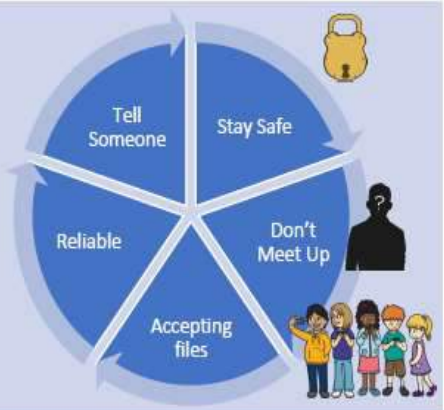
E-Safety

If you have any concerns or worries, please tell a trusted adult. You can also contact the police via www.ceop.police.uk/ceop-reporting/

What should I already know about keeping safe?



What should I already know about privacy?

- × Remember: we **never** share our full name with anyone online.
- × Things like where we live or where we go to school should **never** be shared with strangers.
- × Never share your passwords with other people.

- ✓ Ask a trusted adult to ensure your privacy settings are on so your location and profile are not public.
- ✓ Rather than use your name, use an alias (maybe your favourite cartoon character) for public profiles.

Privacy: Stay Safe. Be SMART!

Remember! The internet is never private. We need to protect our privacy.

Passwords

- ✓ A strong password helps keep your information private.
- ✓ Include: a mixture of lower case and upper case letters.
- ✓ Use numbers and symbols (@?£$@)
- × **Remember**! Don't share your password with others!
- × **Remember!** Don't use easy to guess words like your name.

Your data – your privacy

- ➢ **Be aware!** Websites and apps can collect and share information with other sites.
- ➢ **Be aware!** Many free apps may read and share private information (e.g. friends, contacts, likes, images, videos, voice, messages, geolocation) with others.
- ➢ **Be aware!** Information can be used to direct adverts to you.
- ➢ **Be aware!** Pop ups could direct you to inappropriate sites. Check the links.
- ➢ **Check!** Ask a trusted adult if you are asked about sharing your information.

Check your settings and check the website

- ✓ Use the settings within apps to increase privacy.
- ✓ Look at the address bar. Some browsers will show a padlock to show the site is secure.

Use a variety of strong passwords. Use a mixture of letters, numbers and symbols.

Stay safe! Check your privacy settings, use an alias and don't share personal information.

Never meet unknown people you have met online.

Be SMART: make sure you're safe with privacy settings ON and tell a trusted adult if you are worried.

E-Safety

Online bullying. Be SMART!

Tell someone! Tell an adult if someone or something makes you worried or uncomfortable.

- **Report the unkind actions** to a teacher or the Learning Mentor at school. We will investigate the report carefully.
- **E-mail us:** safeguarding@allsaintsfed.Derbyshire.sch.uk
- **Block the person** who is being unkind.
- Contact Childline: 0800 11 11
- Chat online to Childline: www.childline.org.uk

What should I already know about age restrictions?

App aware

Use Net Aware to check the age restrictions

Net Aware

13+

16+

Communicating: safely and kindly

NEW LEARNING! Scam e-mail and phishing inapp

- Nearly everyone has an **email address**. Email is a useful tool at home and in work but ***spam*** and junk mail can be a problem. ***Spam emails*** offer all kinds of things like money, prizes and very low prices for products that are normally very expensive. ***Check! Look before you click on any links!***
- Look out! Trying to trick someone into giving out information over email is called '***phishing***'. You might receive an email claiming to be from your bank or from a social networking site. They usually include a link to a fake website that looks identical to the real one. When you log in it sends your username and password to someone who will use it to access your real accounts.

What if I receive a scam or phishing e-mail?

- Forward it to report@phishing.gov.uk then delete the original e-mail. Tell a trusted adult.
- ***The National Cyber Security Centre can help with phishing.***

Have you spotted a suspicious email?

National Cyber Security Centre

If you have received an email which you're not quite sure about, forward it to the Suspicious Email Reporting Service (SERS):

report@phishing.gov.uk

The message might be from a company you don't normally receive communications from, or someone you do not know. You may just have a hunch. If you are suspicious, you should report it.
Your report of a phishing email will help us to act quickly, protecting many more people from being affected.

NEW LEARNING! Check before sharing!

It can be upsetting when others share words, pictures or videos of you, without your permission. They may be misinterpreted. This could be unkind.

- ***REMEMBER! Once content if shared online, it can be difficult to remove.***

× Do not share images or videos of others without their consent.
× Do not tag your friends into content unless you have their consent.

What should you do?

✓ Follow our online safety rules: be SMART!
✓ Capture bullying content as evidence (e.g screen-grab, URL, profile) to share with those who can help you.

What if you are concerned that an adult might be making inappropriate contact with you?

✓ Child Exploitation and Online Protection (CEOP) can help. Contact them immediately if you are concerned about inappropriate contact (i.e. being asked to send inappropriate images.).

Should I make a report to CEOP?

Binary & Denary Hexadecimal

KEY VOCABULARY	
Denary	Base 10 number system. Uses digits 0,1,2,3,4,5,6,7,8,9
Binary	Base 2 number system. Uses digits 0 and 1 only.
Hexadecimal (Hex)	Base 16 number system. Uses characters 0-9 and A,B,C,D,E and F

DENARY

Denary is the decimal number system that we are used to. It uses the numbers 0-9 and the column headings go up in powers of 10.

100 (Hundreds)	10 (Tens)	1 (Units)
2	3	8
2 lots of 100	3 lots of 10	8 lots of 1

BINARY

Binary uses the numbers 0 and 2. The column headings go up in power of 2:

128	64	32	16	8	4	2	1
0	1	0	0	0	1	1	1

64 + 4 + 2 + 1 = 71

HEXADECIMAL

Hexadecimal uses 0- F (A=10, B=11, C=12, D=13, E=14, F=15). The headings go up in powers of 16.

16	1
3	D
3 lots of 16	D (13) lots of 1

3* 16 = 48
D (13) * 1 = 13
48+13=61

To convert a binary number to Hexadecimal, split into 2:

8	4	2	1
0	0	1	1

= 3

8	4	2	1
1	1	0	1

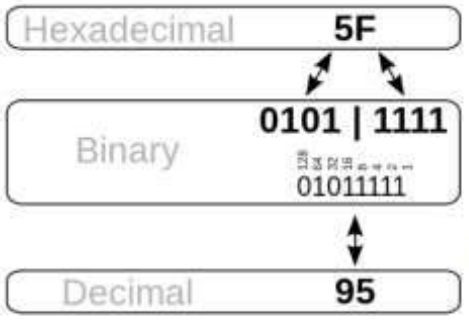
= D

UNITS OF DATA IN COMPUTER SYSTEMS		
UNIT	VALUE	SIZE
bit (b)	0 or 1	1/8 of a byte
nibble	4 bits	½ a byte (a nibble… get it?!)
byte (B)	8 bits	1 byte
kilobyte (kB)	1000^1 bytes	1,000 bytes
megabyte (mB)	1000^2 bytes	1,000,000 bytes
gigabyte (gB)	1000^3 bytes	1,000,000,000 bytes
terabyte (tB)	1000^4 bytes	1,000,000,000,000 bytes
petabyte (pB)	1000^5 bytes	1,000,000,000,000,000 bytes

BINARY PLACE VALUES								
BASE Exponent	2^7	2^6	2^5	2^4	2^3	2^2	2^1	2^0
PLACE VALUE	128	64	32	16	8	4	2	1

CONVERTING DENARY TO BINARY TO HEX

HEXADECIMAL	
DENARY	HEX
0-9	0-9
10	A
11	*B*
12	*C*
13	D
14	E
15	F



There are two methods for converting a HEX value to Denary

OR:

5F = (5x16) + **F**

5F = 80 + 15

5F = 95

Network hardware & Topologies

Network interface card (NIC)

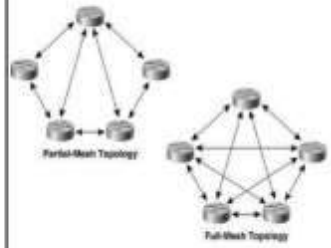
NICs enable desktop and laptop computers to connect to a network. NICs are small circuit boards that connect to the **motherboard**. **Smartphones** also use a **GSM** chip to connect to the telephone network. Games consoles contain a NIC card so users can access the internet, download games and play online.

Hubs

A hub broadcasts data to all devices on a network. This can use a lot of **bandwidth** as it results in unnecessary data being sent - not all computers might need to receive the data. A hub would be useful to link up a few games consoles for a local multiplayer game using a wired LAN.

A **switch** performs a similar role to a hub and a bridge but is more powerful. It stores the **MAC addresses** of devices on a network and filters **data packets** to see which devices have asked for them. This makes a switch more efficient when demand is high. If, for example, a game involved lots of data being passed between machines, then a switch could reduce the amount of **latency**.

A **router** can form a **LAN** by connecting devices within a building. It also makes it possible to connect different networks together. Homes and businesses use a router to connect to the internet. A router can often incorporate a modem within the hardware.

Star		Each node connects to a hub or switch. A central machine acts as **server** whilst the outer nodes are **clients.**	Centralised management through the server Easy to add more machines to the network If 1 machine fails, the others are unaffected	Potentially higher set up costs, especially in server and switch set ups. Central server determines the speed of the network and the number of possible nodes If the server fails then the network fails
Mesh		Every nodes is interconnected with every other, allowing for distributed transmission. Mesh topology can be **FULL MESH** (where every possible connection is made) or **PARTIAL MESH** (at least 2 computers are connected with multiple links)	Multiple devices can transmit data at once, therefore can handle large amounts of data A failure of 1 device does not affect the rest of the network Adding devices does not impact on data transmission between existing devices	Cost is higher due to increased hardware requirements Building and maintaining a mesh network is costly and time consuming The chance of redundant connections is very high, which increases the cost, and makes the network cost inefficient

Logic Gates & Truth Tables

Logic gates use **Boolean** operators. The most common Boolean operators are **AND, OR and NOT**. Each operator has a standard symbol that can be used when drawing logic gate circuits.

AND gate

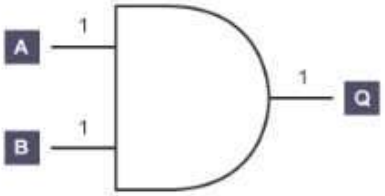
An **AND** gate usually has two inputs. **AND tells us that both Input A AND Input B have to be 1 (or ON) in order for the output to be 1. Otherwise the output is 0.**

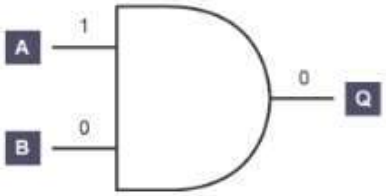
The Boolean expression can be written as **Q = A AND B**.

The truth table would look like this:

Input A	Input B	Input Q
0	0	0
0	1	0
1	0	0
1	1	1

Logic gate diagrams would look like this:





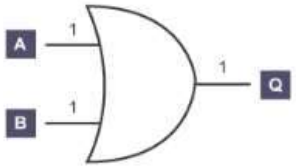
An **OR** gate has two inputs. **OR tells us that EITHER Input A OR Input B has to be 1 (or ON) in order for the output to be 1. Otherwise the output is 0.**

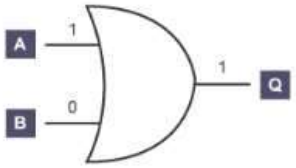
The Boolean expression can be written as **Q = A OR B**.

The truth table would look like this:

Input A	Input B	Input Q
0	0	0
0	1	1
1	0	1
1	1	1

Logic gate diagrams would look like this:





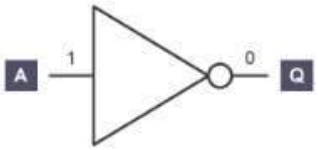
A NOT gate has just one input. NOT tells us that Input A has to be 0 (or OFF) in order for the output to be 1. Otherwise the output is 0. A NOT gate is sometimes called an inverter.

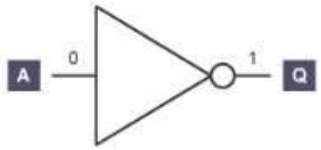
The Boolean expression is written as Q = NOT A.

The truth table would look like this:

Input A	Input Q
1	0
0	1

Logic gate diagrams would look like this:





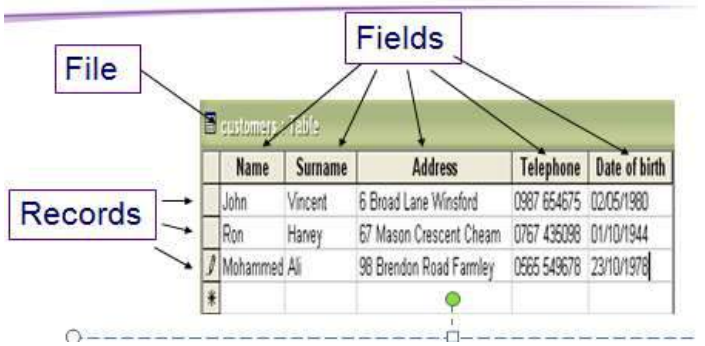
Databases

- A **database** is a **collection of information** which is stored in a way that **can easily be accessed and found**.
- Databases are used by most **organizations** to **store** information.
- A database is made up of **files**.
- Each file is made up of **records**.
- Each record is made up of **fields**.
- Fields have a **data type**.
- Data must be **validated** and **verified** to avoid mistakes.
- A database can be used to **search** and **sort** data.

Each Filed is made up of certain **data type**. For example, Name and Surname are **text**; Date of birth is not text but a **date**

Each **record** is made up of **fields** – categories of information.

For example the fields here are: Name, Surname, Address, Telephone and Date of birth.



Types of Databases

Key terms	Definition
Flat file database	When a database has only one table and everything is stored in that one table it is called a "flat-file database".
Relational database	Many databases which are used in organisations are known as "relational databases". This means that the database contains more than one table and these are linked together.

Databases can also paper based. Examples include the Phone Book or Yellow Pages. It has one entry (record) for each person. That record has several parts (Fields) than give name, telephone number etc. So it has the main elements of a database.

Data Types		
Type	**Examples**	**Description**
Text	Smith, Red, PE23 5AW	Strings of letters or a mixture of letters and number or just numbers that do not need to be used in calculations
Number	1, 23.67, -0.23	Numbers can include positive or negative numbers and decimal places
Date/Time	15/2/2001, 12:45 am	Dates in many different formats or time values
Currency	£45.99	Numbers including the symbol for monetary values
Boolean	Yes or No, True or False	Values which are either Yes or No, True or False or On or Off
AutoNumber	1,2,3	Generates a number automatically

Computerised databases are electronic files, called '**Data Files'** that let you store, organise, format and search digital data. In order to save data it needs to be converted from its original form into binary data types. The data is organised, retrieved, shared and searched via a query language associated with the computerised database such as SQL.

	Advantages	**Disadvantages**
Paper based	•Can carry them around with you. •Don't need training to learn how to use them. •Cheap to set up.	•Can be lost. •Can't easily make backup copies. •Hard to update or make changes.
Computerised	•Can easily make backup copies. •Can easily make changes. •Can easily sort data into order e.g. Alphabetic. •Can search for particular records very quickly.	•Can be expensive to set up if you have to get a professional to make it. •If there is a power-cut, you can't use it. •You need to have a computer.

SQL

SQL – Structured Query Language can be used t search database tables for specific data

SELECT AND FROM

The SELECT keyword is used to search for and display specific data
The FROM keyword is used to identify the tables that need to be searched

```
SELECT hotel_name FROM hotels;
```

RETURN THE HOTEL_NAME FIELD FROM THE HOTELS TABLE

```
SELECT hotel_name, address, telephone, email, rating
FROM hotels;
```

```
SELECT * FROM hotels;
```

RETURN ALL THE FIELDS FROM THE HOTELS TABLE

WHERE

The **WHERE** statement is used to filter results – to apply a condition

```
SELECT hotel_name FROM hotels WHERE bathroom="En-
Suite";

SELECT hotel_name FROM hotels WHERE hotel_rating >=4.5;
```

ORDER BY

Data can be ordered in **ascending (ASC)** or **descending (DESC)** order

```
SELECT hotel_name, price FROM hotels WHERE rooms >100
AND hotel_rating < 4 ORDER BY price DESC;

SELECT hotel_name, price FROM hotels WHERE rooms >100
AND hotel_rating < 4 ORDER BY price ASC;
```

MODEL EXAM ANSWER

Table : hotels

ID	hotel_name	hotel_rating	rooms	bathroom	price
1	Water Lodge	2.3	50	En-suite	42.00
2	Fire Inn	4.2	60	Shared	42.00
3	Earthen House	4.4	251	En-Suite	39.00
4	Windy Inn	3.5	150	Shared & Ensuite	57.00
5	River View	3.8	180	En-Suite	46.00

What data would be found by the SQL statement `SELECT hotel_name FROM hotels WHERE rooms > 150`?

River View and Earthen House

Write the SQL statement to find the hotel name and rating for all hotels with en-suite bathrooms

Select hote_name, hotel_rating FROM hotels WHERE bathroom = "En-sute";

Write the SQL statement to find all the hotel data sorted in ascending order by rating

*SELECT * FROM hotels ORDER BY rating ASC;*

OPERATORS

==	The Same As
!=	Not Equals To
>	Greater Than
<	Less Than
>=	Greater Than or Equals To
<=	Less Than or Equals To

LIKE AND %

LIKE can be used with **WHERE** to search for a pattern
`WHERE hotel_name LIKE "%Hotel"` will search for any name contains the word hotel