Digital Devices 1

Information Technology Systems Function & Use of Digital Devices Digital Devices 1

A digital device is a piece of physical equipment that uses digital data, such as by sending, receiving, storing or processing it.

We rely on them in our personal and work lives for all sorts of reasons. This could be for getting directions, doing our shopping, entertaining ourselves, managing our business stock and finances, or a great many other reasons.

In this lesson, we'll look at the features and uses some of the different types of digital devices, such as:

Personal Computers

Servers

Mobile Devices

Entertainment Systems

Navigation Systems

Media Attachments:

Presentation

Video

1. Personal Computers

Personal Computers

A general purpose computing device that is small and cheap enough for it to be used by individuals.

These types of digital devices are capable of performing most common computing tasks. That's why we refer to them as being 'general purpose'. By installing a new software application our computer becomes capable of performing a completely new function.

Personal computers contain individual processors, ram & hard disk components, along with expansion ports. This makes it very easy to upgrade our device to add additional capabilities, such as replacing the hard disk to add more storage or adding a graphics card to an expansion port to improve its graphics processing power.

Examples of personal computers include desktops & laptops.

Uses

Because personal computers are general purpose devices, they really have a wide range of functions. However, there are some particularly popular uses.

In the workplace, we often use them for word processing, desktop publishing, spreadsheets and database management systems. They're also popular for creative tasks, like graphics, music and film editing.

This is due to the wide availability of software, good processing capabilities and the range of available input devices. For example, a mobile device doesn't generally use a keyboard and so isn't as useful for word processing as a desktop or laptop.

In our personal lives, they're also commonly used for accessing the internet, such as surfing the web and email. These devices almost always come with networking capabilities which make them useful for this. They're also used for gaming, but this requires an expensive graphics card normally.

What type of personal computers do you use in school and at home?

Create a list of all the computers you use and what you use them for. Do you use different types of personal computer for different reasons?

2. Servers

Servers

A computer that manages access to different resources and services over a network.

Other devices, like personal computers, connect to the server via a range of means such as Ethernet cables & WiFi. This is how a network is formed. Depending on the type of server, other computers can then access the resources and services it is providing.

As a device, servers are actually very similar to personal computers. However, they commonly contain a larger storage capacity, higher processing power and larger amount of memory. Though not necessarily always.

Examples of servers include web servers, mail servers, file servers and print servers.

Uses

There are different types of servers and each has their own particular use to the business.

Web servers are used to manage access to web pages. The web server stores the web page and associated files. When a client computer makes a request for a web page to the server (by entering the web pages URL) the web server locates the correct files and then sends them back to the client.

In a similar way, mail servers manage access to email. When you write an email and press send on your personal computer, it first goes to your outgoing mail server. This mail server will then send it across the network to the recipient's mail server where it is stored in their mailbox. When the recipients log into their email client the mail server will forward the email to their computer.

File servers store your files, such as word processing documents and spreadsheets, so that you can access them from any computer on the network. When you hear the term 'cloud storage', this is an example of where your files are being stored on a file server, so you can access them from any computer by logging into your cloud storage account.

Finally, print servers are used to share access to a printer. By using a print server you can send your files to print from any computer on the network. This means you don't need to log into a specific computer to print or have a printer for every computer, which would be very expensive.

Do servers need to be more powerful than personal computers? Are they more expensive?

Look up how much a server can cost and how you could convert a personal computer into a server.

3. Mobile Devices

Mobile Devices

A computing device that is designed to be portable by being compact, light-weight and capable of running for extended periods on battery power. They're also almost always capable of connecting to the internet wirelessly, either through mobile broadband or WiFi.

One key feature that helps make the device more compact & reduces power consumption is System-on-a-Chip. This is where all the core components of the computer are integrated onto a single chip. This includes the CPU, GPU and RAM.

However, System-on-a-Chip does make it difficult to upgrade a mobile device as all the components are integrated on the chip. It's not like a laptop or PC where you can take out and replace individual components.

Examples of mobile devices include tablets and smartphones.

Uses

Mobile devices, especially smartphones, have become a massive part of people's lives and are used for all kinds of tasks. Like personal computers, they're general purpose devices, and so can turn their hand to most common computing tasks by installing different software applications, or 'apps'.

The most common use of mobile devices is to access the internet while on the go, such as for web browsing and email access. However, we use them for many other reasons too. Playing games and organisational functions like keeping a diary of events are popular functions we use on a regular basis.

However, as these devices almost always use a touchscreen as the sole input, this makes them not practical for tasks like word processing. Also, the limited processing capabilities make them not practical for graphically intensive tasks like high-end gaming and film editing.

How does System-on-a-Chip reduce the battery consumption and size of your mobile device?

Find out the answer to this question, as well as any disadvantages to System-on-a-Chip.

4. Entertainment Systems

Entertainment Systems

Computing devices that are designed to entertain, such as watching television, listening to music and playing video games.

They usually contain good hard disk storage for storing tv/films, music & games. They also commonly have built-in internet connectivity capabilities, such as WiFi, for downloading new media directly to them, as well as to access streaming and online gaming services.

Examples of entertainment systems include digital media players, mp3 players & video game consoles.

Uses

All these devices are used in the home for entertainment. However, this covers a wide range of devices each with their own use.

Digital media players allow us to stream digital media, such as films, tv, music and images from over a network. You may be familiar with devices like Apple TV & Roku. Portable media players are similar, except instead of streaming, we download the media to the device and play it off the devices hard disk.

MP3 players are used to access & listen to 1000s of music tracks on a small portable device. It is now common to have MP4 players which can also play video too. We might also use them to listen to podcasts or other forms of auditory media.

Video game consoles allow you to play video games. We can even use the internet to play games with and against other players from all around the world.

Can you think of any other entertainment systems you use at home?

Think about all the electronic devices you use in your personal time to entertain yourself. Are they digital devices?

5. Navigation Systems

Navigation Systems

This is a digital device that uses GPS (Global Positioning System) to provide a real-time map of our current location, as well as including route planning tools to give us directions to a chosen destination.

Often they also have added features, such as identifying traffic, roadworks and accidents that might delay your journey and take this into consideration to provide an accurate destination time.

An example of a navigation system is an in-car satnav.

Uses

In-car satnavs are commonly used instead of traditional maps to help direct you along the fastest route on your car journey. This can be integrated directly into the car's dashboard, but is often in a standalone device. TomTom is a popular brand for these.

Nowadays we often see navigation systems built into smartphones to be used when driving, walking, cycling & taking public transport. For many people, standalone satnav devices have been completely replaced by their smartphones.

A digital device is a piece of physical equipment that uses digital data.

Personal computers are general purpose computing devices like desktops and laptops. They're relatively small and inexpensive and are commonly used in the workplace for tasks like word processing, desktop publishing, etc. They're used at home for the web, email and gaming.

Servers are used to manage access to web pages, email, files & printers. They're similar to personal computers but usually contain more storage, faster processing, greater memory & an active network connection.

Mobile devices are digital devices that are designed to be portable by being compact, light-weight and running on battery power. They're most commonly used for internet access.

Entertainment systems are devices that are used purely for the purpose of entertainment, such as watching tv, listening to music & playing games. They usually have good storage & internet connectivity as well as a number of features specific to each device.

Navigation systems are devices that use GPS to locate you on a map and plan routes to a chosen destination. It is commonly used as an in-car satnav to plan your route while driving.