

Year 11 – Computer Science

Should you decide to study Computer Science as a subject next year, these resources should help further develop your interests as well as preparing you for 'A' Level study and beyond.

The resources include a selection of videos, reading and websites you may find useful in your preparation. One of the best ways to stand out during your Sixth Form studies is through the amount of independent study you undertake outside of the classroom. Further study increases your passion in an area of interest, regardless of your future plans, the ability to extend yourself and research independently is an invaluable skill.

Suggested websites:



1. **Teach Yourself Computer Science:** <https://teachyourselfcs.com/>
2. **Learn Computer Science:** <https://www.learncomputerscienceonline.com/>
3. **Learn Python:** <https://www.learnpython.org/>
4. **Sololearn:** <https://www.sololearn.com/Course/Python/>
5. **W3 Schools- Python Tutorial:** <https://www.w3schools.com/python/default.asp>

Ted Talks recommendations:



1. **[Bettina Bair: Inside your computer](#)**



How does a computer work? The critical components of a computer are the peripherals (including the mouse), the input/output subsystem (which controls what and how much information comes in and out), and the central processing unit (the brains), as well as human-written programs and memory. Bettina Bair walks us through the steps your computer ta...

https://www.ted.com/talks/bettina_bair_inside_your_computer

2. **[Brian Christian: How to manage your time more effectively \(according to machines\)](#)**



Human beings and computers alike share the challenge of how to get as much done as possible in a limited time. Over the last fifty or so years, computer scientists have learned a lot of good strategies for managing time effectively— and they have a lot of experience with what can go wrong.

https://www.ted.com/talks/brian_christian_how_to_manage_your_time_more_effectively_according_to_machines

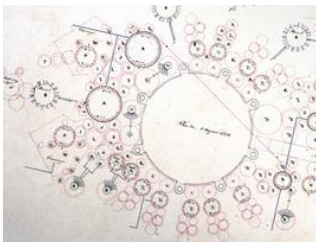
3. **[Kanawat Senanan: How do hard drives work?](#)**



The modern hard drive is an object that can likely hold more information than your local library. But how does it store so much information in such a small space? Kanawat Senanan details the generations of engineers, material scientists, and quantum physicists who influenced the creation of this incredibly powerful and precise tool.

https://www.ted.com/talks/kanawat_senanán_how_do_hard_drives_work

4. [John Graham-Cumming: The greatest machine that never was](#)



Computer science began in the '30s ... the 1830s. John Graham-Cumming tells the story of Charles Babbage's mechanical, steam-powered "analytical engine" and how Ada Lovelace, mathematician and daughter of Lord Byron, saw beyond its simple computational abilities to imagine the future of computers.

https://www.ted.com/talks/john_graham_cumming_the_greatest_machine_that_never_was

5. [Tim Berners-Lee | TED Speaker](#)



Tim Berners-Lee invented the World Wide Web. He leads the World Wide Web Consortium (W3C), overseeing the Web's standards and development.

Inventor

https://www.ted.com/speakers/tim_berniers_lee

Suggested reading (available of Amazon with the free App):



1. **Data Visualization Made Simple Book by Kristen Sosulski**

It gives a detailed description of the best software, programming languages and even platforms for data visualization. The book will also give you some critical insights on data exploration methods.

2. **The Soul of a New Machine by Tracy Kidder**

This book is about the history of the computer. It is among the best books that try to give a clear picture of the history of computers.

3. **Structured Computer Organization by Andrew S Tanenbaum**

This book will give you a graphical view of how computers work. This information is important to anyone who is pursuing computer science regardless of their area of specialization. The book starts by teaching you about transistors, gates, parts of a processor, and how a processor works.

4. **Hackers: Heroes of the Computer Revolution by Steven Levy**

Well, hacking is always associated with lots of negative connotation. The good news is that this book is not about the negative message about hackers. Instead, it is about people who have done great things in the world of computing.

5. **Introduction to Algorithms by Thomas H. Cormen**

As a computer science student, you will use different algorithms especially when programming. This classic book will feed you some valuable knowledge on how to use algorithms effectively. The book will elevate you from the level of just being an ordinary programmer. You will learn how to be a smart coder. The book covers details of the search algorithm, sort algorithm, and all other algorithms that you are likely to encounter as a coder.

6. **Sketching User Experiences: Getting the Design Right and the Right Design by Bill Buxton**

This book will teach you how to communicate effectively to partners and other stakeholders. Whether it is coming up with the right designs of a product or building prototypes, the book will

give you all that you need. The information will help you to survive in an agile software development team. Each topic is accompanied by practical examples.

7. **Elementary Number Theory with Programming**

How is mathematics related to programming? This book has the answer. It will open your eyes on this issue that many computer science students are uncomfortable with. The book will give you a clear picture of the correlation between these two subjects.