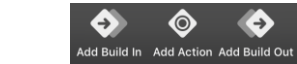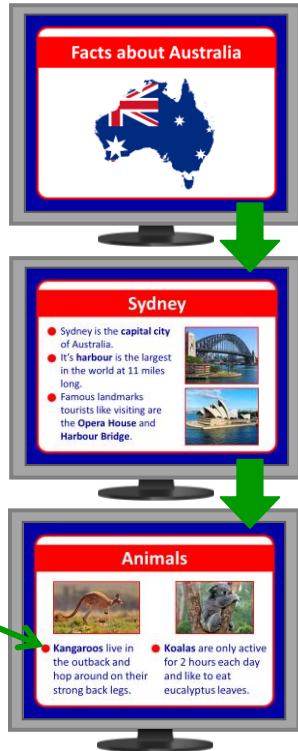# Computing Knowledge Organiser
Information Technology: Years 5/6

Creating a Presentation

A presentation is made up of several **slides** about a topic, usually **played** in a **linear order** on a screen.

- ✓ **Colour scheme** matches the topic.
- ✓ A neat, **consistent design** used across all slides.
- ✓ **Transitions** added between slides.
- ✓ Objects **animate** in and out for effect.

  Add Build In   Add Action   Add Build Out

- ✓ **Bullet points** summarise key facts.

Facts about Australia

Sydney
- Sydney is the **capital city** of Australia.
- It's **harbour** is the largest in the world at 11 miles long.
- Famous landmarks tourists like visiting are the **Opera House** and **Harbour Bridge**.

Animals
- **Kangaroos** live in the outback and hop around on their strong back legs.
- **Koalas** are only active for 2 hours each day and like to eat eucalyptus leaves.
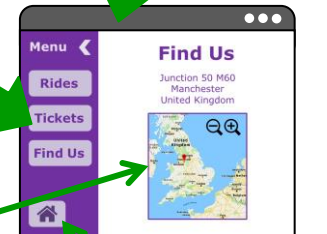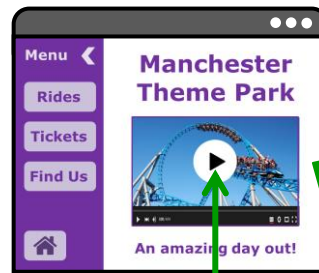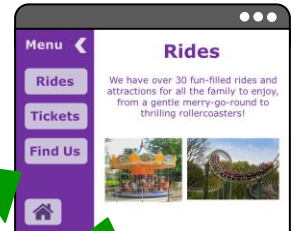
Audiences
children parents visitors

Creating a Website

A website is made up of several **pages** about a topic, **navigated** in a **non-linear order** in a web browser.

Coded in **HTML** or made in a **web design package**.

Menu — Manchester Theme Park — An amazing day out!

Rides — We have over 30 fun-filled rides and attractions for all the family to enjoy, from a gentle merry-go-round to thrilling rollercoasters!

Find Us — Junction 50 M60 Manchester United Kingdom

sub-pages

home page

embedded content

hyperlink button 🔗

- ✓ A **consistent design** and an appropriate **colour scheme** used across the site.

Purposes
persuade inform entertain

Spreadsheets

A spreadsheet lets you **present data** neatly and **solve calculations** quickly to find out **statistics**.

column B

	A	B	C	D
1	Supermarket Shop			
2				
3	Item	Price	Quantity	Cost
4	Apple 🍎	£0.40	5	=B4*C4
5	Carrot 🥕	£0.30	2	=B5*C5
6	Potato 🥔	£0.10	6	=B6*C6
7	Steak 🥩	£4.50	1	=B7*C7
8	Chocolate bar 🍫	£1.50	2	=B8*C8
9			Total Cost	=SUM(D4:D8)
10			Cash Given	£15.00
11			Change Due	=D10-D9

table → **formula** → **row** 6 → **function** → **cell** D11

Uses

- **Finding totals** of a lot of numbers.
- Working out **budgets**.
- Doing **maths conversions**.

Databases

A database is a structured way of **organising data** on a topic so it can be **searched** and **analysed** easily.

A **field** is a single item of data.

A **record** is all of the information stored about something.

Weather	Temperature (°C)	Rainfall (mm)
Rainy	13	5
Sunny	20	1
Sunny	23	0
Cloudy	11	2
Rainy	9	9
Sunny	20	0

Sort records into alphabetical or numerical order.

Filter to only show records matching rules (e.g. Rainfall ≥ 5mm).

Uses

- Sports coaches **studying player statistics**. ⚽
- Schools **checking pupil attendance**. 🏫
- Supermarkets **monitoring stock levels**. 🛒

Tips for Effective Web Searching

- ✓ **Use key words**. e.g. capital city France
- ✓ **Use inverted commas** to find exact names. e.g. **"**Queen Elizabeth II**" "**Chinese New Year**"**
- ✓ **Cross-reference (compare) websites** to check the information on them is **reliable**.
- ✓ **Put information into your own words** to avoid **plagiarism** (copying somebody else's work and pretending it's yours).

Comparing Search Engines

🔍 Which has the **nicest design**?

🔍 Which has the **fewest adverts**?

Google **Bing** **Ask** **yahoo!**

🔍 Which includes **fact boxes** in the results?

🔍 Which shows you the most **useful results**?

Personal Information and Privacy

Personal information is details that can identify you, such as your: full name, home address, bank card number, email address or photograph.

You might give your **consent** to share some online, such as: when shopping, when sending a selfie to a friend or to authorise your account when logging in.

Is the website **trustworthy** and likely to keep your details **secure** from hackers?

Are the person's **privacy settings** public (visible to everybody) or private (only visible to selected people)?
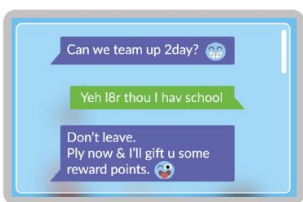
Digital Footprint — A record of you and your activities online, that somebody could search.
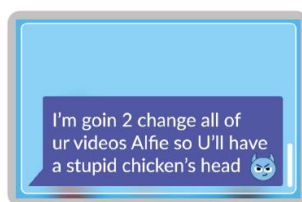
Phishing Message — A message pretending to be from a trustworthy company that is actually fake and trying to steal your details.
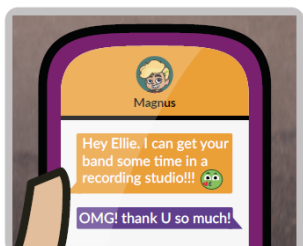
Online Manipulation Tactics

> Can we team up 2day? 😱
> Yeh l8r thou I hav school
> Don't leave. Ply now & I'll gift u some reward points. 😈

Bribery When someone offers you something in return for doing something.

> I'm goin 2 change all of ur videos Alfie so U'll have a stupid chicken's head 😈

Threats When someone says something bad will happen if you don't do what they say.

> Magnus
> Hey Ellie, I can get your band some time in a recording studio!!! 😬
> OMG! thank U so much!

Too-Good-to-be-True Offers When you are offered something seemingly impossible.

> Magnus
> HEY Eli, love the video you are great! 😬😬
> Thank u!

Flattery When someone says really, really nice things about you to gain your affection.

## E-Commerce and Vlogging

E-Commerce

amazon **TESCO**

- ✓ Always **get the bill payer's permission** before checking out.
- ✓ **Only shop on trusted sites** so you aren't a victim of fraud.
- ✓ **Be aware that cookies track which pages you visit** so shops may send you targeted adverts or change their prices.
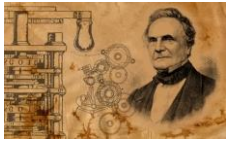
Vlogging

- ✓ **Stream over WiFi** as it's faster and cheaper than using mobile data.
- ✓ **Make your own, original content** so you aren't breaking copyright laws.
- ✓ **Block and report cyberbullies**.
- ✓ Be aware that **viral videos might be fake**.
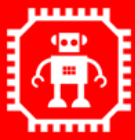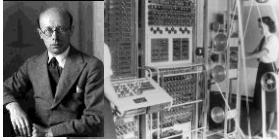
Computing Knowledge Organiser
Computer Science - Theory: Years 5/6

Computing Pioneers

Charles Babbage made the first machine which could perform mathematical calculations in 1832.

Tommy Flowers designed Colossus, the first programmable electronic computer, in 1943.

Tim Berners-Lee was the inventor of the World Wide Web in 1989.

Larry Page was the founder of Google search engine in 1995.

Steve Jobs was the founder of Apple in 1976, launching the iPhone in 2007.

Internet Services

The Internet is useful because it lets **people communicate** and **share information** across the world **quickly** and **easily**.

Message friends, share photos and find followers.

Send messages to people and collaborate on ideas.

Social Media

Communication

Internet Services

Broadcasting

World Wide Web

Stream videos, listen to radio stations and watch programmes on catch-up.

View pages of multimedia information about different topics.

The Impact of Technology

✅ Advantages	❌ Disadvantages
Online shops let you buy things from home easily.	Real shops have been forced to close.
Robots do tasks quickly and don't get bored.	This has meant some workers have lost jobs.
Information is stored on computers so few trees are cut down for paper.	More electricity is needed which could be bad for the environment.
Cloud computing lets people work anywhere.	Worries about hackers and lack of socialising.
Children have fun playing computer games.	Too much screen time causes sleep problems.

Future Technology

Homes are becoming smarter with appliances running automatically and able to be controlled from apps over **WiFi**.

More devices are having **Bluetooth** capabilities enabled, allowing them to connect with each other remotely, such as to transfer files or offer hands-free services.

The **digital divide** is when some people can't benefit from using technology because they:

- are **too poor** to buy a computer;
- live in an area with a **slow Internet connection**;
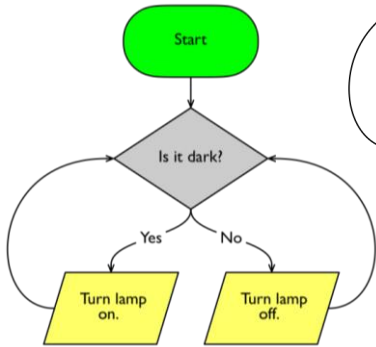- live in a country where some **websites are blocked**.

Computing Knowledge Organiser
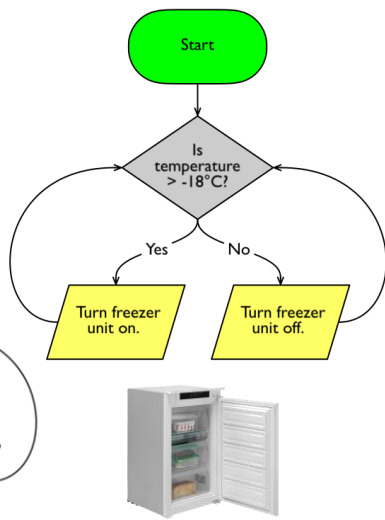# Computer Science - Programming: Years 5/6

Flowcharts of Control Systems

Control systems constantly monitor **sensors** (input devices detecting changes in: light, temperature, movement etc.) and, using **conditional events**, decide when to respond by triggering **actuators** (output devices like: bulbs, motors, buzzers etc.).

💡 Street Lamp 💡

Start

Is it dark?

Yes → Turn lamp on.

No → Turn lamp off.

❄️ Freezer ❄️

Start

Is temperature > -18°C?

Yes → Turn freezer unit on.

No → Turn freezer unit off.

The Systems Lifecycle

This explains how a computing project is **developed in stages** to meet specific needs or expectations.

❶ Analysis
Who will it be for?
What has to be done?

❷ Design
How should it be done?
What could it look like?

❸ Implementation
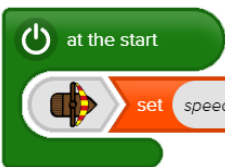Create the project as efficiently as possible.

❹ Testing
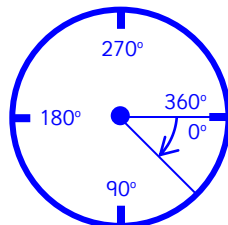*Does it do what it should?*
Does it need modifying?

❺ Evaluation
Review the project's success.
How could it be improved further?

Programming with Numbers

at the start
set speed to 2

Set the exact **speed** a ship moves at.

Turn a ship by changing its **angle** (direction it faces) and **heading** (direction it moves in).

270°
180° 360° 0°
90°

-ve   +ve
left   right

when ← key pressed
change angle by -10
change heading by -10

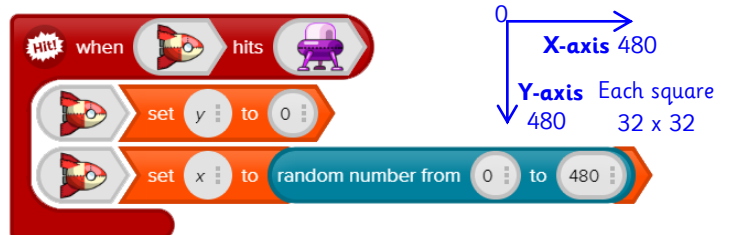when → key pressed
change angle by 10
change heading by 10

Logical Reasoning Solving a problem carefully.
Tinkering Changing things to see what happens.

Random Numbers

Set the speed of a UFO **by chance**, within the range of 1-10.

at the start
set speed to random number from 1 to 10

If the rocket catches the UFO, **then** move its position, using **co-ordinates**, to the top of the screen, to a random position in the middle.

when rocket hits UFO
set y to 0
set x to random number from 0 to 480

0
X-axis 480
Y-axis 480   Each square 32 x 32

Decomposition Breaking down into parts.
Abstraction Removing unnecessary detail.