ICT – Revision Session 1

1 of 21 – Welcome

Welcome to this revision session. In this session we are going to revisit key ideas and information from previous sessions.

By the end of this session, you will be able to:

* Understand how technology systems are used in different sectors
* Know how technology systems are developed
* Know examples of several hardware devices
* Understand what is meant by automated systems
* Know examples of a number of data-storing devices

2 of 21 – What is meant by technology systems?

It is important to remember that technology systems is a broad term – meaning it can cover lots of areas in computing.

Generally though, technology systems refer to the ways in which computer systems are organised, usually with a specific aim or performance requirement in mind.

This is why we have multiple technology systems – and why we need to know about more than just computers – because all technology systems are designed to cater to a certain user need.

3 of 21 – Different sectors

If you think back to some of the earliest sessions, you might remember talk of different sectors, and how they all use different technology systems for different reasons – meaning, their systems are likely to perform different jobs to each other.

Some sectors worth remembering are:

* The financial sector
* The health sector
* The manufacturing sector
* The retail sector

Each sector will use technology systems for different reasons. For example, the financial sector might have special systems that are designed to help users monitor changes in the financial market, or perhaps to calculate the effects of changes in the financial market.

4 of 21 – How are sectors using their systems?

Each sector will be getting something different from their system, so while the financial sector is monitoring the market:

* The **health sector** is using technology systems for investigative procedures – like MRI scans, for example – and for supportive machines, too (i.e. systems that will help patients to breathe, for example)
* The **manufacturing sector** is using technology systems in order to design and manufacture different parts – Computer Aided Design (CAD) and Computer Aided Manufacture (CAM) are very important systems in this sector
* The **retail sector** is using technology systems for a growing number of tasks, such as tracking and monitoring sales and stock levels, advertising and selling their products online, alongside one or two other new technology systems, too (we will look at these in more detail later)

5 of 21 – Advantages of using these systems

Even though each technology system caters for a different need or purpose, the advantages to using these systems are fairly similar across all of the different sectors.

Sectors can expect:

* Their day-to-day operations to be easier and faster
* Their services will also be faster for customers
* Their stocks, sales, and finances will be easier to monitor
* Their product design and development will be more accurate

6 of 21 – Developing new technology systems

There are lots of reasons why a sector, or an individual company, might look into developing a new technology system. It might be that they have a specific need that their existing system cannot meet, or it might be that they are planning something new and experimental which their current system is a little outdated for. Whatever the specific reason, there are three general reasons that often explain developing new technology systems:

* A company is trying to gain a competitive advantage over another company
* A company is looking to reduce their costs and expenses
* A company is looking to improve their current planning processes and performance rates

7 of 21 – Disadvantages of using these systems

While technology systems, old and new, have a number of advantages, there are also one or two disadvantages that have to be remembered as well. Such as:

* While these systems might be developed and well-tested, they can still be vulnerable to cyber-attacks or corruption, and so computer security is something that needs to be carefully monitored
* There might be health and safety concerns that have to be addressed, including whether the system meets regulations for electrical equipment, and whether staff have been properly trained to use these new systems
* A company might have to consider environmental issues – a bigger and more powerful technology system will require more electricity and generate more heat, which might be problematic in the long-term

There may be one or two ethical issues – such as people losing their jobs – to consider, too.

8 of 21 – Question 1

Categorise the examples and tasks below according to their sectors, either **financial**, **retail** or **health**.

Supportive machines

Monitoring the market

Performing calculations

Tracking sales

Investigative procedures

Advertising online

Selling online

The correct answers are:

Monitoring the market and performing calculations are tasks performed within the **financial** sector.

Tracking sales, advertising online and selling online are tasks performed within the **retail** sector.

Supportive machines and investigative procedures are examples and tasks performed within the **health** sector.

9 of 21 – Question 2

Indicate whether the following statements are true or false.

An advantage of using technology systems is that they make day-to-day operations faster and easier.

True

False

The correct answer is: True

An advantage of using technology systems is that they are not vulnerable to security attacks.

True

False

The correct answer is: False

A company might develop a new technology system to gain a competitive edge over other companies.

True

False

The correct answer is: True

Technology systems can damage the accuracy of product design and planning.

True

False

The correct answer is: False

10 of 21 – Hardware devices

In talk of technology systems, different types of hardware devices are never too far away. Hardware, meaning any physical instrument that makes up part of a technology system, and device, meaning a mechanical or electrical something made for a specific purpose. Some of the most common examples of hardware devices are:

* Personal computers (PCs) and laptops
* Programmable digital devices
* Games consoles and tablets
* Servers

You will find these devices in large companies, but you will also find them in schools, colleges, and at home as well.

11 of 21 – Hardware devices and their jobs

It is important to remember that each hardware device will have its own strengths and weaknesses. For example a personal computer can provide speed, power, and huge amounts of memory storage, but it cannot be moved around – unlike a laptop, which offers many of the same key elements, but with added mobility, too. Tablets are now also particularly useful for computing on the go as well.

While these devices are useful in their own ways, they perform very different jobs to those expected of a server. Remember: a server can be thought of as a large and powerful computer system. It acts as a central hub, or space, in the middle of other computer systems. This central server can then control the entire network (this is the space that the other computers are connected to).

12 of 21 – Hardware devices and their jobs 2

There are other hardware devices – smaller ones, mostly – that can be used alongside larger systems, and these smaller devices are typically used for inputting (putting data into a computer system) and outputting (receiving data from a computer system).

So a microphone, keyboard, scanner, or mouse might be used for inputting, as all of these devices allow information or commands to be delivered to the system.

On the other hand, speakers, printers, screens, and force feedback devices might be used for outputting, as these devices will deliver data from the computer system to the user.

**Remember:** force feedback devices are things that provide a user with touch output. If you’re using a games controller, for example, and your character crashes into something which causes a vibration, that vibration would be an example of touch output.

13 of 21 – Automated systems

Automated systems are technology systems that work on a larger scale – so they are exclusively found inside businesses, rather than in schools and homes.

The main purposes of automated systems are:

* To perform an activity, or a number of activities, in place of human beings
* To monitor activities and performance rates

Catering to these jobs exactly, two common examples of automated systems are:

* The self-service checkout
* The automated production line

These two automated systems have been particularly useful for the retail sector, and the manufacturing sector.

14 of 21 – Self-service checkouts and production lines

Self-service checkouts are an example of a new technology system developed with the retail sector in mind.

Through a number of input devices (such as scales and barcode and card scanners) and a number of output devices (such as a printer and a money distributor), a technology system has been made that is both fast and efficient for the customer, but is also saving money for the company overall – as the company no longer has to pay human employees to work on the checkout.

The production line works in a similar way to this as it also has a number of input and output devices that help this automated system to develop and piece together products. Not only is this more time-efficient for the company, but it is often considered to be a safer alternative too, as some production lines will handle large and heavy parts that would be difficult for a human to work with.

15 of 21 – Other data-saving devices

While automated technology systems rely on data input and output in a unique and specific way, there are one or two other day-to-day devices that are particularly useful for storing data, such as:

**Magnetic strip readers**

Magnetic strips, which are often found on the backs of credit cards or loyalty cards, for example, are used to store data that is specific to the individual who owns the card. This data can then be securely read by insertion readers (where the card must be fully inserted into the machine) and swipe readers (where the card must be passed, or swiped, through the machine).

**Optical character readers (OCR) and Optical mark readers (OMR)**

Optical character readers allow a printed text to be scanned into a computer system, in order for a digital copy to be made. Optical mark readers work in a similar fashion, but they can process pen and pencil marks. These two devices can read any data set and then safely transcribe and store it in a computer system.

**Radio frequency identification systems**

This term refers to an entirely wireless system that works by attaching a tag – this might be a barcode, or a smart label – to a certain object. Radio waves can then track the object that the tag has been attached to and send this data back to the tag’s point of origin (meaning, wherever the tag was applied).

A particularly useful technology system, this device is often used for:

* Tagging merchandise, such as books or CDs
* Tagging luggage, specifically in airports and during flights
* Tagging animals, so should a pet become lost their whereabouts can still be identified

16 of 21 – Question 3

What is a server?

1. An example of an automated system
2. A central hub computer that controls a network
3. A powerful type of laptop
4. A computer that is connected to a network

The correct answer is B, a central hub computer that controls a network.

17 of 21 – Question 4

What devices might you use for data inputting?

Choose all that apply:

1. Screen
2. Mouse
3. Keyboard
4. Printer
5. Microphone
6. Speakers

The correct answers are B, C and E, mouse, keyboard and microphone.

18 of 21 – Question 5

Using the following choice of words; **time-efficient**, **technology**, **self-service**, **monitor** and **running costs**, fill in the blanks for the paragraph below:

Automated systems are **blank** systems that are usually created with one of two key reasons in mind: they can complete a certain task in place of human beings, or they can **blank** activities and performance rates. Automated systems are often more **blank** for a customer and more cost-effective for a business, as they can work at a faster pace while also reducing **blank**. The **blank** checkout is a popular example of an automated system in the retail sector; this system reduces company costs as there is less need for paid staff on the checkout systems.

The correct paragraph should read:

Automated systems are **technology** systems that are usually created with one of two key reasons in mind: they can complete a certain task in place of human beings, or they can **monitor** activities and performance rates. Automated systems are often more **time-efficient** for a customer and more cost-effective for a business, as they can work at a faster pace while also reducing **running costs**. The **self-service** checkout is a popular example of an automated system in the retail sector; this system reduces company costs as there is less need for paid staff on the checkout systems.

19 of 21 – Question 6

Match these data-saving devices; **magnetic strip readers**, **optical character readers** and **optical mark** **readers**, to the definitions below:

1. Written data, i.e. a text document, can be scanned into a computer system in order for a digital copy to be made
2. Data is stored on a strip, found on the back of a card, and when inserted into or swiped through the correct reader this stored data can be securely shared
3. Data that is written in either pen or pencil can be read and understood by a reader, which then makes a duplicate copy of the data on the computer system

The correct answers are:

Data is stored on a strip, found on the back of a card, and when inserted into or swiped through the correct reader this stored data can be securely shared is a definition of **magnetic strip readers**.

Written data, i.e. a text document, can be scanned into a computer system in order for a digital copy to be made is a definition of **optical character readers**.

Data that is written in either pen or pencil can be read and understood by a reader, which then makes a duplicate copy of the data on the computer system is a definition of **optical mark readers**.

20 of 21 – End

Well done. You have completed this session on revision (part 1).

In this session we have covered:

* How technology systems are used in different sectors
* How technology systems are developed
* Examples of several hardware devices
* What is meant by automated systems
* Examples of a number of data-storing devices

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