

ICT - Information and Communications Technology

ICT20115

Cert. 2 in Information, Digital Media and Technology

ICTICT201

Use computer operating
systems and hardware

*This is not a complete document.
SAMPLE ONLY*

Student/Trainee Manual



LANE

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STUDENT/TRAINEE DETAILS

Student/Trainee Name**Student/Trainee Email****Teacher / Trainer Name****School / Institution / Training Organisation / Employer**

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INTRODUCTION

This manual was developed to provide training content that addresses the specific 'Unit of Competency' as outlined in the following pages.

We encourage you the student / trainee to take your time when reviewing this content and seek any assistance from your teacher/trainer should you have difficulty in understanding the information.

LEARNING ACTIVITIES

Also included in this Student / Trainee manual are a series of Learning Activities.

The learning activities in the student and/or trainee manuals are 'Form Enabled' so that if the resources are delivered online, the activities can be entered in using the computer keyboard.

Each learning activity is identified with the following icon.

A blue rounded rectangular button with the text "Learning Activity" in white, bold, sans-serif font.

Learning activities come in the following forms.

- ☆ Questions
- ☆ Research
- ☆ Tasks
- ☆ Interviews

INTRODUCTION—CONT'D

Questions

Questions generally relate to the information presented on previous pages. Questions will also include multiple choice questions, 'Yes' and 'No' questions and/or 'True' and 'False' questions.

Research

This type of learning activity requires you to locate information by using research methods. The research methods could include:

- ☆ Internet searches
- ☆ Reading textbooks and other reference sources
- ☆ Location visits

Tasks

This learning activity type requires you to actually do something and some examples of tasks may include:

- ☆ Creating reports
- ☆ Visiting locations such as workplaces
- ☆ Performing an activity in a workplace

Interviews

This learning activity type would require you to interview person(s) in an actual workplace environment or a person(s) who are experienced in the industry sector which you currently are undergoing training.

You will be made aware of the type of learning activity by noting the learning activity type displayed under the learning activity icon.

INTRODUCTION—CONT'D

USING THE FORM ENABLED FEATURE

If you are using this manual online, you can fill in some of the answers using your computer keyboard.

Your teacher or trainer will provide you with the information and instructions on how to use the 'Form Enabled' feature in this manual.

SELF ASSESSMENT

At the end of each manual is a series of questions that you should review and answer either Yes or No.

The term 'Self Assessment' means you will ask yourself these questions and therefore is no need to provide the answers to the self assessment questions to your teacher or trainer, unless they require you to do so.

This self assessment is to ensure you have reviewed and understood the information that was presented in this manual.

If you answered 'No' to any of these questions or are unsure of your understanding in any of the topics reviewed, you are encouraged to go back and review the information again and/or seek the assistance of your teacher or trainer.

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UNIT OF COMPETENCY OVERVIEW

The following pages are extracts from Training.gov.au website and outlines this specific 'Unit of Competency' including the 'Elements' and the 'Performance Criteria'. The content within this manual has been developed to address this unit.

ICTICT201 - USE COMPUTER OPERATING SYSTEMS AND HARDWARE

| ELEMENT | PERFORMANCE CRITERIA |
|--|--|
| 1. Identify operating system and hardware components | 1.1 Determine ICT organisational requirements and specifications 1.2 Identify and select the operating system 1.3 Identify appropriate external hardware components 1.4 Identify internal hardware components |
| 2. Install and configure operating system and application software with hardware components | 2.1 Install and configure the operating system to meet organisational requirements 2.2 Identify functions associated with the operating system and associated boot process 2.3 Configure power management settings to minimise power consumption, as an environmentally sustainable measure 2.4 Use both the graphical user interface and the command line interface to perform basic tasks 2.5 Install or upgrade application software onto the operating system and hardware configuration 2.6 Determine the relationship between an application program, the operating system and hardware 2.7 Identify general differences between different computer platforms and their respective operating systems |
| 3. Optimise operating system and hardware components | 3.1 Optimise operating system, using included tools or third-party utilities 3.2 Customise the graphical user interface 3.3 Use techniques unique to the command line interface 3.4 Set up and configure external hardware components and check functionality 3.5 Install drivers as appropriate and check functionality |

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Section One

Identify Operating System and Hardware Components

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USE COMPUTER OPERATING SYSTEMS AND HARDWARE

SECTION ONE—IDENTIFY OPERATING SYSTEM AND HARDWARE COMPONENTS

INTRODUCTION

Today, it is safe to say that most people and organisations could not survive with some type of computer or computer system.

Without operating system software, computers would not exist.

In this section we look at operating systems and why people choose certain types of operating systems for their computer.

SECTION LEARNING OBJECTIVES

At the completion of this section you will learn information relating to:

- ☆ Determining ICT organisational requirements and specifications
- ☆ Identifying and selecting the operating system
- ☆ Identifying appropriate external hardware components
- ☆ Identifying internal hardware components



DETERMINE ICT ORGANISATIONAL REQUIREMENTS AND SPECIFICATIONS AND IDENTIFY AND SELECT THE OPERATING SYSTEM

(Over the next few pages we cover two 'Performance Criteria' points at the same time to avoid repetition)

When we speak of organisational requirements, these generally refer to the following:

- ☆ Policies and procedures of the company relating to choice, acquisition and use of ITC software and hardware
- ☆ Allocated budgets associated with ITC software and hardware
- ☆ The safe and authorised use ITC software and hardware
- ☆ Security policies and procedures associated with the company's computer system
- ☆ ITC software and hardware maintenance policies and procedures

Over the next few sections these training materials will be looking at specifically the PC operating system, the types, installation information, what it means to configure and optimise an operating system.

DEFINING AN OPERATING SYSTEMS

Your computer's operating system (OS) manages all of the application software and internal/external hardware on the computer. Most of the time, there are many different computer programs running at the same time and they all need to access your computer's central processing unit (CPU), memory and storage (hard drive). The operating system coordinates all of this to make sure each program gets what it needs.



Mac OS X



UNIX



TYPES OF OPERATING SYSTEMS

The four main types of PC operating systems are:

- ☆ Windows operating systems
- ☆ Apple Macintosh OS-X operating systems (MAC)
- ☆ Linux
- ☆ Unix

The most widely used operating systems are Windows and MAC operating systems. Windows is generally installed in almost all new PCs sold and MAC operating systems is used in MAC PCs.

Linux is an open source, **free to use** operating system widely used for computer hardware and software, game development, tablet PCs and sometimes used in large mainframe computers. Linux is often considered a clone of Unix. There is also another variant of Linux known as Ubuntu which is gaining some popularity as an alternative to Windows.

Unix is also an open source, **free to use** operating system. It is generally used in large computer networks, internet servers and some PCs.

There are other types of operating systems that have been developed to be used on special digital devices such as Smartphones, tablets, gaming consoles and so on.

These include:

- ☆ Android
- ☆ Blackberry
- ☆ iOS
- ☆ Palm
- ☆ Symbian



SAMPLE SAMPLE

SELECTING AN OPERATING SYSTEMS

The selection of an operating systems can be as simple as buying a new PC or digital device with the operating system already installed or developing a large computer network and having an operating system that is modified to suit the network.

Many of the operating systems used in personal and business environments today are multi-tasking systems. These systems are capable of running multiple programs and tasks at the same time.

There are also real-time systems that run an advanced algorithm for scheduling the resources of the computers CPU. These systems are used in situations where there are high volumes of simple transactions, like a flight booking system or bank transaction system.

Companies also use batch systems to perform regular maintenance tasks. Batch systems perform a series of tasks or jobs without the need for a user's intervention. The best case of this would be a company processing data overnight on their customer's database. A series of reports could be generated and saved to a network directory or emailed to relevant users for the next business day.

There is a whole industry with highly trained and qualified computer engineers that specialise in selecting, installing and configuring operating system software in large and complicated computer systems.

In these training materials we will focus and the simpler and more common PC operating system of Windows.

**Learning
Activity**

Research

LEARNING ACTIVITY ONE

In this activity we want you to do some research and summarise below the relationship between Linux, Ubuntu and Unix.

SAMPLE SAMPLE

**Learning
Activity**

Research

LEARNING ACTIVITY TWO

There is an operating system call DSL OS. Do some research and tell us what DSL means and who uses this operating system.

SAMPLE SAMPLE

**Learning
Activity**

Question

LEARNING ACTIVITY THREE

In this Section we spoke about organisational requirements relating to the choice and use of operating systems. What were the five main points that were outlined regards the organisational requirements relating to the choice and use of operating systems?

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IDENTIFY APPROPRIATE EXTERNAL HARDWARE COMPONENTS AND IDENTIFY INTERNAL HARDWARE COMPONENTS

(Over the next few pages we cover two 'Performance Criteria' points at the same time to avoid repetition)

Hardware components can be either 'internal' or 'external' and allow a computer to be customised for specific tasks.

It is important to know what external hardware will be used or required at some time and ensure the chosen operating system is compatible with the hardware.

The most obvious external hardware items would include:

- ☆ The PC keyboard and mouse
- ☆ The PC monitor

These three hardware components are not only key to the operation of the PC, there are also essential to have when installing an operating system.

Further on the PC keyboard and mouse, these components could be either cabled components or wireless. So either wireless receivers such as "Bluetooth" dongles may also be required or proper USB cable connectors.

The PC monitor general requires a VGA cable (the cable used for video) and a power cord.



EXTERNAL PERIPHERAL HARDWARE

Aside from the PC keyboard, mouse and monitor, there would often be other hardware components called peripheral hardware.

Some examples are:

- ☆ Printers—laser and inkjet
- ☆ Scanners
- ☆ Modems
- ☆ Speakers
- ☆ Webcams
- ☆ Projectors



Each of these would also require wireless accessories (if the device is wireless) or suitable cables for connection to the PC.

In the case of a modem, it would likely need to be “Ethernet” cables available, used to connect to a computer network and/or the internet.



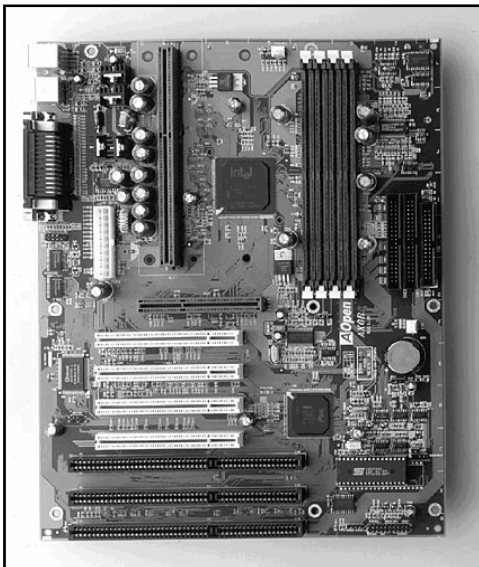
It is important again that these types of hardware components are identified when choosing and installing an operating system.

It is the operating system that ultimately makes the external hardware work, so if the hardware components and the operating system are incompatible, the hardware will simply not operate.

This is often the case when a person buys a new PC with the latest operating system and the peripheral hardware are older models.



In these cases it is important to research the specifications of both the operating system and the external hardware component and see if there will be any compatibility issues. Most issues are resolved by installing updated “driver”. We learn more about hardware drivers in Section Three.



INTERNAL HARDWARE COMPONENTS

A PC is a collection of internal hardware components often called “Circuit Boards” (or simply “Boards”) and “Cards”.

The most important of all internal hardware items in a PC is the “Motherboard”.

The motherboard is the main circuit board in a PC. It contains all the circuits and components that run the PC.

Major components found on the motherboard are:

- ☆ **CPU** - the Central Processing Unit is often an Intel Pentium or Celeron processor. It is the heart of every PC. All scheduling, computation and control occurs here.
- ☆ **CMOS chip**—this is a chip on the motherboard that stores the “PC start up” information and is used when the PC is turned on and starts its “boot up” process. We learn more about the “boot up” process in Section Two.
- ☆ **Serial, parallel, USB ports and expansion slots**—these are connection points that connect the CPU to all internal and external hardware components.

The second most important internal hardware component is the internal hard drive. The hard drive is a disk type component that holds all the software the most important being the operating system. When the operating system is loaded onto the PC it is stored on the hard drive.

The other important internal hardware components would include:

- ☆ **Video and sound card**—needed to for the PC monitor and any speakers being installed
- ☆ **Network card**—needed to connect to either an internet modem or to a WiFi network
- ☆ **CD/DVD drives**—used to load software and also to burn CDs and DVDs for backups

The operating system in conjunction with the CPU and other component drives is what makes a PC operate.

As with external hardware components, it is important that when installing new internal hardware components that they are compatible with the operating system.



CONNECTING INTERNAL HARDWARE COMPONENTS

Earlier we spoke about the mother board and its many ports (or connection points).

When connecting internal hardware, you use the ports on the motherboard.

For example the internal hard drive is attached to the PC case by screws and from the back of the drive is a connection point where a data cable is connected and then this cable is connected to the motherboard.

The two common hard drive connection cables are:

- ☆ SATA cables (also used to connect internal CD and DVD drives)
- ☆ IDE cables

Other internal hardware components such as video and sound cards are inserted into “expansion slots”. These are multi pin slots that are part of the motherboard and the component is inserted into the slot to be connected.

Without proper connections, the internal hardware components cannot be control by the operating system.



SATA cables



IDE cables

**Learning
Activity**

Question

LEARNING ACTIVITY FOUR

What are the differences between internal and external components, what would a printer be considered as?

SAMPLE SAMPLE

**Learning
Activity**

Question

LEARNING ACTIVITY FIVE

What are three most important external hardware devices when it come to installing operating systems and what are the two most important internal hardware devices when it comes to installing operating systems?

EXTERNAL

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INTERNAL

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SAMPLE SAMPLE

Section Two

Install and Configure Operating System and Application Software with Hardware Components

SAMPLE SAMPLE

USE COMPUTER OPERATING SYSTEMS AND HARDWARE

SECTION TWO—INSTALL AND CONFIGURE OPERATING SYSTEM AND APPLICATION SOFTWARE WITH HARDWARE COMPONENTS

INTRODUCTION

After choosing an operating system, the next thing to do is install the software on to the computer and after doing so configuring to work better for the user. Then after the operating system is installed the computer needs to have some application programs installed. In this section we look at these subjects.

SECTION LEARNING OBJECTIVES

At the completion of this section you will learn information relating to:

- ☆ Installing and configuring the operating system to meet organisational requirements
- ☆ Identifying functions associated with the operating system and associated boot process
- ☆ Configuring power management settings to minimise power consumption, as an environmentally sustainable measure
- ☆ Using both the graphical user interface and the command line interface to perform basic tasks
- ☆ Installing or upgrading application software onto the operating system and hardware configuration
- ☆ Determining the relationship between an application program, the operating system and hardware
- ☆ Identifying general differences between different computer platforms and their respective operating systems

INSTALL AND CONFIGURE THE OPERATING SYSTEM TO MEET ORGANISATIONAL REQUIREMENTS

Most PCs come with a version of Windows pre-installed. If the PC does not come preloaded with a version of Windows then a DVD can be purchased and installed. For this example we will look at installing 'Windows 7' on a machine that does not have the program preinstalled.

This is called a "fresh" install. We are assuming in these training materials that you are installing an operating system on a new computer. We look at installing Windows 7 from an installation disk.

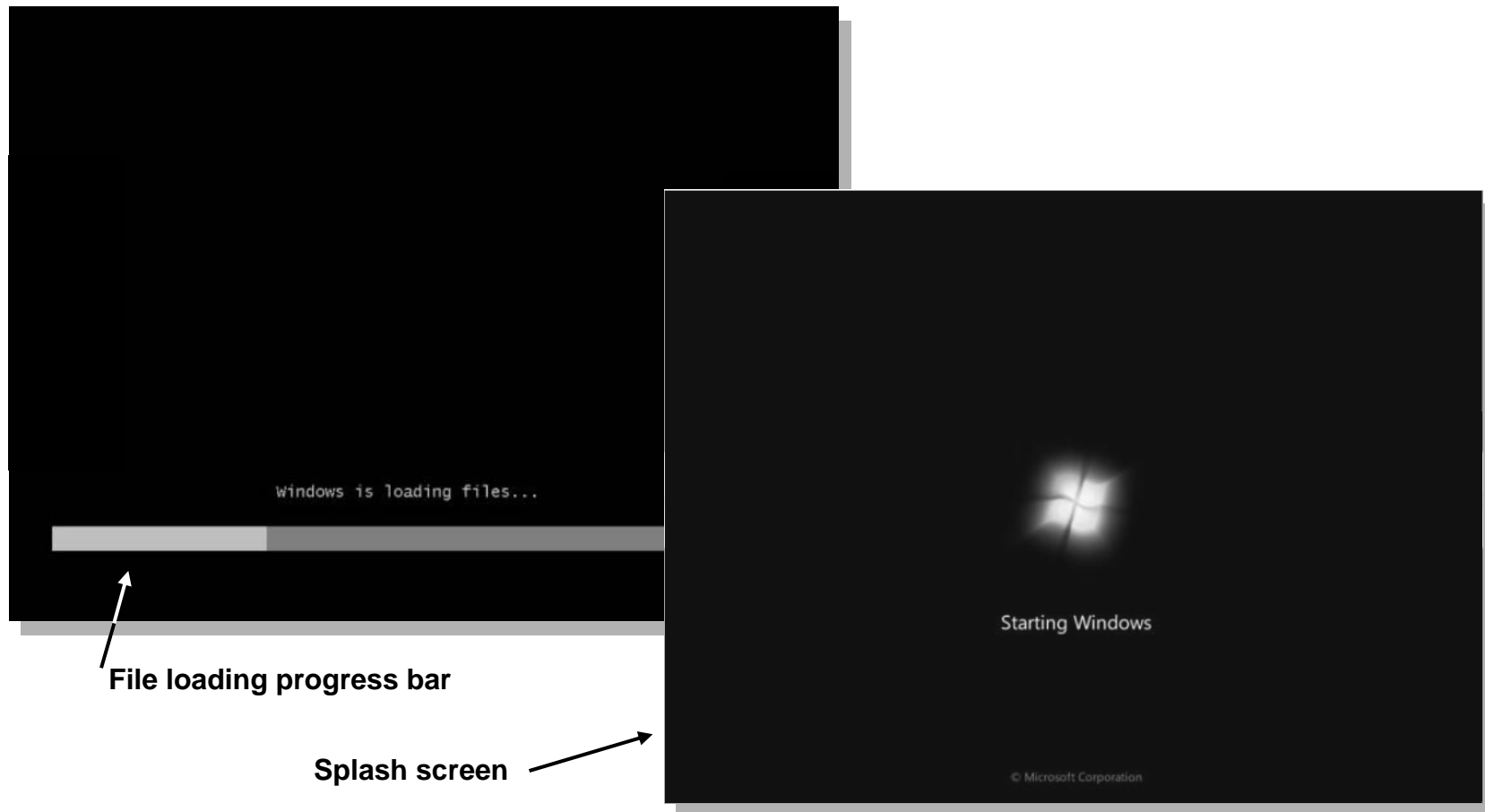
The first step is to insert the DVD with the windows program on it. Watch for a '**Press any key to boot from CD or DVD...**' message similar to the one shown in the screenshot below.

Tap "Enter" the keyboard.

A screenshot of a black screen with white text at the top that reads "Press any key to boot from CD or DVD... _". The rest of the screen is empty.

At this point you simply wait until Windows loads the “temporary” files into the memory of the PC. There is a progress bar that appears to show you how advanced the loading process is. After the file are loaded you will see a “splash” screen appear.

This is to tell you that the set up process is about to begin. Again you simple wait while this process is completed.



From each of the dropdown menus you choose the ***“Language to install, Time and currency format and Keyboard or input method”*** that you'd like to use in Windows 7 and then you click “Next”.

A new window appears. You click on the button “Install now” and the Windows begins the actual install and set up process.

After click this button a new screen appears telling you that the setup process is beginning and you simply wait.

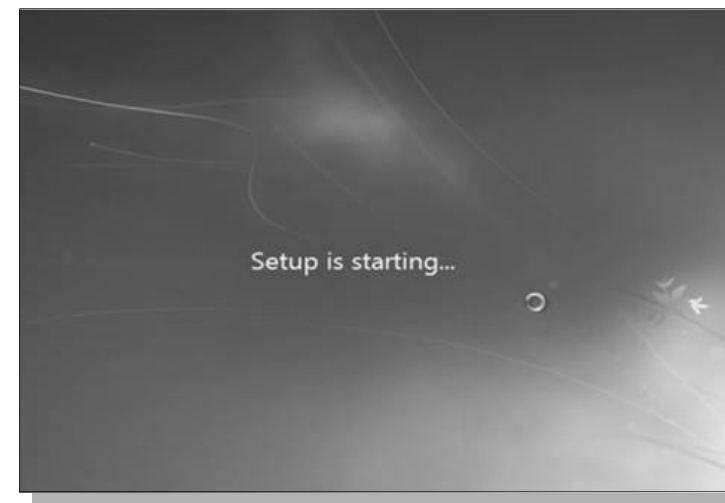


Install now button



Dropdown menus

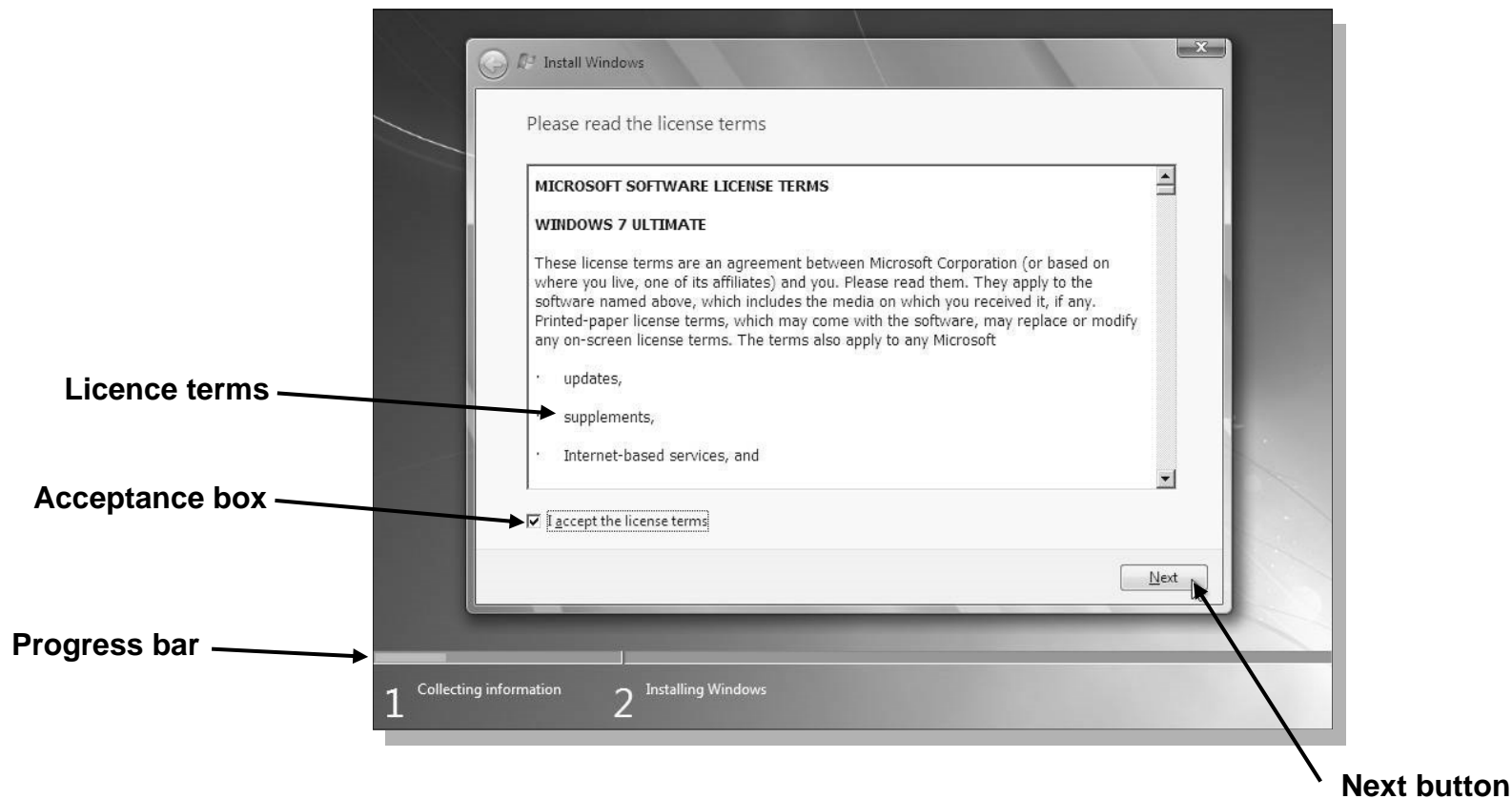
Next



SAMPLE SAMPLE

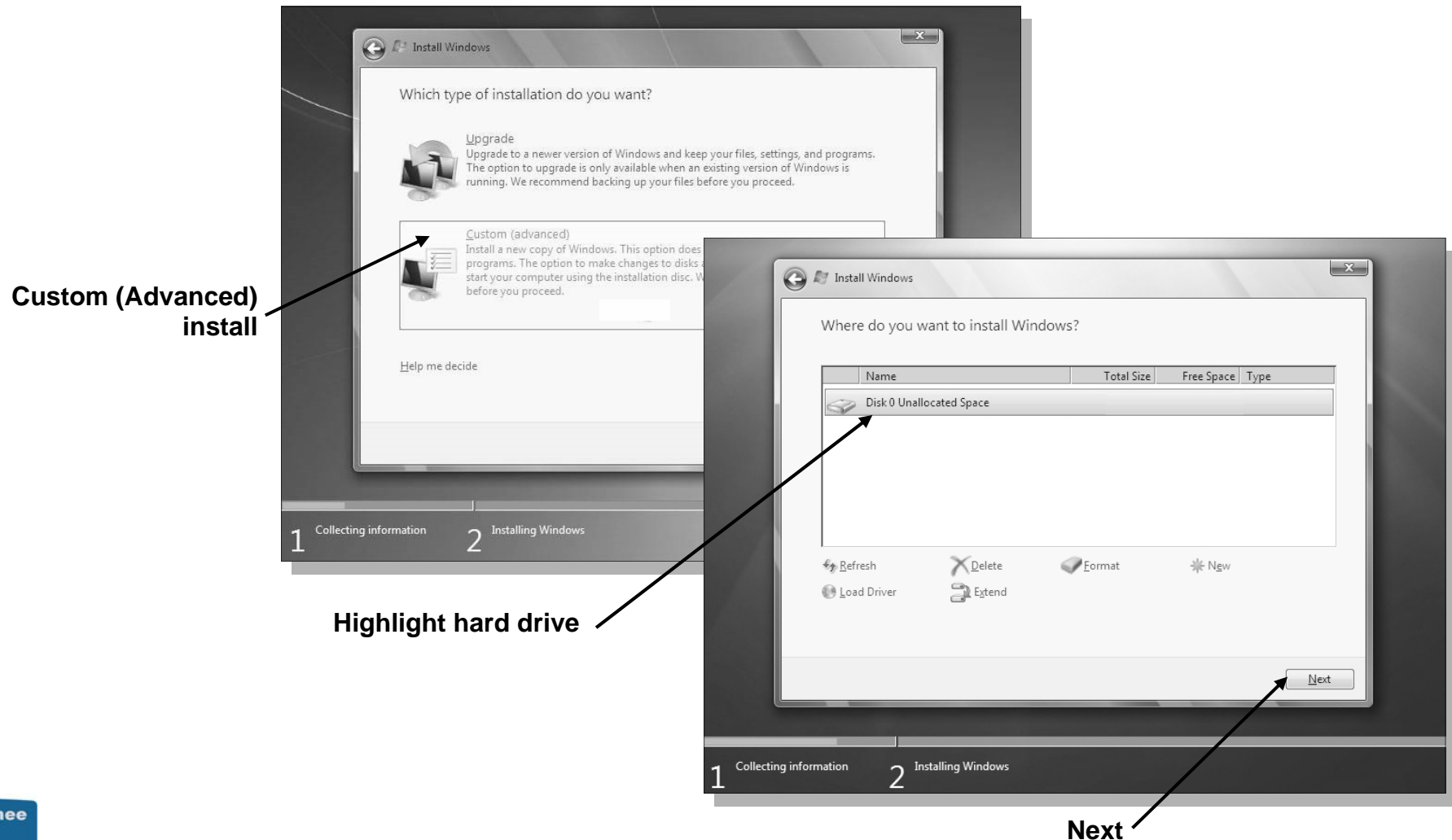
Soon a new window will appear. This one requires you to read and accept the Microsoft licence terms.

Also appearing is a “Progress Bar” that show you how far into the installation process you are. At this point you tick the acceptance box and then click “Next”.



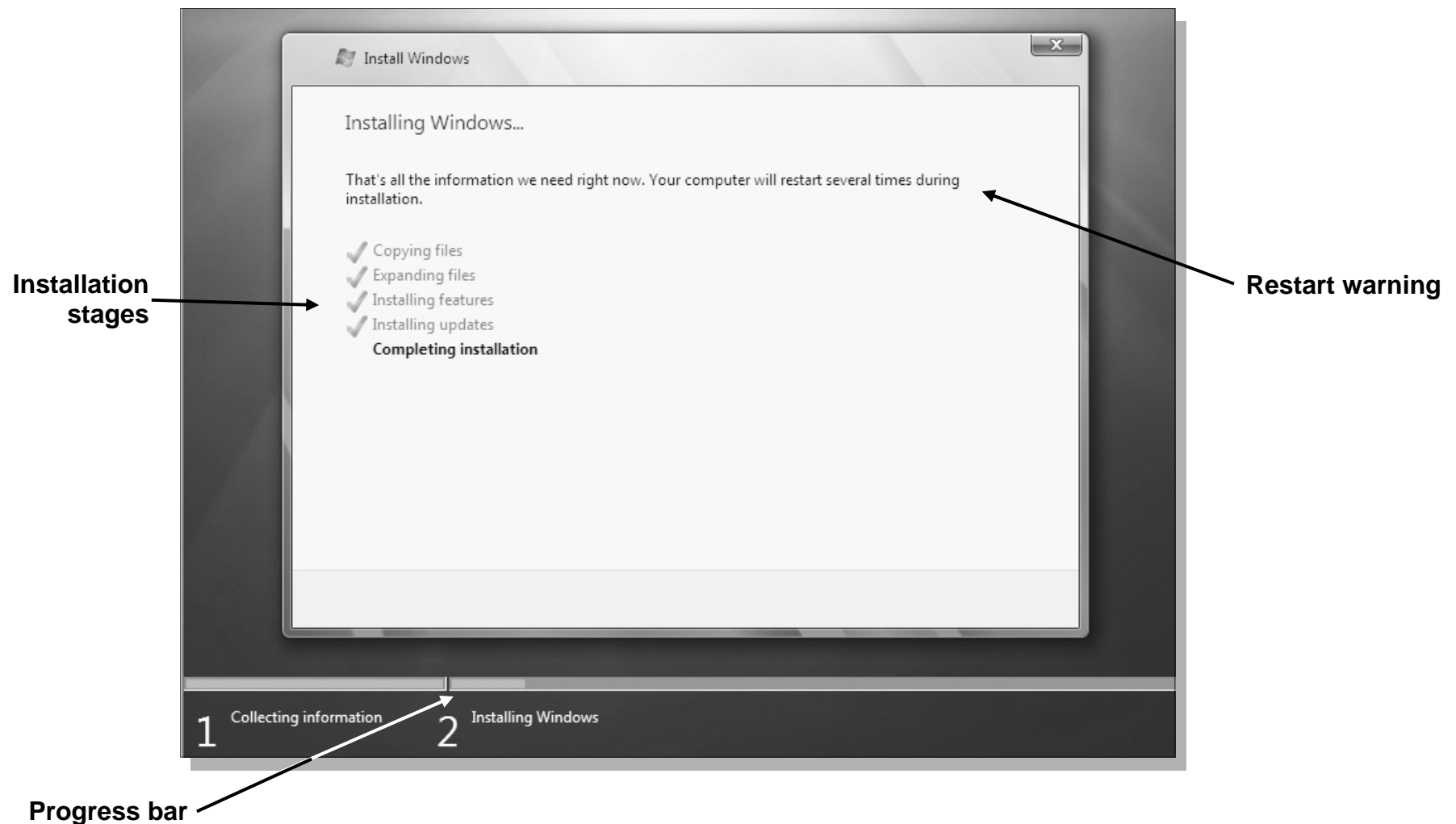
Next window to appear is the one that asks you what type of installation you want. You click on “Custom (Advanced)”.

The next window asks you where you want to install Windows. Because this is a new computer, there is only one place and that is on the hard drive. You click on the hard drive line to highlight it and then click “Next”.



Windows begins the final installation step. This is the most time consuming part of the process. However there is nothing you need to do but wait. You will see on the progress bar where the installation process is at each stage.

It also tells you that as Windows is being installed it will automatically shutdown and re-start. So you do not get worried that something went wrong. As each installation stage is completed the progress bar moves forward and a “checkmark” appears next to the stage completed.



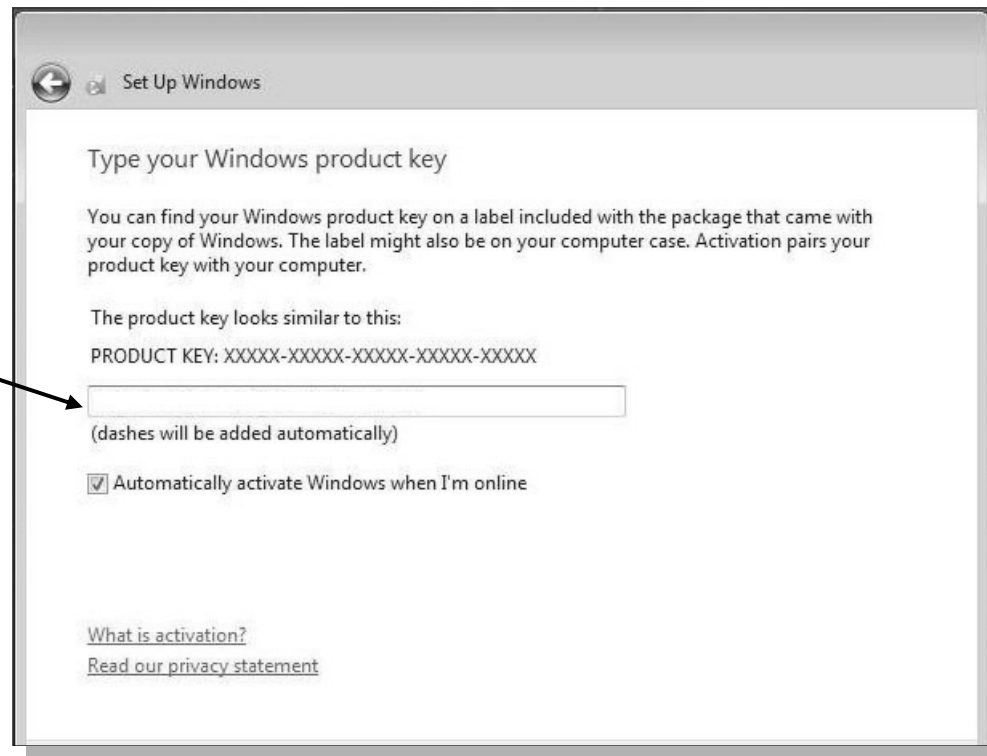
When Windows has completed the installation the next steps is configuring the Windows operating system for the first use. At this stage the computer will shutdown and restart and the screen below will appear. Shortly after you are asked to name the “User” of the computer. This is generally the person using the computer the most. You click “Next”. Then the next screen asks you to provide a password. This is important if you do not want others to access the files on the PC. After entering your password, you click “Next”.



When you purchased Windows 7 DVD, there would have been a “Product Key” with the DVD. You need this “Product Key” number at this stage in order to use the operating system. This matches your PC to a licenced Windows 7 operating system.

You type in the Product Key in the product key field.

**Product Key
field**

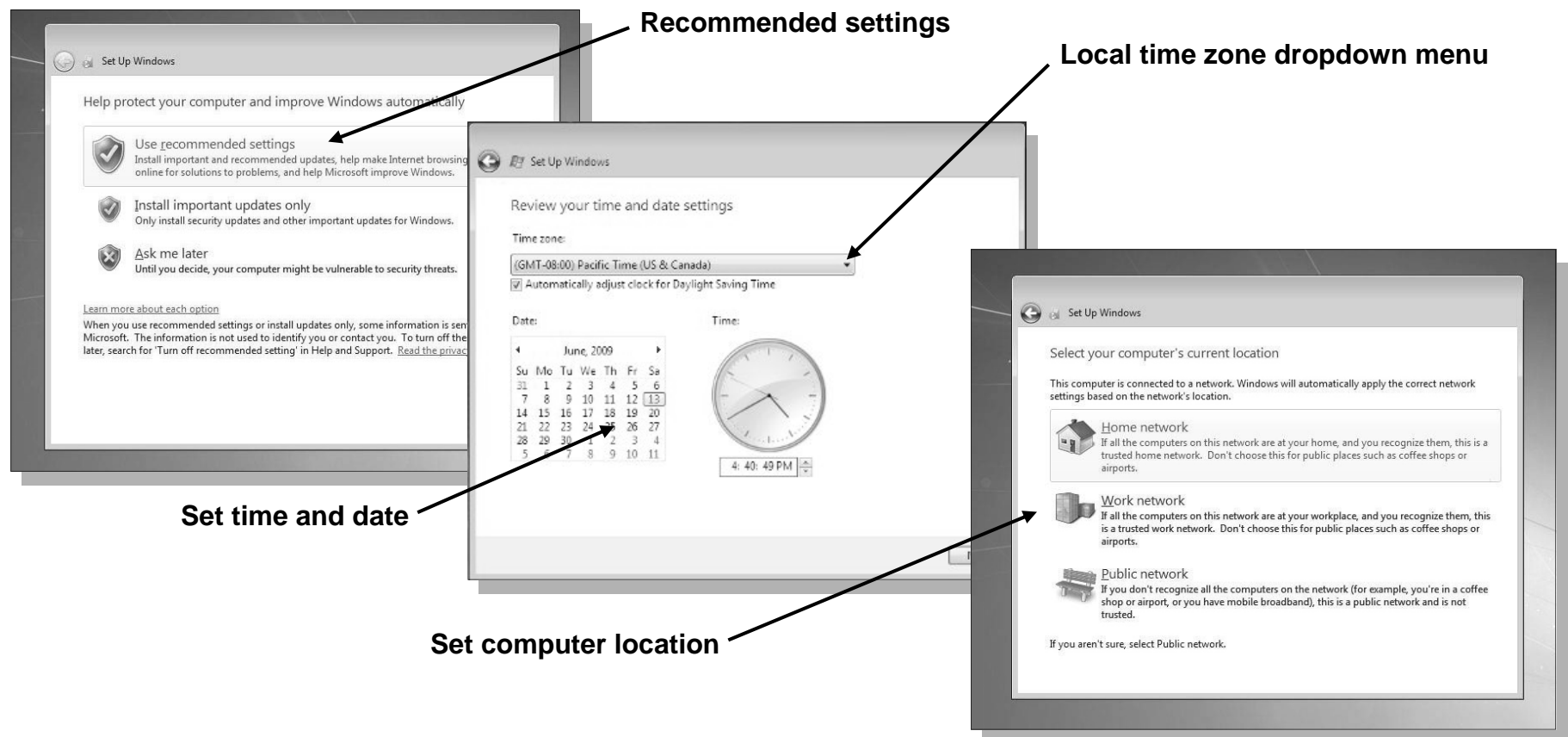


The screenshot shows the 'Set Up Windows' window. The title bar says 'Set Up Windows'. The main text says 'Type your Windows product key'. Below this, it explains that the product key can be found on a label or the computer case, and that activation pairs the key with the computer. It then shows an example: 'PRODUCT KEY: XXXXX-XXXXX-XXXXX-XXXXX-XXXXX'. Below the example is a text input field. A black arrow points from the text 'Product Key field' to this input field. Below the input field, it says '(dashes will be added automatically)'. There is a checkbox labeled 'Automatically activate Windows when I'm online' which is checked. At the bottom, there are two links: 'What is activation?' and 'Read our privacy statement'.

Once the Product Key is entered, Windows 7 operating system becomes activated and a series of basic configuration screens appear. The first one is the updates screen and it is recommended that you click on “Use recommended settings” options.

The next screen is to set the time zone. You select the time zone you reside in by using the dropdown menu and then set the time and date and then click “Next”. The next screen to appear is the security settings. In the “**Select your computer's current location**” window you see now, Windows 7 is asking where your computer is located at so it can setup the proper network security - tighter security for public areas and lighter for private ones like home and work.

Choose Home network or Work network if that applies to you. Choose Public network if you use a laptop computer and you connect to the Internet or other computers away from home.



**Learning
Activity**

Question

LEARNING ACTIVITY ONE

Where are the two places you would most commonly find the Product Key for Windows 7

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SAMPLE SAMPLE

**Learning
Activity**

Task

LEARNING ACTIVITY TWO

In brief and bullet point form, describe the steps that you go through to install Windows 7 on a new computer using an installation disk.

SAMPLE SAMPLE



INSTALLING WINDOWS 10

Windows 10 was released as a redeveloped version of Windows 8 in late 2014. Microsoft then offered a free upgrade to all PC owners who has Windows 7 or 8 and this free upgrade offer will end in July 2016.

Except for OEM installations (Windows 10 installed on new computers by manufacturers), all other installations are conserved upgrades and the only method of getting a Windows upgrade is to access it through the internet and download the operating system.

There are two ways of installing Windows 10. One is called “In-place” upgrade. And the other is called a “Clean” installation.

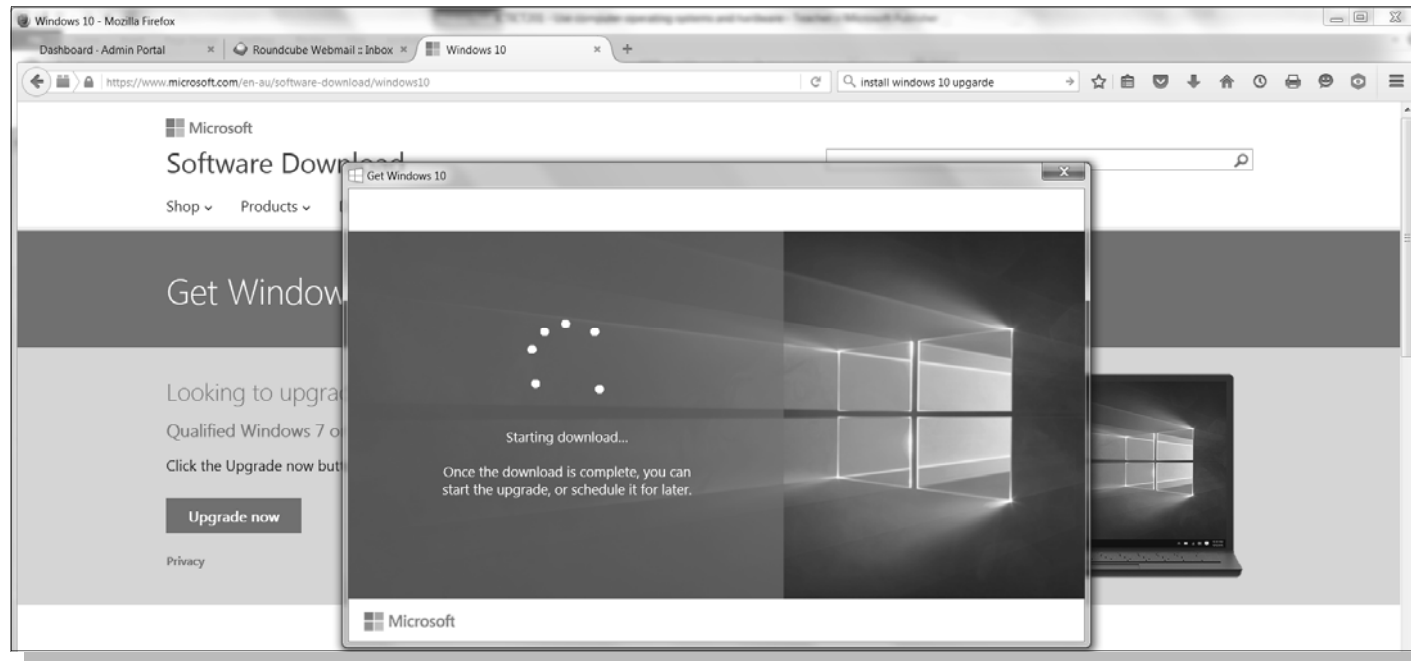
The major advantage of doing an in-place upgrade is that you do not have to reformat your hard drive.

The new operating system will simply replace your previous installation and you'll be able to keep all of your files and programs. This process takes the least amount of time, as technically you are not required to do a backup (though it's highly recommended you do).

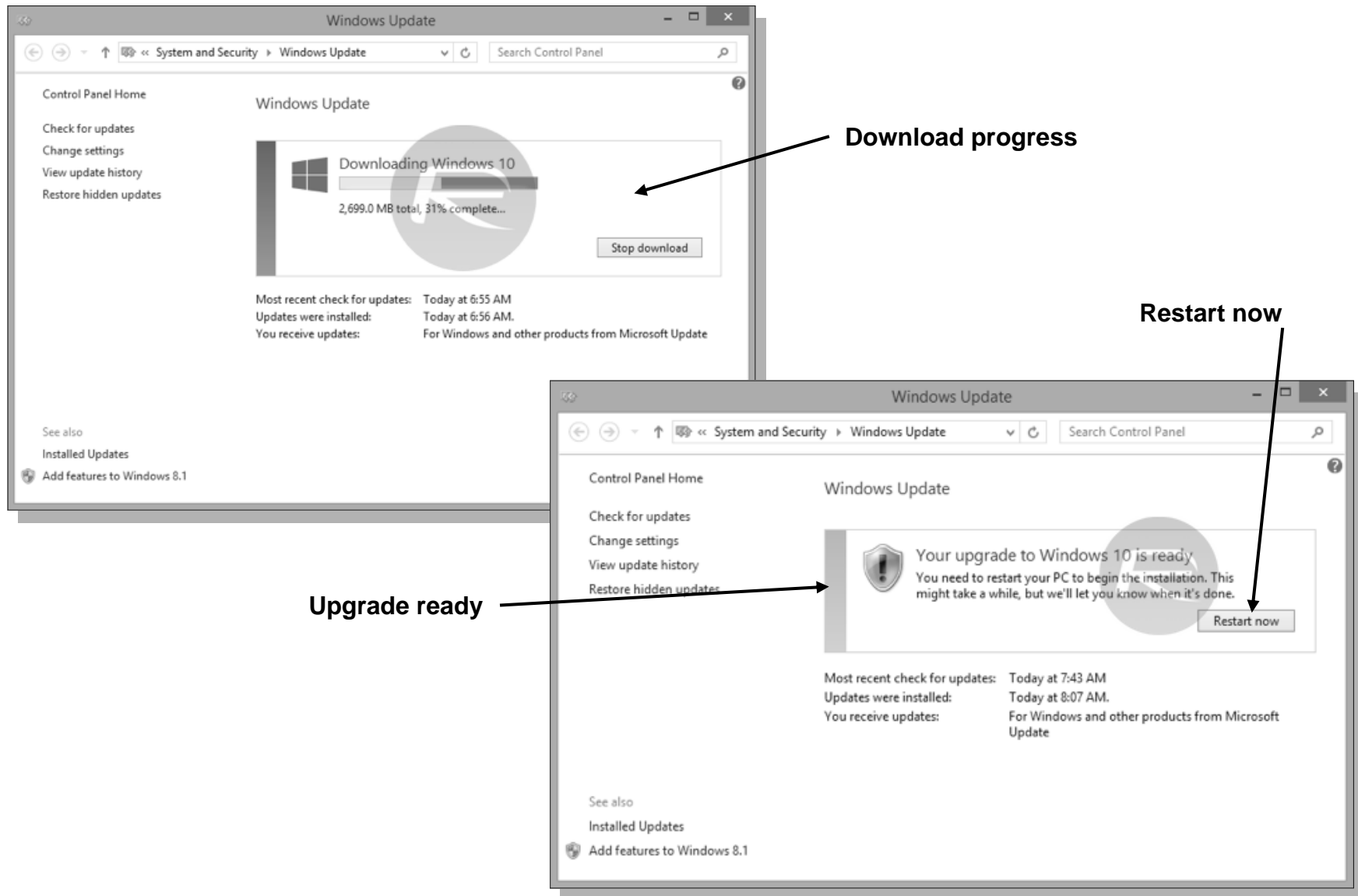
A “Clean” installation is needed if you are installing Windows 10 in a new custom built computer (a PC that has not been built by a manufacture and has had an OEM version of Windows 10 installed at the factory).

Over the next few pages we will look at how to install Windows 10 using the in-place upgrade method.

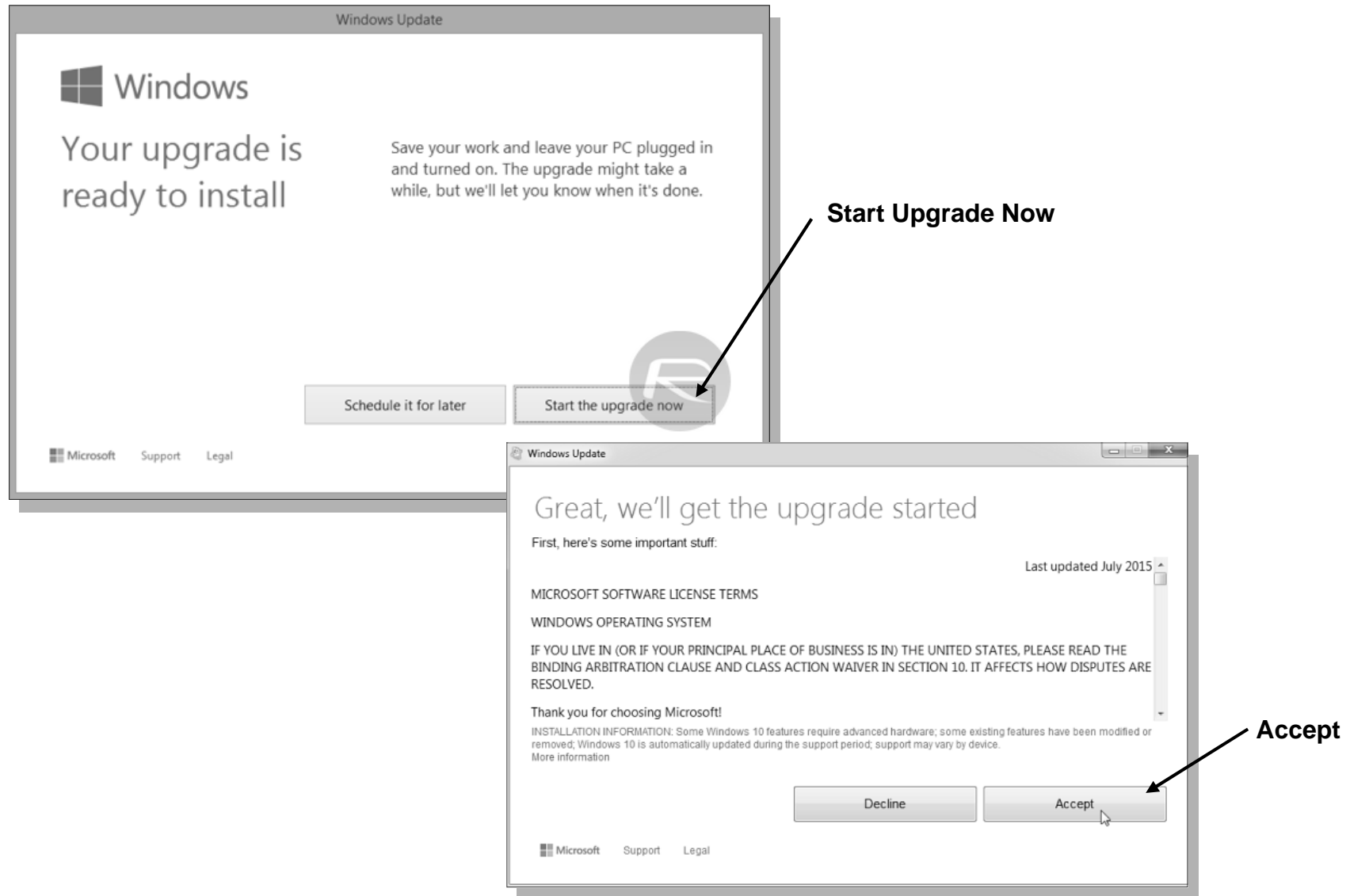
You go to Microsoft website and locate the Windows 10 upgrade page. You click on the button that says “Upgrade Now” and a window will appear stating that the download is about to begin and you simply wait.



Soon a new window appears and this is showing you the progress of the downloading. Once all the Windows 10 files have been downloaded a new screen appears stating the upgrade is ready and you need to restart your PC, so you click “Restart now”.



When the PC has finished its restart, a new window appears and this starts the actual Windows 10 installation when you click on “Start Upgrade Now”. Before the upgrade process begins you would need to agree with the licence terms by clicking on “Accept”.



On your PC screen a new image appears tells you the progress of the installation. It also lets you know that the PC will restart a few times. Just before the upgrade is completed you are presented with a window that suggests you “Use Express Settings”. This saves time you going through numerous windows configuring the operating system. Once this is done, the basic installation of Windows 10 is complete.



**Learning
Activity**

Question

LEARNING ACTIVITY THREE

What does the term “in-place upgrade” refer to?

SAMPLE SAMPLE

**Learning
Activity**

Question

LEARNING ACTIVITY FOUR

In brief and bullet point form, describe the steps that you go through to install Windows 10 upgrade on an existing computer with Windows 7 or 8.

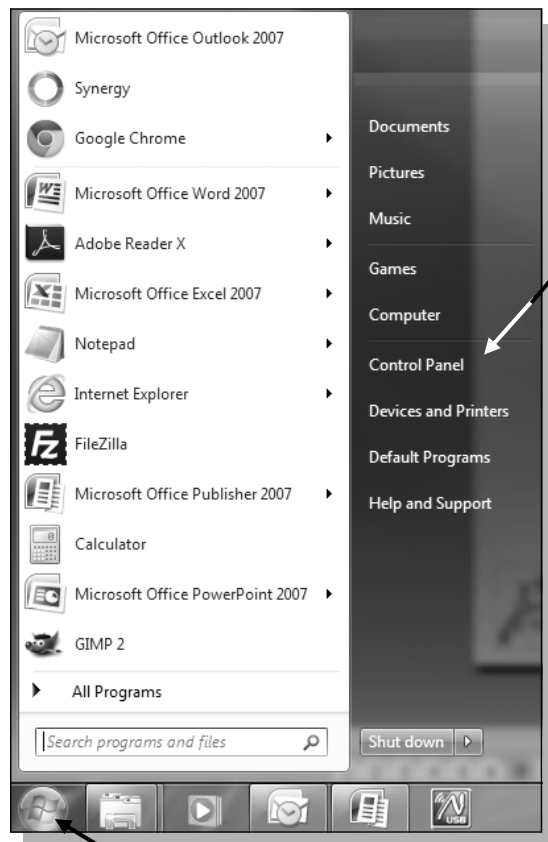
SAMPLE SAMPLE

CONFIGURE THE COMPUTER SETTINGS TO BEST SUIT THE USER

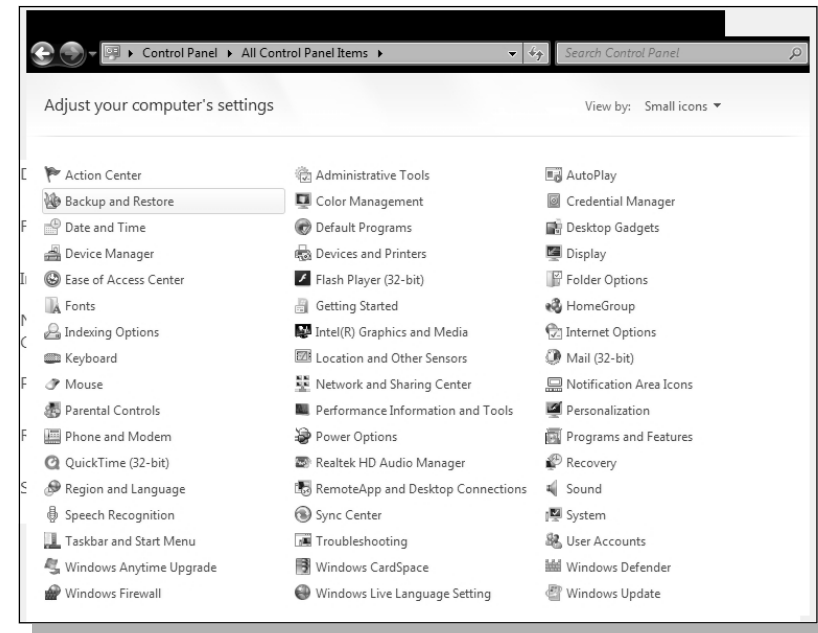
At this point you will have installed Windows 7 on the PC and performed some basic configuration tasks. Windows 7 can be also configured in other ways based on the user's preferences.

The “Control Panel” is a single location for all commands, controls and functions associated with configuring and customising Windows 7 and other Windows versions. You should use the commands found here with caution since misuse could degrade the performance of your system.

Use the following steps to open the “Control Panel”:



From the “Start” menu, select “Control Panel” and then the “Control Panel” window is displayed.



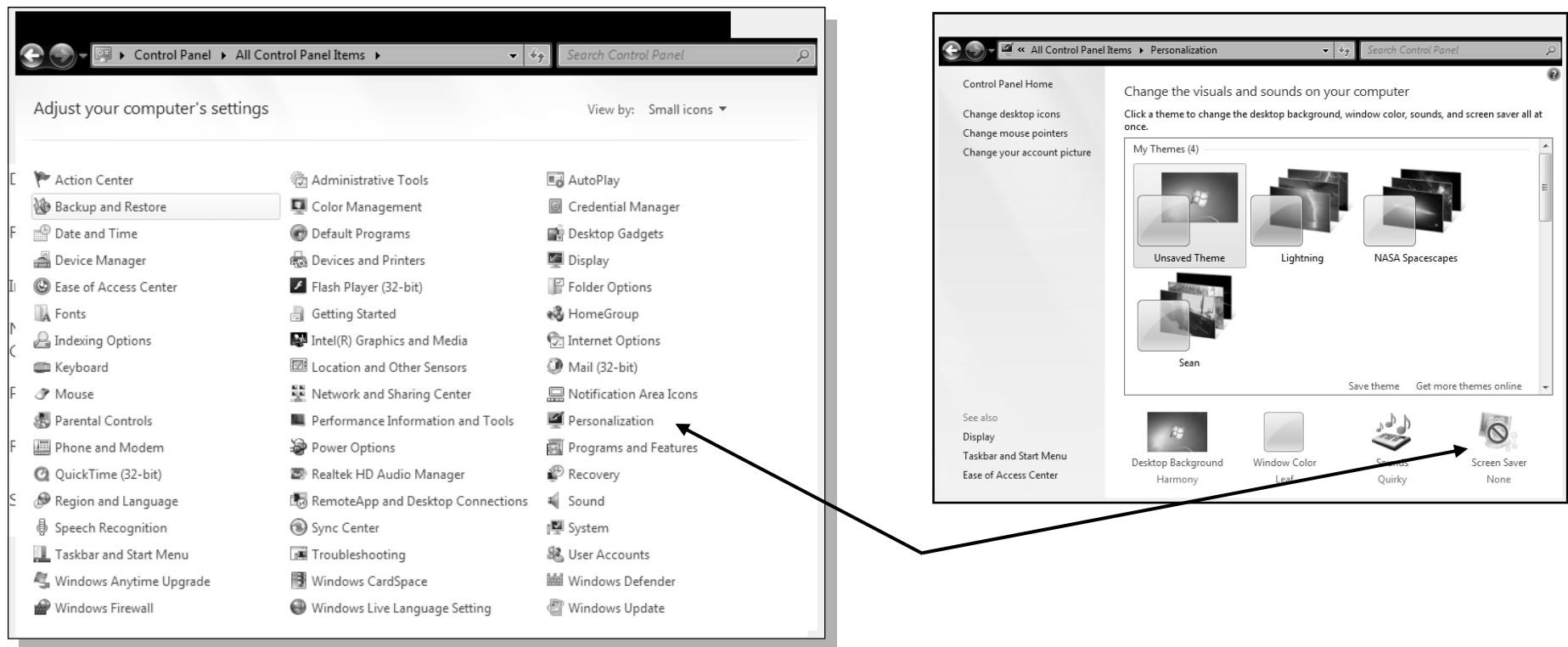
Control Panel window

The first step in customising your desktop is to set up a screen saver.

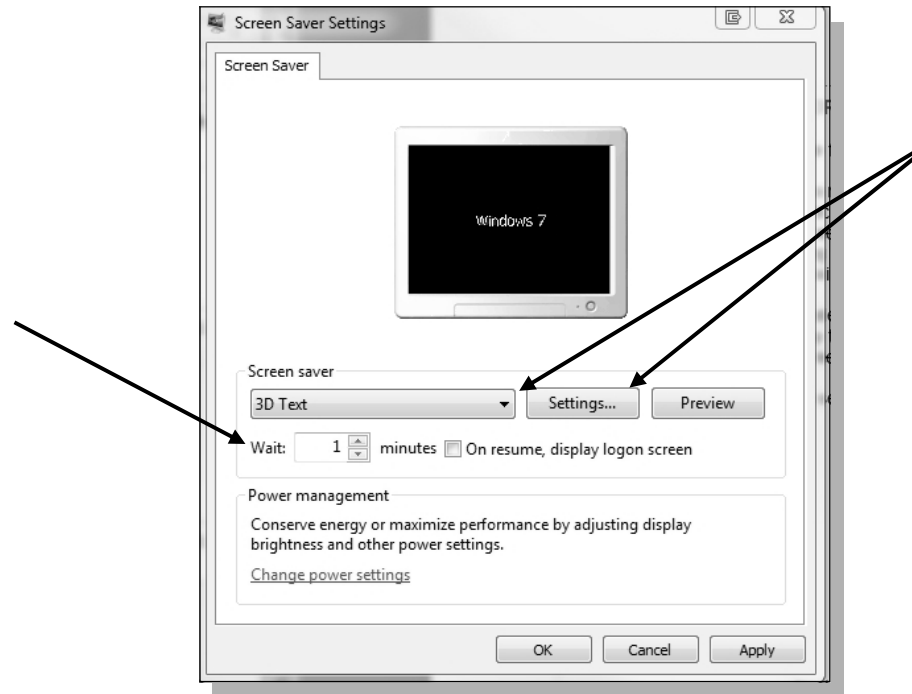
A screen saver is a small program that takes over the display screen if there are no keystrokes or mouse movements for a specified duration. Screen savers were originally developed to prevent ghosting, the permanent etching of a pattern on a display screen. For older monochrome monitors, ghosting often occurred if the same pattern was displayed on a display screen for a long period of time. Screen savers would prevent this by either blanking out the screen entirely, or by displaying a constantly moving image.

Modern display screens do not suffer so much from this problem. Today, therefore, screen savers are mostly an adornment, a way to liven up the computer. Many screen savers provide another benefit, hiding a user's work from would-be snoopers. These screen savers fill the display with an image or animation until the user enters a password.

To set up a screen saver, click the 'Personalization' icon in the 'Control Panel' window and then select 'Screen Saver'.



In the “Screen Saver” panel, click the down arrow and select a screen saver. To customise the screen saver, click “Settings”

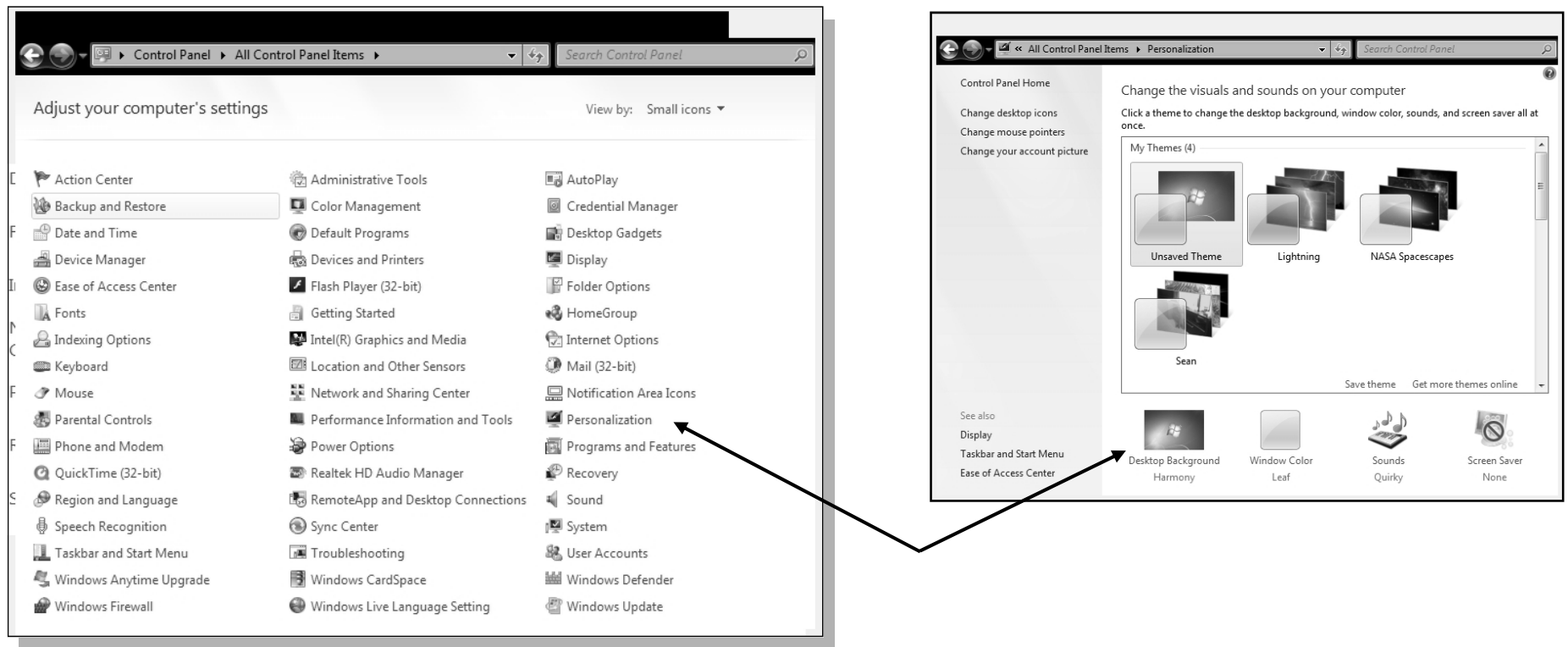


Depending on the screensaver you have selected the “Settings” will allow you to change size, colour and speed of fonts, graphics or textures.

The screen saver starts if your computer is idle for the number of minutes specified in the “Wait” box. To clear the screen saver after it has started, move your mouse or press any key.

The background of your desktop can be likened to a wall or a picture window in your house. You can have different colours and even textured wallpaper on the walls of your house . This holds true with the desktop.

To change the background of your desktop you start by opening up the 'Control Panel' window and click the 'Personalization' icon in the 'Control Panel' window and then click 'Desktop Background'



In the 'Background' list, click the image you want to use as your background. You can select a series of pictures and windows

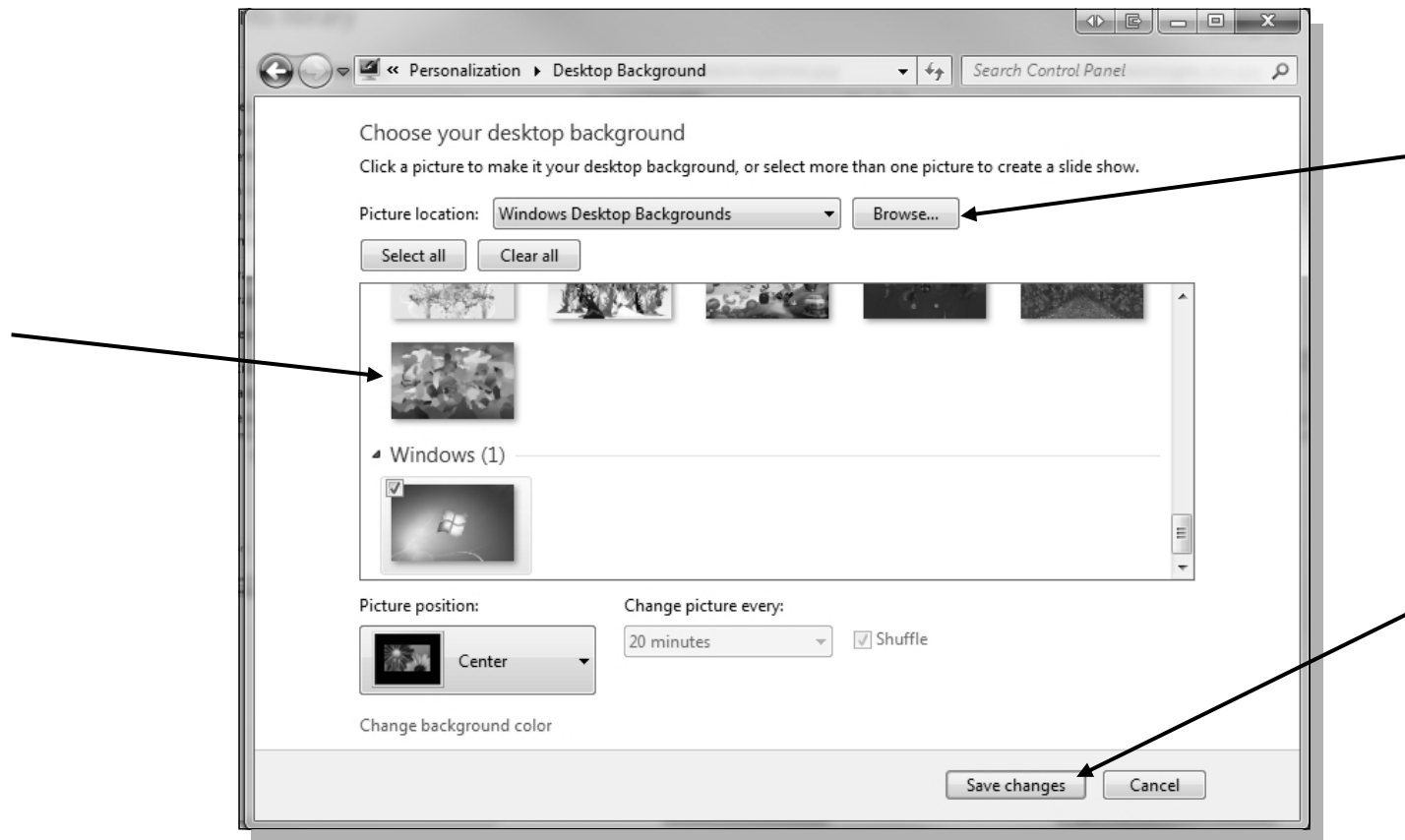
You can also apply a 'picture' that is on file on your computer. To do this. Click on 'Browse' and locate the file that has the picture you wish to use as your desktop background.

Double click on the picture and then click 'Save changes'.

In the 'Background' list, click the image you want to use as your background. You can select a series of pictures and windows

You can also apply a 'picture' that is on file on your computer. To do this. Click on 'Browse' and locate the file that has the picture you wish to use as your desktop background.

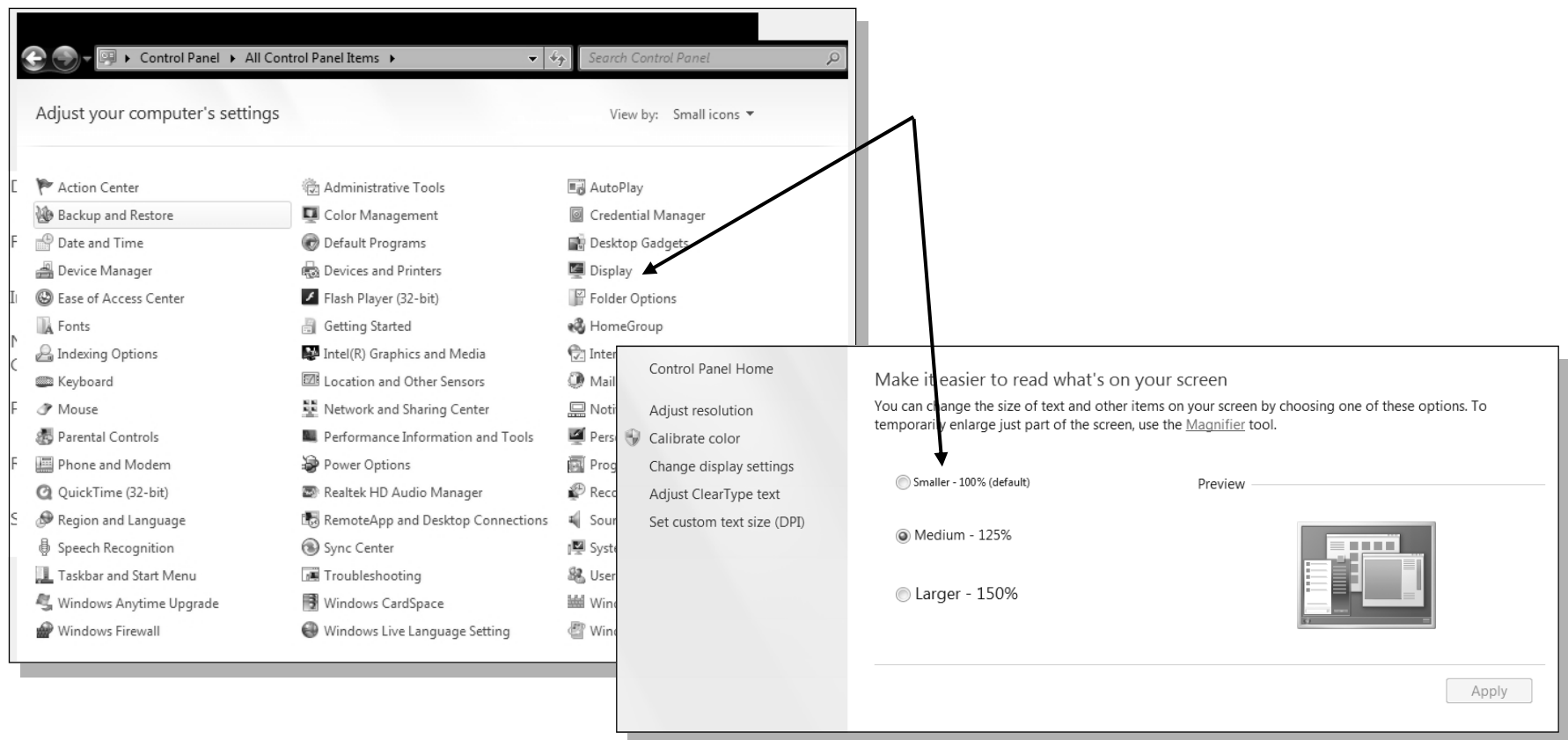
Double click on the picture and then click 'Save changes'.



DISPLAY FEATURES

You can also change the brightness of the screen and the size of the desktop elements.

To do this you again go to the “Control Panel” and select “Display”. Here you can make the elements on your desktop bigger or smaller.

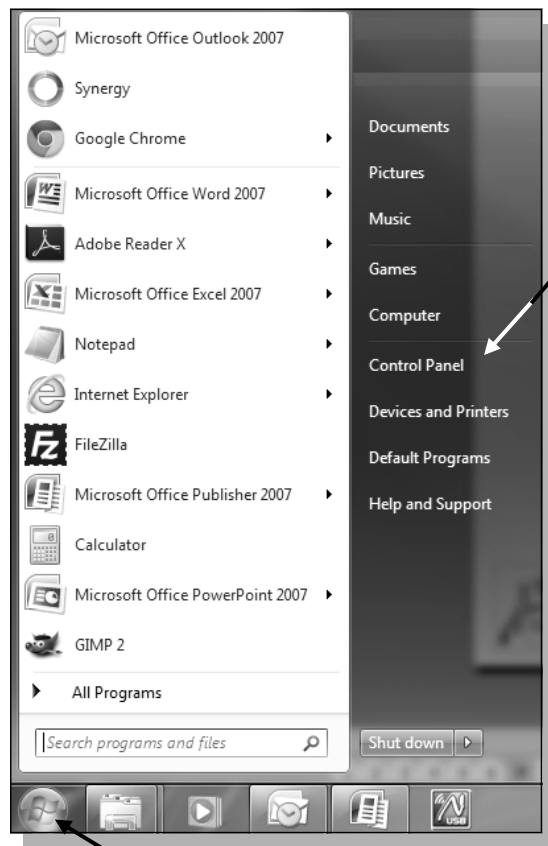


To make your screen brighter or darker, you would need to use the monitor settings. Each monitor is different so you would need to refer to the monitor user manual for instructions.

MOUSE PROPERTIES

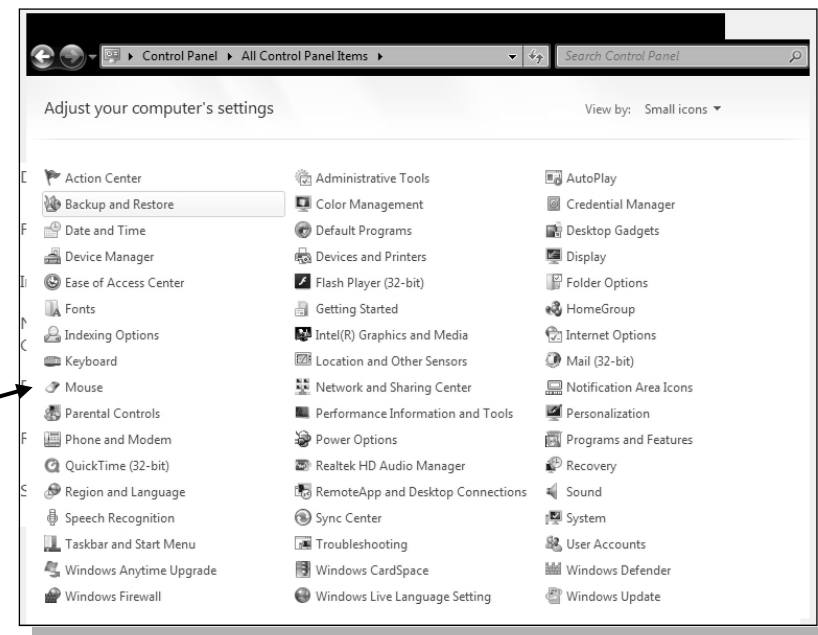
There can be times the mouse pointer seems to zoom out of control when you move the mouse to point and click, or you run out of desk space because it's too slow. The next few paragraphs shows a procedure to change the mouse speed. The following procedures apply to Windows 7 for the PC.

To change the clicking speed of your mouse go to the 'Start' menu, select 'Control Panel' and then click the 'Mouse' icon.



Start menu

Mouse



Control Panel window

**Learning
Activity**

Task

LEARNING ACTIVITY FIVE

In this activity you are to select the screen saver that allows you to place 3D text into a screen saver.

When you have located this screen saver option, put your name in the text area and see how it looks.

You can adjust the speed, the type of movement and colours.

This activity should be done in front of your teacher or trainer. If you are doing this at work or at home, you will need someone to observe you performing this activity. These persons observing you doing this activity will need to have the skills themselves to do this activity so that they can confidently say you have performed this activity successfully.

Your teacher or trainer will likely require some type of evidence that you have performed this activity successfully and your teacher or trainer will let you know what form this evidence will need to be.

**Learning
Activity**

Task

LEARNING ACTIVITY SIX

In this activity you are to try six different types of background and window element schemes located in the 'Display Properties' - 'Appearance' tab. Below tell us what six schemes you tried and which one you liked best.

| |
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| |
| |

The Best

| |
|--|
| |
|--|

SAMPLE SAMPLE

**Learning
Activity**

Question

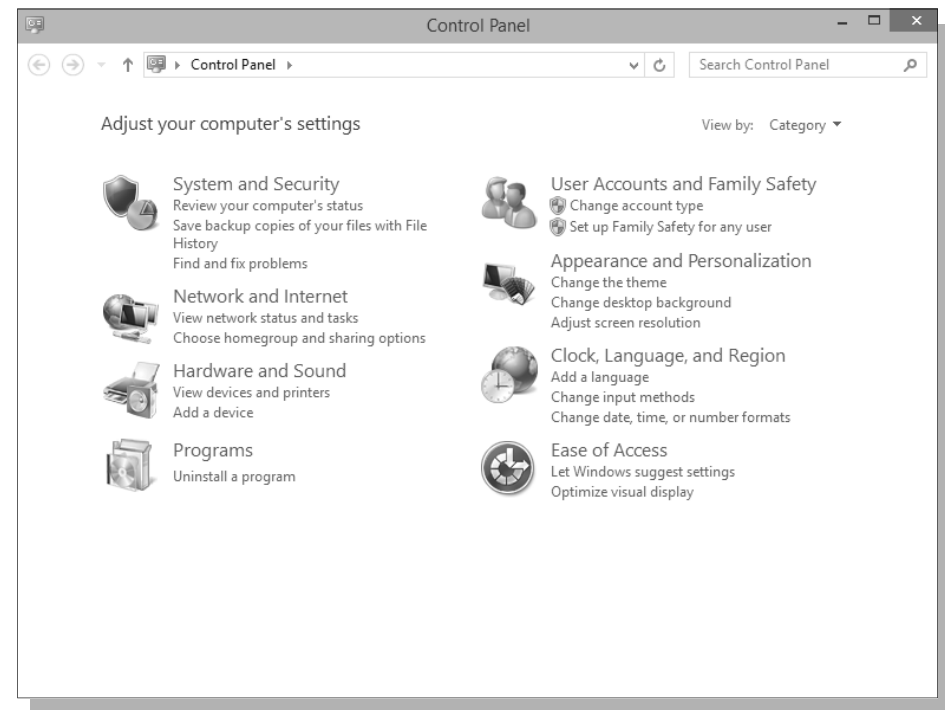
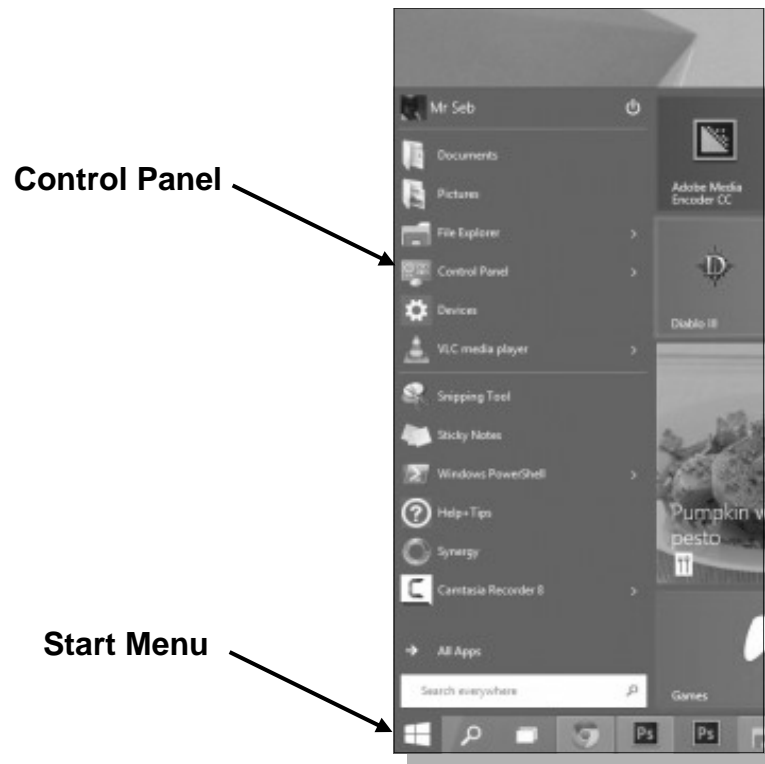
LEARNING ACTIVITY SEVEN

What is the purpose of the 'Control Panel'?

SAMPLE SAMPLE

WINDOWS 10 CONTROL PANEL

Windows 10 “Control Panel” like Windows 7 is a single location for all commands, controls and functions associated with configuring and customising Windows 10 and other Windows versions. To locate the Windows 10 “Control Panel” you click on the “Start” menu.

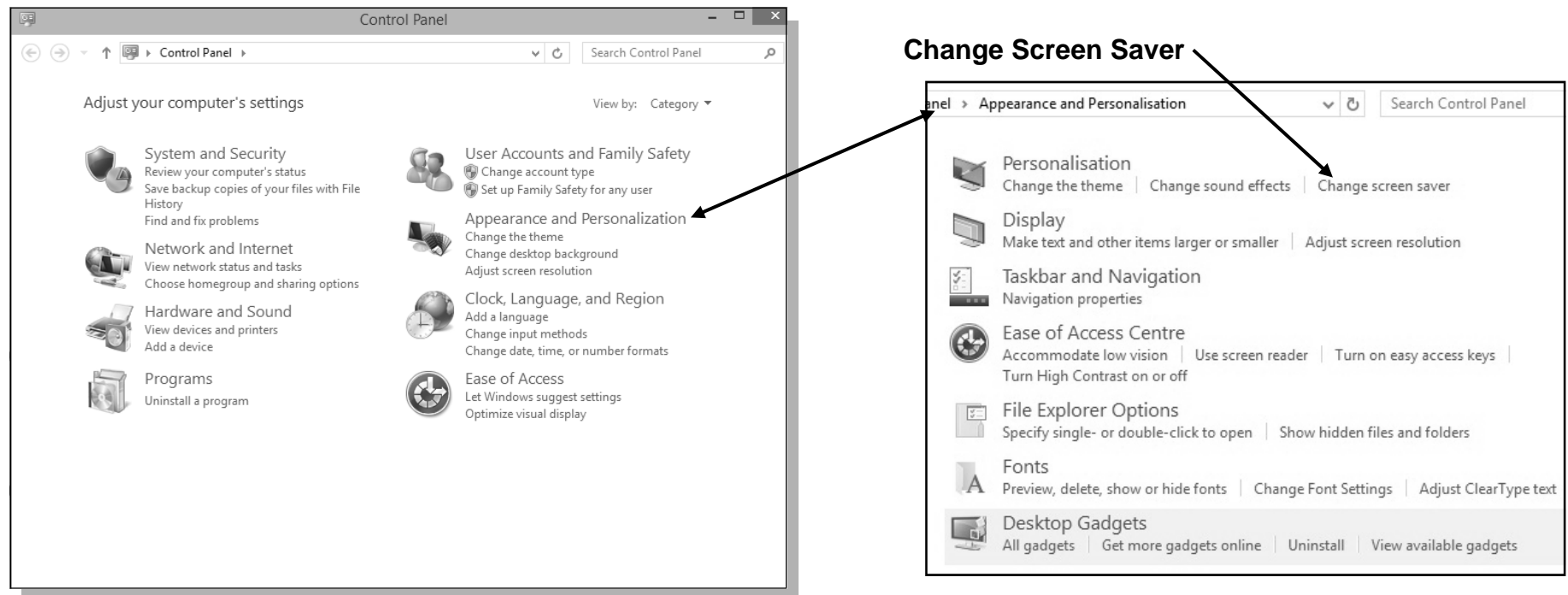


We look at customising your desktop in Windows 10 starting by setting up a screen saver.

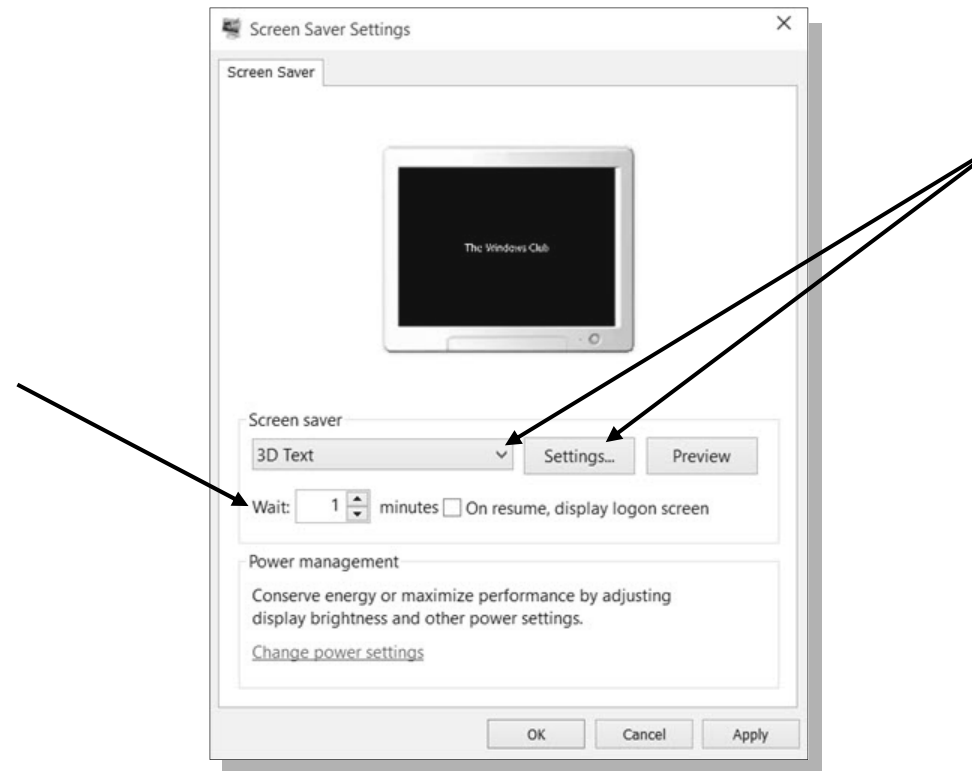
A screen saver is a small program that takes over the display screen if there are no keystrokes or mouse movements for a specified duration. Screen savers were originally developed to prevent ghosting, the permanent etching of a pattern on a display screen. For older monochrome monitors, ghosting often occurred if the same pattern was displayed on a display screen for a long period of time. Screen savers would prevent this by either blanking out the screen entirely, or by displaying a constantly moving image.

Modern display screens do not suffer so much from this problem. Today, therefore, screen savers are mostly an adornment, a way to liven up the computer. Many screen savers provide another benefit, hiding a user's work from would-be snoopers. These screen savers fill the display with an image or animation until the user enters a password.

To set up a screen saver, click the “Appearance and Personalization” icon and then on the next window you click on “Change Screen Saver”



In the “Screen Saver” panel, click the down arrow and select a screen saver. To customise the screen saver, click “Settings”

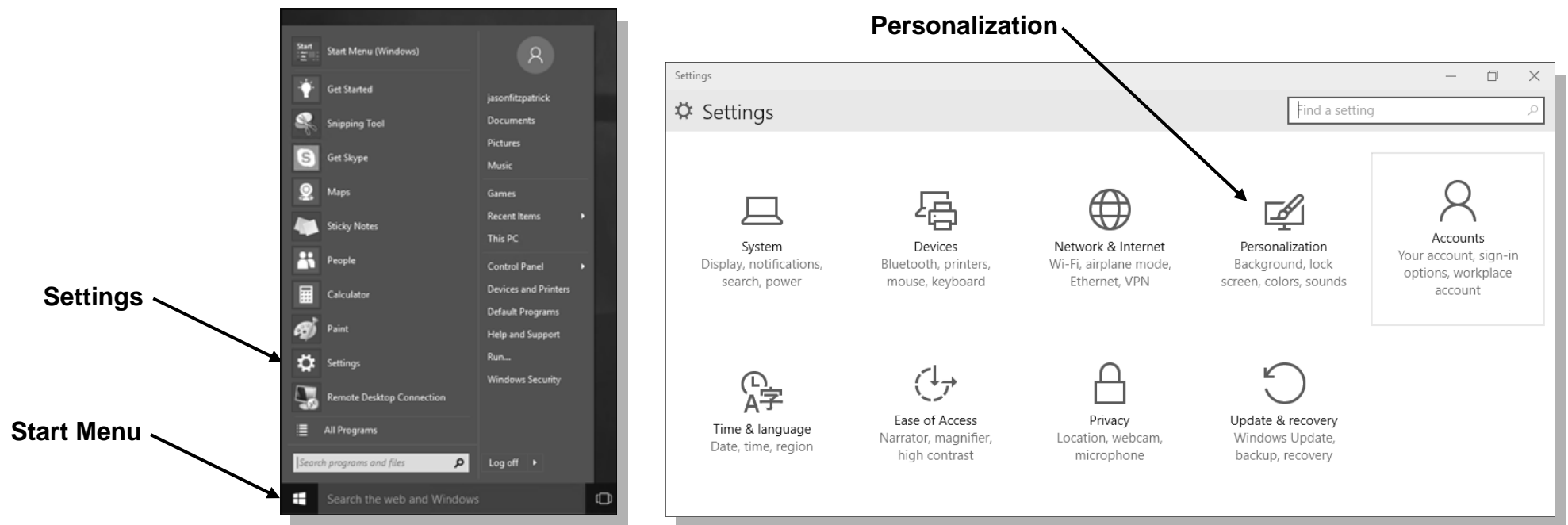


Depending on the screensaver you have selected the “Settings” will allow you to change size, colour and speed of fonts, graphics or textures.

The screen saver starts if your computer is idle for the number of minutes specified in the “Wait” box. To clear the screen saver after it has started, move your mouse or press any key.

The background of your desktop can be likened to a wall or a picture window in your house. You can have different colours and even textured wallpaper on the walls of your house . This holds true with the desktop.

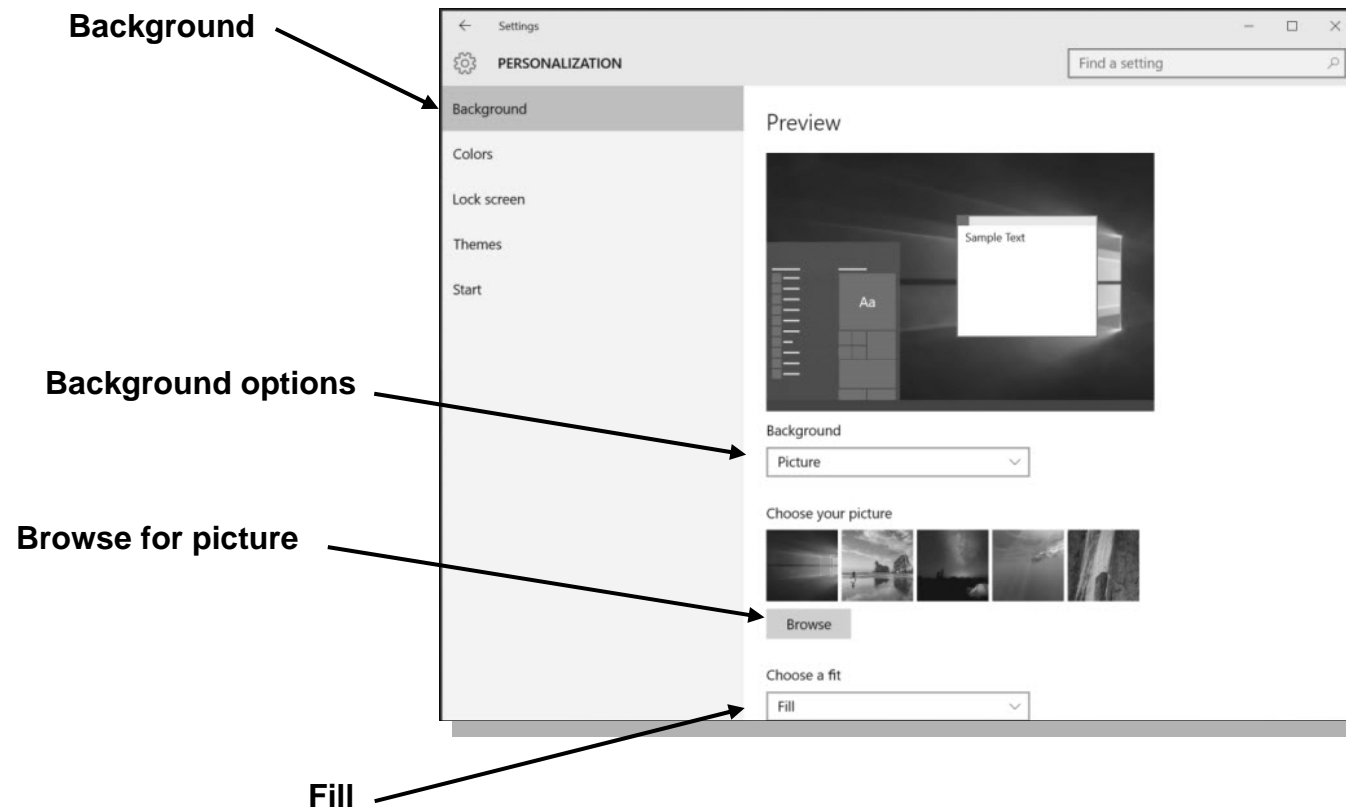
To change the background of your desktop you start by opening up the 'clicking on the "Start Menu" and the clicking on "Settings". In the next window you click on "Personalization".



SAMPLE SAMPLE

In the next screen you can choose what the desktop background will be. It can be simply solid colours or a picture that Windows 10 has provided or even your own favourite picture.

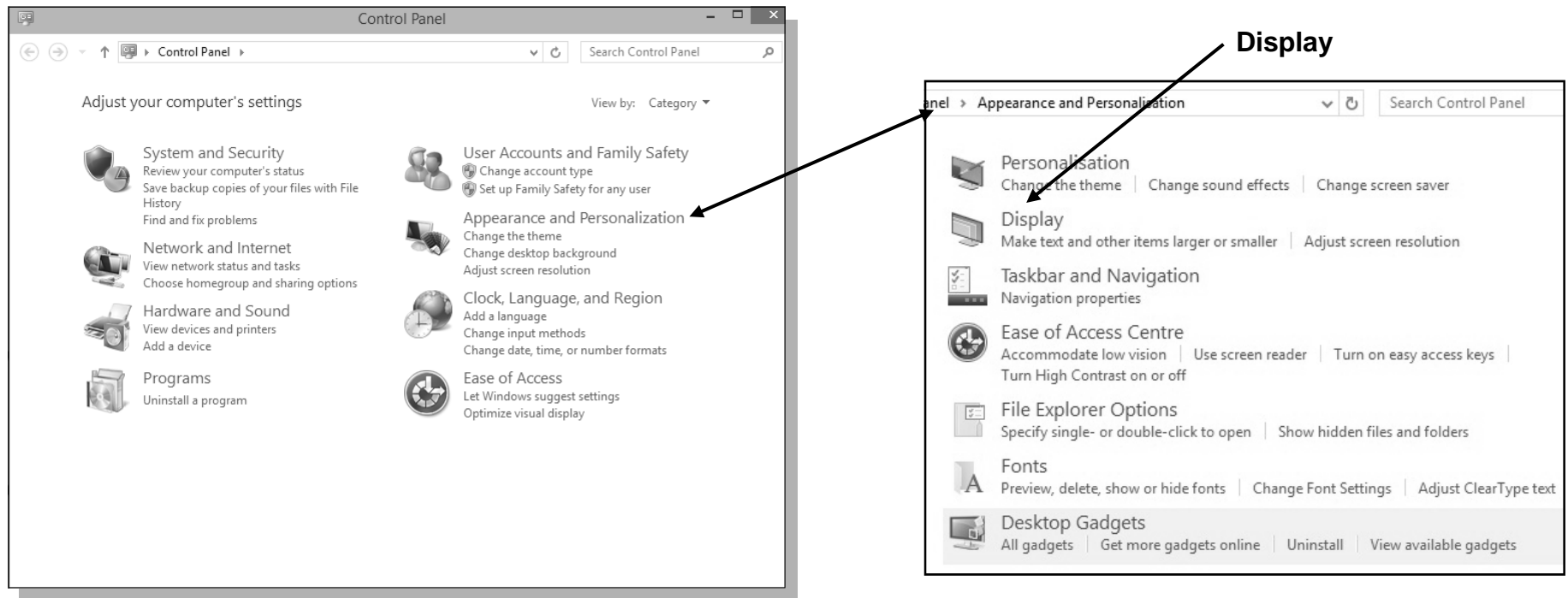
To use your own picture you locate the picture on your PC using “Browse” and click on the picture file and then click on “Fill” to make the desktop background your own picture.



DISPLAY FEATURES

You can also change the brightness of the screen and the size of the desktop elements.

To do this you again go to the “Control Panel” and select “Appearance and Personalization” and then select “Display”. Here you can make the elements on your desktop bigger or smaller.

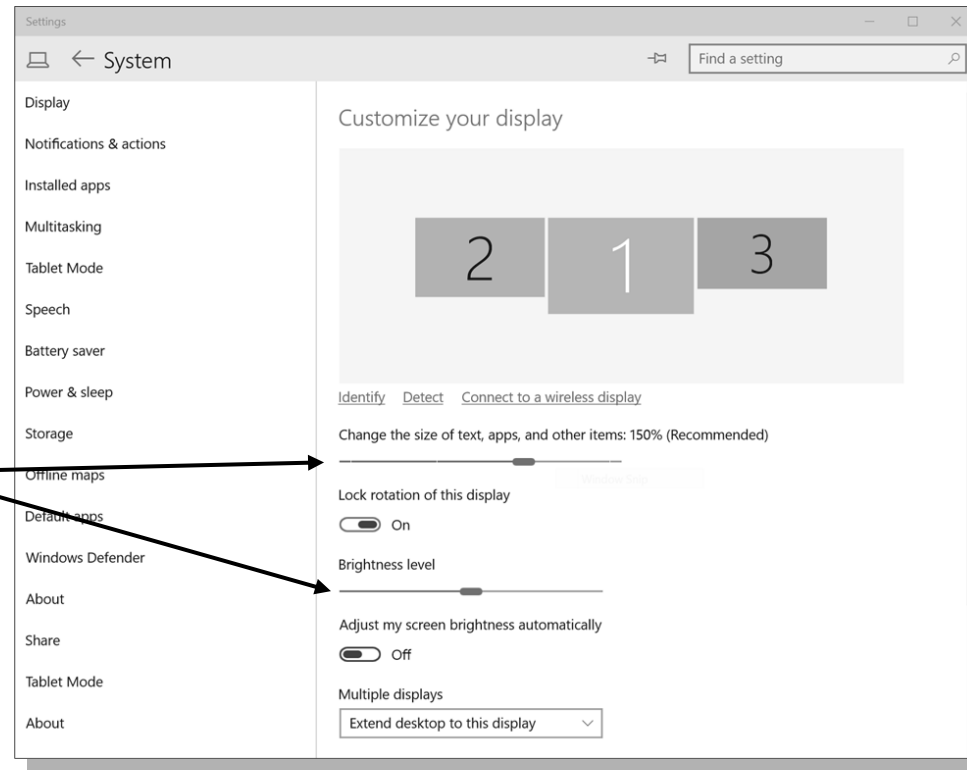


SAMPLE SAMPLE

T

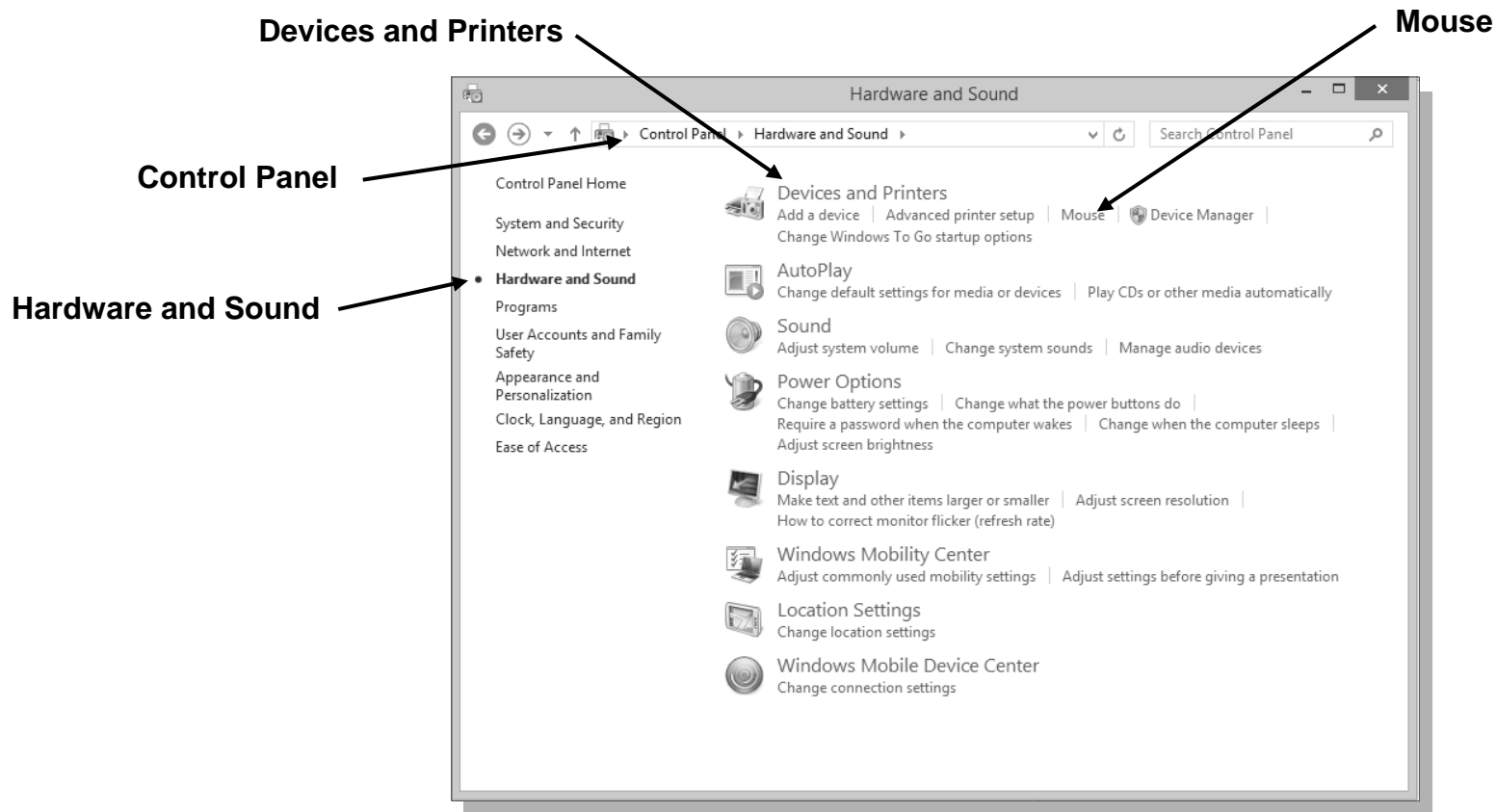
In this window you can increase and decrease the size of the text, icons and so on and change the brightness of the screen using the slider settings in the “Display” settings.

Slider settings

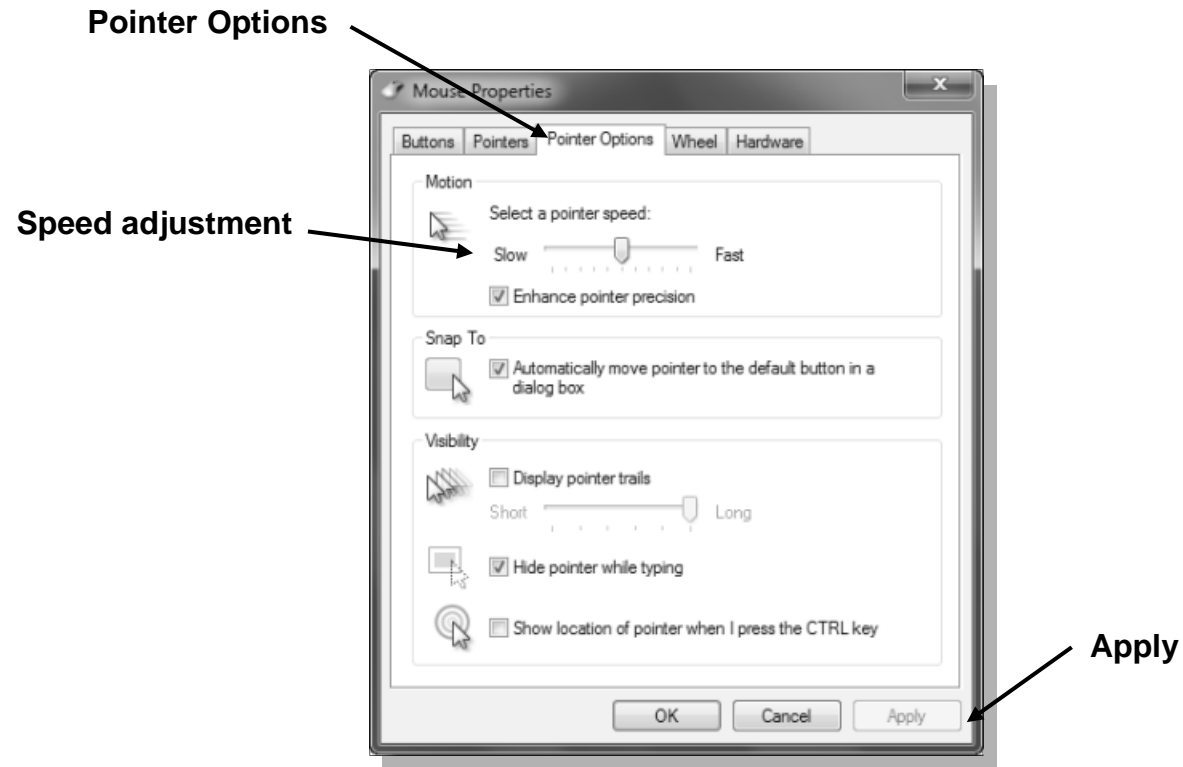


MOUSE PROPERTIES

There can be times the mouse pointer seems to zoom out of control when you move the mouse to point and click, or you run out of desk space because it's too slow. The next few paragraphs shows a procedure to change the mouse speed. Again you go to the "Control Panel" and select "Hardware and Sound", then select "Mouse" under "Devices and Printers".



A new window appears and you click on the tab “Pointer Options”. In the “Motion” area you can adjust the mouse speed to what you feel comfortable with using the adjustment slider. Once you have chosen your mouse settings you click “Apply”.



**Learning
Activity**

Task

LEARNING ACTIVITY EIGHT (A)**This activity is for those using Windows 10.**

In this activity you are to select the screen saver that allows you to place 3D text into a screen saver.

When you have located this screen saver option, put your name in the text area and see how it looks.

You can adjust the speed, the type of movement and colours.

This activity should be done in front of your teacher or trainer. If you are doing this at work or at home, you will need someone to observe you performing this activity. These persons observing you doing this activity will need to have the skills themselves to do this activity so that they can confidently say you have performed this activity successfully.

Your teacher or trainer will likely require some type of evidence that you have performed this activity successfully and your teacher or trainer will let you know what form this evidence will need to be.

**Learning
Activity**

Task

LEARNING ACTIVITY NINE (A)

This activity is for those using Windows 10.

In this activity you are to try two different types of desktop backgrounds; one must be a picture of yours.

This should be done in front of your teacher or trainer.

If you are doing this at work or at home, you will need someone to observe you performing this activity. These persons observing you doing this activity will need to have the skills themselves to do this activity so that they can confidently say you have performed this activity successfully.

Your teacher or trainer will likely require some type of evidence that you have performed this activity successfully and your teacher or trainer will let you know what form this evidence will need to be.

IDENTIFY FUNCTIONS ASSOCIATED WITH THE OPERATING SYSTEM AND ASSOCIATED BOOT PROCESS

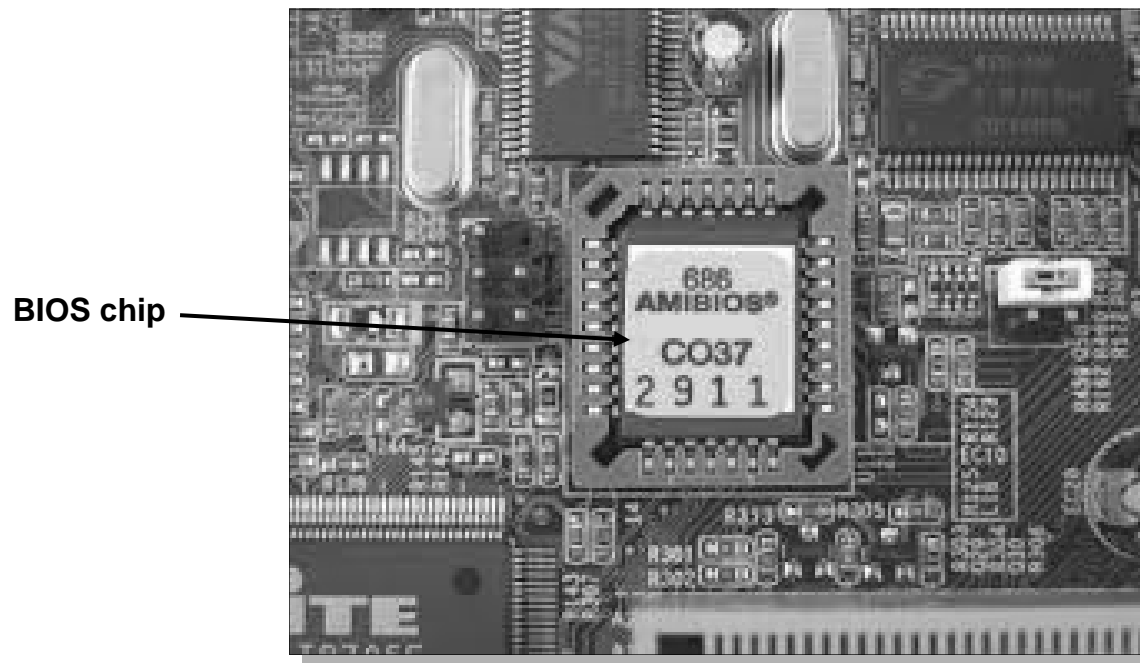
When you turn on your computer it goes through a various number of processes called the “PC Boot Process”.

Basically the boot process (or Booting Up processes) is getting the operating system up and running so that all the hardware and application software can be used. (we learn more about application software later in this section)

The term “booting up” a computer comes from the term “bootstrapping” a term to describe someone *pulling themselves up by their bootstraps without anyone’s help*.

So when a computer boots up it does this all by itself automatically.

Your computer knows how to boot because instructions for booting are built into one of its chips, the BIOS (or Basic Input/Output System) chip on the motherboard. In order for a computer to successfully boot, its BIOS, operating system and motherboard components must all be working properly; failure of any one of these three elements will likely result in a failed boot sequence.



Motherboard

When the computer's power is first turned on, the “Central Processing Unit” (CPU) on the motherboard starts up, and the boot process begins when the CPU look to the system's BIOS chip for its first instruction in the start up program. The first instruction is the instruction to run the power-on self test (POST).

The POST is a built-in diagnostic program that checks your hardware to ensure that everything is present and functioning properly, before the BIOS begins the actual boot. It later continues with additional tests (such as the memory test that you see printed on the screen) as the boot process is proceeding. drives, ports and other hardware devices, such as the keyboard and mouse, to ensure they are functioning properly.

```

Diskette Drive B : None          Serial Port(s) : 3F0 2F0
Pri. Master Disk : LBA,ATA 100, 250GB Parallel Port(s) : 370
Pri. Slave Disk : LBA,ATA 100, 250GB DDR at Bank(s) : 0 1 2
Sec. Master Disk : None
Sec. Slave Disk : None

Pri. Master Disk HDD S.M.A.R.T. capability ... Disabled
Pri. Slave Disk HDD S.M.A.R.T. capability ... Disabled

PCI Devices Listing ...
Bus Dev Fun Vendor Device SVID SSID Class Device Class IRQ
0 27 0 8086 2668 1458 A005 0403 Multimedia Device 5
0 29 0 8086 2658 1458 2658 0C03 USB 1.1 Host Cntrlr 9
0 29 1 8086 2659 1458 2659 0C03 USB 1.1 Host Cntrlr 11
0 29 2 8086 265A 1458 265A 0C03 USB 1.1 Host Cntrlr 11
0 29 3 8086 265B 1458 265A 0C03 USB 1.1 Host Cntrlr 5
0 29 7 8086 265C 1458 5006 0C03 USB 1.1 Host Cntrlr 9
0 31 2 8086 2651 1458 2651 0101 IDE Cntrlr 14
0 31 3 8086 266A 1458 266A 0C05 SMBus Cntrlr 11
1 0 0 10DE 0421 10DE 0479 0300 Display Cntrlr 5
2 0 0 1283 8212 0000 0000 0180 Mass Storage Cntrlr 10
2 5 0 11AB 4320 1458 E000 0200 Network Cntrlr 12
ACPI Controllor 9

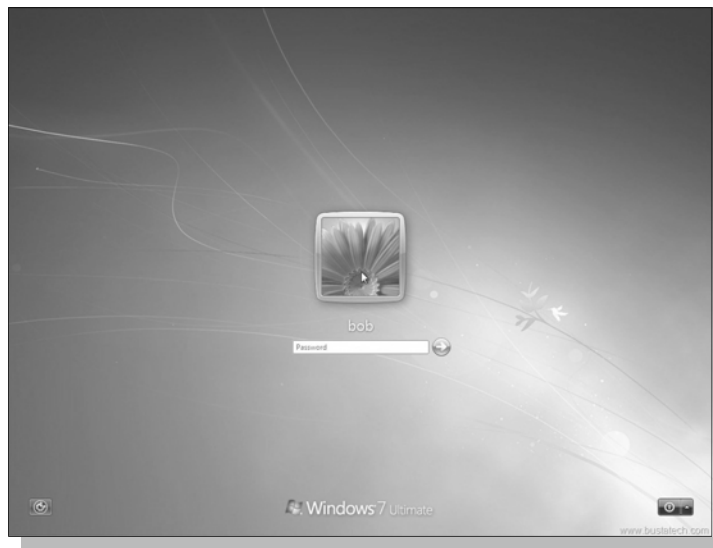
```

Once the POST has determined that all components are functioning properly and the CPU has successfully initialised, the BIOS looks for an operating system to load.

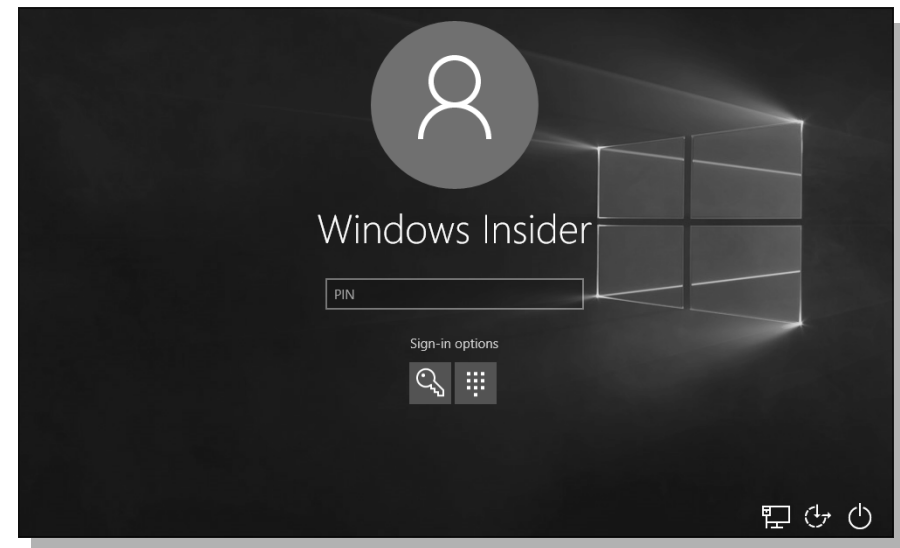
This information is stored on a special CMOS chip on the motherboard. Generally the BIOS is told that the operating system is located on the hard drive and then copies the operating system and places the files on the system memory called the BIOS ROM (ROM means read only memory).

It is at this point of the boot process the operating system then takes over and starts loading in the hardware drivers (we learn about hardware drivers in Section Three) and prepares the PC so that the user can access the application software.

It is also at this point the “Login” screen will appear if the PC has been set up with usernames and password access.



Windows 7



Windows 10

**Learning
Activity**

Question

LEARNING ACTIVITY TEN

What does the term BIOS mean and what is it for?

SAMPLE SAMPLE

**Learning
Activity**

Question

LEARNING ACTIVITY ELEVEN

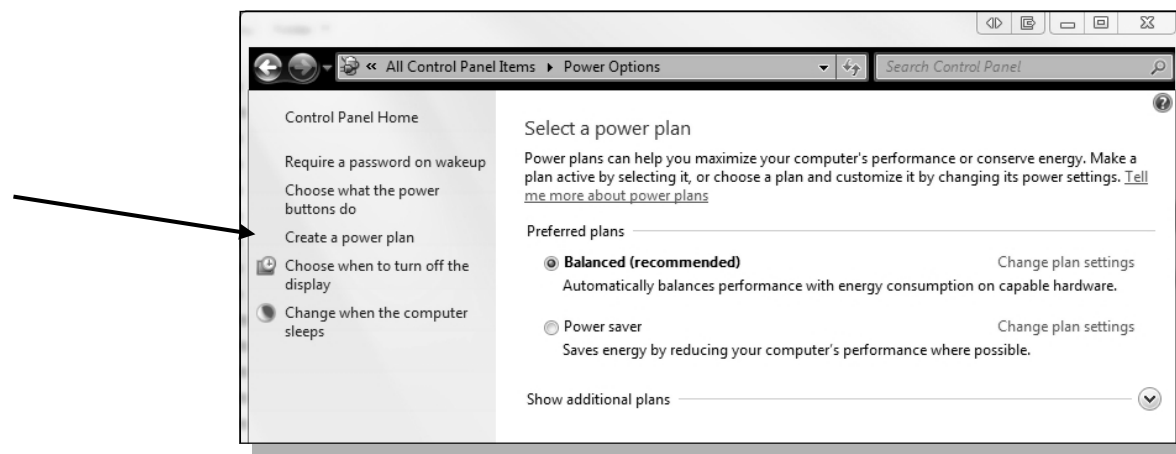
What does the term POST mean and what is it for?

SAMPLE SAMPLE

CONFIGURE POWER MANAGEMENT SETTINGS TO MINIMISE POWER CONSUMPTION AS AN ENVIRONMENTALLY SUSTAINABLE MEASURE

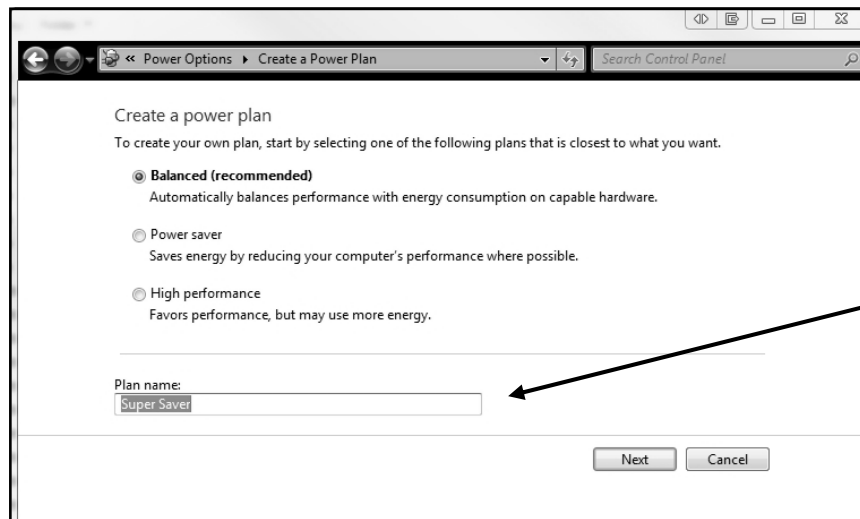
The following pages refer to both Windows 7 and Windows 10.

Power Management is not just significant for laptop or notebook users, it is also a feature that should be used for desktop PC users as well. A good power management plan can minimise power consumption and in turn be environmentally sustainable. To change how your PC uses power, go into the Control Panel and select “Power Options”. In Windows 10 the power management setting is under “Hardware and Sound” and then under “Power Options”. Here on in the steps are the same for both Windows 7 and Windows 10.

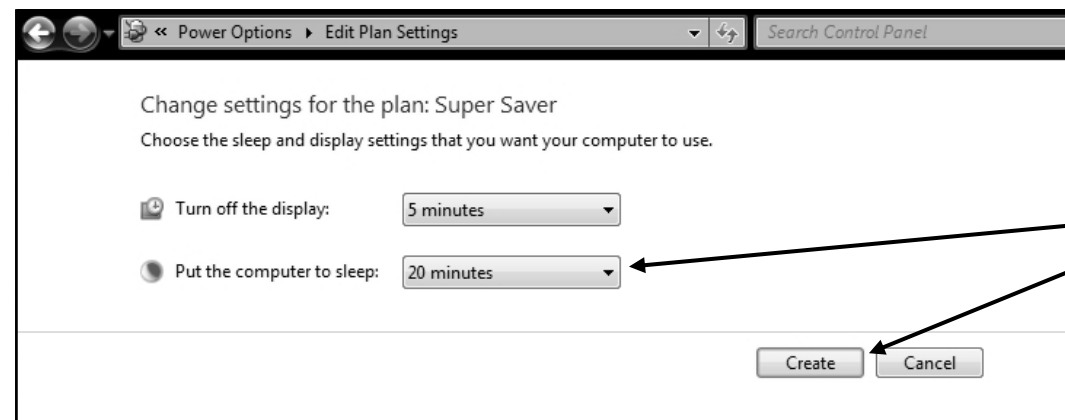


The default Power Option will be the “Balanced” option. This option offers full performance for your PC while you are using it and saves power during periods of inactivity. You can change to another Power Plan by selecting it from the ‘options’, or by clicking on the ‘Create a power plan’ to create your own.

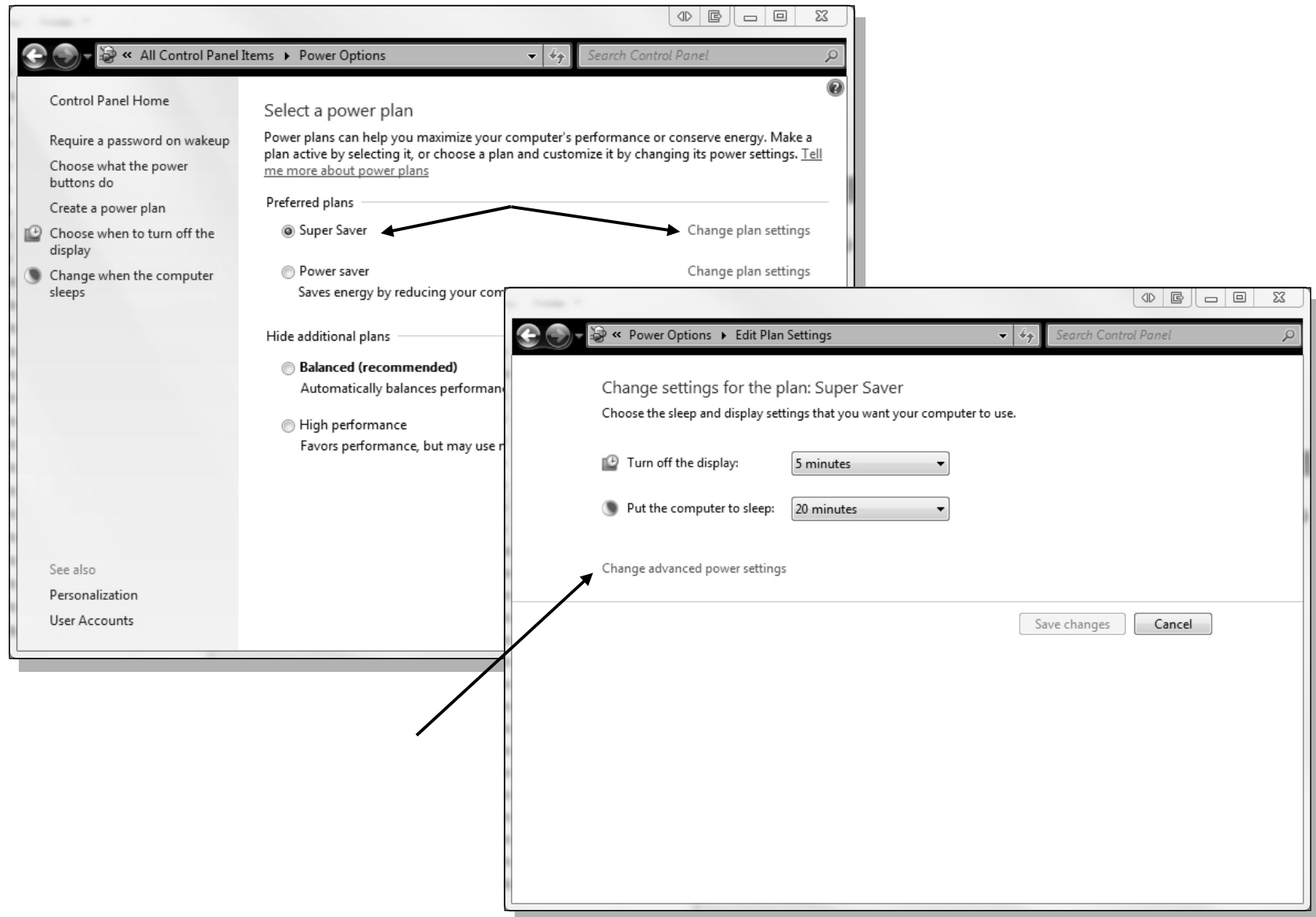
When you select 'Create a Power Plan' you will be presented with the 'Create a power plan wizard'. The first step is to select the existing plan that is closest to what you want and enter a 'Plan name'. For this example we will be using the 'Power saver' plan as our template and we will name it 'Super Saver'.



Change the option for 'Turn off the display' to 5 minutes and the option to 'Put the computer to sleep' to 20 minutes. This will ensure that the computer uses hardly any power when not in use by turning off the monitor after 5 minutes and reducing the power used by the CPU after 20 minutes. To save this plan, click the 'Create' button.

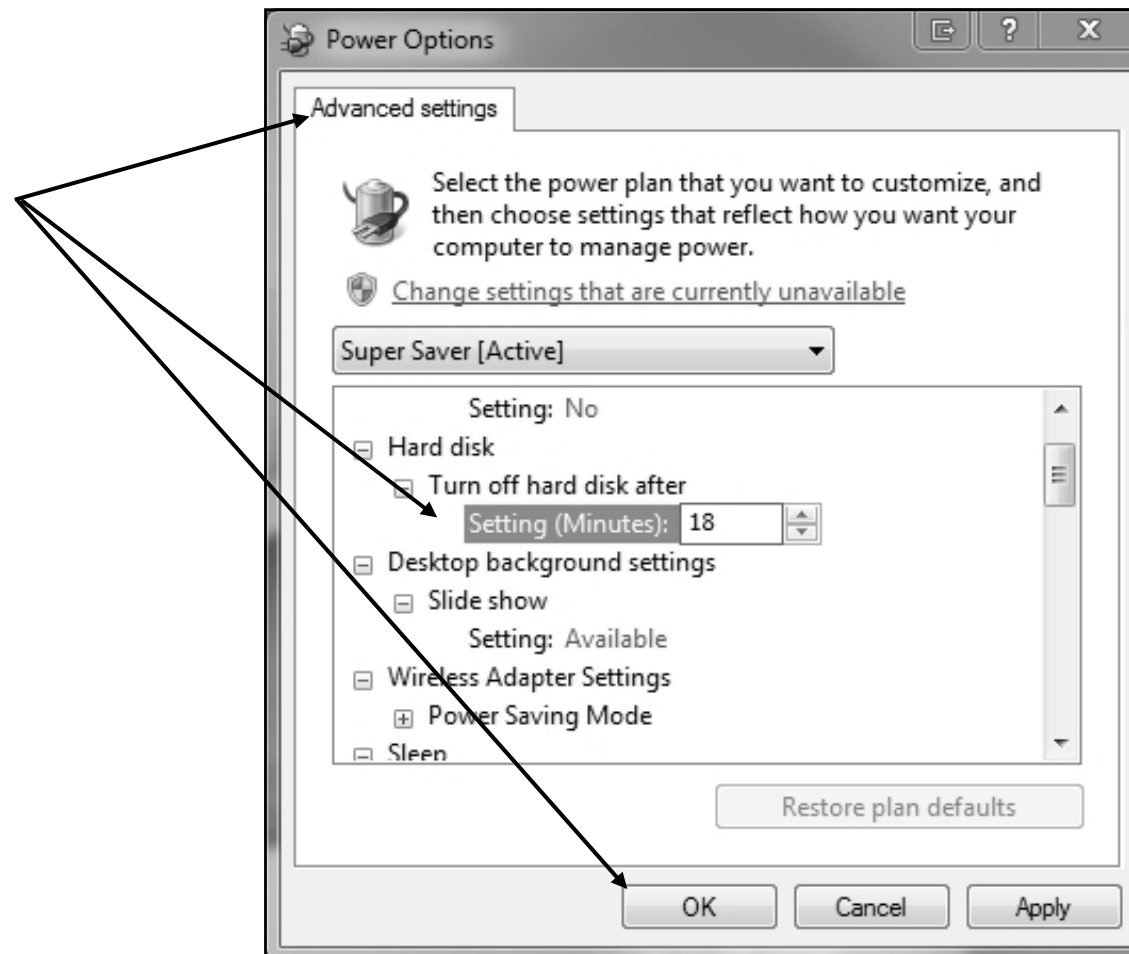


Now we want to customise our new plan even further, so select the new plan and click on 'Change plan settings', then 'Change advanced power setting'.



This will open the 'Advanced settings'. In the advanced settings you can customise each item that draws power in the system. To change any of the settings for these items you just select the 'Setting' from the clusters and change the value by typing in a new value, or selecting an option in the drop down.

In this example we will set the hard disk to turn off after 18 minutes of inactivity. Once you have finished, click 'OK'.



**Learning
Activity**

Question

LEARNING ACTIVITY TWELVE

Why is it beneficial to change the power settings of your PC to turn off devices that are not being used?

SAMPLE SAMPLE

**Learning
Activity**

Task

LEARNING ACTIVITY THIRTEEN

In this activity you are to locate the power management settings on your PC. Locate where the settings can be changed and how power plans can be created.

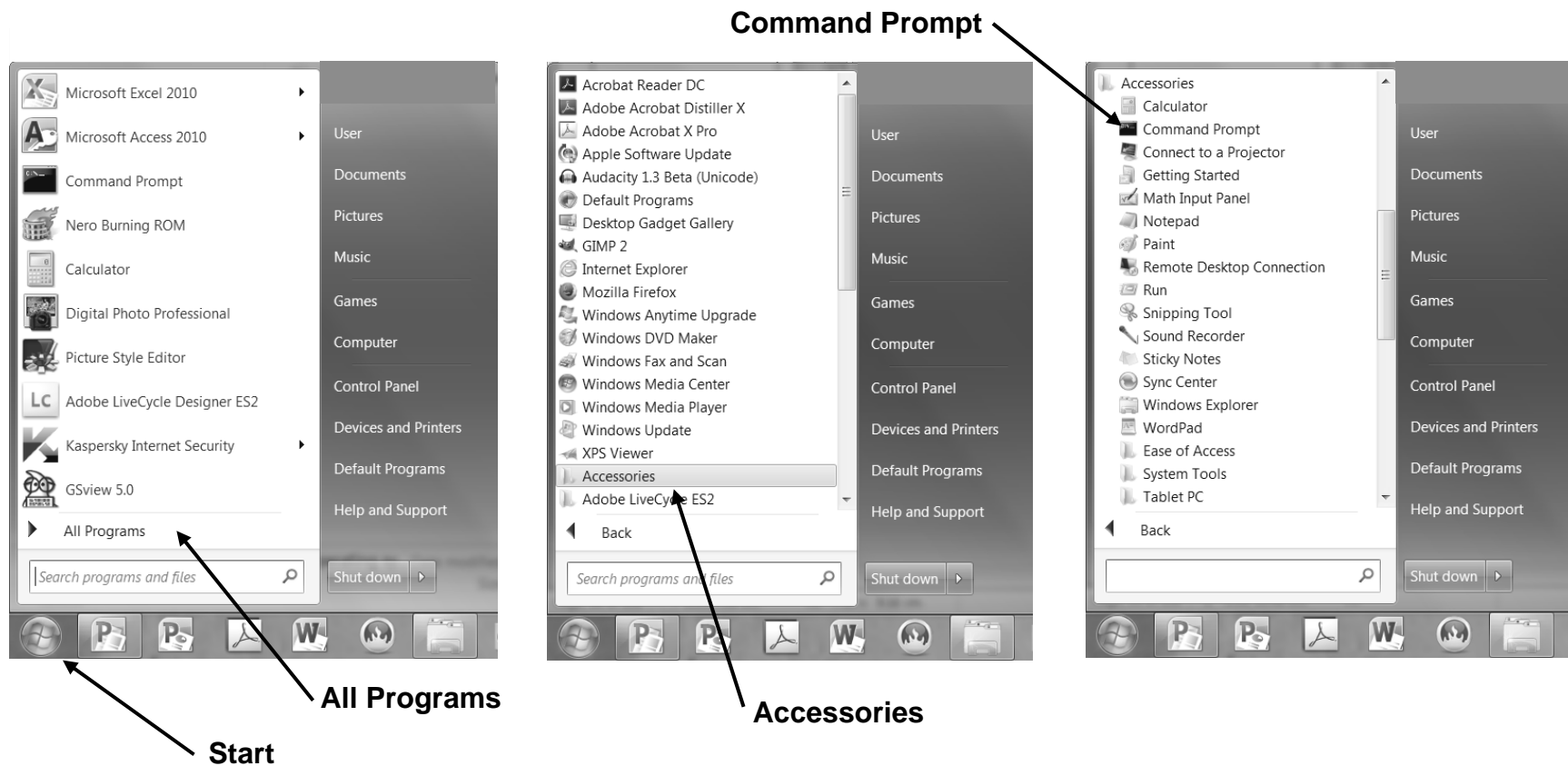
This activity should be done in front of your teacher or trainer. If you are doing this at work or at home, you will need someone to observe you performing this activity. These persons observing you doing this activity will need to have the skills themselves to do this activity so that they can confidently say you have performed this activity successfully.

Your teacher or trainer will likely require some type of evidence that you have performed this activity successfully and your teacher or trainer will let you know what form this evidence will need to be.

SAMPLE SAMPLE

USE BOTH THE GRAPHICAL USER INTERFACE AND THE COMMAND LINE INTERFACE TO PERFORM BASIC TASKS

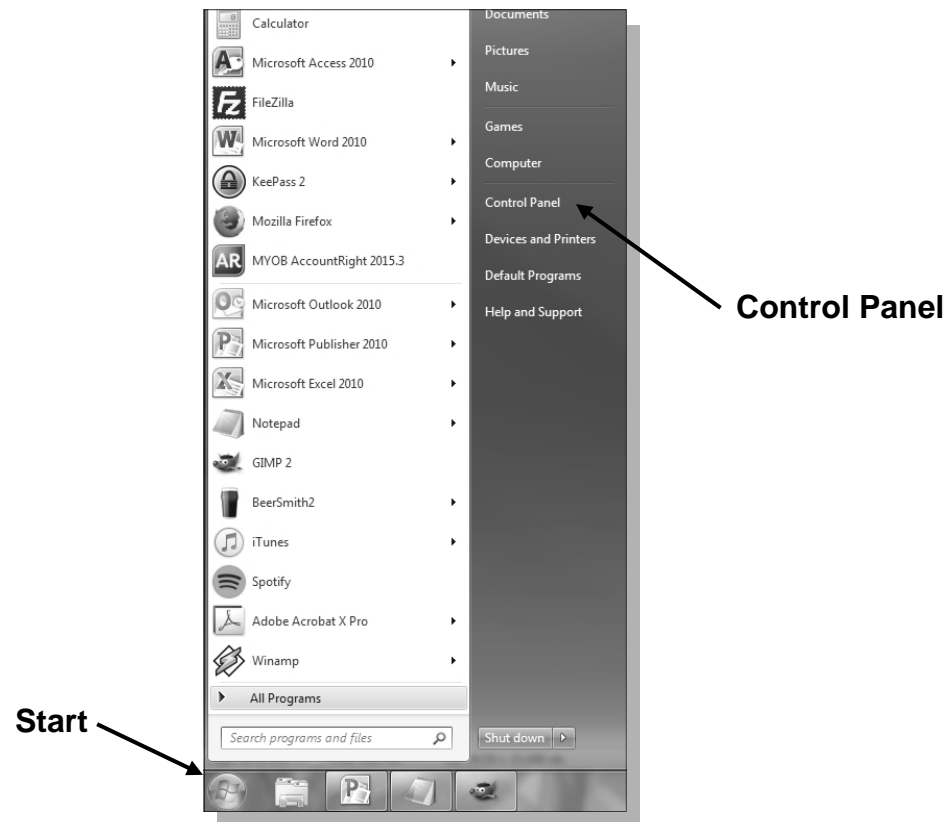
Many early operating systems used a 'Command Line Interface' to interact with the computer. This was a text-only method and allowed users to enter a series of commands for the computer to perform. Though the Command Line Interface is rarely used anymore, it still forms part of most modern operating systems. To access the Command Line Interface in Windows 7 go to the "Start" menu, click "All Programs" and select "Command Prompt" from the "Accessories" menu.



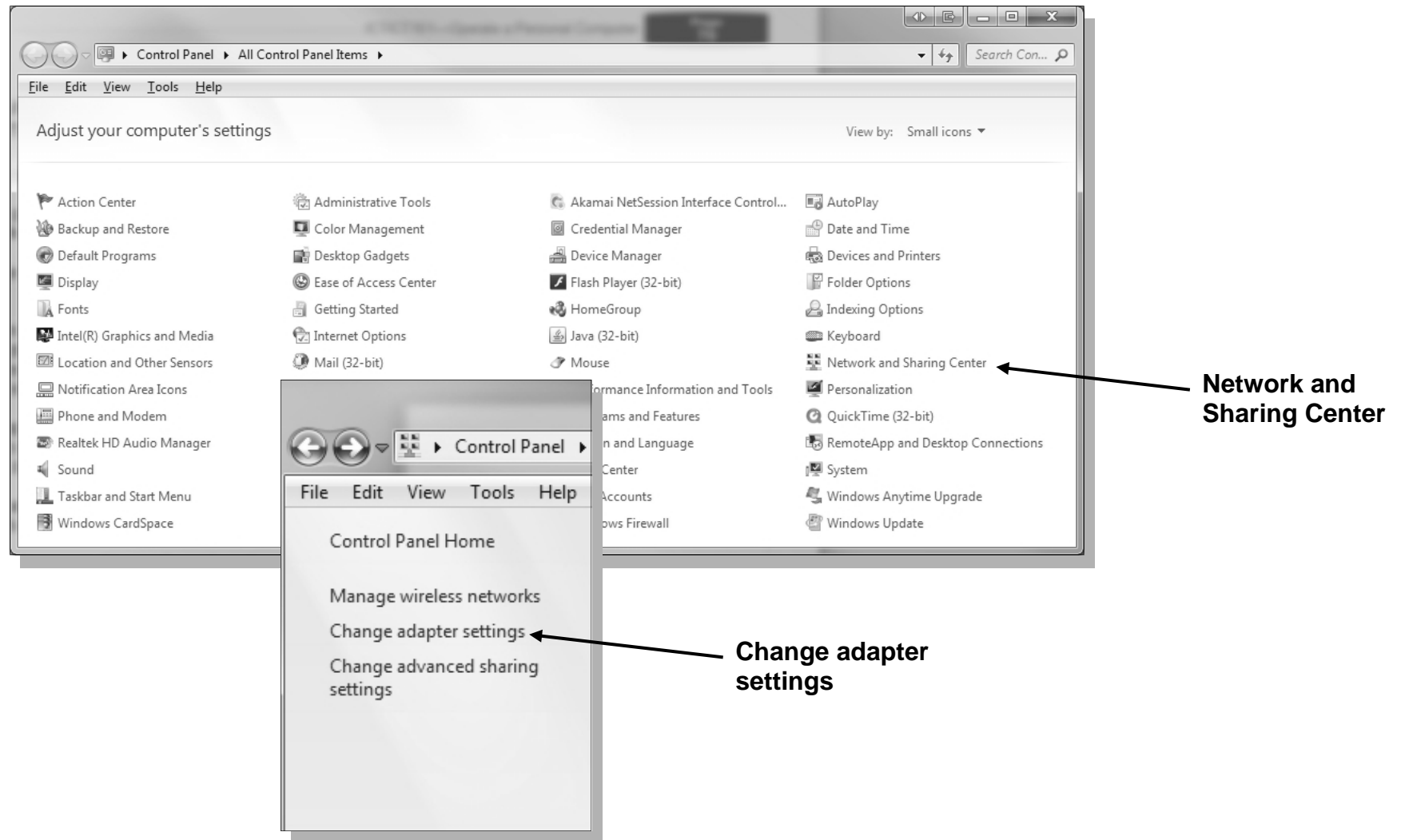
The 'Command Prompt' in Windows allows a user to quickly perform tasks by entering text only commands rather than navigating through the Graphical User Interface. A good example of this is when you need to identify an IP address of a PC for networking.

If you were to use the graphical user interface to find the IP address the steps would be as follows.

Open "Network Connections" by clicking the "Start" button and then clicking "Control Panel".



A new window appears and you click on “Network and Sharing Centre”. Then click on “Change adapter settings” on the next window to appear.

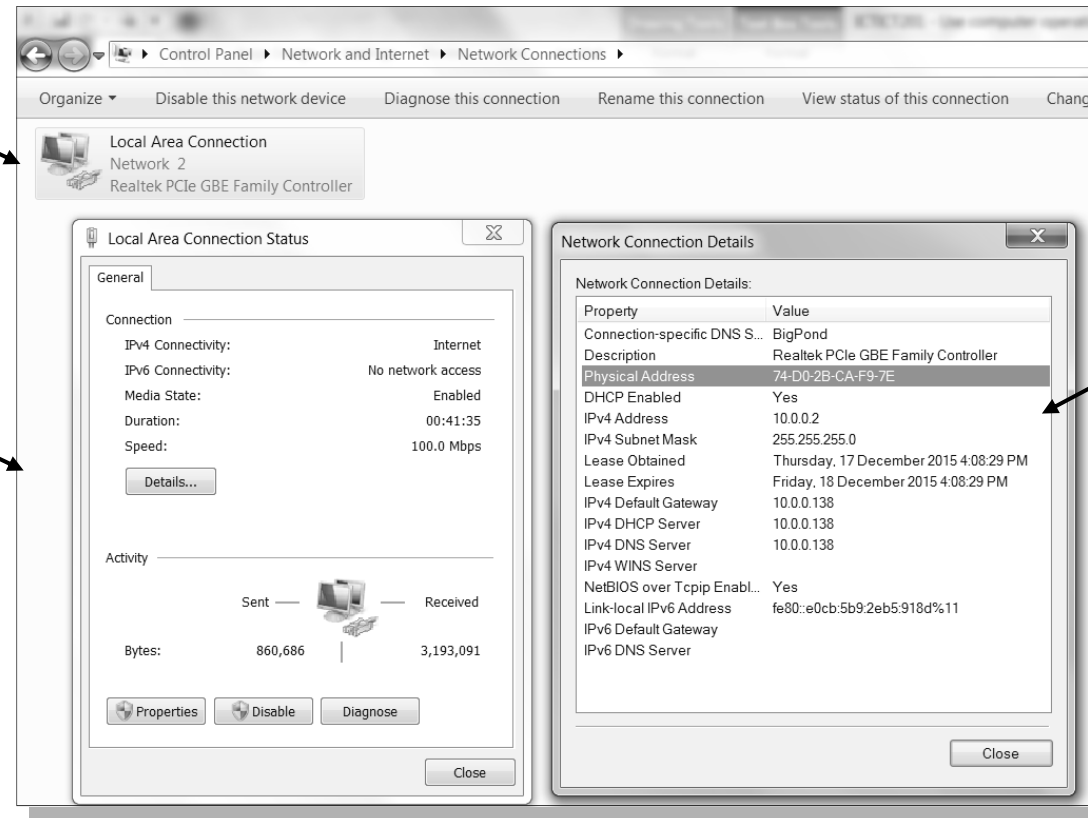


This will bring up the network connection screen. You click on an active connection and then on the new screen you click on the network “Details” and this will bring up a screen that tells you the IP address.

Active network
connection

Details

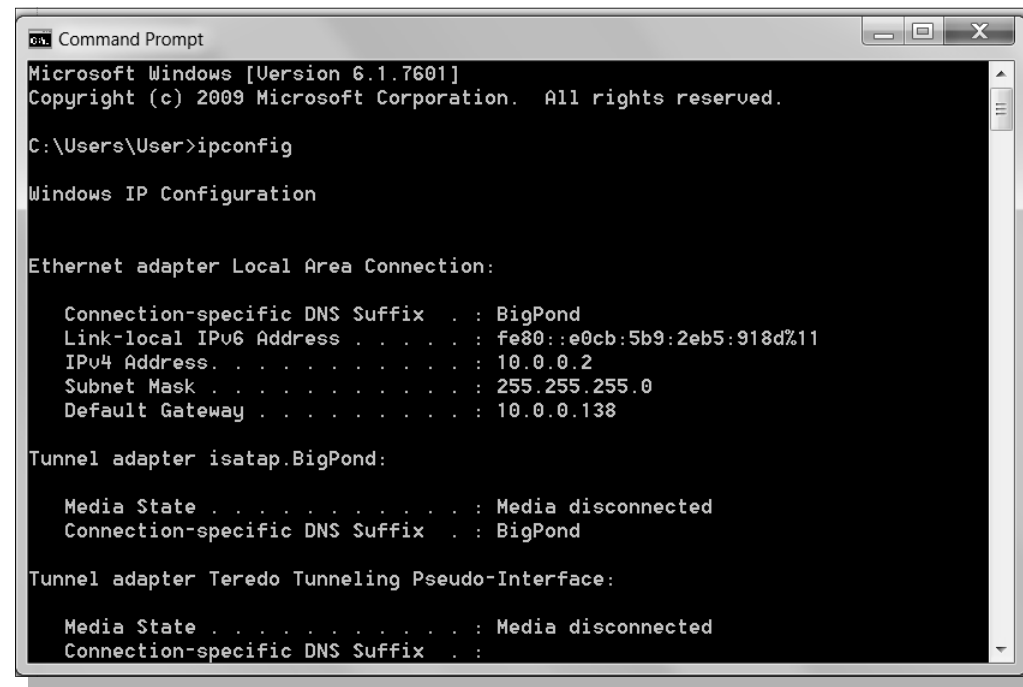
IP address
details



SAMPLE SAMPLE

To do the same task via the “Command Prompt” you would only need to do the following.

Open the “Command Prompt” from the Accessories menu, type in “ipconfig” and hit “Enter” on your keyboard.



```
Command Prompt
Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

C:\Users\User>ipconfig

Windows IP Configuration

Ethernet adapter Local Area Connection:

    Connection-specific DNS Suffix  . : BigPond
    Link-local IPv6 Address . . . . . : fe80::e0cb:5b9:2eb5:918d%11
    IPv4 Address. . . . . : 10.0.0.2
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : 10.0.0.138

Tunnel adapter isatap.BigPond:

    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix  . : BigPond

Tunnel adapter Teredo Tunneling Pseudo-Interface:

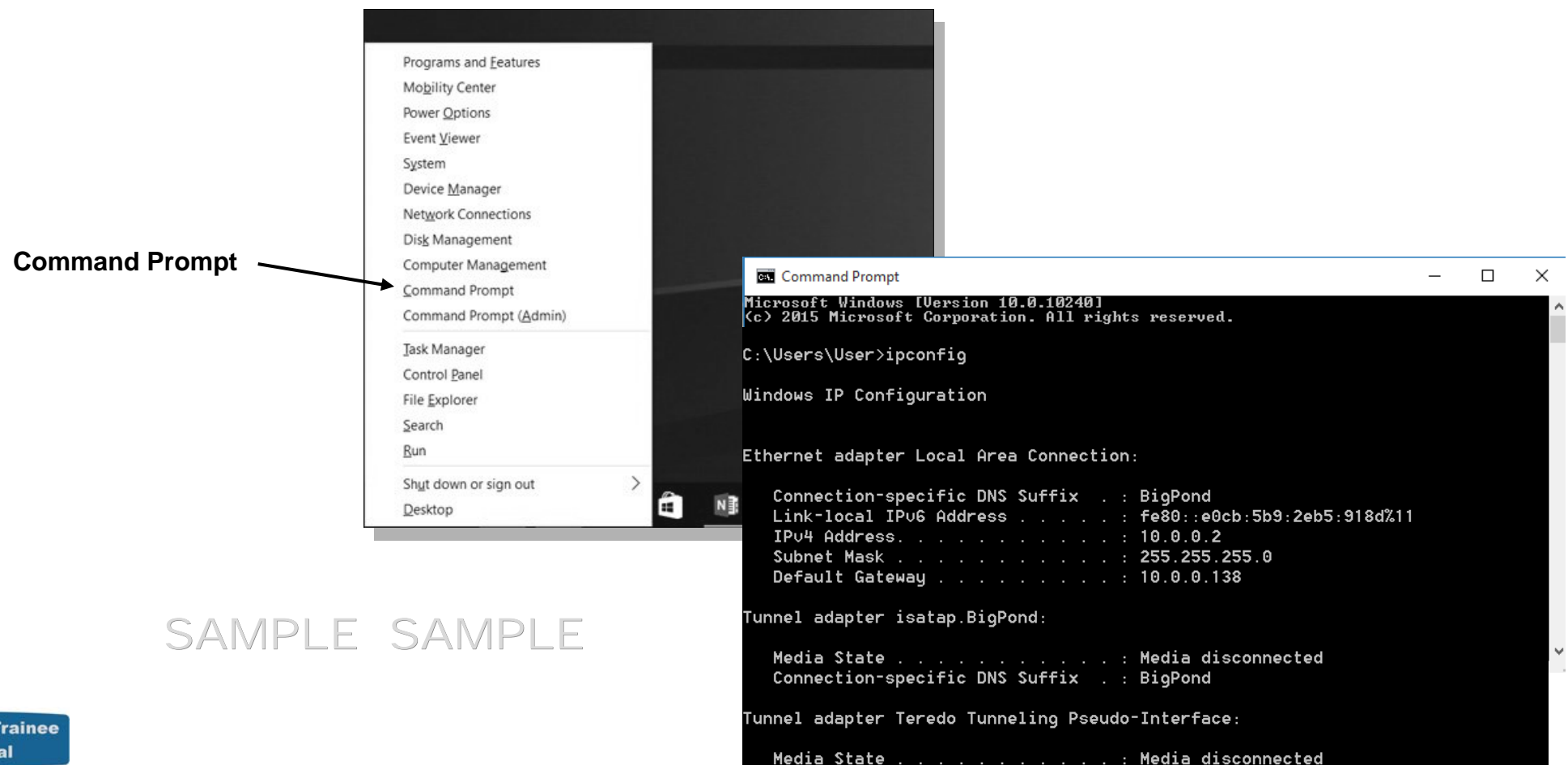
    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix  . :
```

This command will give you the IP Address and other useful information required when networking computers.

COMMAND PROMPT IN WINDOWS 10

Windows 10 also has the Windows Command Prompt interface. It is much the same as in Windows 7. To locate the Command Prompt in Windows 10 you go to “Start” button and **right click** on the “Start” button icon.

A menu will come up and you click on “Command Prompt”. Type in “ipconfig” and hit “Enter” on your keyboard. This command will give you the IP Address and other useful information required when networking computers.



SAMPLE SAMPLE

**Learning
Activity**

Question

LEARNING ACTIVITY FOURTEEN

What is a Command Line Interface?

SAMPLE SAMPLE

**Learning
Activity**

Task

LEARNING ACTIVITY FIFTEEN

In this Section we showed you an example of how to use the Command Prompt. Using the same example in this Section, we want you to try it on your PC.

This activity should be done in front of your teacher or trainer. If you are doing this at work or at home, you will need someone to observe you performing this activity. These persons observing you doing this activity will need to have the skills themselves to do this activity so that they can confidently say you have performed this activity successfully.

Your teacher or trainer will likely require some type of evidence that you have performed this activity successfully and your teacher or trainer will let you know what form this evidence will need to be.

INSTALL OR UPGRADE APPLICATION SOFTWARE ONTO THE OPERATING SYSTEM AND HARDWARE CONFIGURATION

(The following content refers to both Windows 7 and Windows 10)

Once your operating system and internal hardware has been installed, you can start installing 'software' to allow your PC to perform a variety of functions. The example we will use is "Microsoft Office", as it is one of the most common programs used at home or in offices. We will be focussing on a DVD installation, however today a lot of the application software is now download.

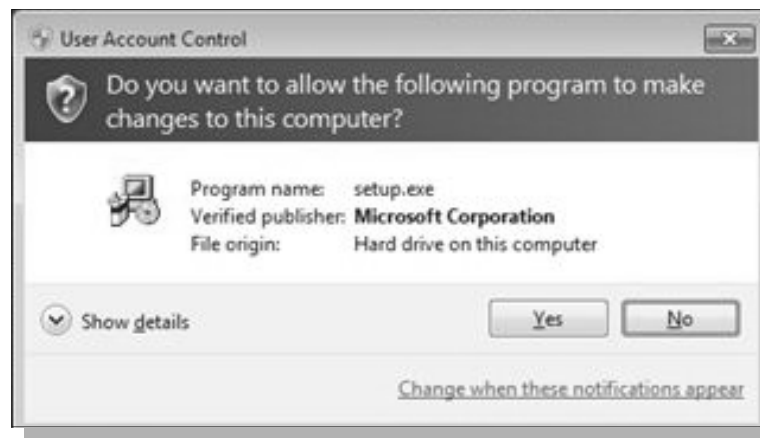
The overall installing process is the same between the two methods except for the initial steps. We will identify those small differences as we go along.

To begin the installation process, insert the DVD that contains the program or download the program from the web.

In most cases when inserting a DVD, Windows 7 and Windows 10 will run "AutoRun" which starts the installation process. If "AutoRun" does not start the process, you located the DVD on the DVD drive in the Windows 7 "Computer" tab or Windows 10 File Explorer in the file navigation pane and click on the DVD drive to start the process.

When you purchase the application software online, the software is generally downloaded to you PC's "Download" folder. The location of your "Download" folder depends on the type of internet browser you are using. Once you have located the file you **double click** on the application file as you would when the files appeared on the DVD.

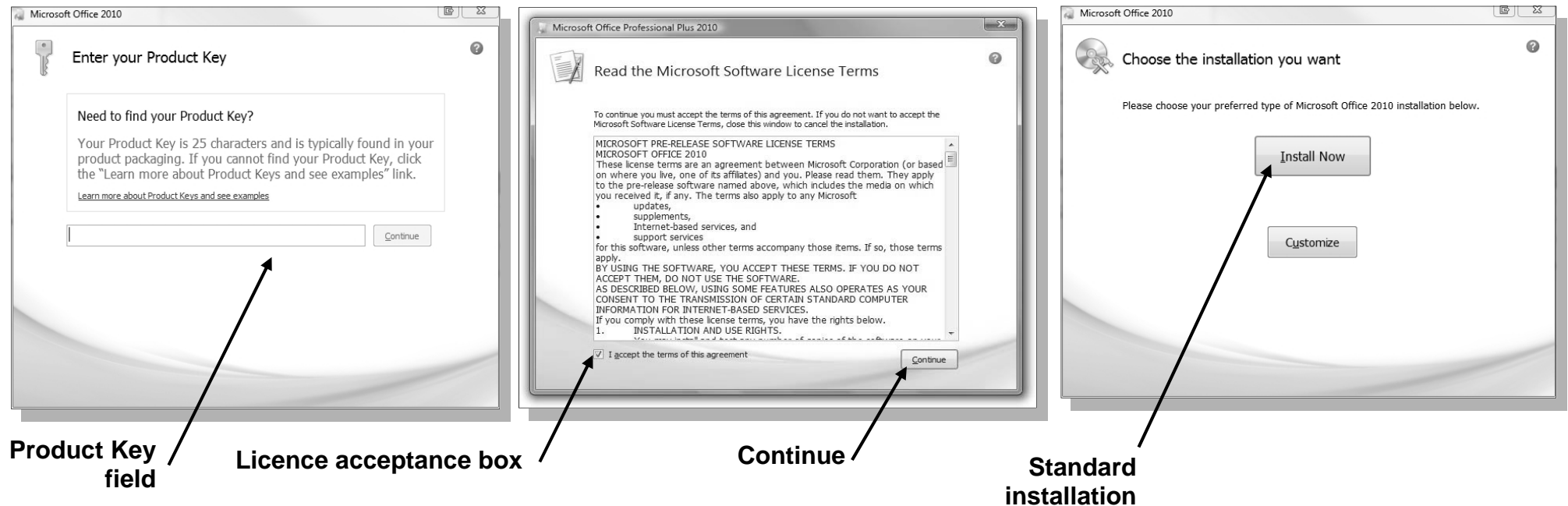
When the installation wizard is about to start the installation, a warning window appears. To start the installation you simply click "Yes".



After double clicking on the application files (it is called a program execute file “.exe”) the installation process starts. Most programs will have some kind of ‘licence/key code’ that you will need to input, this code is designed to stop people pirating programs. ‘Pirating’ refers to the installation of non-licenced copies of the software. The product key is generally on the DVD case or if you have downloaded the software it would have been sent to your email. When you enter the licence/key code the software will verify this code against a database via the internet, to ensure that the copy you have is legitimate.

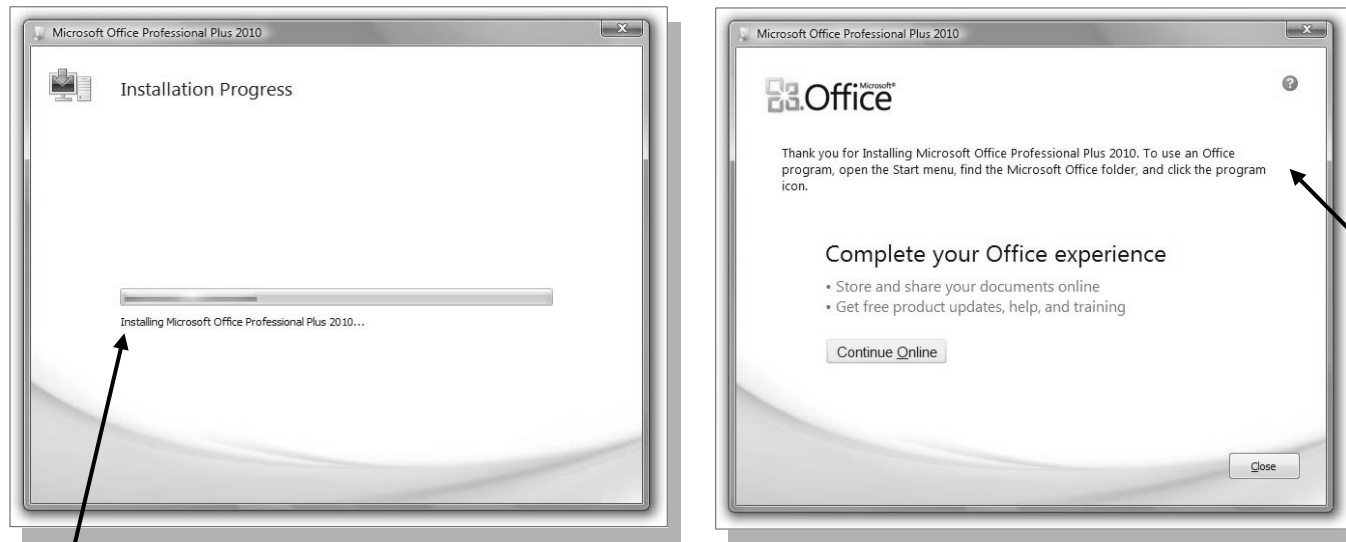
Once the software has been activated you are asked to read and accept the software licence agreement by ticking “I accept...” box and then click on “Continue”.

The program will then allow you to install a standard version of the software with the most common features or a customised version which allows you to choose what features you wish to be installed. It is advisable to install the standard version of software, unless you are experienced with the program and its operations.



A new window appears showing the progress of the software installation. Once the installation is completed a new window appears and asks you to go to your programs folder and open the Microsoft Office folder.

This is often required by most application software installs. When you do this you are launching the new application for the first time and this is when you configure the application to suit your needs. The most common configuration is the installing of shortcuts. With Microsoft office there are numerous sub-applications such as Word, Excel, PowerPoint and so on so having shortcuts allows you quick access to each application.



Installation progress

Application shortcuts



**Learning
Activity**

Task

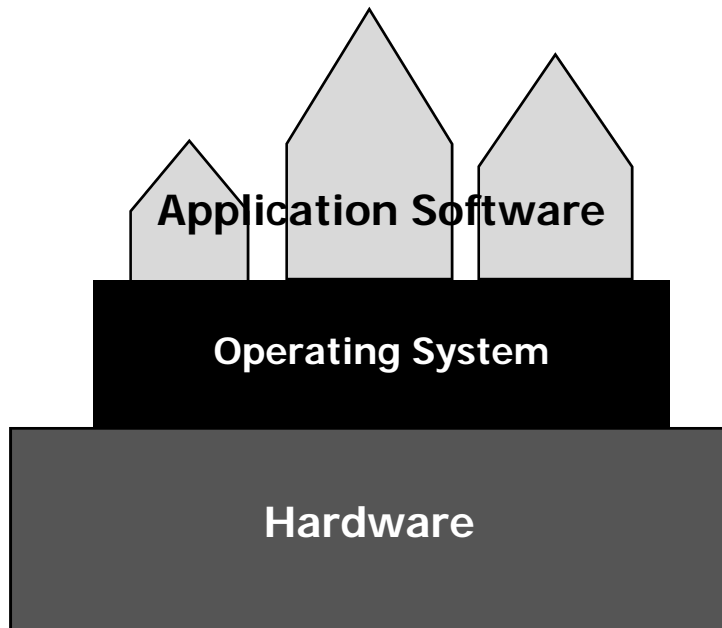
LEARNING ACTIVITY SIXTEEN

In this activity we are going to get you to download and install an application called “GIMP”. This is a freeware application similar to Photoshop and it is a safe download.

Locate the GIMP website and download the software using the direct method. Once downloaded (the file will likely be in your download folder of your browser), proceed to install the application.

This activity should be done in front of your teacher or trainer. If you are doing this at work or at home, you will need someone to observe you performing this activity. These persons observing you doing this activity will need to have the skills themselves to do this activity so that they can confidently say you have performed this activity successfully.

Your teacher or trainer will likely require some type of evidence that you have performed this activity successfully and your teacher or trainer will let you know what form this evidence will need to be.



DETERMINE THE RELATIONSHIP BETWEEN AN APPLICATION PROGRAM, THE OPERATING SYSTEM AND HARDWARE

During recent years there has been some outstanding advances made in the development of IT hardware. Hardware has become faster, more compact and much more affordable.

However, hardware is basically useless without software. IT hardware without software is like a car without a driver.

The term software can be simply described as a set of instructions given to a computer or computer/chip devices by the user or embedded by the manufacturer.

There are two basic types of software:

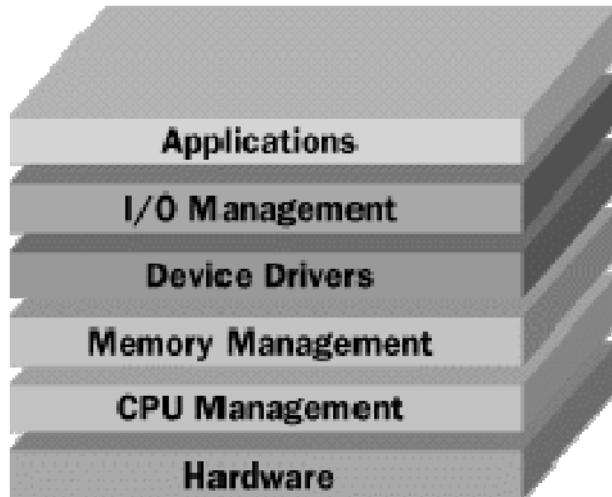
- ☆ Operating system software
- ☆ Application software

Operating system software controls the hardware and interacts with and controls other software.

Application software carries out the processing tasks

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SAMPLE SAMPLE



OPERATING SYSTEM SOFTWARE

Earlier we had learned about the types of operating systems and how to install operating systems.

As a review we know that the operating system has two main functions which are it controls the operation of all hardware and peripherals and it also interacts and controls all application software.

Some of the tasks that operating systems software performs include:

- ☆ Starting application software
- ☆ Supervises multiple applications running at the same time
- ☆ Manages the storage of programs, data and information
- ☆ Manages the various input and output devices
- ☆ Transfer of data, programs and information between the internal memory and the secondary storage devices.
- ☆ Where there are multiple users on a computer system, the operating system allocates memory and processing time
- ☆ Provides basic security for users and to the system as a whole



APPLICATION SOFTWARE

There is an endless amount of application software available today. It has been said that a person can name any type of human activity and there will be an “application software package” written to perform that activity.

There are two types of application software:

- ☆ Off the shelf applications
- ☆ Custom applications

Off the shelf application software is commonly known by its acronym COTS - Short for commercial off-the-shelf, an adjective that describes software (as well as hardware) products that are ready-made and available for sale to the general public. For example, Microsoft Office is a COTS product that is a packaged software solution for businesses. COTS products are designed to be implemented or integrated easily into existing computers such as PCs without the need for customisation.

In some businesses or organisations the needs require application software to be developed specifically for that company. This can be done through the customisation of COTS or a fully developed software package. Within the IT industry there is a thriving business segment of contract software developers and programmers.





PERIPHERALS

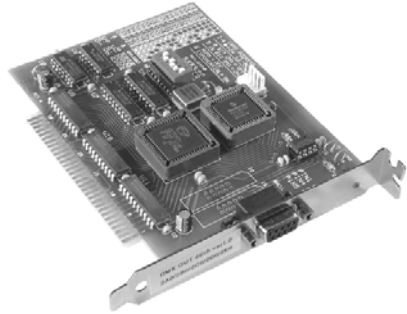
A peripheral is a computer device that is not part of the main computer system unit. In other words it is any device that is not part of the motherboard, aside from memory and the CPU. These devices enable the main computer system to receive inputted data to be processed and give the main computer system the ability to output the processed information. It also allows the main computer to store data and information for later retrieval and use.

There are two main types of peripherals:

- ☆ External devices – outside of the system case and attached with cables
- ☆ Internal devices – installed permanently inside the system case

External devices include:

- ☆ Keyboard
- ☆ Computer Tablets
- ☆ Monitor
- ☆ Mouse
- ☆ Printer
- ☆ Scanner
- ☆ Speakers/Headsets
- ☆ Microphones
- ☆ Docking stations
- ☆ Joy Sticks (not common in office environments)
- ☆ Cameras



Internal devices would include:

- ☆ Video Cards
- ☆ Sound Cards
- ☆ Network Cards

There are also peripheral devices that can be either internal or external devices. These would include:

- ☆ Hard Drives
- ☆ CD/DVD Drives
- ☆ Modems



SAMPLE SAMPLE

**Learning
Activity**

Question

LEARNING ACTIVITY SEVENTEEN

What is the difference between operating system software and application software?

SAMPLE SAMPLE

**Learning
Activity**

Question

LEARNING ACTIVITY EIGHTEEN

What are some examples of internal computer peripherals?

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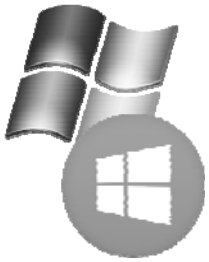
**Learning
Activity**

Question

LEARNING ACTIVITY NINETEEN

When referring to application software, what does the term COTS mean?

SAMPLE SAMPLE



Mac OS X

UNIX

SAMPLE

IDENTIFY GENERAL DIFFERENCES BETWEEN DIFFERENT COMPUTER PLATFORMS AND THEIR RESPECTIVE OPERATING SYSTEMS

In simple terms that all would understand, the two most common PC platforms are the Windows platform and the Apple Macintosh platform. These platforms use their own type of operating systems which we have learned about earlier...for Windows it is lately Windows 7 and recently Windows 10 and for Apple Macintosh it is MAC OS-X.

So to completely define a computer platform is to have hardware such as a PC or laptop, with it is operating system which acts as an interface between the computer and the user and also between the computer and the application. So, in order to have a functional device, you need hardware and an operating system together to make a usable computer platform for a program to run on.

Interestingly, all Smartphones, tablets and gaming consoles have their own platforms. For instance most Smartphones are either a iOS platform (Apple) or Android platforms most other Smartphones.

There are other computer platforms and these are generally developed for large computer systems many that use the UNIX operating system.

UNIX is the oldest operating system software and due to its portability, flexibility and power, UNIX has become the leading operating system for large networks with multiple workstations (users). Historically, it has been less popular in the personal computer market but the emergence of a new version called Linux is starting to make UNIX popular across all platforms.

The latest version the MAC OS-X is actually a version of UNIX adapted to operate on Macintosh hardware.

CROSS PLATFORM

You will more and more these days that applications are becoming cross-platform. Historically, application software would only work on a Windows platform or a MAC platform Today more and more applications are being developed as cross platform which means they can be used on either or both a MAC PC and a Windows PC.

This becomes increasingly important when the output (say a document file) from one platform needs to be opened or read by a different platform.

**Learning
Activity**

Question

LEARNING ACTIVITY TWENTY

What were the three main computer platforms we reviewed in this Section?

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SAMPLE SAMPLE

**Learning
Activity**

Task

LEARNING ACTIVITY TWENTY ONE

What were the two main computer platforms used for Smartphones, tablets and other digital devices?

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SAMPLE SAMPLE

Section Three

Optimise Operating System and Hardware Components

SAMPLE SAMPLE

SELF ASSESSMENT

Self assessment is where you ask yourself certain questions to ensure you have understood what you have learned while reading this manual and completing the learning activities.

This unit requires you the student or trainee at the completion of your training to have a certain level of 'Required Knowledge' in which you would be need to have acquired and in which you will be assessed on.

This self assessment section reviews this required knowledge by way of questions and if you are able to say YES to all of them you can be confident your assessment will be satisfactory.

- ☆ Do you understand what it means to determine ICT organisational requirements and specifications?
- ☆ Are you familiar with he many types of operating systems?
- ☆ Are you able to tell us the types of external hardware components and internal hardware components?
- ☆ Could you now tell us how to install and configure the operating system to meet organisational requirements?
- ☆ Can you list the functions associated with the operating system and associated boot process
- ☆ Do you know why a PC has power management systems?
- ☆ Do you know what the graphical user interface and the command line interface is?
- ☆ Would you be able to explain how to install or upgrade application software?
- ☆ Do you know what the relationship between an application program, the operating system and hardware is?
- ☆ Could you identify general differences between different computer platforms and their respective operating systems?
- ☆ Do you know what it means to optimise operating system, using included tools or third-party utilities?
- ☆ Can you explain how you would customise the graphical user interface?
- ☆ Are you able to explain the steps to set up and configure external hardware components and check functionality?
- ☆ Could you tell us how to install drivers as appropriate and check functionality?

If there were any questions that you were unable to confidently say YES to, we encourage you to review the information again in this manual and if needed seek the assistance of your teacher or trainer.