Super Curriculum – Computing
KS3

📖 Reading:

- https://www.codecademy.com
- https://processing.org
- smallbasic.com

📺 Watching:

- There's a useful series of lectures that you could watch from Harvard University which introduce some interesting principles of Computer Science using resources that we don't have access to in a school – the first one is at: https://www.youtube.com/watch?v=z-OxzlC6pic&list=PLvJoKWRPIu8G6Si7LlvmBPA5rOJ9BA29R&index=1 and if you watch the first you will see links to the others.

✒️ Doing:

- Develop your Small Basic programming skills using the tutorials at smallbasic.com.
- Try a more advanced programming language such as C#. There are lots of online tutorials but the simplest way is to use our resources, which you can find on the Public Drive or on Sharepoint under GCSE then Year 9: https://burygrammar.sharepoint.com/:f:/r/computing/Student%20Documents/GCSE/Programming/Year%209?csf=1&web=1&e=Of3ngQ

Academic Enrichment:

- In Year 8, you can join our robotics club (see timetable on website).

Competitions:

- In Year 7 and Year 8 all students are entered for the UK Bebras Computational Thinking competition, run by Oxford University (http://www.bebras.uk/).

  This takes place in November – 2020.

Super Curriculum – Computing
KS4

📖 **Reading:**

- https://www.codecademy.com
- https://processing.org

📺 **Watching:**

- There's a useful series of lectures that you could watch from Harvard University which introduce some interesting principles of Computer Science using resources that we don't have access to in a school – the first one is at: https://www.youtube.com/watch?v=z-OxzIC6pic&list=PLvJoKWRPIu8G6Si7LlvmBPA5rOJ9BA29R&index=1 and if you watch the first you will see links to the others.

✒️ **Doing:**

- You can develop your programming skills further by trying out techniques that are not required at GCSE such as Windows Programming or by solving more complex problems. Please ask one of your teachers for suggestions relevant to your interests. Alternatively, these websites are good ones that have useful tutorials and tasks on:

  https://www.codecademy.com
  https://processing.org

Competitions:

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- In Year 9 you can join our team for the First Lego League Robotics Competition (https://www.firstlegoleague.org/). This is an international competition and students from the school have got to the UK final in most years, and once to the European finals. The competition usually takes place in December but is likely to take place in April or May in this academic year. A lot of work, both programming and engineering, is involved in preparing for the competition.
- In November all students in Years 9 and 10 will be entered for the UK Bebras Competition.

- As Computer Science uses many techniques that are similar to mathematics, it is also useful to take part in mathematics competitions, many of which are organised by the UK Mathematics Trust (https://www.ukmt.org.uk) – the mathematics department organise these.

Super Curriculum – Computing
KS5

📖 **Reading:**

General textbooks about Computer Science:

D. Harel, Algorithmics: The Spirit of Computing, Addison Wesley, 2003

K. Dewdney, The New Turing Omnibus, Palgrave Macmillan, 2004

The Elements of Computer Systems, Nisan and Schocken

D. Harel, Computers Ltd: What They REALLY Can't Do, Oxford University Press, 2003

Books to teach yourself a new language:

Y. D. Liang, Introduction to Java Programming, Pearson Education, 2012

B. W. Kernighan, D. Ritchie. The C Programming Language (2nd Edition), Prentice Hall, March 1988 (Java)

B. Downey, Think Python, O'Reilly Media, August 2012 (Python)

Other interesting books on specific topics:

Clements. Principles of Computer Hardware (4th Edition), Oxford University Press, February 2006

The Code Book, Simon Singh

📺 **Watching:**

- There's a useful series of lectures that you could watch from Harvard University which introduce some interesting principles of Computer Science using resources that we don't have access to in a school – the first one is at: https://www.youtube.com/watch?v=z-OxzlC6pic&list=PLvJoKWRPIu8G6Si7LlvmBPA5rOJ9BA29R&index=1 and if you watch the first you will see links to the others.

Doing:

- When it comes to applying to a university, the most important think that you can do is to have tackled some interesting programming tasks and be able to discuss them, including things such as the technologies and skills that you've used, any theoretical concepts involved, and what you've learnt from them. Talk to your teacher about ideas that you might want to develop based on your interests.
- You could try to teach yourself another language, such as Python or Java, which is also useful, but is not valued as highly as developing your problem-solving skills to solve more complex problems.

Competitions:

- Competitions can provide a good way to evidence your achievements. Some organisations that run competitions related to Computer Science are:

  The Training Partnership
  The Sutton Trust