ICT Level 2 – Software Part 1 – Software and Operating Systems

1 of 19 – Welcome

Welcome to this session on software and operating systems.

By the end of this session you will:

* Understand what is meant by off-the-shelf software
* Understand what is meant by custom-made software
* Know what an operating system is
* Know what the different features of an operating system are

2 of 19 – Introduction to software

**What is software?**

Computer systems would not be able to get up and running – whether it is for research, gaming, or even writing an essay – if they did not have software.

Software is the term that covers all manner of programs that can be installed, or updated, to your computer system. It can be used to help operate the machine, or even to adapt a computer so it is better prepared to complete different tasks.

Different types of software can perform different jobs, and so it is important to know what your software is actually doing for your computer before you make any changes or updates to it.

3 of 19 – Different types of software

Software – meaning a program that can run on a computer – is what tells a computer system which parts are needed, and which instructions must be completed, in order for a program to run.

When a program is started up, it sets off a chain of operations in the computer system itself, alerting different internal components to the processes that need to be completed.

While software might seem like quite a broad term, it can be further broken down into two different types:

* Off-the-shelf software
* Custom-made software

4 of 19 – Off-the-self software

Off-the-shelf software are programs that are already built and available for computer users to purchase and install.

Given that this software is not designed for one particular individual, it is often much cheaper than custom-made software and it is also easy to purchase, meaning many technology retailers will have this sort of software in stock on a day-to-day basis.

Another benefit of using off-the-shelf software is how well it has been tested, prior to it being released. This software is often bug-free, and it comes with huge amounts of information on how to use it – both on the internet, and in different support manuals – which can also make it easier to use.

5 of 19 – Custom-made software

Custom-made software is something that is made to order, typically with a specific need in mind.

Custom-made software – sometimes referred to as bespoke – usually take weeks but can sometimes take months to be written and developed, meaning that there is a much longer wait for this than with off-the-shelf alternatives.

While it is useful to design software for a specific purpose or need, it should also be remembered that this type of software does not go through the same amount of testing or safety checks that ready-made programs do.

Custom-made software can be useful for solving specific technology problems, though. Some companies will design software with a certain problem in mind – for example, speeding up a machine-operated production line – and use the software to target that issue.

6 of 19 – Question 1

Using the following choice of words; **specific task**, **programs**, **well-tested**, **custom**, **Adobe Photoshop**, **the-shelf**, **designed** and **two**, fill in the blanks for the paragraph below:

Software is a term that covers the different **blank** that are available on your computer. Software can be used generally to help the machine operate, or it might be used for a **blank** or purpose. There are **blank** different types of software that computer users can purchase and install: off-**blank** software, for example **blank**, and **blank**-made software. Both software types have their benefits and disadvantages; one is readily available and **blank** by companies, but the other is **blank** to a user’s specific needs.

The correct paragraph should read:

Software is a term that covers the different **programs** that are available on your computer. Software can be used generally to help the machine operate, or it might be used for a **specific task** or purpose. There are **two** different types of software that computer users can purchase and install: off-**the-shelf** software, for example **Adobe Photoshop**, and **custom**-made software. Both software types have their benefits and disadvantages; one is readily available and **well-tested** by companies, but the other is **designed** to a user’s specific needs.

7 of 19 – Question 2

What are the disadvantages of buying custom-made software?

Choose all that apply:

1. It takes a long time to develop
2. It is better designed that off-the-shelf software
3. It does not go through as many safety checks
4. It is generally quite easy to purchase

The correct answers are A and C, it takes a long time to develop and it does not go through as many safety checks.

8 of 19 – Introduction to operating systems

An operating system is a type of software that performs a number of roles within a computer system.

The operating system of a computer will perform a number of different functions, but its main aim overall is to ensure that the hardware and the programs that are currently running, or being used, are operating in line with the user (or rather, the instructions that have been input by a user).

You can think of the operating system as the program that manages other programs. The three most popular operating systems for computers at the moment are:

* Microsoft Windows
* Max OS X
* Linux

9 of 19 – What are functions of an operating system?

The functions of an operating system are:

* **File management** – the operating system will monitor your files, including the functions of renaming, editing, or deleting them
* **Hardware management** – the operating system will make sure that the necessary programs are loaded to complete certain tasks and instructions, and it will make sure these programs have what they need to run properly
* **Distributing resources** – not only does the operating system make sure the right programs are loaded, but it also makes sure that the individual programs have what they need to run smoothly. The operating system might achieve this by directing mouse inputs to certain software, for example
* **Security management** – the operating system is particularly useful for taking your computer back to an earlier state – if, for example, a program crashes and needs to be restored. It can also limit or distribute access to data, which is particularly useful if a computer has more than one user

10 of 19 – Utility applications

Inside an operating system you may find a number of utility applications – these are small additions to the operating system that help it to run a little more smoothly. Common examples of utility applications are:

* **Disk defragmenters** – these allow a computer’s hard drive to run more quickly, by re-distributing files. When one file is deleted it creates a space that can be replaced by another; the disk defragmenter will ensure that files go to the right sized spaces – or, if a file is too big, the defragmenter can fragment the file into a space that it will fit into
* **Firewalls** – this software is designed to prevent online traffic getting into your computer without your permission
* **Anti-virus programs** – these programs prevent your computer from obtaining any malware – remember: ‘malware’ covers all manner of computer bugs – and scan your computer at regular intervals to make sure that malware has not slipped through into the system

11 of 19 – User interface

User interface broadly refers to all of the different components within a computer that a user is likely to have some kind of interaction with. This might include things like the keyboard, the mouse, or the layout of a desktop. There are two main methods relied on for user-and-computer interactions:

* A **graphical user interface (GUI)** – this interface relies heavily on visuals and graphics that a user can interact with, such as windows, buttons, and different icons like those typically found on a computer’s desktop
* A **command line interface (CLI)** – this interface relies largely on written instructions, and it typically works by encouraging a user to write instructions down. This means that a user would type in their command, and the system would then somehow respond to this written instruction

12 of 19 – GUI versus CLI

In today’s technology, a graphical user interface is preferred over a command line interface for a number of reasons.

Mouse controls are easier now than they were in previous years. Because of this, users can navigate their way around a computer’s monitor without too much trouble at all – and the use of icons and drop-down menus in a graphic user interface will make navigation even easier. Icons also mean that it is easier to launch a program, or open a file, with a graphic user interface, too.

Graphic user interfaces also give users the option of a search bar, meaning that rather than hunting through documents, a user can input the name of a file and leave the operating system to do all of the searching instead.

Graphic user interfaces are also easier for people to access – they allow users to magnify screens and can even offer talking-document features, making it easier for more people to navigate their way around a computer.

Some computers can now even respond to voice commands, too!

While the command line interface was relied on by a lot of early technology systems, it is now thought to be a little outdated. It tends to be slower than modern alternatives and also requires more time investment from a user.

It is thought to be less accessible too, as some users may not be able to repeatedly type in different commands before completing a certain task or opening a folder.

13 of 19 – Operating systems and mobile devices

It is important to remember that operating systems are not only found in computers, but are found in other technology devices, too – namely, mobile devices.

Operating systems in mobile telephones, for example, are something that many users are now influenced by. The operating systems of mobile phones are designed with user interface in mind, making them as easy to navigate as possible, often asking for little time input from a user.

User interface in our most modern handsets has seen the introduction of touch screen technologies and voice control features, too.

However, while these features may seem standard to many users now, the companies behind these phones are constantly working to make sure that the operating systems in place are able to process these new pieces of software.

14 of 19 – Operating systems and mobile devices – continued

Mobile phones benefit from the same easy accessibility as computers do, due to the options for magnifying screens and speaking instructions. Similar features can be noted in other mobile devices as well, such as e-readers where screens can be backlit or magnified – alongside one or two other useful features – to make user experience even easier.

There are a number of operating systems available for mobile phones now as well, such as:

* Android
* iOS
* Windows Mobile

15 of 19 – Question 3

What are the four key functions of an operating system?

Choose all that apply:

1. File management
2. Hardware management
3. Firewall management
4. Security management
5. Distributing resources
6. Monitoring for malware

The correct answers are A, B, D and E, file management, hardware management, security management and distributing resources.

16 of 19 – Question 4

Indicate whether the following statements are true or false.

Utility applications are small additions to an operating system that help it to run more smoothly.

True

False

The correct answer is: True

Software firewalls can be used to track a user’s online activity.

True

False

The correct answer is: False

User interface is concerned with the different computer components that a user will have contact with.

True

False

The correct answer is: True

Command line interface is the most popular type of interface used in modern technologies.

True

False

The correct answer is: False

17 of 19 – Question 5

Computer systems and mobile phones have their own operating systems.

Categorise the operating systems below according to if they belong to **computer systems** or **mobile phones**.

Microsoft Windows

Android

Windows Mobile

Mac OS X

iOS

Linux

The correct answers are:

Microsoft Windows, Mac OS X and Linux are operating systems that belong to **computer systems**.

Android, Windows Mobile and iOS are operating systems that belong to **mobile phones**.

18 of 19 – End

Well done. You have completed this session on software and operating systems.

In this session we have covered:

* What is meant by off-the-shelf software
* What is meant by custom-made software
* What an operating system is
* What the different features of an operating system are

If you have any questions about any of these topics, make a note and speak to your tutor for more help.