

Year 7 Independent Work Tasks:

E-Safety

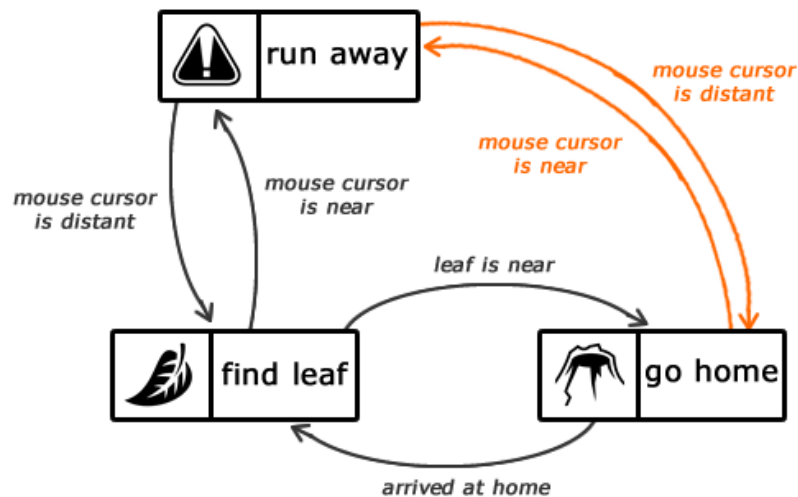
Using the BBC website – Read the article about algorithms and filter bubbles and summarise the key points you learn from the website about the topic area:

[How algorithms and filter bubbles decide what we see on social media - BBC Bitesize](#)

Scratch Programming

An important skill to take forward to your Scratch project is being able to plan the behaviour of your enemies.

This can be done via “Finite State Machine” – see the example below:



You should be able to create a similar version of this for the behaviour of one of the enemies in your game, you may wish to consider the following actions:

- Proximity to player character
- Health Points
- Movement
- Use of Weaponry

Hardware Software

Explore how the world of Computer Hardware has changed over the past 200 years, use the following website to help:

[History of computers: A brief timeline | Live Science](#)

Be prepared to contribute some of the key findings of interest to yourself to your class teacher.

Units and Logic

Binary digits will be studied as part of this module and we will be able to calculate between these and our standard (denary) number system, but why do we use binary values?

<https://www.youtube.com/watch?v=thrx3SBEP8>




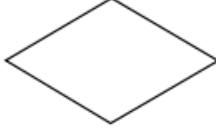


Flowcharts

Using your knowledge of Flowcharts, you should be able to create flowcharts for at least one of the additional real-life applications:

- The Traffic Lights 3-Way Sequencing outside of Tesco
or
- A ticket machine to pay for your parking via cash or card (Found in multi-story car parks!)

Remember to use the following shapes:

Flowchart symbols

	Line		Input/ Output
	Process		Decision
	Sub program		Terminal

Python Programming

Python is a free programming language and the program be downloaded and installed on your home computers quite easily.

For independent work you may consider working through the following tutorial:

<https://www.w3schools.com/python/>

This site uses an online version of Python so you should be able to work through the tutorial – focus on completing the following:

- Casting
- If... Else statements
- For/While loops

Year 8 Independent Work Tasks:

Programming

As we begin the year with Python, we will be working on how to draw certain shapes and structures.

For this task – using what you have learnt so in lessons, try to create a drawing of a house – you do not need to download python – you can use the online version found here:

<https://www.pythonsandbox.com/turtle>

Try to include colours as well as more than one window!

Excel

It is highly likely that close family and friends have experience using Excel – whilst you are learning it, you might not immediately see the benefits...

For this task – speak to your close family who are in employment and ask them where they have used spreadsheets in their job, try to find at least 3 examples.

Business Tech

For this module – you will need to come up with a business idea of your own to create documents and eventually an advertisement video for.

For this task try to make notes on the business idea – complete the following prompts to help you:

- What is the name of the business?
- What does your business do?
- How does your business stand out from competition?
- Where would your business be based?
- Why would it be located there?
- Draw a draft version of a logo!

Computer Performance

For this module we will be exploring how the performance and speed of computing components is measured, quite often people are completely unaware of the technical specifications of their home computer or laptop... but that would be you of course!

As you might have guessed for this task you should find out the specifications of your home computer and ensure you bring these into school so that we can discover what the numbers and manufacturer markings mean!

Critical Thinking Skills

In this module, critical thinking and problem solving will be key skills – they apply to everything we do rather than just to computer science!

In order to test your knowledge of problem solving, go onto the Bebras site(below) and complete at least three of the Intermediates challenges found under the Challenge tab

[Challenges - UK Bebras](#)

Games Design

For this module you will need to come up with a level design for your game, this will include identifying the locations of important areas (for either combat or story) as well as the layout of the terrain to help with the atmosphere for your game.

You should create this on an A4 piece of paper that you can use as a reference point during the development stage of the project – see below for inspiration:



Year 9 Independent Work Tasks:

Social Media and Propaganda

Over the years the influence of social media sites on major political events has increased tenfold, there are always murmurs of Russian bots, fake news and other stories that seek to discredit those with opposing views... however, propaganda is not a new concept and to explore this you should read the following article about its usage during World War 1:

[Propaganda and conscription - BBC Bitesize](#)

Encryption & Networks

In this module we will look at encoded messages and the methods used to make these messages seen in plain sight, quite impossible for others to understand or decode without knowing the cipher and key used.

So far we have looked at Caesar Cipher, Pigpen Cipher and briefly the Vigenere Cipher... For this task you should research two further ciphers and be prepared to talk about/describe them in lesson.

Cybersecurity

This topic covers a huge growth area of jobs within the Computer Science industry, in addition – it is very likely that you will know of people who have fallen victim to fraud, online theft or other such breaches.

For this task read the National Cyber Security Centre guide on how to stay safe and avoid common online crimes:

<https://www.ncsc.gov.uk/section/information-for/individuals-families>

Logic Gates

To prepare you for the content of this module, you should watch the following Crash Course Computing video:

<https://www.youtube.com/watch?v=gl-qXk7XojA>

AI

Artificial Intelligence will play a big part in our futures, how it works and has evolved in ability over the years is quite impressive.

One such robot is called Atlas and its ability often surprises people in terms of how well it can move and navigate terrain – for this task, you should read about it below as well as watch the video above the resources section:

<https://www.bostondynamics.com/atlas>