

Hi everyone, here's our Summer Task List

Computer Science

There are three tasks you should complete which will greatly aid you in your study of computer science next year:

1. Buy the textbook
 - We Strongly Recommend AQA AS And A-Level Computer Science by PM Heathcote.
 - You should buy the latest edition (new spec 2016 onwards)
 - <http://tinyurl.com/yakswdvp>
2. Program Something
 - I cannot stress this enough, being able to program something such as conways game of life will make your life at A-Level much easier.
3. Read Something
 - It's really important to start building a broad background understanding the issues in computer science, there are a wide range of useful books which are available from good libraries or free online. I strongly recommend the first two as essential reading, other than that pick one or two that sound interesting.
 - The new Turing Omnibus, A Kee Dewdney 2003
 - Computational Thinking, Jeannette Wing (<https://www.cs.cmu.edu/~15110-s13/Wing06-ct.pdf>)
 - *Introduction to Algorithms* [Thomas H. Cormen](#)
 - The Soul of a new machine Tracy Kidder
 - *Computer Science: An Overview* by J. Glenn Brookshear (ninth edition, Addison Wesley, 2006)
 - *Computational Fairy Tales*
 - *Computer Science: An Overview* by J. Glenn Brookshear. ISBN: 978-0321544285 - overview of what computer science is all about: each topic is presented with its historical perspective, current state, and future potential, as well as ethical issues.
 - *Code: The Hidden Language of Computer Hardware and Software* by Charles Petzold. ISBN: 978-0735611313 - "What do flashlights, the British invasion, black cats, and seesaws have to do with computers? ...see how ingenuity and our very human compulsion to communicate have driven the technological innovations of the past two centuries."
 - *Out of Their Minds* by D Shasha and Cathy Lazere. ISBN: 978-3540979920 - the lives and discoveries of fifteen unsung computer scientists whose programs have helped people from factory owners to cartoonists.

- *The Pattern on the Stone: The Simple Ideas That Make Computers Work* by Daniel Hillis. ISBN: 978-0465025961 - explains the basic concepts of the computer in everyday language.
- *The Information: A History, a Theory, a Flood* by James Gleick. ISBN: 978-0007225736 - a chronicle that shows how information has become "the modern era's defining quality - the blood, the fuel, the vital principle of our world."
- *The Pleasures of Counting* by Tom K rner. ISBN: 978-0521568234 - puts Maths into the context of how it is used to solve real-world problems.
- *The Code Book* by Simon Singh. ISBN: 978-1857028898 - not strictly about Computer Science, but an interesting introduction to code-breaking and cryptography, fields that have a strong connection to Computer Science.
- *The New Turing Omnibus* by A Kee Dewdney. ISBN: 978-0805071665 - mini articles on Computer Science topics.
- *Algorithmic Puzzles* by Anany Levitin and Maria Levitin. ISBN: 978-0199740444 - "...The emphasis lies in training the reader to think algorithmically and develop new puzzle-solving skills: the majority of puzzles are problems where we are asked to find the shortest distance or the fewest moves to get from A to B, or construct a proof that a puzzle has no solution ..."
- **For lighter reading you should look at New Scientist, Ars Technica, Slashdot, or any computer magazine on the shelf in WH SMITHS... these will help keep you abreast of what is happening in the world around you.**

4. Program Something (Repeated as its pretty important)

- In the shared area of the school drive there are a whole bunch of python books covering everything from dynamic web content, to game design and scientific data analysis... bound to be something you enjoy.
- Have a look on humble bundle, they often have pretty good deals on programming books.
- Sign up to <https://www.codingame.com/start>, we use VB.NET for the exams but why not pick a language that interest you?

Your Summer Tasks

1. Read one of the books listed and write a short report on it.
2. Complete one of the following:
 - Basic: <https://bitstorm.org/gameoflife/> Program it in your language of choice.
 - Advanced: <https://www.ibm.com/developerworks/library/os-php-gamescripts1/index.html> build a game based on the scripts.
3. Get some exercise: <http://www.health.harvard.edu/blog/regular-exercise-changes-brain-improve-memory-thinking-skills-201404097110>

I look forward to meeting you all in September.