

Hello and welcome to Key Stage 5 Computer Science! Whether you are a returning student or someone arriving from a new school, I am very happy to hear that you've chosen this topic to complete!

I am giving you a reading/watching list, with books and videos you can use to further your current knowledge.

I am also setting you three tasks, one to do with Binary, one to do with Programming and one to do with Ethics, to keep your skills in all up to scratch before arriving next year!

Reading/Watch list

GCSE to A-Level Transition from Isaac Computer Science (You will need to register to access!)

- **GCSE Programming concepts**
- **GCSE Data representation**
- **GCSE Networking**

Books you can read from your local library

- Code: The Hidden Language of Computer Hardware and Software, by Charles Petzold
- Don't Make Me Think, by Steve Krug
- The Ascent of Information: Books, Bits, Genes, Machines, and Life's Unending Algorithm, by Caleb Scharf
- Hidden Figures: The American Dream and the Untold Story of the Black Women Who Helped Win the Space Race by Margot Lee Shetterly

YouTube Videos to watch

- Crash Course Computer Science : [Crash Course Computer Science Preview - YouTube](#)
- Computerphile : [Computerphile - YouTube](#)
- Coding Train : [Code! Programming with p5.js for Beginners Trailer - YouTube](#)



KS4-KS5 Transition Activity

Activity 1

Complete this Microsoft Form with questions about Binary calculations:

<https://forms.office.com/e/2QKKJYGSWx>

Activity 2

Create a program that analyses a passage of text from a file and then counts:

- How many words
- The average length of a word
- How many times each word occurs
- How many words start with each letter of the alphabet?

The aim of this exercise is to test your ability to develop algorithms.

To help you do this:

W3 Schools Python File Handling - [Python File Open \(w3schools.com\)](#)

W3 Schools Python String Methods - [Python - String Methods \(w3schools.com\)](#)

W3 Schools Python While Loops - [Python While Loops \(w3schools.com\)](#)

W3 Schools Python For Loop – [Python For Loops \(w3schools.com\)](#)

W3 Schools Python Dictionaries - [Python Dictionaries \(w3schools.com\)](#)

Your program does not need to fully work; however, you are expected to have made a reasonable attempt. You may work with others and request help with this work!

Email your program with your name to: Johnson.S@myton.co.uk

Activity 3

Write an essay that is at least **half a page long** about the impact of AI on one of the following sectors:

- Health
- Education
- Military
- Entertainment

You should include:

- References to news stories about AI, with links to the article
- A discussion on both the positive and negative effects of AI
- A discussion on the ethics of AI making decisions or generating content
- A conclusion