Draft

INFORMATION AND COMMUNICATION TECHNOLOGY

LEARNING MODULE

COMPUTER SYSTEM
MODULE 2.4

Pusat Perkembangan Kurikulum
Kementerian Pelajaran Malaysia
2006

1. What is it?

This is a learning module for a specific Learning Outcome as stipulated in the HSP that is :

- 2.4.1 Personal Computer (PC) Assembling
- 2.4.2 Hard disk partitioning and formatting
- 2.4.3 Software Installation

2. Who is it for?

This module is for students who are taking the ICT subject as their elective and for those who are interested in ICT.

3. What can be achieved?

Upon completion of this module, you will be able to :

- assemble the components of a PC correctly.
- format and partition the hard disk.
- install operating system, application software and utility programs.

4. Is previous knowledge necessary?

Yes. Before using this module, you should have learned about basic concepts of networks and communications, hardware requirements and software requirements.

TOPIC : 2.4 - INSTALLATION

LEARNING OUTCOMES

By using this module, you will be able to:

1. assemble the parts of a PC correctly
2. format and partition the hard disk
3. install operating system, application software and utility programs

DURATION : 12 periods

REFERENCES

Suggested Reference Books

1. Discovering Computers 2006, A Gateway to Information. Complete. Shelly Cashman Series, 2005

2. The Architecture of Computer Hardware and Systems Software, An Information Technology Approach: Second Edition. Irv Englander, 2000

Websites Addresses

1. http://www.scsite.com
2. http://webopedia.com/
3. http://www.microsoft.com/assemble
4. http://www.microsoft.com/biossetup
5. http://www.grisoft.com
6. http://www.pcguide.com

ACTIVITIES
Individual / Group work

1. Teacher demonstration.
2. Study the procedure of assembling parts, formatting and partitioning hard disk and installing software. This can be carried out as group work.
3. Carry out the installation in a small group.

Personal Computer (PC) Assembling

Before assembling the PC, you should check the list of components needed to complete the task.

Components	**Tick (√) if available**
1. CPU casing and power supply	
2. CPU chip	
3. Motherboard	
4. Hard disk	
5. Floppy disk drive	
6. CD Rom drive	
7. Cables - IDE cable - floppy cable - audio cable	
8. Cards - modem card - display card - sound card - network card (not needed if all devices are integrated on-board)	
9. RAM chips	
10. Mouse	
11. Speakers	
12. Keyboard	

A) Assembling the Motherboard

1. Make sure the casing has appropriate risers or spacers installed between the motherboard and the casing (**Figure 1**). This keeps the motherboard from touching the metal surfaces of the casing and prevents any short circuit.

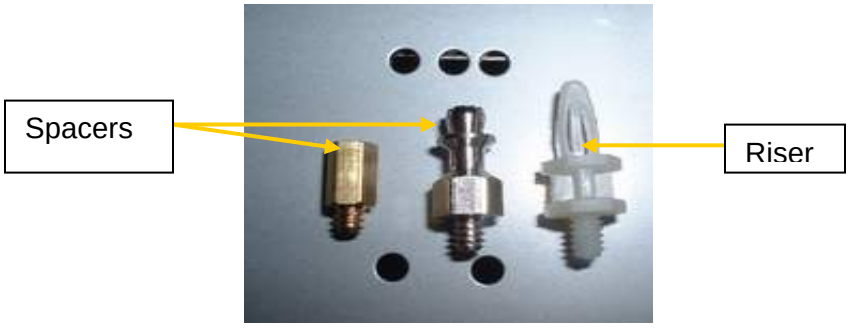


Figure 1*:* Risers or Spacers

2. Place the casing panel on the table and gently fix the motherboard on it (**Figure 2**).Tighten the screws on the motherboard to the panel

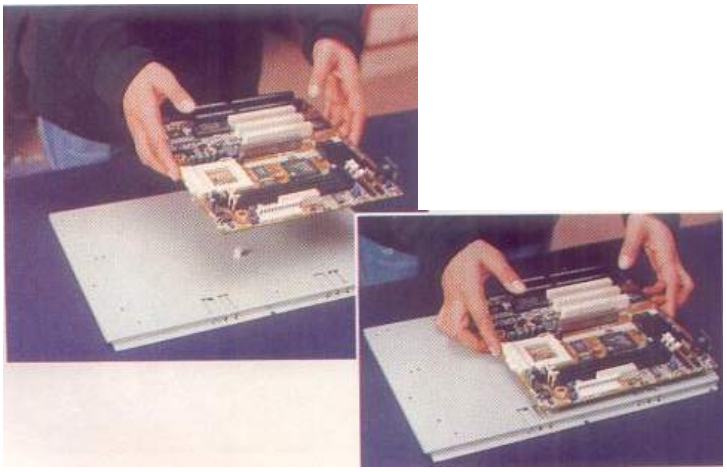


Figure 2: Fixing the motherboard on the casing panel

Precautions:

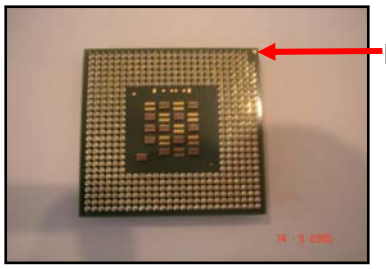
- It is advisable to wear an anti-static wrist strap that is properly grounded, to avoid damage by static electricity to the motherboard and cards.
- Be sure to handle all the components with great care.

B) Fixing the Processor

1) Place the CPU (**Figure 3**) into the ZIF (Zero Insertion Force) Socket (**Figure 4**).

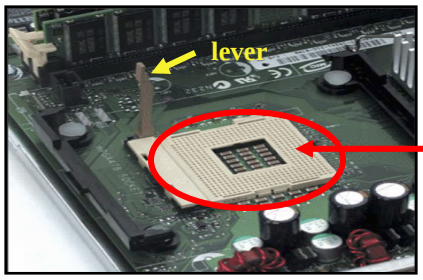
2) Gently lower the CPU into the ZIF socket (**Figure 5**). Make sure that the Number 1 pin is placed correctly.

3) Lock the socket using the Locking lever (**Figure 6**).



Number 1 pin

Figure 3



ZIF Socket

Figure 4

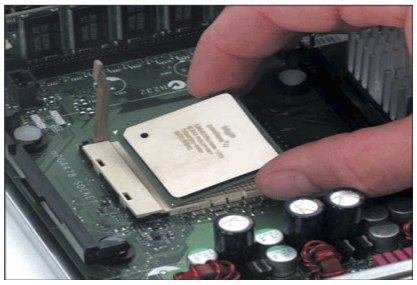


Figure 5

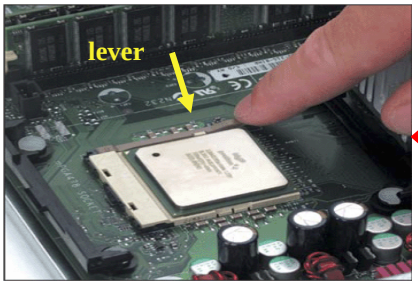


Figure 6

4) Apply the IC paste (silicone heat sink compound) that comes with the processor to the bottom of the heat sink (**Figure 7**).

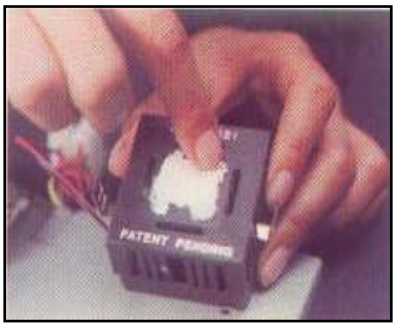


Figure 7: Applying IC paste

5) Fix the processor fan on the processor. Make sure that the locks of the processor fan are in place (**Figure 8**).

Figure 8*:* Fixing the processor fan

C) Installing the RAM

1) Insert the RAM in the RAM slot at an angle of 45^0. Press downwards (**Figure 9**).

2) Ensure that the RAM remains in the locked position. Inserting the RAM will vary with different kinds of RAM.

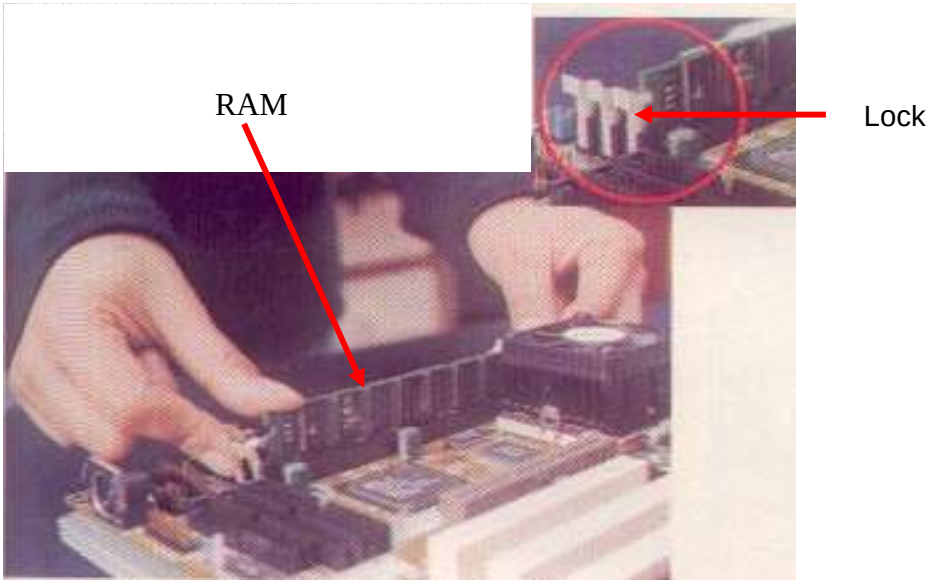


Figure 9: Installing RAM

D) Connecting the Cables

Name of Cables	Connected to :	No. of Pins
IDE	Hard Disk, CD-ROM	40
Floppy IDE	Floppy Drive	34
Power Cables for Motherboard	From power supply to Motherboard From power supply to Floppy Drive From power supply to Hard Disk, CD-ROM	2x6 in AT and 20 in ATX
Front Panel Display	Speaker, HDD Indicator LED, Power LED, Restart	Different for each
Back Panel Peripherals Connections	PS/2, USB, LPT, COM 1, COM 2	Different for each
Card Connectors	CD ROM Audio cable from motherboard to CD ROM, Onboard display & Audio to back panel.	Different for each

1) Connect the IDE cables to the motherboard (**Figure 10**).

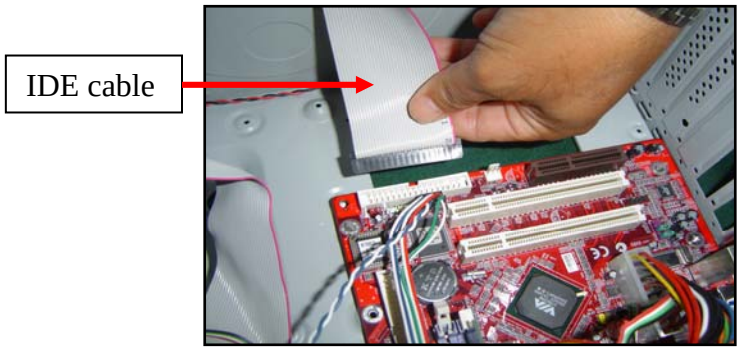


Figure 10: IDE Cable

2) Connect all other cables to their respective devices such as the processor fan, hard disk drive, floppy disk drive and CD-ROM drive

   Note that that processor fan comes with its own cable that must be connected to the jumper on the motherboard. Make sure that they are securely connected to the appropriate slots.

Precautions:

- Be careful to fix the cables properly to avoid damaging the pins or the motherboard in the process.
- Make sure that the red part of the IDE cables (the number 1 pin) is in proper position.

Pin Configuration on Motherboard - Cables can be connected to a number of slots on the motherboard. The following are the number of pins for all the slots on the motherboard (**Table 2**).

Device/Slot Name	No of pins
LPT	26
COM	10
IDE	40
IDE Floppy	36

Table 2

3) Remove the metal coverings that might cover the parallel ports and serial ports when you place the motherboard into the casing (**Figure 11**).

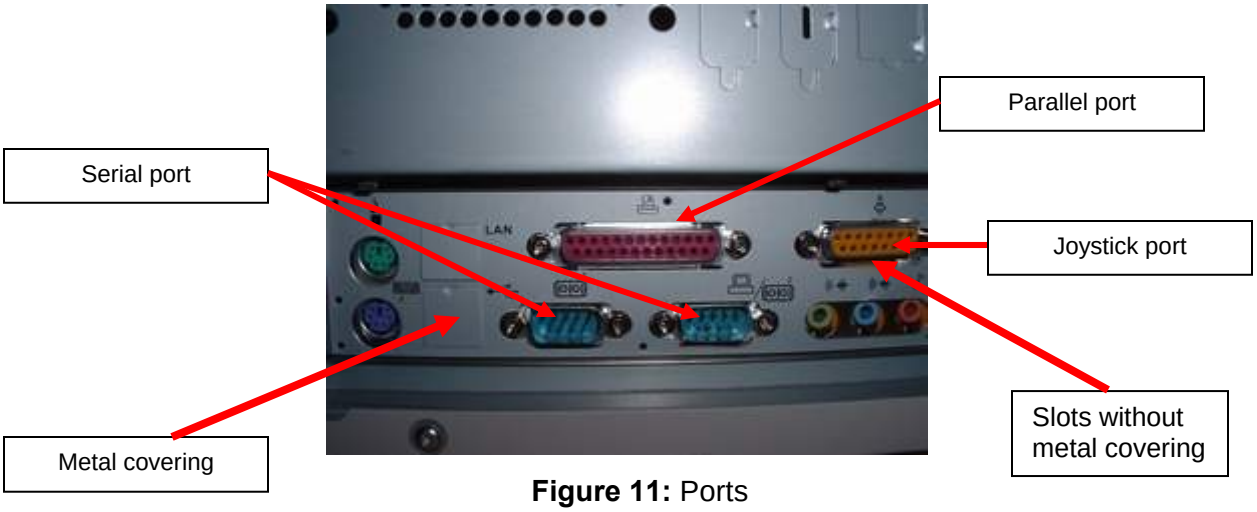


Figure 11: Ports

4) Place the motherboard (**Figure 2**) inside the casing and fasten it with plastic pegs or metal screws given (**Figure 12**).

Figure 12:
Placing the motherboard inside the casing

E) Installing the Floppy Drive

1) Ensure that one of the 3.5-inch bays in your casing is open.

2) Attach the drive to the rails on the casing and slide it into the front of the computer until it clicks into place.

3) Once the power cable and the floppy cable are in place, screw the floppy drive in securely on both sides.

4) Plug in the power cable carefully (**Figure 13**).

Figure 13: Plugging in the power cable

5) Plug in the floppy (data) cable.

6) Ensure that the floppy data cable runs parallel with the floppy drive power cable. You can do this by aligning the red stripe on the floppy IDE cable with the red wire on the floppy drive cable (**Figure 14**).

Floppy Cable

Figure 14: Plugging in the power cable

F) Installing the Hard Disk

1) Ensure that the hard disk is set up to be the master drive on its IDE cable. If you have two IDE devices, one must be designated the master device, and the other, the slave device.

2) Examine the top of your hard disk. Set the jumpers to make the drive a master or slave device. The jumpers are located on the back of the drive (**Figure 15**). The jumper settings are indicated in the chart which comes along with the hard disk. Ensure that they are set correctly to enable the drive as a master.

Figure 15: Location of the jumpers

3) Insert the hard drive into the drive-tray and screw it in securely on both sides (**Figure 16**).

Figure 16: Inserting the hard drive into the drive tray

G) Installing the Optical Drive (DVD/CD-ROM)

1) Ensure that at least one full sized 5.25" bay is open in the casing.

2) Insert the drive into the front of the casing until it clicks into place (**Figure 17**).

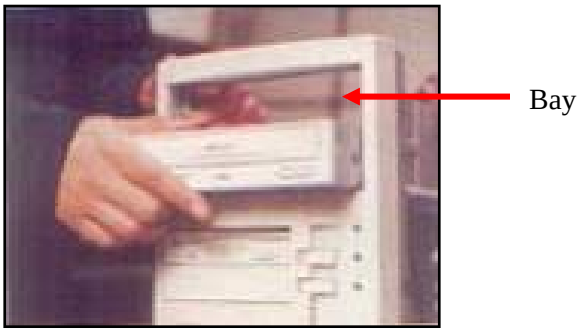


Figure 17: Inserting the hard drive into the drive tray

3) Screw it in securely on both sides.

4) Attach the power cable to the drive.

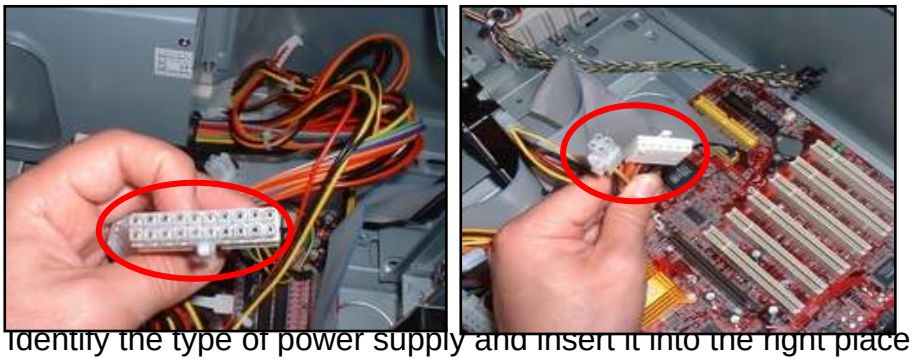
5) Attach the secondary IDE cable to the drive.

6) Set the jumper on the CD-ROM drive as 'master'.
If you are using the same IDE cable that connects to the hard disk, you have to set the CD-ROM drive as 'slave'.

7) Connect the audio cable of the CD-ROM to the jumper on the board.

H) Installing Power Supply

There are two main types of casings available today with reference to Power Supply - AT and ATX - and both have different connectors **(Figure 18).**



1) Identify the type of power supply and insert it into the right place.

ATX – 20 pins **Figure 18** **AT – 2x6 (12) pins**

The ATX cables must be connected in such a way that the black cables of both plugs are aligned (**Figure 19**).

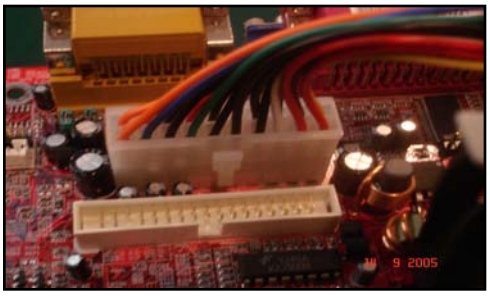


Figure 19: Aligning the black cables

2) Connect the wires from behind the computer casing to your motherboard jumpers (**Figure 20**). Their functions are to control the ‘on’, ‘off’, ‘reset’, ‘hard disk activity’, ‘speaker’ and ‘power switch’. Every motherboard is different. Refer to the motherboard manual to identify the correct jumpers to be connected to.

Figure 20: Connecting to the motherboard

3) Ensure all connections are firmly attached, and that no wires run close to the top of the processor fan.

4) Replace the casing and screw it tight (**Figure 21**). Set it in an upright position.

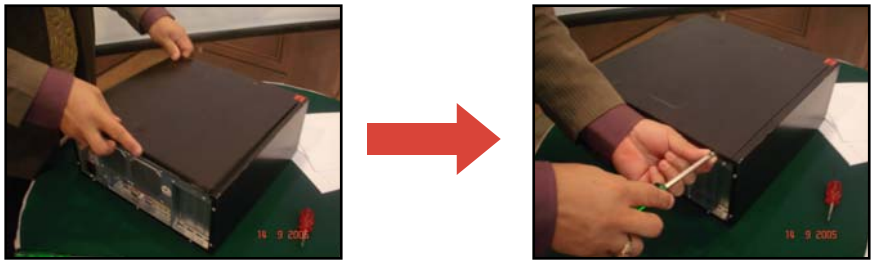


Figure 21: Replacing the casing and screwing it tight

I) Connecting other Peripherals

1) Plug the video cable of the monitor to the display port. The monitor symbol is shown on the back panel of the casing.

2) Connect the keyboard, speakers and mouse to the respective ports.

3) Connect all other peripherals available such as the printer, external modem, scanner and others to their respective ports (**Figure 22**).

Figure 22: Ports

Upon completion of the assembling process, use the checklist below.

	Steps	Tick (✓) if completed
A	Installing the Motherboard	
B	Fixing the Processor	
C	Installing the RAM	
D	Connecting the Cables	
E	Installing the Floppy Drive	
F	Installing the Hard Disk	
G	Installing the Optical Drive (DVD/CD-ROM)	
H	Installing the Cards	
I	Connecting the Peripherals	

DONE!

J) Powering the System

1) Plug in the power cord and switch the power supply switch to the 'On' position.

2) Press the power button. If everything is connected as it should be, all system fans should start spinning, you should hear a single beep, and after about 2-5 seconds, the computer starts to boot.

3) Post-test running will appear for a while and then the system will halt because an operating system is not installed yet.

K) Configuring the BIOS Setting

BIOS is Basic Input Output System. It loads basic operating system from ROM into the memory.

Turn of the main power supply and switch on the computer again. To enter BIOS setup, press the Delete key immediately during the post-test (power on self-test) Review and edit the BIOS setting as needed.

1. Go to the **Main** menu.

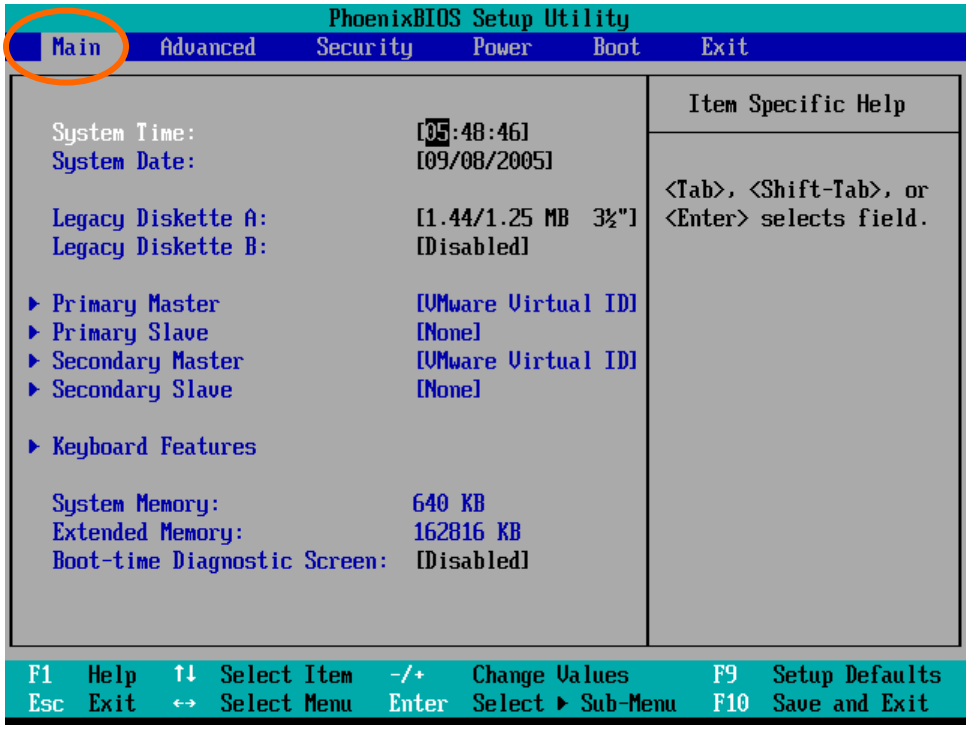


Figure 23: BIOS Setup Interface

2. Change the system time and date.

> **WARNING -** Do not change any other settings.
>
> - The disk drives, DRIVE A and DRIVE B, are currently always 1.44 MB for A and None (no) for B.
> - The hard disk and the memory are detected automatically.

3. Review other settings in **Advanced**, **Security**, **Power** and **Boot** menu (**Figures 24-27**).
   Do not change any settings.

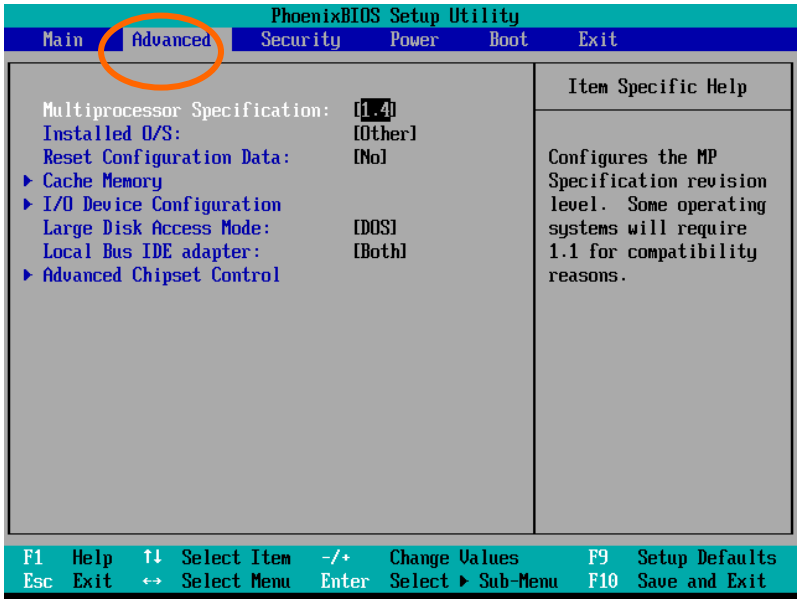


Figure 24: Advanced Interface

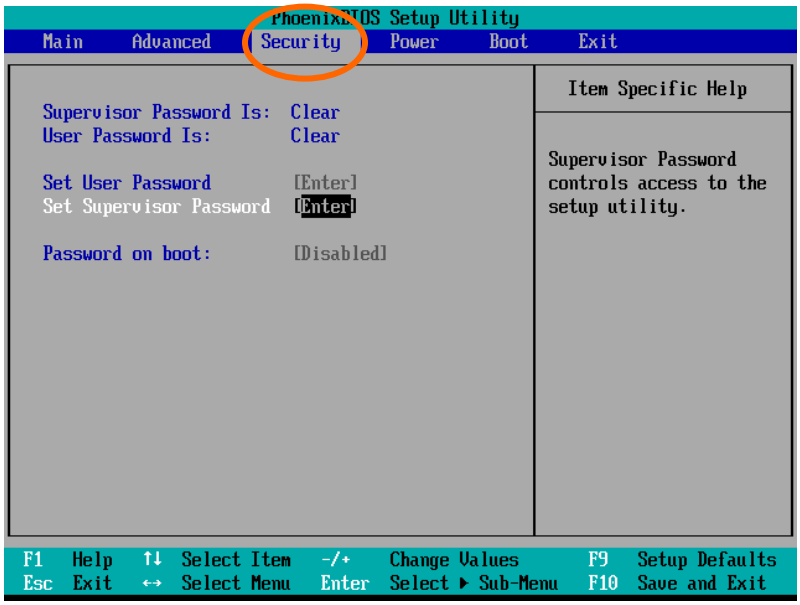


Figure 25: Security Interface

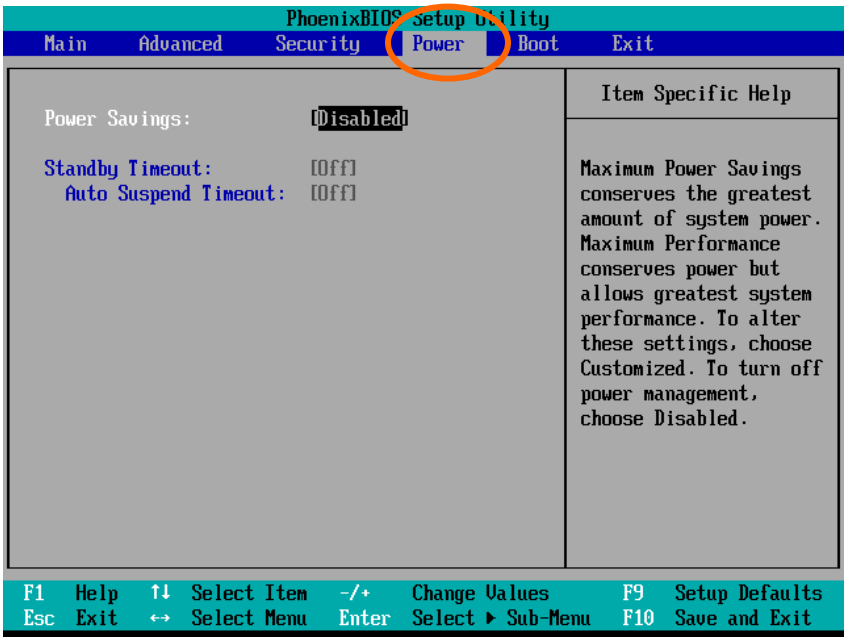


Figure 26: Power Interface

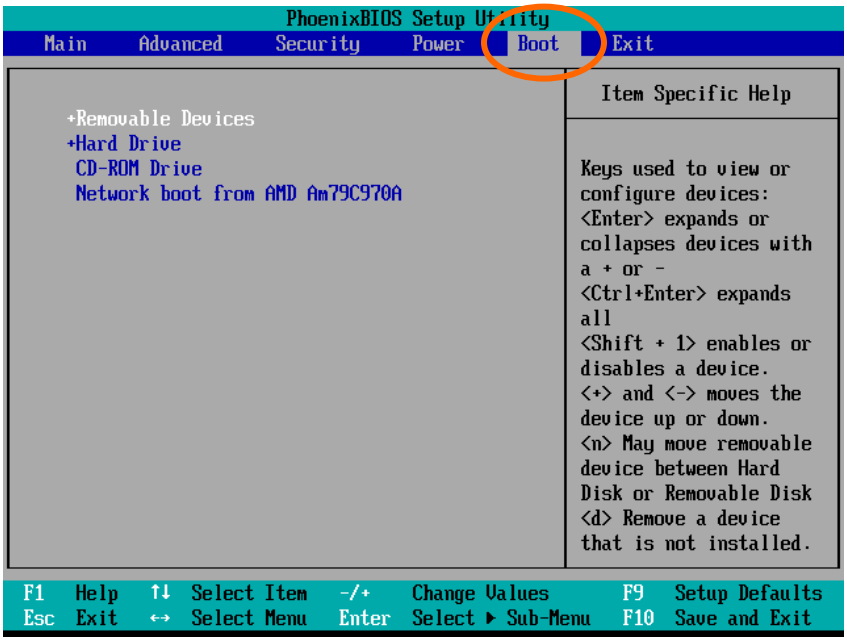


Figure 27: Boot Interface

4. Go to the **Exit** menu and choose **Save Changes** to exit (**Figure 28**).

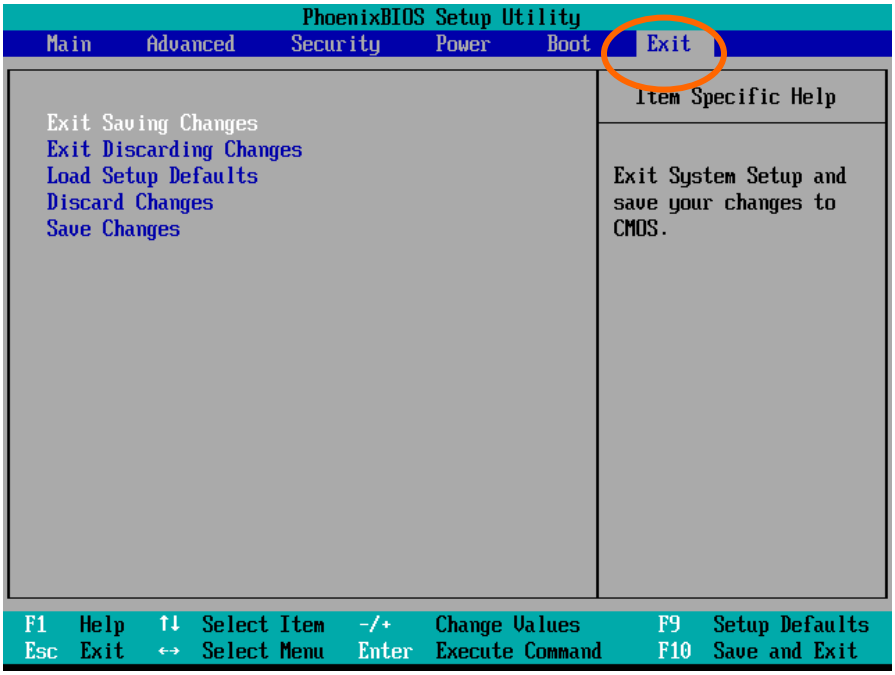


Figure 28: Exit Menu

5. Type **'Y'** for Yes to save and exit from the BIOS setup.

The system is now ready! The operating system can be installed now.

Note :

- Read the troubleshooting guide for instructions to solve any problems that may arise.

ASSESSMENT

Suggested assessment

Exercise

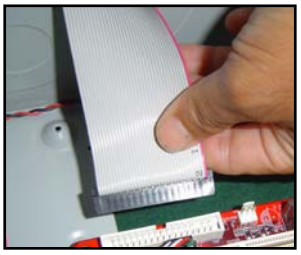
1. Identify the following components by matching them with the appropriate terms.

a.

Heat Sink

b.

IDE Cable

c. 

CD Drive

d.

Processor

e.

RAM

2. Mark **T** for True and **F** for False.

____ a. Replacing RAM is a fairly simple process, whereas replacing a processor is much more complicated.

____ b. Computers can use only one processor at a time.

____ c. Floppy disk drive is only available in internal bays.

____ d. The processor is also called the central processing unit (CPU).

____ e. PC Card slot is a socket on the motherboard that can hold an adapter card.

A. HARD DISK PARTITIONING AND FORMATTING

and

OPERATING SYSTEM INSTALLATION

Insert your Windows XP Professional Setup CD.

1) Welcome to Setup:

The **Welcome to Setup** screen appears (**Figure 1**). Choose one of the following instructions:

Press **ENTER** to Continue Setup.

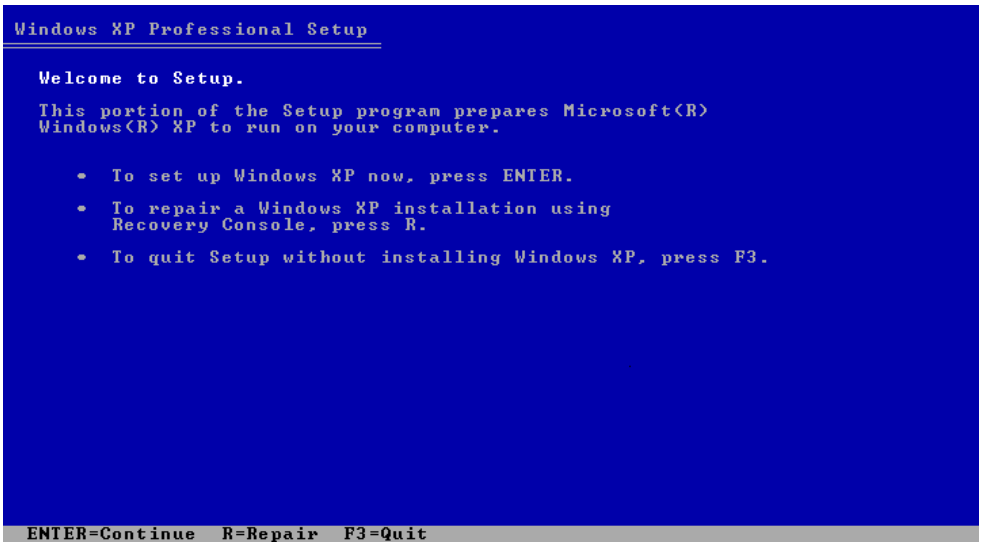


Figure 1: Windows XP Professional Setup

2) Windows XP Licensing Agreement:

The **Windows XP Licensing Agreement** screen appears (**Figure 2**).

Press **F8** to agree with the terms.

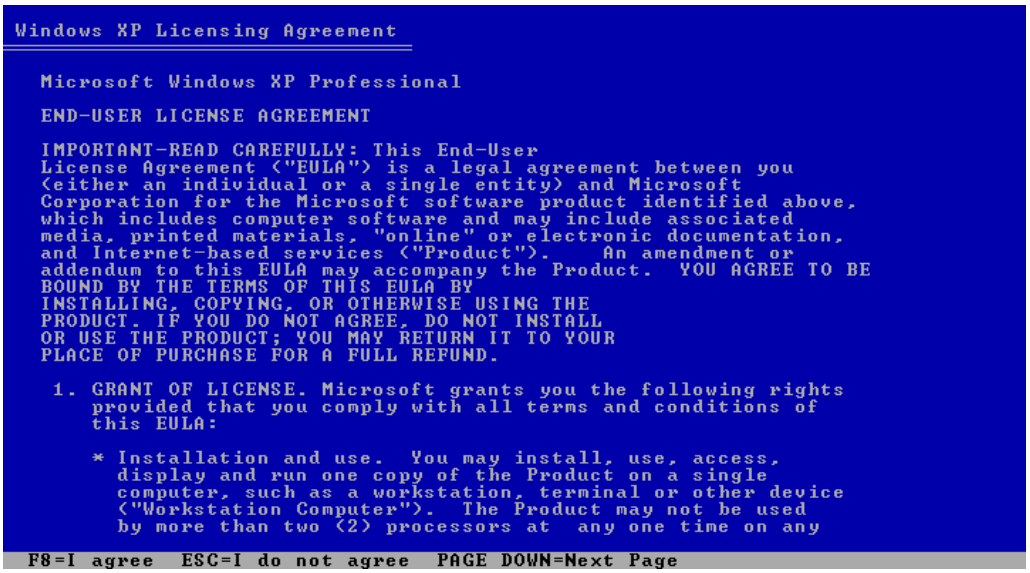


Figure 2: Windows XP Licensing Agreement

3) Hard drive partition information

a. If partition is defined

Hard drive partition information is now displayed. This example already has a partition defined (**Figure 3**).

Press **ENTER** to install on the selected partition.

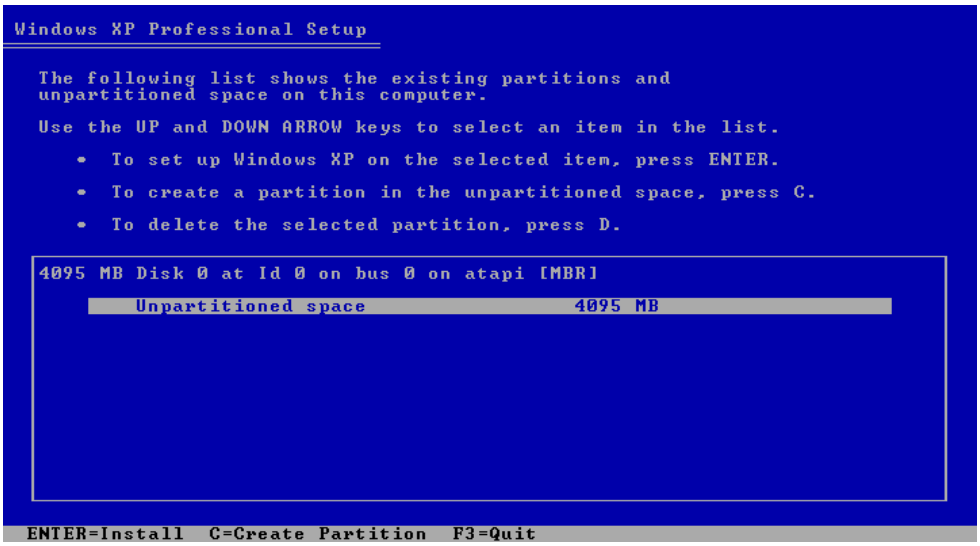


Figure 3: Hard Drive Partition

b. If no partitions have been previously defined

If no partitions have been previously defined, this screen will be displayed (**Figure 4**). You can create as many partitions as you wish.

Press **Enter** to create a partition.

You may create a partition through automatic partitioning or manual partitioning.

If you decide on automatic partitioning, press **Enter.**

If you decide on manual partitioning, choose the minimum and maximum perimeters that appear on the screen. Work within these perimeters.

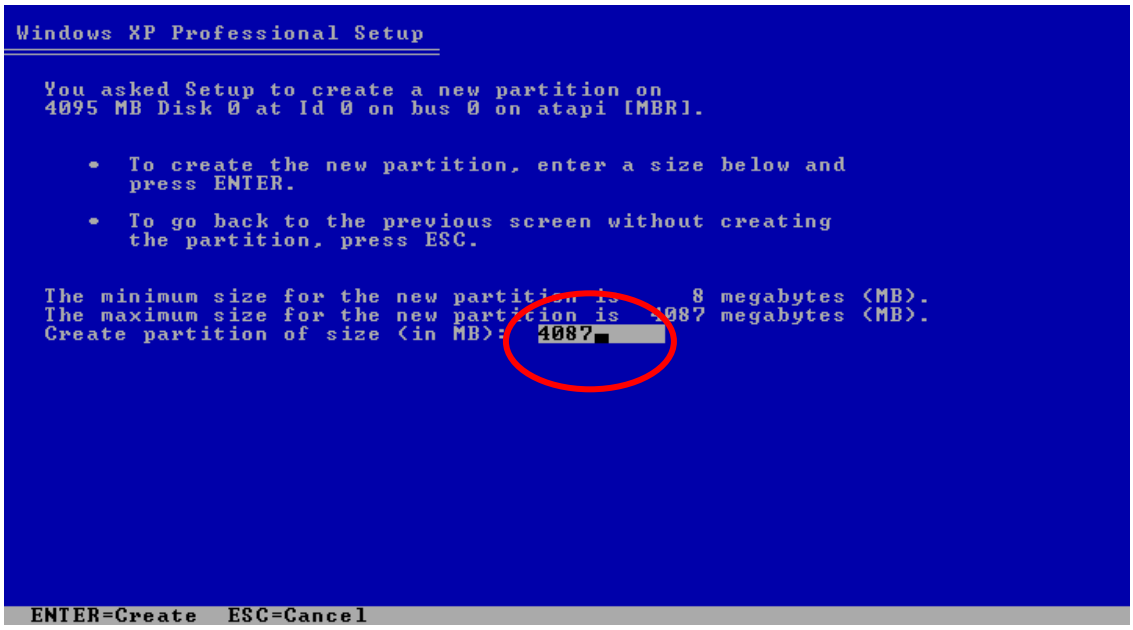


Figure 4: Automatic partitioning

4) Install the partition

Choose **Drive C** : or partition 1 to install the operating system (**Figure 5**).
Click **Enter** to install the system.

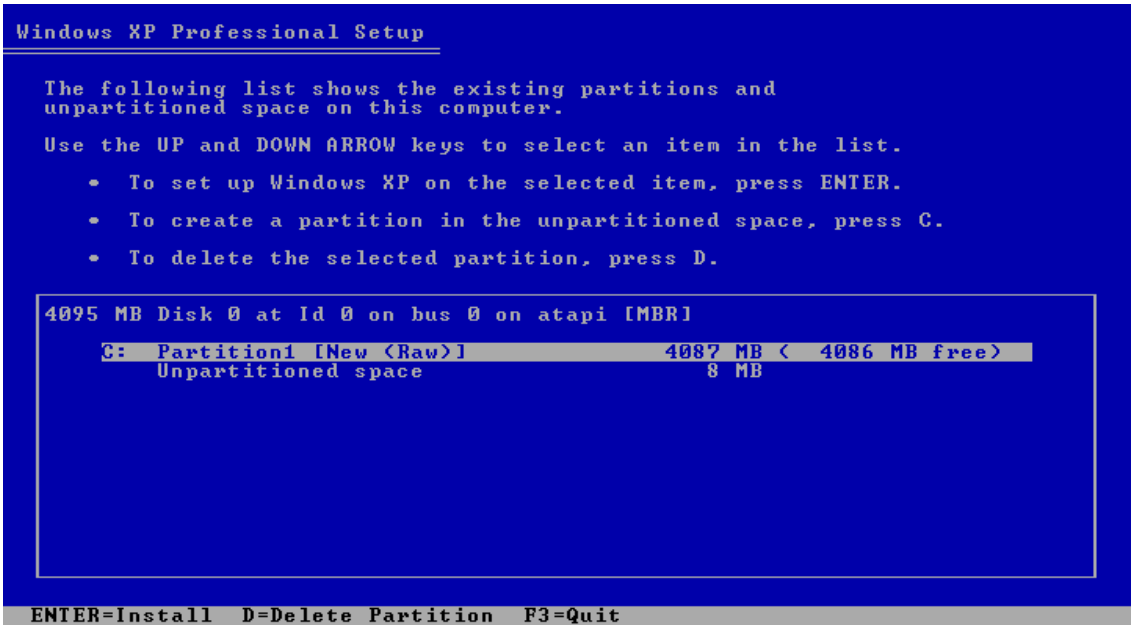


Figure 5: Install the operating system

5) Format the partition

This Operating System (OS) supports Network File System (NTFS), so format the partition with it.

Select format partition using **NTFS** file system (**Figure 6**).

Press **Enter** to confirm your selection.

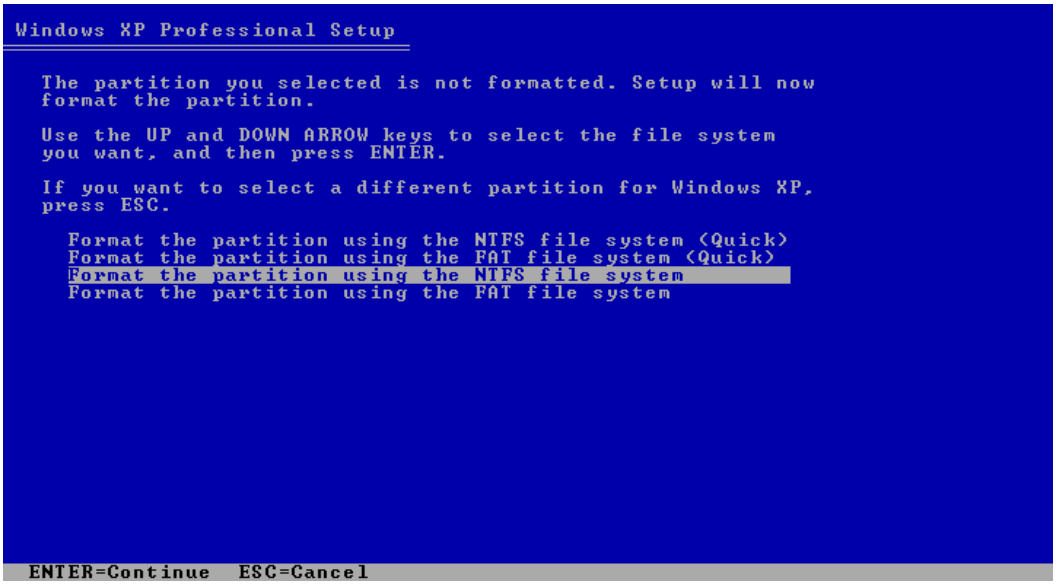


Figure 6: Format the partition using NTFS file system

6) Setup formats the partition (**Figure 7**).
Wait until the process is completed.

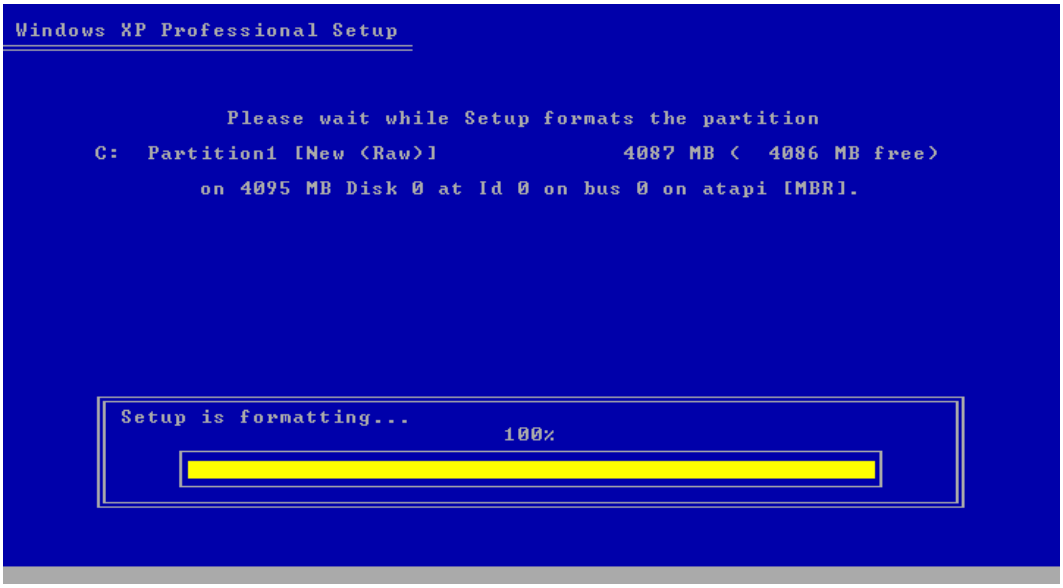


Figure 7: Setup formats the partition

7) Setup copies and configures various files (**Figure 8**).

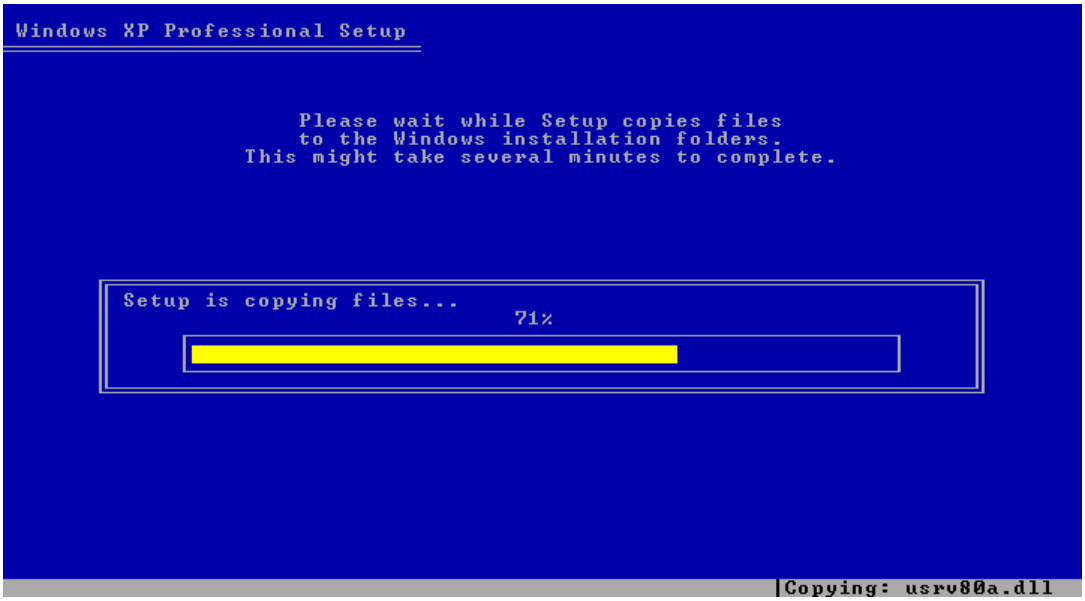


Figure 8: Setup copies and configures various files automatically

8) Press **Enter** to restart and the new windows XP boot screen is displayed (**Figure 9**).

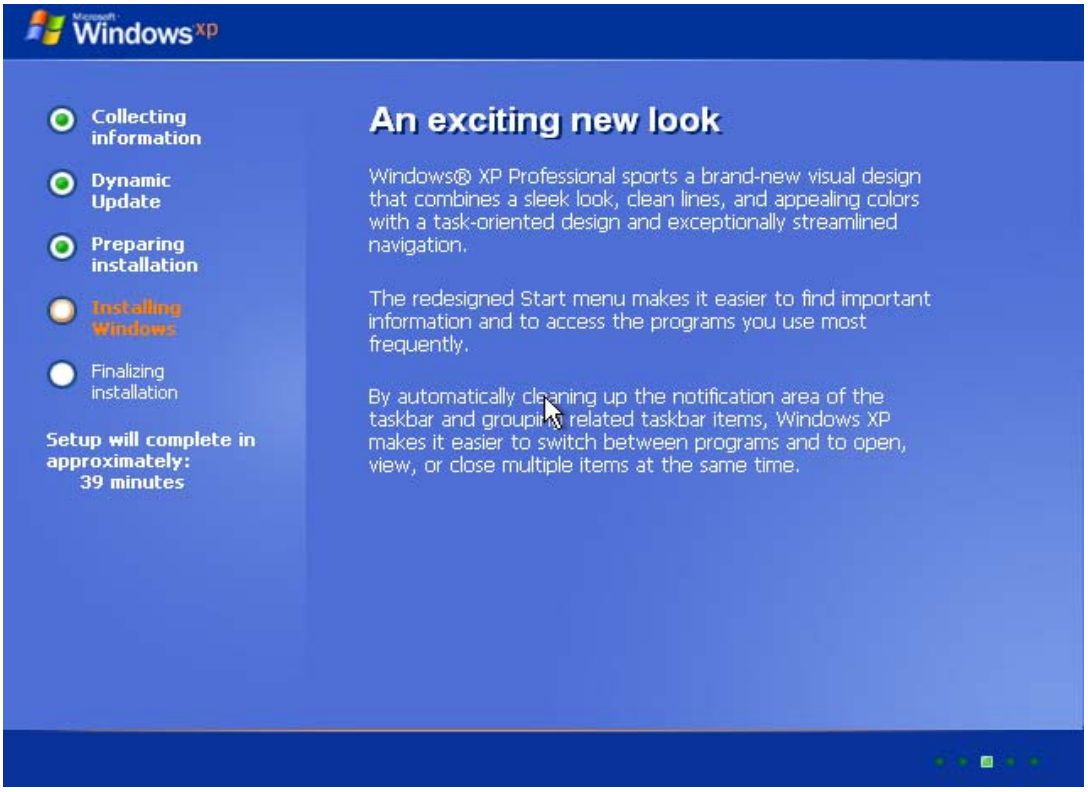


Figure 9: Windows XP boot screen

Wait until the **Regional and Language Options** screen appears (**Figure 10**). Click **NEXT.**

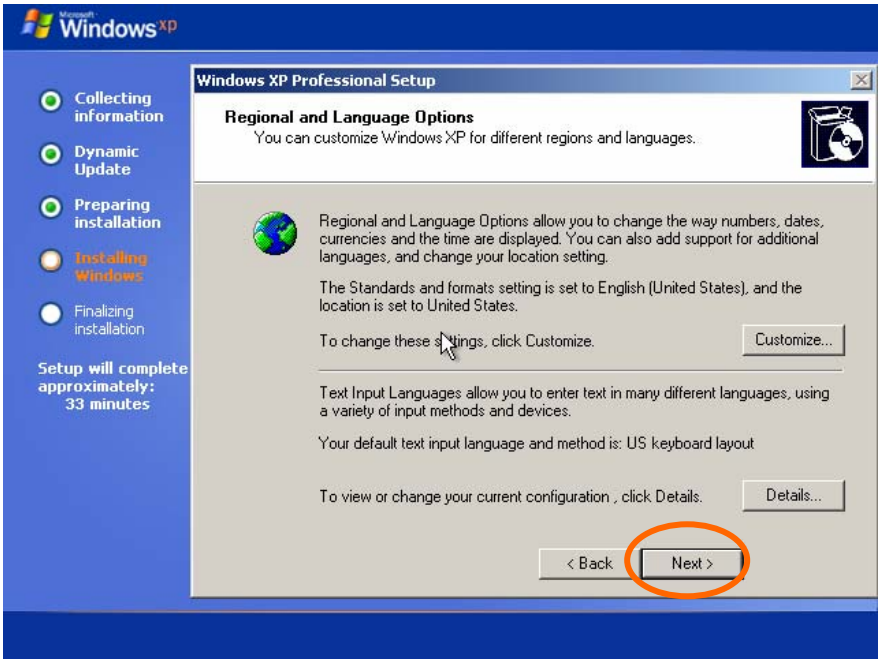


Figure 10: The Regional and Language Options screen

B. OPERATING SYSTEM INSTALLATION

9) Windows XP installation

The new windows XP screen appears while the installation process takes place (**Figure 11**). Wait until the process is completed.

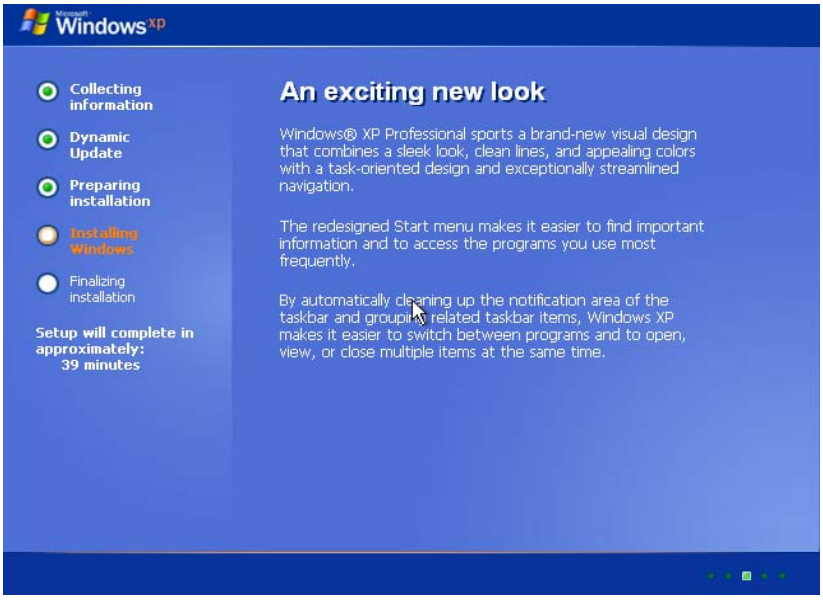


Figure 11: Windows XP installation screen

10) Region and Input language (Figure 12)

Click **Next**

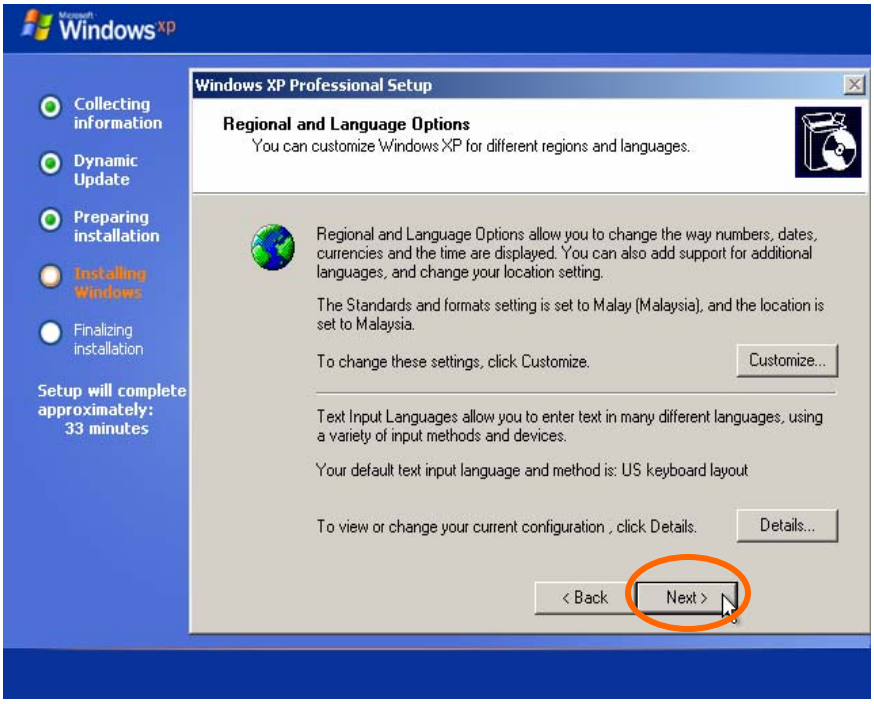


Figure 12: Regional and Language Options

11) Enter your name

Enter your name and organization (**Figure 13**).
Then, click **Next.**

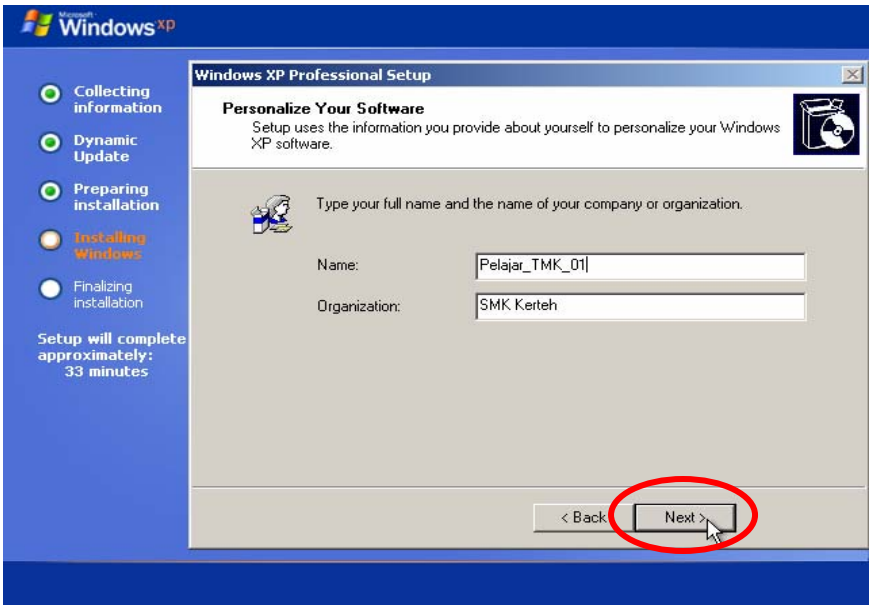


Figure 13: Personalize Your Software

11) 25 Digit Product Key

Enter the **25 digit product key** that comes with your CD (**Figure 14**). Click **Next.**

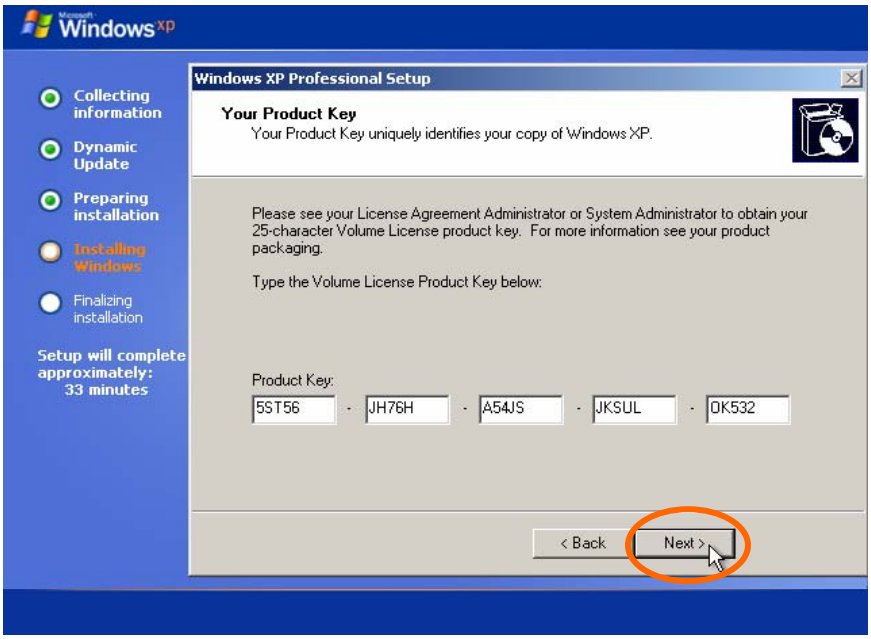


Figure 14: Product key

14) Enter computer name and an administrator password

Enter the computer name and administrator password as required (**Figure 15**). It is important that you remember this password.

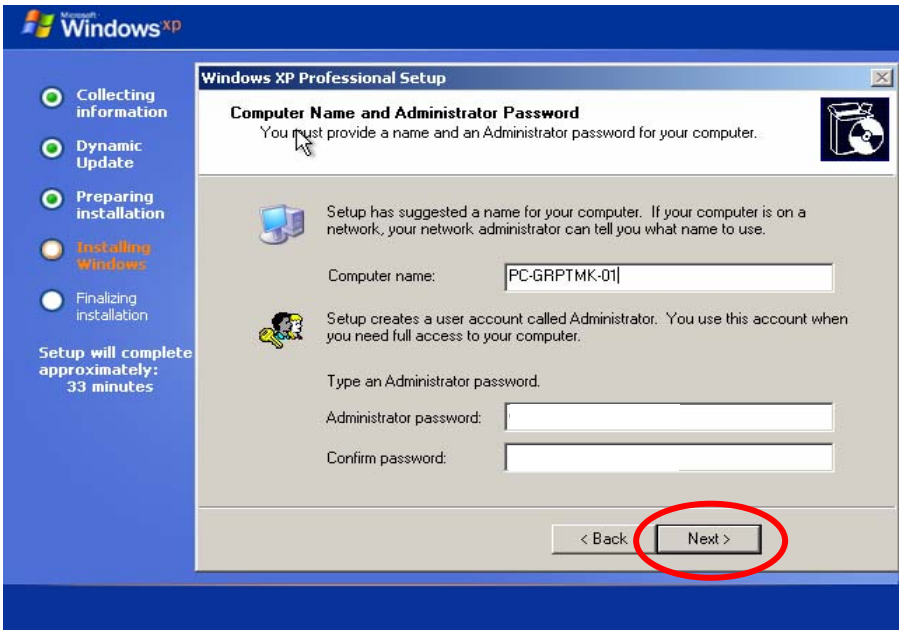


Figure 15: Computer name and Administrator password

15) Date, Time and Time Zone

Fill in the required information for the Date, Time and Time Zone (**Figure 16**).

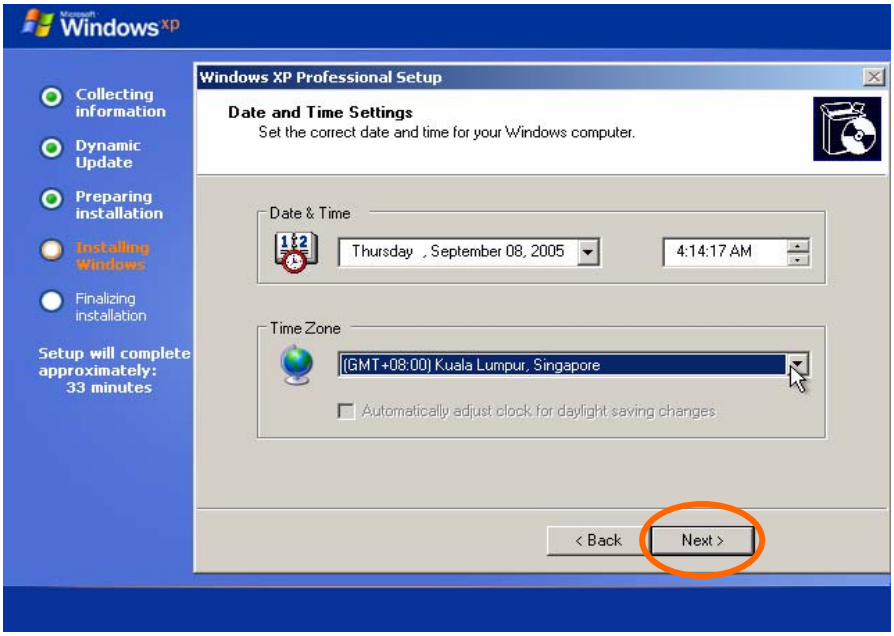


Figure 16: Date and Time Settings

16) Network is installed

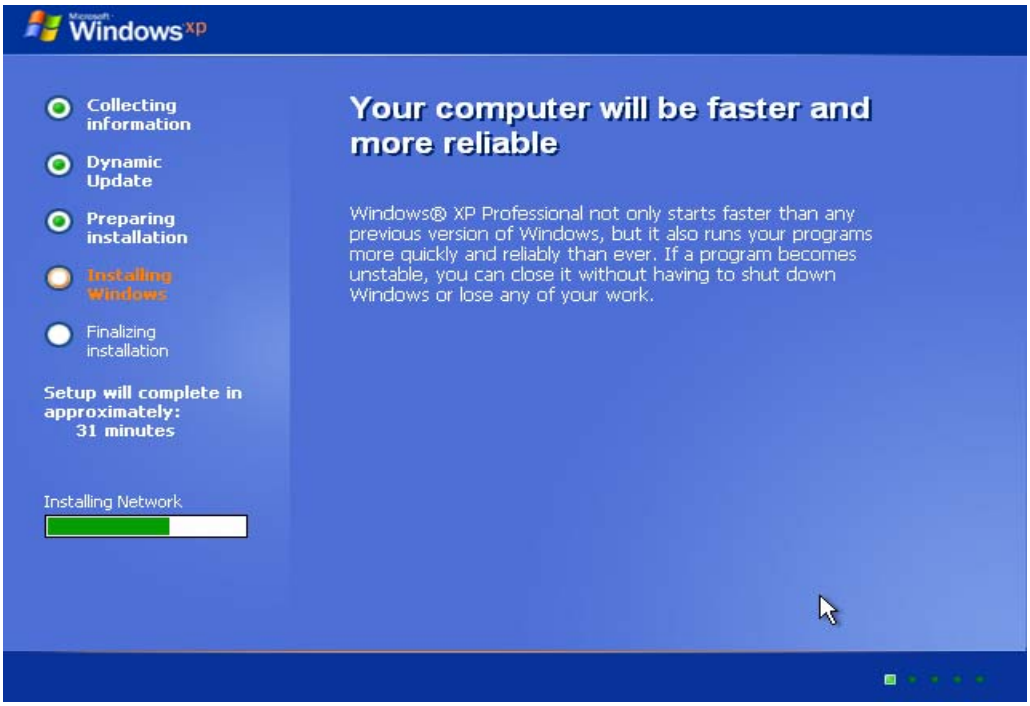


Figure 17: Installing Network

17) Network setting

Choose typical setting (**Figure 18**).
Click **Next**

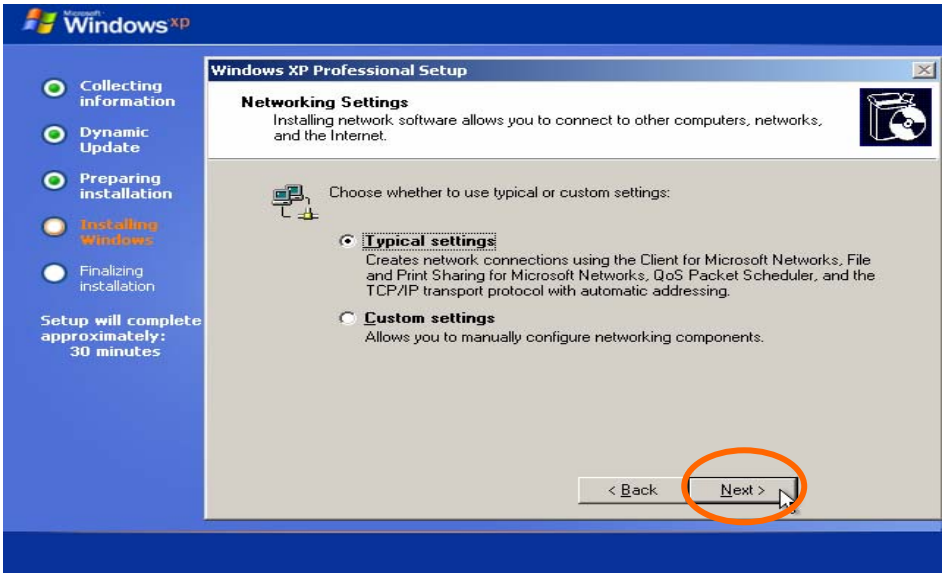


Figure 18: Network Settings

18) Workgroup or computer domain

You can change the workgroup if you want to (**Figure 19**).
Click **Next**.

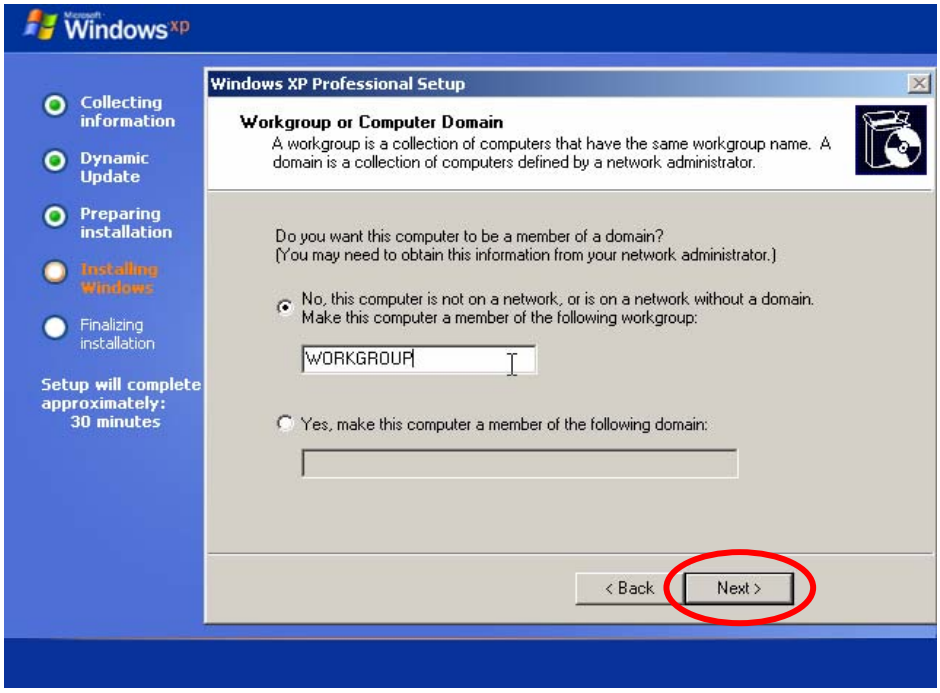


Figure 19: Workgroup or Computer Domain

19) Install screen

All the files have been copied.
The system will automatically reboot (**Figure 20**).

Figure 20: Install screen

ASSESSMENT

Suggested Assessment

Exercise 1

1. In hard disk partitioning, there are several keys that are involved. Identify the functions of the keys below.

Keys	Functions
a. R	
b. F3	
c. F8	
d. Esc	

2. Explain briefly how to create a partition.

_____

_____

_____

3. Explain briefly how to format the hard disk using Windows XP.

_____

_____

_____

4. What is an operating system?

_____

_____

_____

5. Name three examples of operating system.

_____

_____

_____

C. APPLICATION SOFTWARE INSTALLATION

Draft

How To Install Microsoft Office XP Professional with FrontPage

This application comes with **Word, Excel, Access, PowerPoint, Outlook** and **FrontPage.**

Minimum System Requirements that you need before you install Microsoft Office are as follows.

- Processor: 133 MHz or higher; Pentium III is recommended.
- Memory (RAM): 128 MB minimum
- Hard drive space: 410 MB; additional 115 MB is required on the hard disk where the operating system is installed.

Procedure to Install

1. Insert the Microsoft Office XP Professional CD into the CD ROM drive.

   In the first **Microsoft Office XP Professional Setup** window, fill in the **User information.** Enter your **User name**, **Initials**, and **Organization** as you would like, and click **Next (Figure 1).**

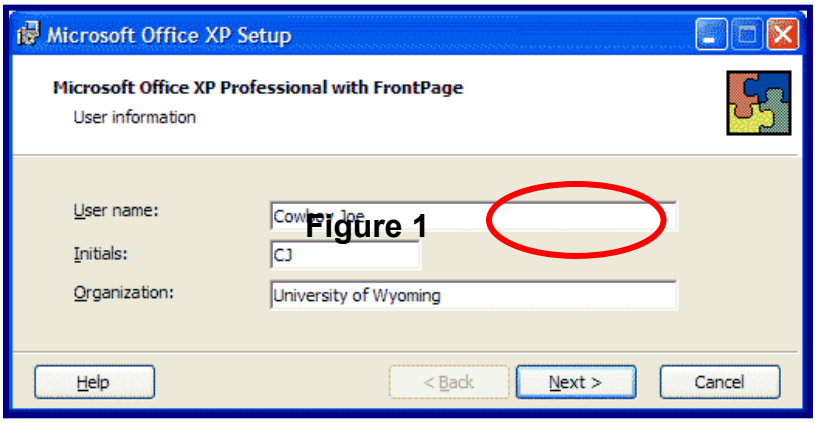


Figure 1

2. In the next window, choose the type of installation you need. Check the **Complete** button **(Figure2).**

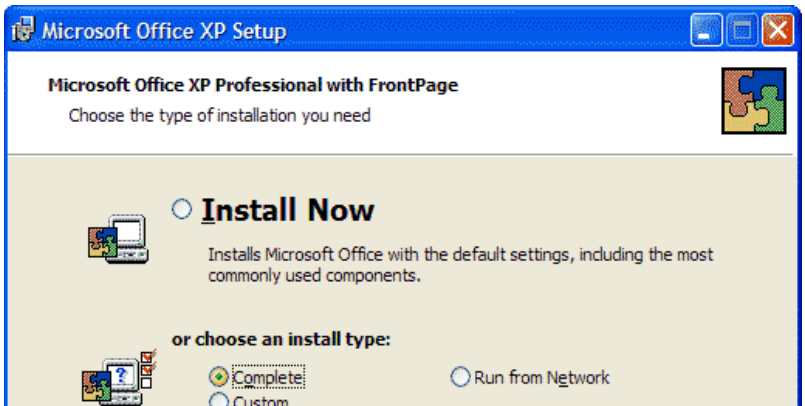


Figure 2

> **NOTE:** The **Install Now** option will install only the most common components for Microsoft Office XP Professional. Selecting **Complete** will install all applications and components in their entirety to your computer which is recommended for Microsoft Office. The **Custom** option will allow you to install only the specific applications or components that you need. If you select either **Run from Network**, be aware that in the future, if you need to use a component you do not select, you must be connected to the network in order for the component to be installed.

3. Click **Install** to begin installation **(Figure 3).**

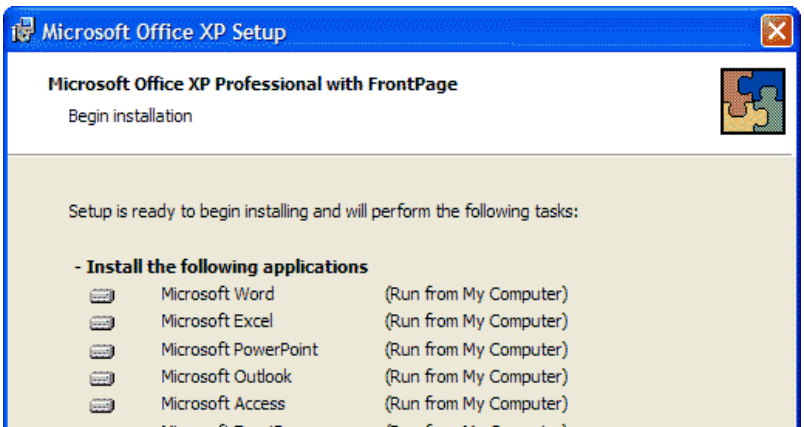


Figure 3

4. The installation process begins **(Figure 4).**

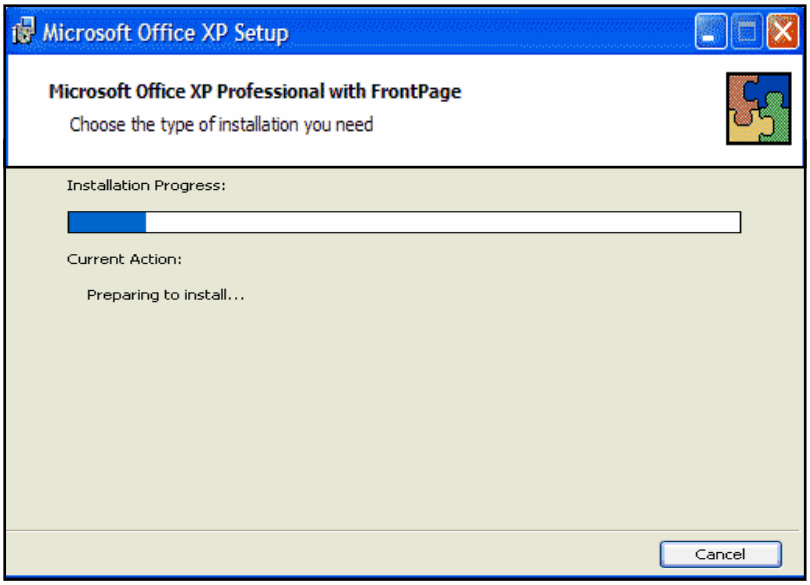


Figure 4

5. When done, click **OK**. You have completed the installation of Microsoft Office XP Professional successfully **(Figure 5)**.

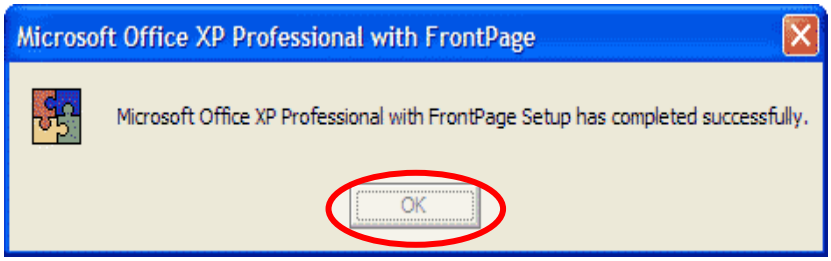


Figure 5

6. Opening a Microsoft Office Application

   A. To open an Office application, select the **Start** menu, point to **Programs** (or **All Programs**), and click whichever Office application you would like to open.

D. UTILITY SOFTWARE INSTALLATION

After installing the application software, you may want to install the utility programs for computer maintenance and other usages. Two utility programs which are mostly used are the antivirus software and the compression software.

How to Install Antivirus Software - AVG Free Edition Anti-Virus

1. Click **Start** menu and point to **Control Panel (Figure 1)**

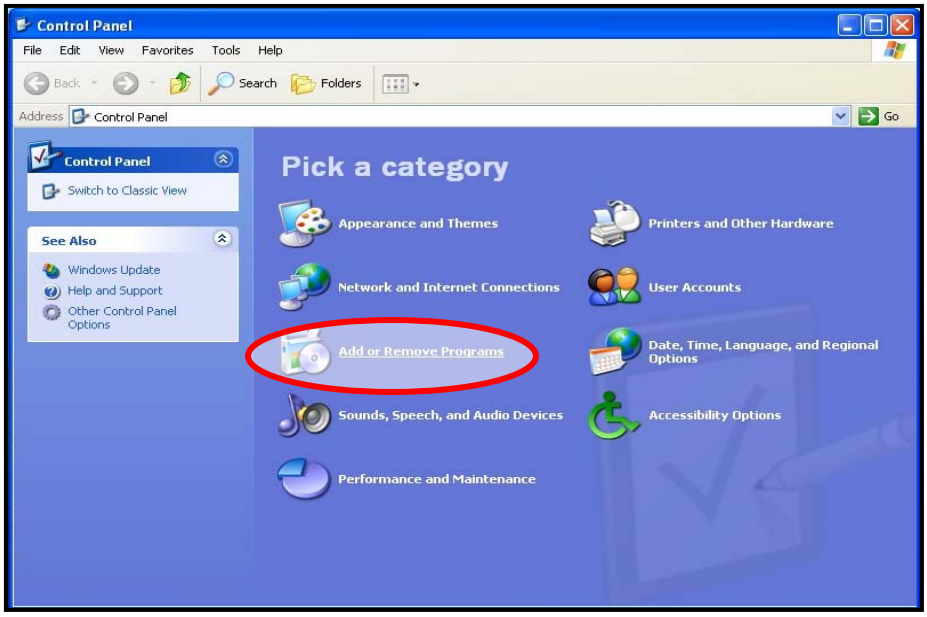


Figure 1

2. Click **Add or Remove Programs**. You will get the following display (**Figure 2).**

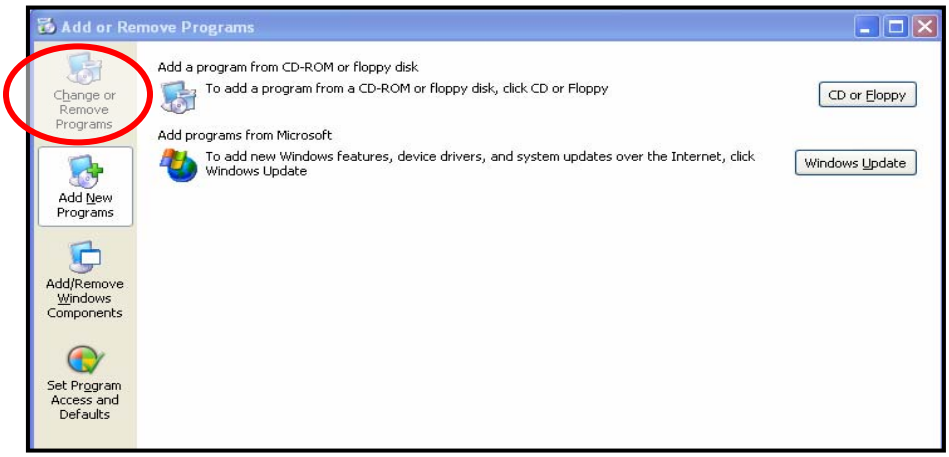


Figure 2

3. Choose the location of the AVG Anti-Virus CD program (**Figure 3**).

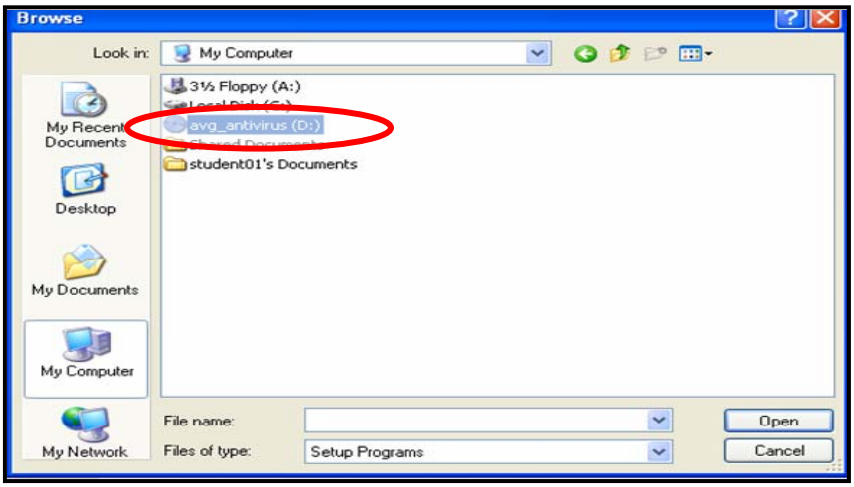


Figure 3

4. Click on the location drive and a display will be shown as in **Figure 4** below.

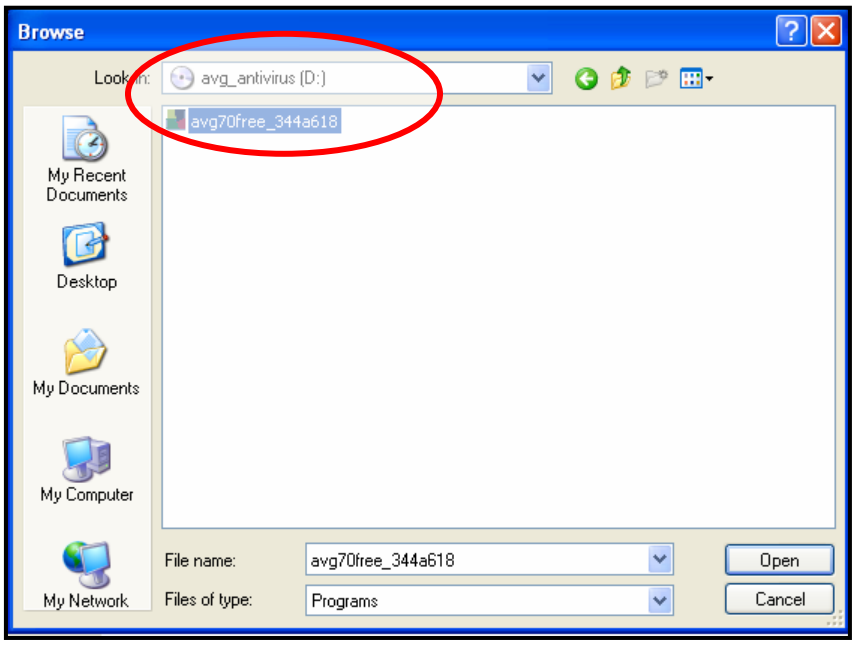


Figure 4

5. The **Welcome** screen will be displayed as shown in **Figure 5.** Click on the **Next** button to start installing the program.

Figure 5

6. Read the license Agreement on the use of an AVG Anti-Virus software. Click **Accept** (**Figure 6).**

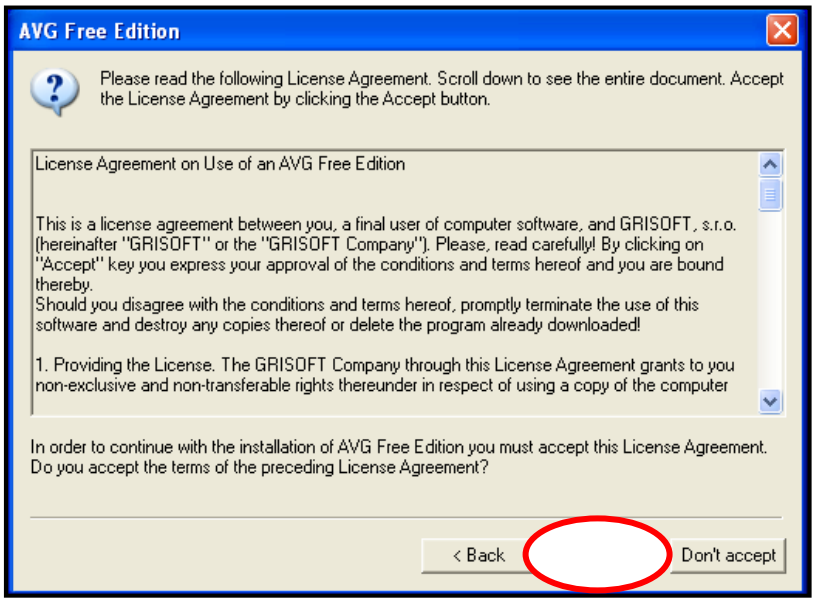


Figure 6

7. The program will check your computer system before installing the program (**Figure 7**).

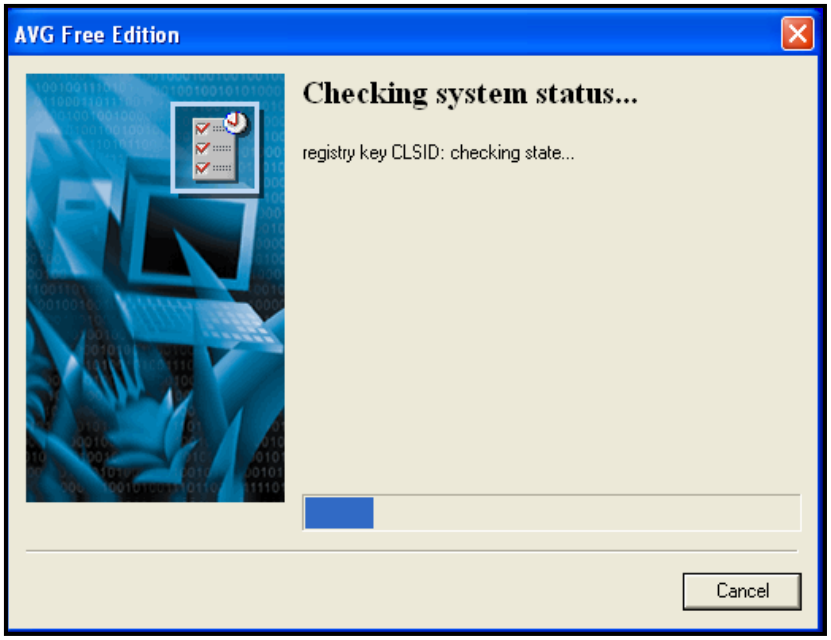


Figure 7

8. After checking the computer status, select the type of installation (**Figure 8)**. Then, click **Next** .

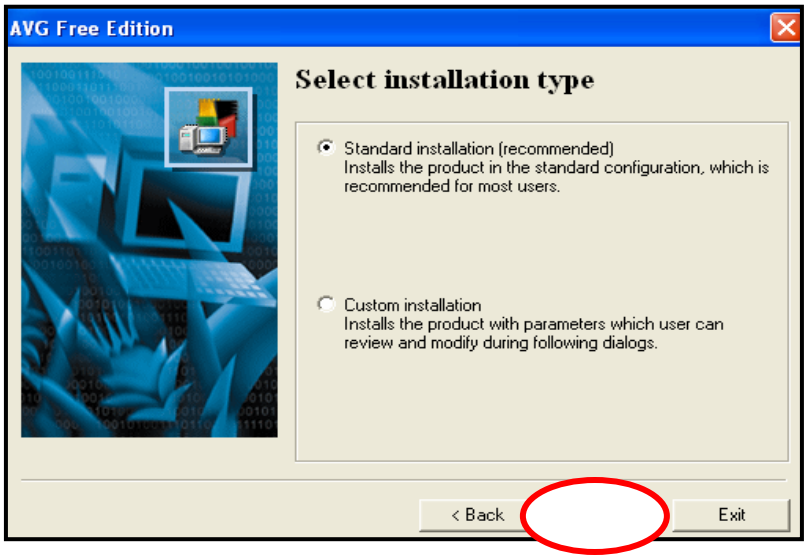


Figure 8

9. Type the **User Name** and **License Number** shown in **Figure 9**.

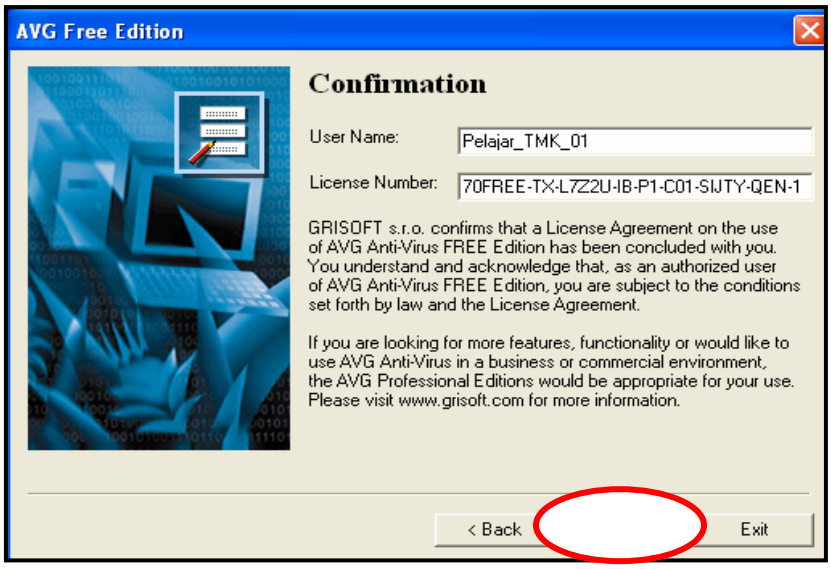


Figure 9

10. Click **Finish** when the following screen is displayed (**Figure10).**

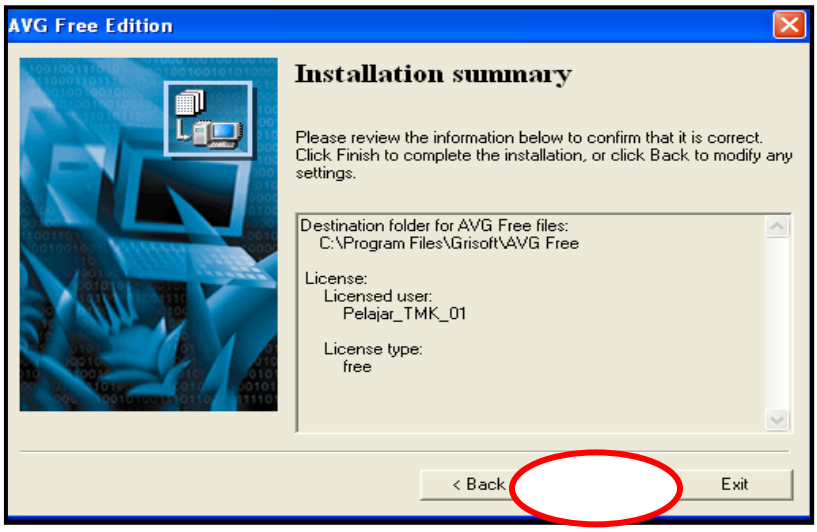


Figure 10

11. The following screen shows on the screen while the installation proceeds **(Figure 11).**

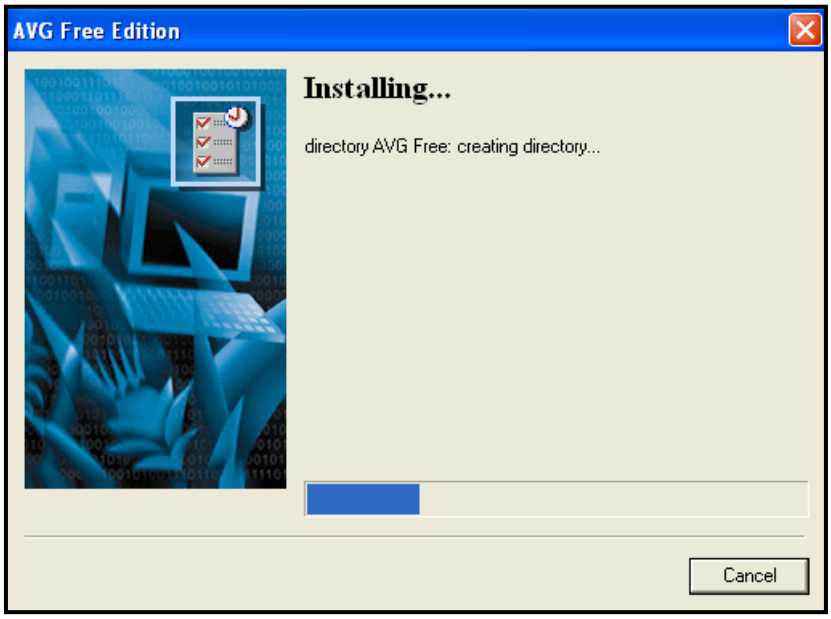


Figure 11

12. Click the **Ok** when the installation process is completed (**Figure 12).**

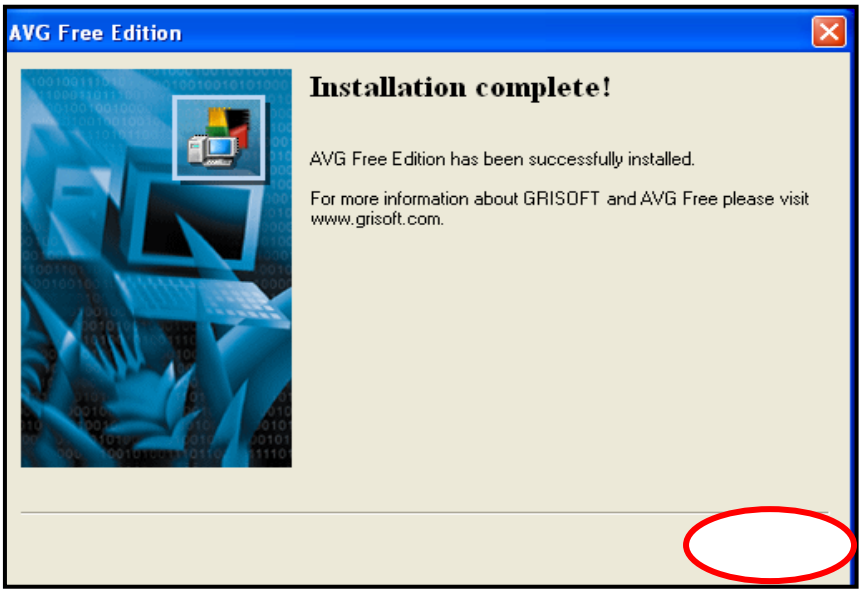


Figure 12

13. AVG Antivirus has been successfully installed. Click **Next** to proceed (**Figure 13)**.

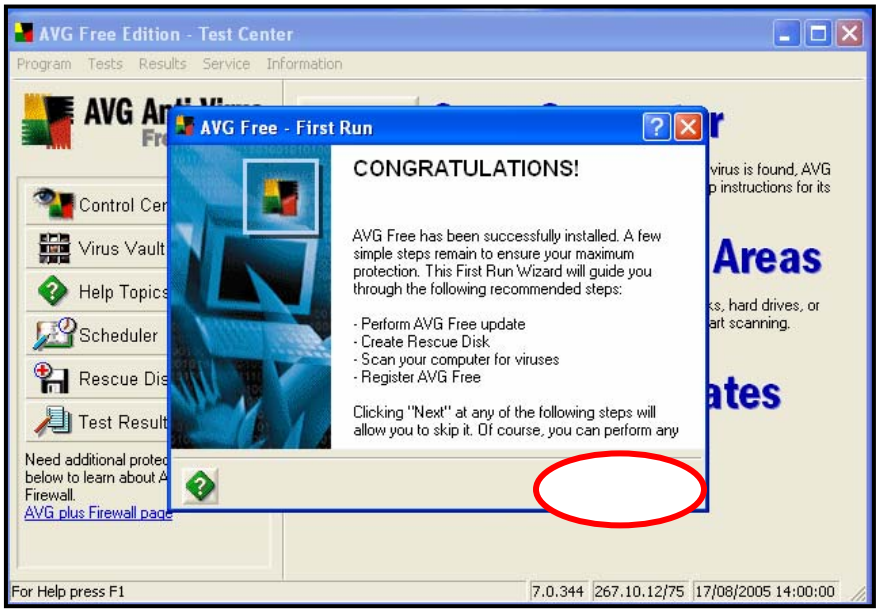


Figure 13

14. Just click **Cancel** to proceed (**Figure 14).**

Figure 14

15. AVG Free Registration screen appear as shown in **Figure 15** below. Click **Next** to register automatically.

Figure 15

16. Your Anti-Virus installation program completed. Click **Continue** to run your AVG Anti-Virus program **(Figure 16).**

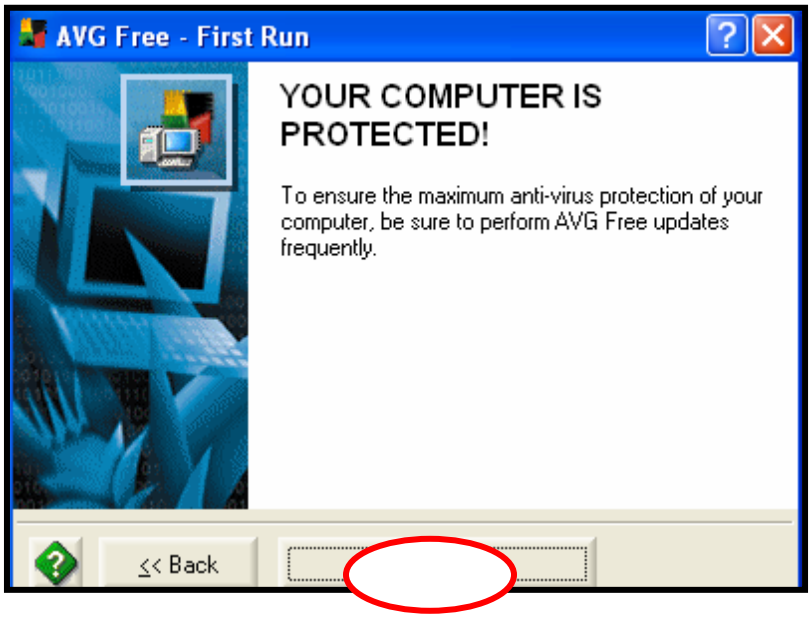


Figure16

17. Once the AVG Anti-Virus program installation process completed, the Test Center screen appears as shown in **Figure 17** below. Choose your options to scan.

Figure 17

ASSESSMENT

Suggested Assessment

Exercise 1

1. List three types of application software in Microsoft Office XP.

   _____

   _____

   _____

2. Name any three anti-virus programs.

   _____

   _____

   _____

3. Explain briefly how to install anti-virus software.

   _____

   _____

   _____

4. What is a utility software? Give two examples.

   _____

   _____

   _____

CONGRATULATIONS !!

YOU HAVE SUCCESSFULLY COMPLETED THIS MODULE. YOU ARE NOW ABLE TO RUN YOUR COMPUTER AND THE PROGRAMS THAT YOU HAVE INSTALLED.