Swanshurst Sixth Form Super-Curriculum

Subject:

Read 📖

Textbooks & Study Guides:

1. *AQA A Level Computer Science* – Bob Reeves

General Computer Science Books:

4. *Computer Science Distilled* – Wladston Ferreira Filho
5. *Code: The Hidden Language of Computer Hardware and Software* – Charles Petzold
6. *The Pragmatic Programmer* – Andrew Hunt & David Thomas
7. *Algorithms to Live By* – Brian Christian & Tom Griffiths
8. *How to Think Like a Programmer* – Paul Vickers
9. *The Self-Taught Programmer* – Cory Althoff

Articles & Online Resources:

10. *CS50 Blog (Harvard's Intro to Computer Science)*
11. *MIT OpenCourseWare – Introduction to Computer Science*
12. *GeeksforGeeks – Data Structures & Algorithms Explained*

Watch 📺

YouTube Channels & Playlists:

1. Computerphile
2. CrashCourse Computer Science
3. Harvard's CS50 (David J. Malan)
4. The Coding Train
5. Derek Banas
6. MyCodeSchool
7. freeCodeCamp.org
8. Fireship

Educational Lectures & Talks:

9. MIT OpenCourseWare – Introduction to Computer Science
10. Stanford University – Programming & Algorithms Lectures
11. Oxford University – Computer Science Talks
12. Royal Institution Lectures on AI & Computing

Documentaries & TV Shows:

13. *The Imitation Game* (2014) – Story of Alan Turing & Early Computing
14. *The Code: Story of Linux* – Open-source revolution

Listen to 🔊

Podcasts:

1. *The Stack Overflow Podcast*
2. *The Changelog*
3. *The AI Alignment Podcast*
4. *CodeNewbie*
5. *Hanselminutes – Fresh Talk on Tech*
6. *Syntax – Tasty Web Development Treats*
7. *Darknet Diaries* – Cybersecurity & Hacking Stories
8. *Computer Science Café*
9. *Python Bytes*
10. *Lex Fridman Podcast* – AI & Machine Learning

Audio Lectures & Courses:

11. Harvard's *CS50 Podcast*
12. *MIT OpenCourseWare – Intro to Computer Science (Audio Lectures)*
13. *BBC Radio 4 – The Digital Human*
14. *Royal Institution Science Podcast*
15. *ACM ByteCast* – Deep Dives into CS Research

Write 📝

- *Explain the difference between procedural, object-oriented, and functional programming with examples.*
- *Write an essay on "The Future of Artificial Intelligence: Risks & Benefits".*
- *Research and write about a famous computer scientist (Alan Turing, Grace Hopper, Ada Lovelace, Tim Berners-Lee, etc.).*
- *Summarise a recent breakthrough in computer science (e.g., Quantum Computing, AI, Cybersecurity).*
- *Compare and contrast Python and Java for beginners.*
- *Explain Big O Notation in simple terms with real-world examples.*
- *Solve and document a complex algorithm problem (e.g., sorting, pathfinding, recursion).*
- *Debate: "Should we regulate AI development?" (Write both for and against arguments).*
- *Write a fictional short story about a world where AI surpasses human intelligence.*
- *Create a step-by-step guide on how to build a simple computer program or game.*

Visit 🚗

Technology & Computing Museums:

1. ***The National Museum of Computing*** *(Bletchley Park, UK)*
2. ***Science Museum – Information Age Gallery*** *(London, UK)*
3. ***Centre for Computing History*** *(Cambridge, UK)*
4. ***Computing History Museum*** *(Mountain View, California, USA)*
5. ***Computer Games Museum*** *(Berlin, Germany)*

University & Research Centers:

6. ***Bletchley Park*** *– Home of the WWII codebreakers*
7. ***Alan Turing Institute*** *(London) – AI & Data Science Research*
8. ***University Open Days*** *for Computer Science Programs*
9. ***Royal Institution Lectures on Computing & AI***

Tech Company HQs & Tours:

10. ***Google UK Headquarters*** *(London, by invitation/events)*
11. ***Microsoft Research Cambridge*** *(Occasional events)*
12. ***Amazon Web Services (AWS) London Office*** *– Cloud Computing Insights*
13. ***IBM Research Labs*** *(Various locations)*

STEM & Computing Events:

13. *Khan Academy – Computer Science Fundamentals* 14. *Smashing Magazine – Programming & Web Development Articles* 15. *ACM TechNews – Latest in Computer Science Research*	15. *Inside Bill's Brain* (Netflix) – Bill Gates & Microsoft 16. *The Great Hack* – Data privacy & AI 17. *Lo and Behold: Reveries of the Connected World* – Internet's impact 18. *AlphaGo* – AI defeating humans in strategy games 19. *Halt and Catch Fire* – Dramatized history of computing (TV series) **Movies with Strong Computing Themes:** 20. *The Social Network* (2010) – Facebook's origins 21. *Tron: Legacy* (2010) – AI and virtual worlds 22. *WarGames* (1983) – Hacking & cybersecurity 23. *Her* (2013) – AI and human interaction			14. ***Big Bang Fair*** *– UK's largest STEM event* 15. ***PyCon UK*** *– Python Programming Conference* 16. ***AI & Machine Learning Summits*** *– Various global locations* 17. ***Tech Exhibitions (e.g., BETT Show, Web Summit, CES)*** ***International Visits (For Advanced Enthusiasts):*** 18. ***Silicon Valley Tour*** *– Apple, Google, Facebook, Intel HQs* 19. ***CERN*** *– Computing & Data Science in Particle Physics* 20. ***MIT Media Lab*** *– Future Technology Research*