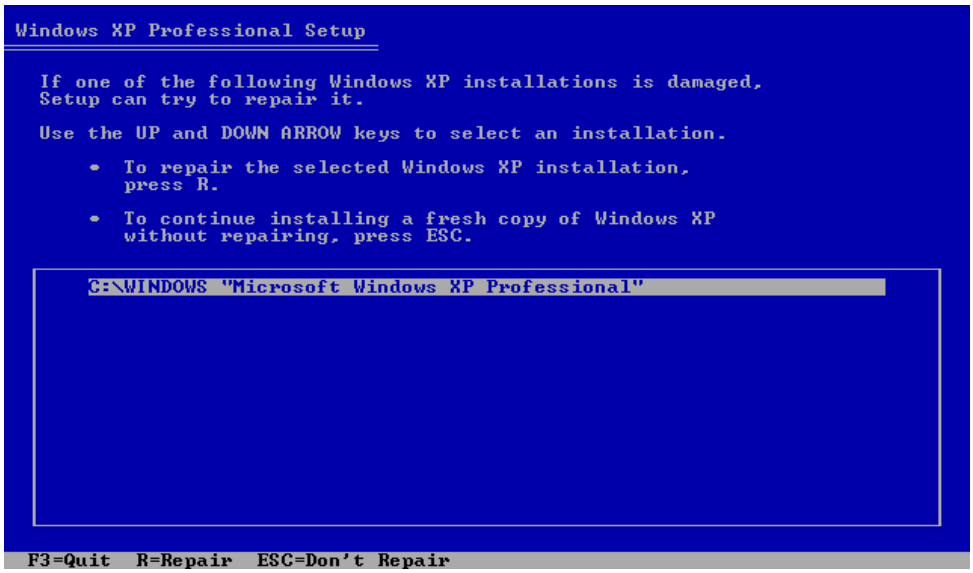
3. Windows XP Setup begins. During this portion of setup, your mouse will not work, so you must use the keyboard. On the **Welcome to Setup** page, press ENTER.



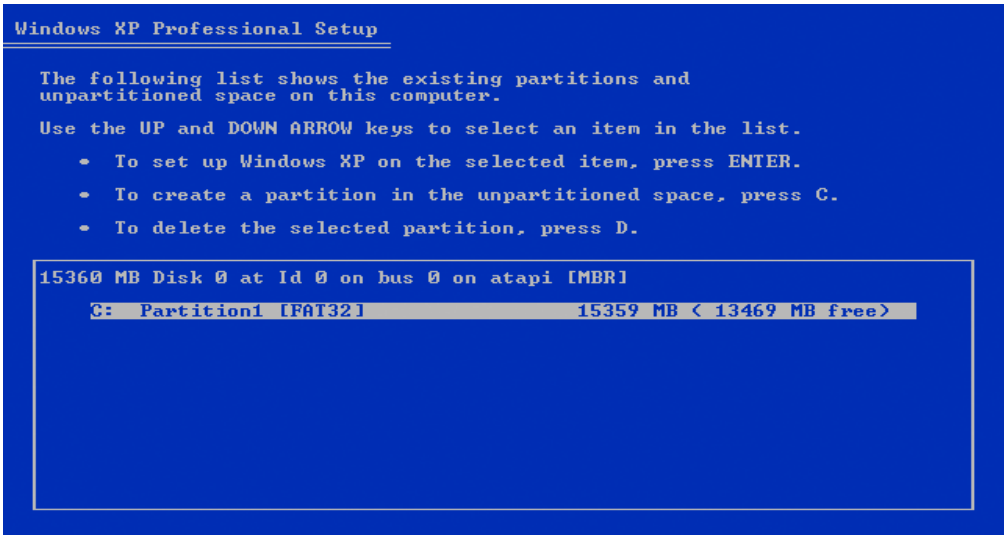
4. On the **Windows XP Licensing Agreement** page, read the licensing agreement. Press the PAGE DOWN key to scroll to the bottom of the agreement. Then press F8.



5. Searching for **Previous Versions of Windows XP:** Setup will search for existing Windows installations. You will see the next ―repair or install fresh copy‖ screen appears only if a Windows installation currently exists on your machine. If you‘re installing on a brand-new hard drive, skip to Step 6.


Windows XP Professional Setup
If one of the following Windows XP installations is damaged, Setup can try to repair it.
Use the UP and DOWN ARROW keys to select an installation.
• To repair the selected Windows XP installation, press R.
• To continue installing a fresh copy of Windows XP without repairing, press ESC.
C:\WINDOWS "Microsoft Windows XP Professional"
F3=Quit R=Repair ESC=Don't Repair

6. Continue Installing a Fresh Copy. Press ESC. You will be given a list of partitions available on your hard drive.

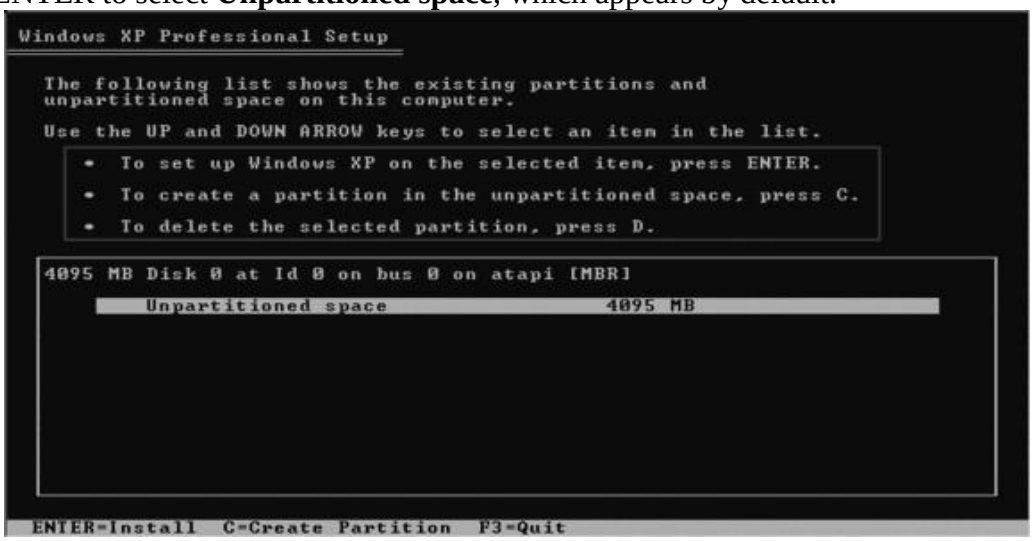


7. The next screen is asking for the type of disk formatting to be used:

If your system has already an operating system installed, you will see them listed. This page enables you to select the hard disk drive on which Windows XP will be installed. Once you complete this step, all data on your hard disk drive will be removed and cannot be recovered. It is extremely important that you have a recent backup copy of your files before continuing.

8. When you have a backup copy, press D, and then press L when prompted. This deletes your existing data.

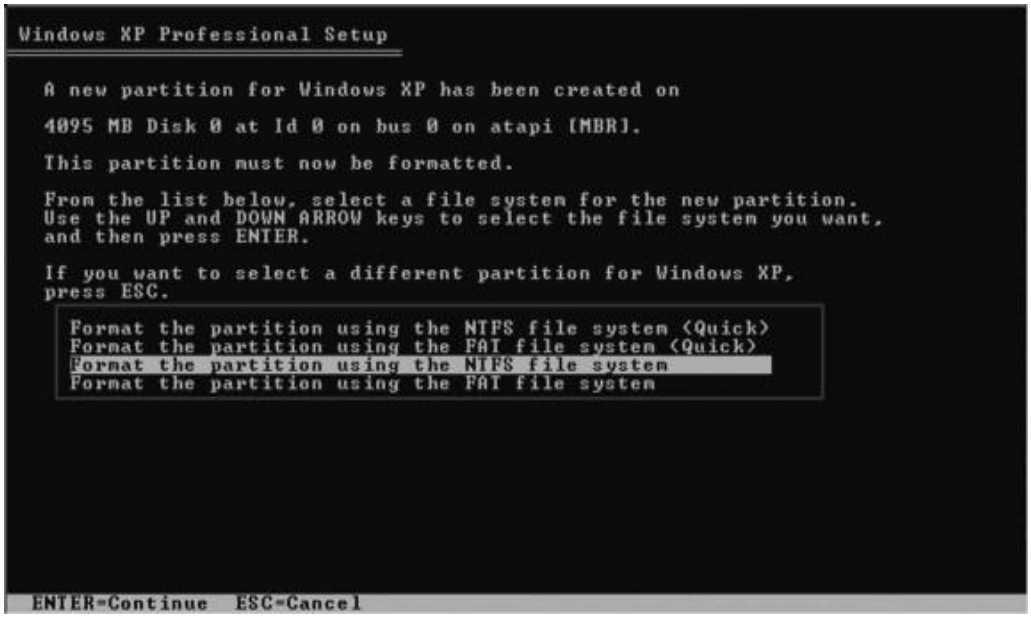
9. Press ENTER to select **Unpartitioned space**, which appears by default.



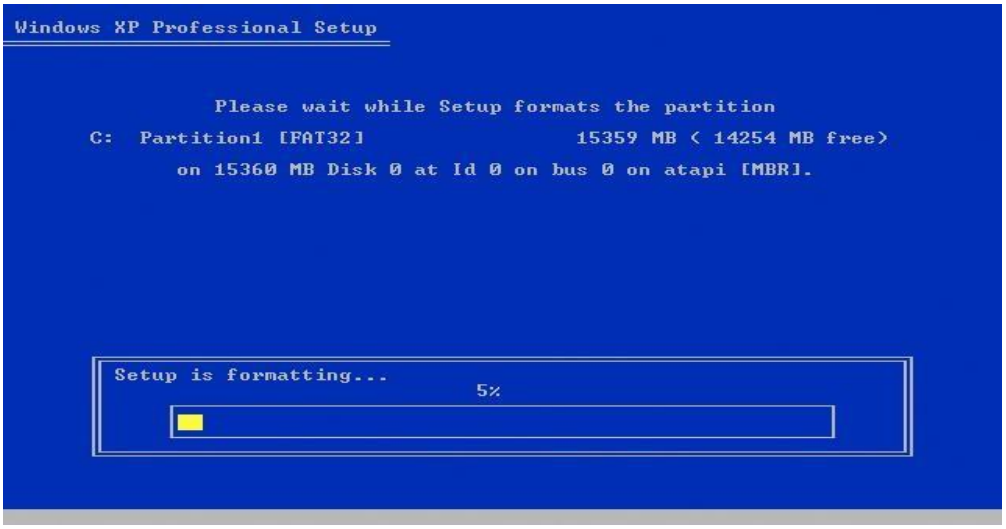
10. Select the type of disk formatting: **FAT or NTFS**

FAT: possible to access from a DOS-boot floppy, but limited to max. 4 GByte with very inefficient file-storage (cluster-size of 64 KByte), no Security features

NTFS : not accessible from a DOS-boot floppy, but NOT limited in size and using an efficient file-storage with a small cluster-size, able to use File-System Security features. Windows XP requires a lot of disk-space for itself; you should use at least a **4 GByte** partition. Press ENTER again to select **Format the partition using the NTFS file system**, which appears by default.

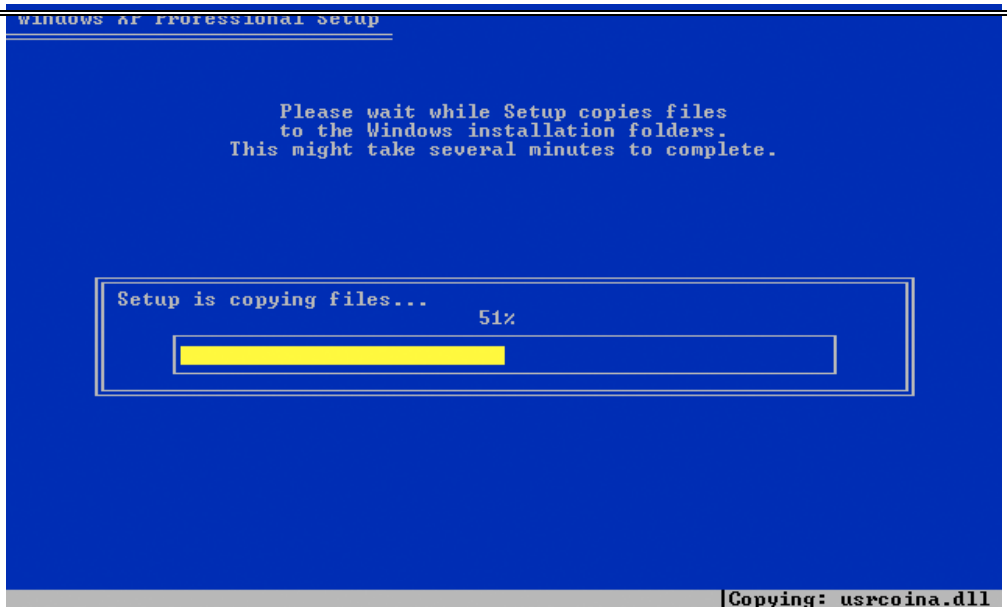


11. Windows XP erases your hard disk drive using a process called formatting and then copies the setup files.

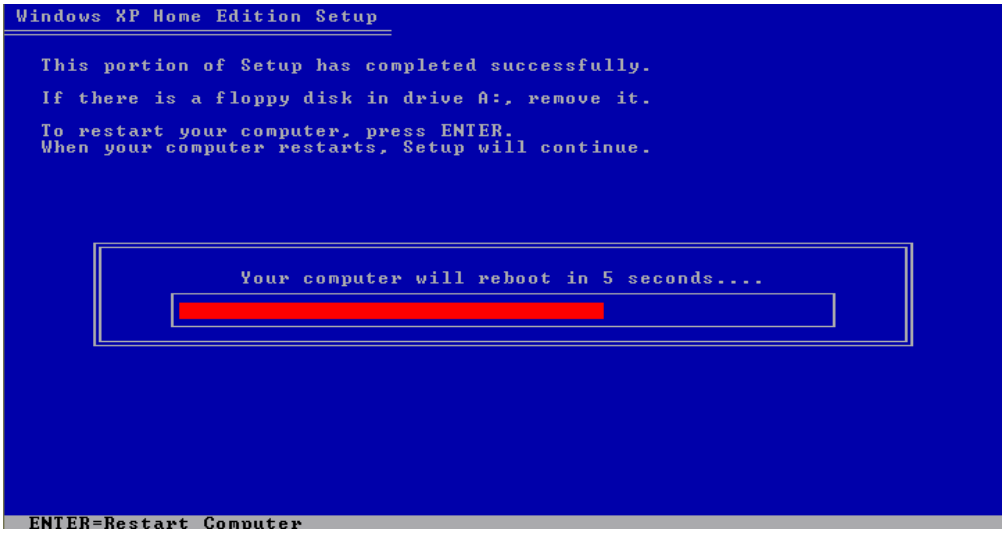


12. Copying Files

After the format setup will automatically copy files and restart your computer. Go to BIOS and remove CD-ROM from first boot device. Start your computer.



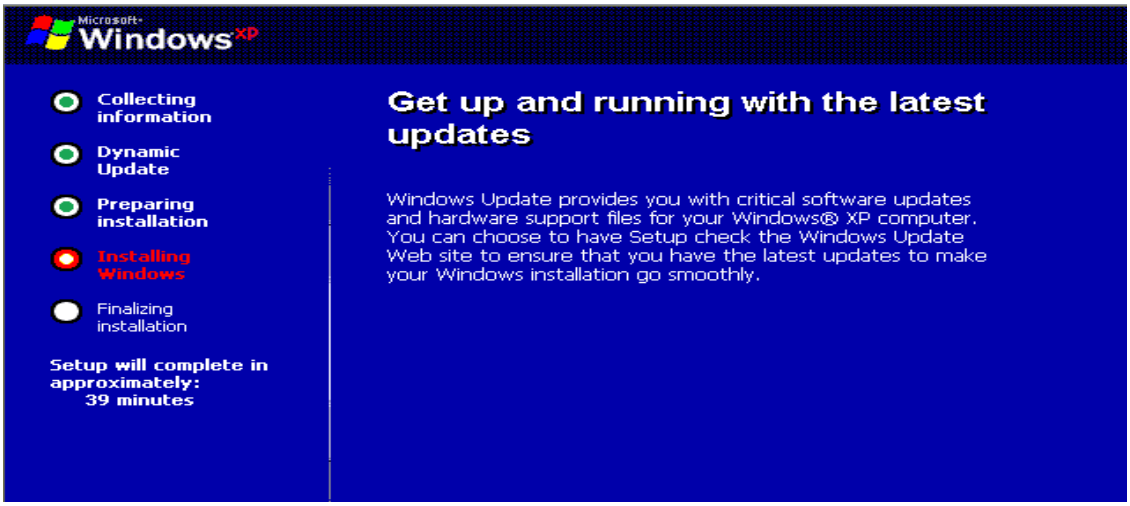
13. Setup will show a progress box and reboot when copying files is complete.When you see the "Press any Key to Reboot" do not Press any Key. If CD boots anyway, remove CD and reboot.



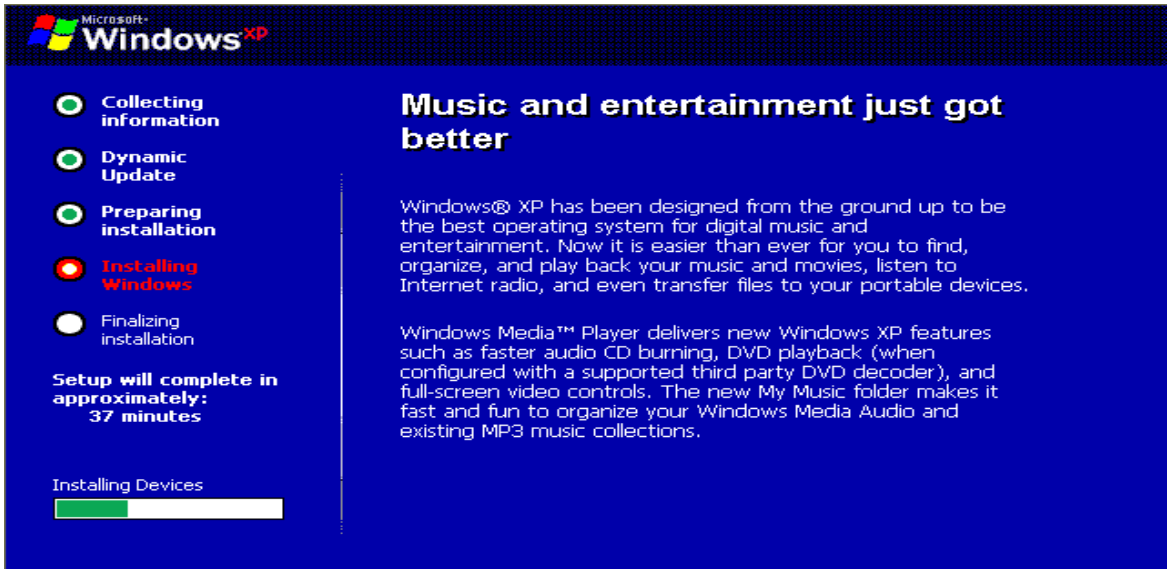
Part 2: Continue the installation

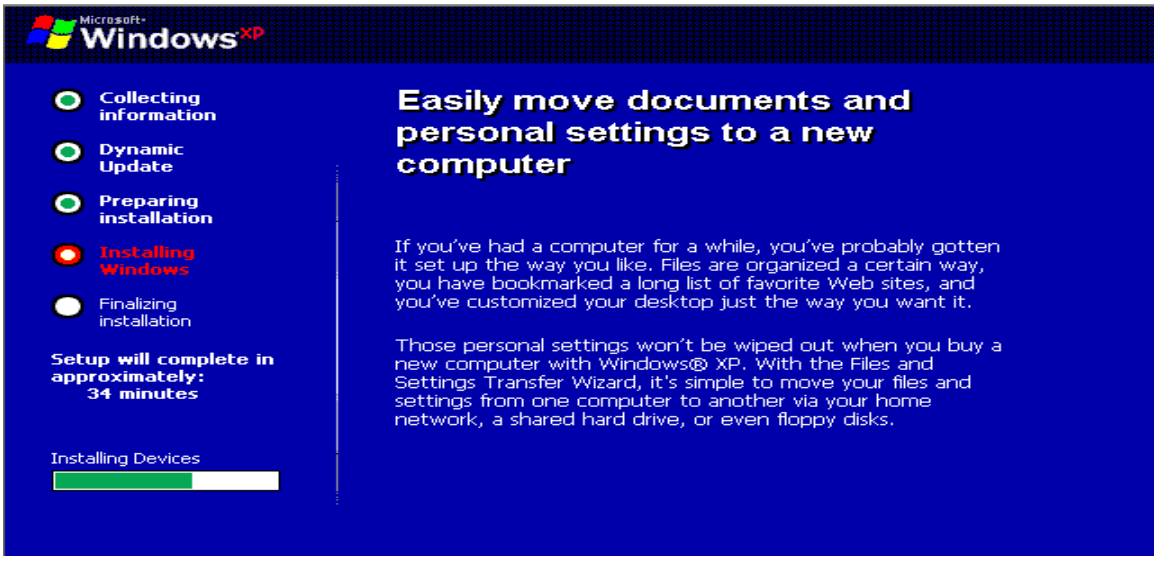
14. From this point, you will follow the on screen prompts.

15. If you live outside the US, you will probably need to modify the default settings.



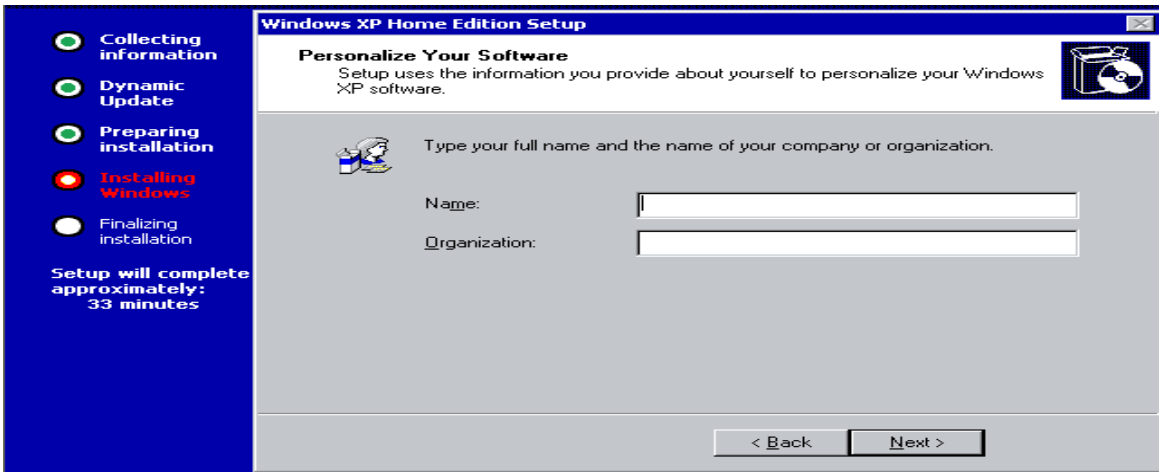
Devices will be installed



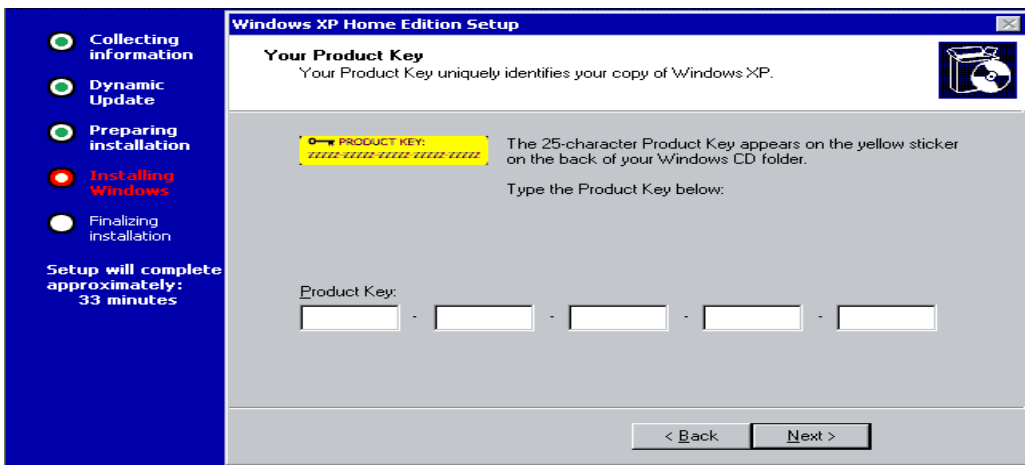


16. Windows XP restarts and then continues with the installation process. From this point forward, you can use your mouse. Eventually, the **Regional and Language Options** page appears. Click **Next** to accept the default settings. If you are multilingual or prefer a language other than English, you can change language settings after setup is complete.

17. On the **Personalize Your Software** page, type your name and your organization name. Some programs use this information to automatically fill in your name when required. Then, click **Next**.

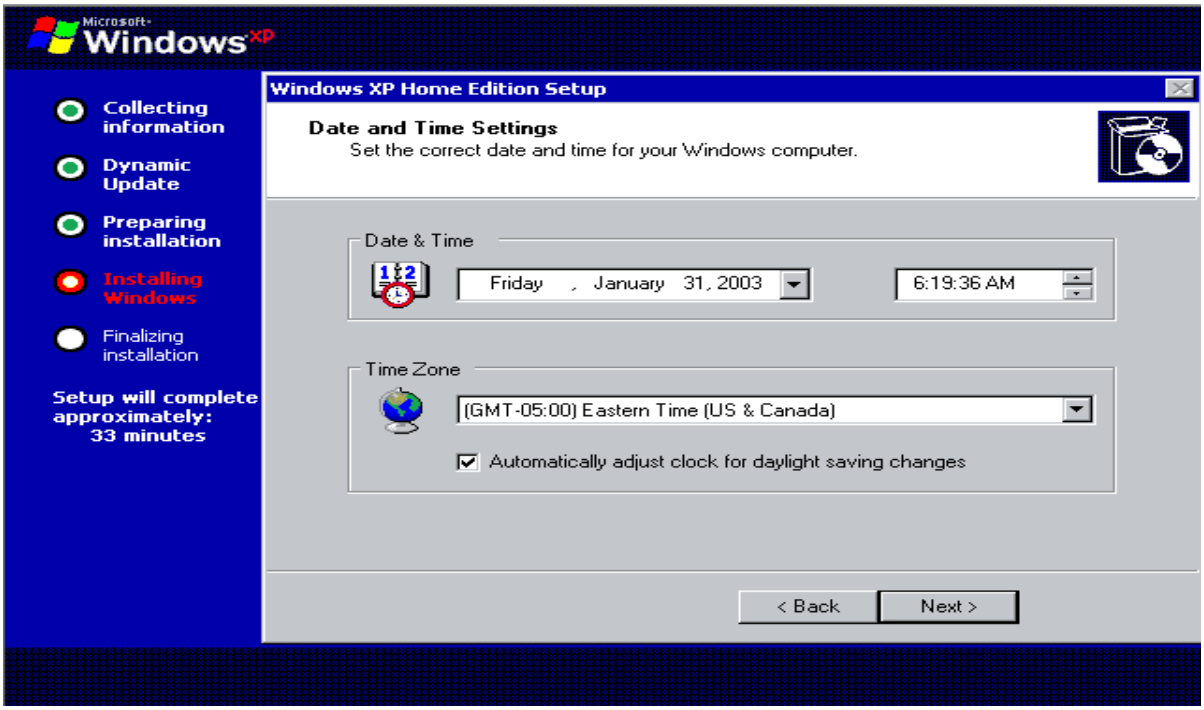


18. On the **Your Product Key** page, type your product key as it appears on your Windows XP CD case. The product key is unique for every Windows XP installation. Then, click **Next**.

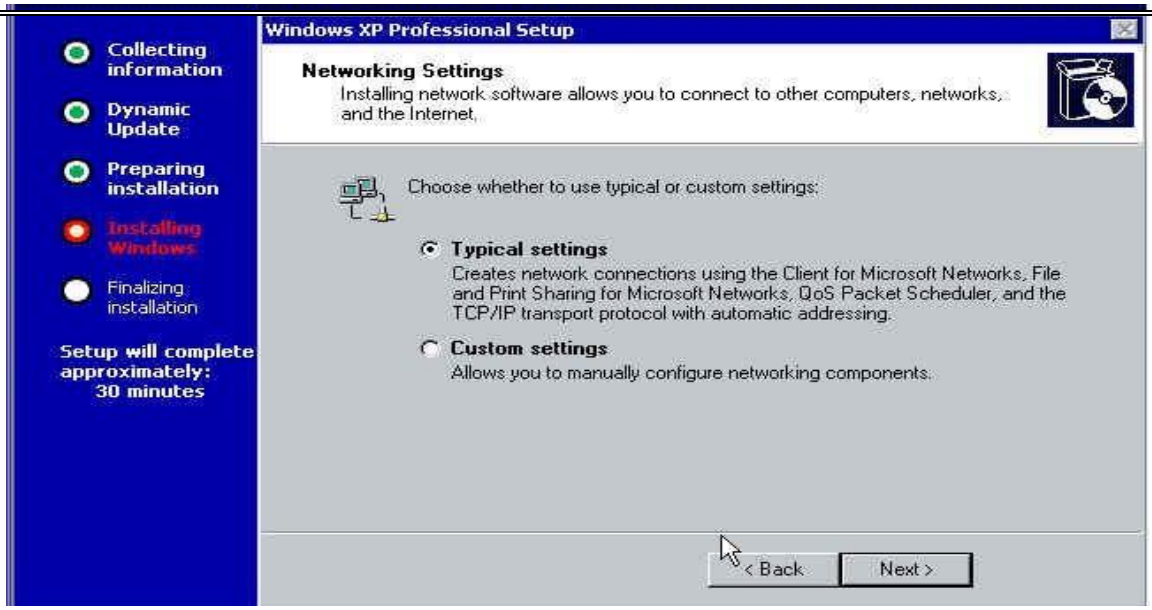


19. On the **Computer Name and Administrator Password** page, in the Computer name box, type a name that uniquely identifies your computer in your house, such as FAMILYROOM or TOMS. You cannot use spaces or punctuation. If you connect your computer to a network, you will use this computer name to find shared files and printers. Type a strong password that you can remember in the **Administrator password** box, and then retype it in the **Confirm password** box. Write the password down and store it in a secure place. Click **Next**.

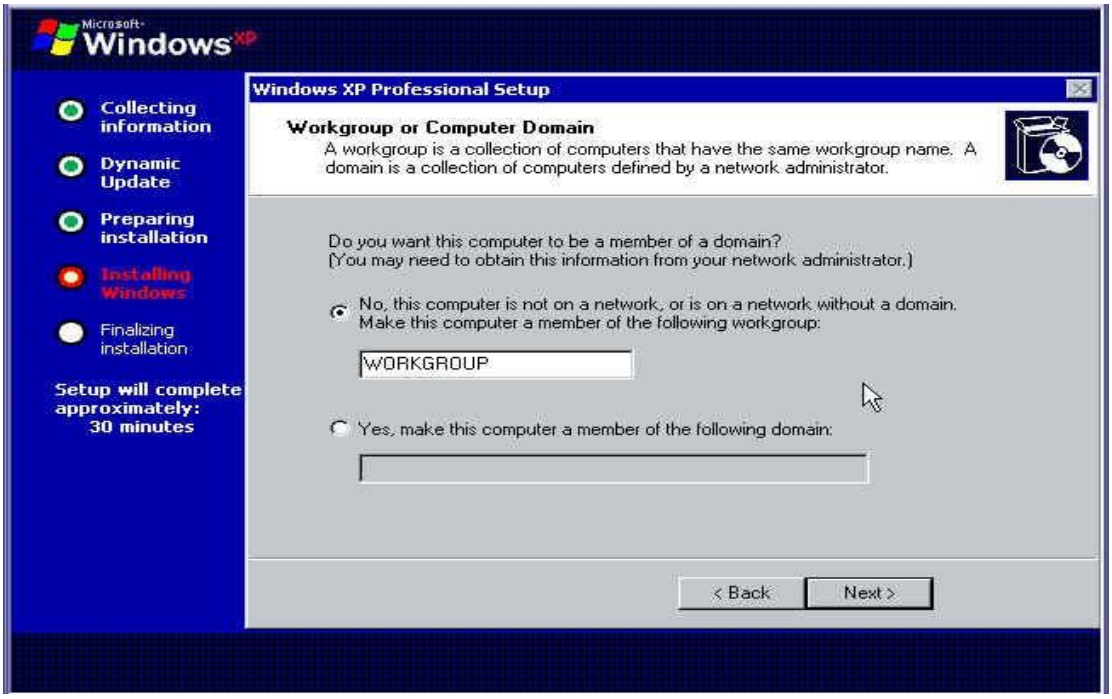
20. On the **Date and Time Settings** page, set your computer's clock. Then, click the **Time Zone** down arrow, and select your time zone. Click **Next**.



21. Windows XP will spend about a minute configuring your computer. On the **Networking Settings** page, click **Next**.

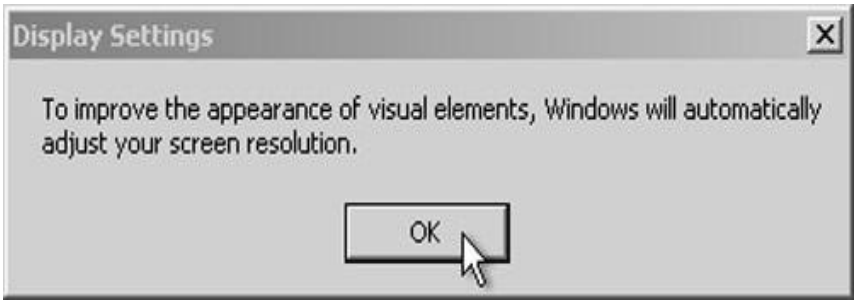


22. On the **Workgroup or Computer Domain** page, click **Next**.

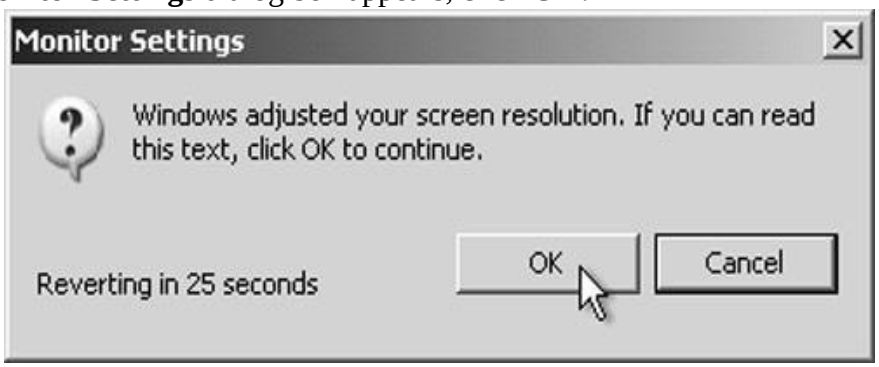


Part 3: Complete the installation

23. Windows XP will spend 20 or 30 minutes configuring your computer and will automatically restart when finished. When the **Display Settings** dialog appears, click **OK**.



24. When the **Monitor Settings** dialog box appears, click **OK**.

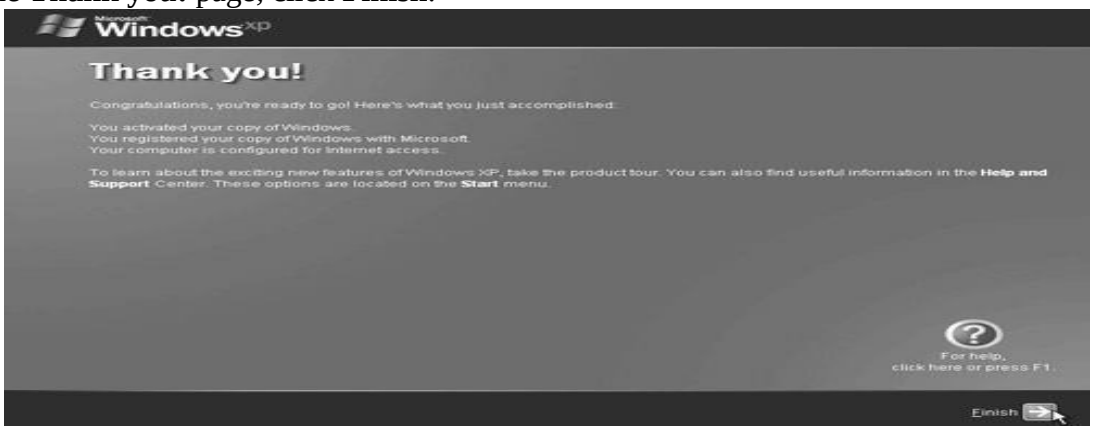


25. The final stage of setup begins. On the **Welcome to Microsoft Windows** page, click **Next**.

26. On the **Help protect your PC** page, click **Help protect my PC by turning on Automatic Updates now**. Then, click **Next**.

27. On the **Who will use this computer?** page, type the name of each person who will use the computer. You can use first names only, nicknames, or full names. Then click **Next**. To add users after setup is complete or to specify a password to keep your account private, read Create and customize user accounts.

28. On the **Thank you!** page, click **Finish**.



29. Now you can log on by clicking your name on the logon screen. You are now ready to use the "colorful" Windows XP

**********END **********