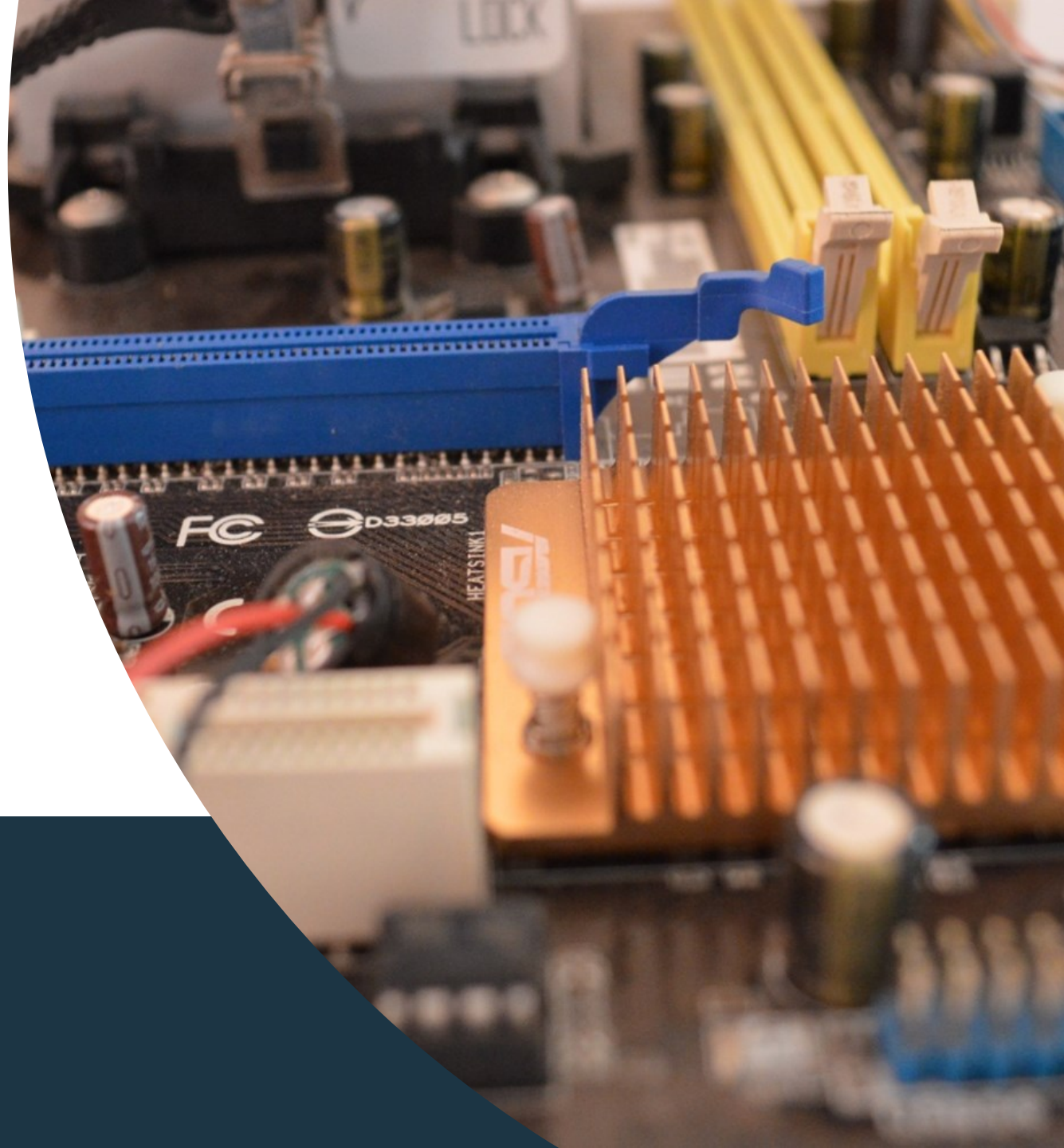


A-Level Computer Science Transition Work



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Read

Two articles for you to read...



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Please read the following articles which will introduce some of the concepts we will cover at A-Level Computer Science...

What is AI? Is it dangerous and are jobs at risk?

<https://www.bbc.co.uk/news/technology-65855333>

Quantum breakthrough could revolutionise Computing

<https://www.bbc.co.uk/news/science-environment-64492456>

Watch

Two videos for you to watch...



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Please watch the following videos which will introduce some of the concepts we will cover at A-Level Computer Science.

BBC Panorama – Is China watching you?

<https://www.bbc.co.uk/iplayer/episode/m001n9sh/panorama-is-china-watching-you>

A documentary exploring legal and ethical impacts of surveillance technology

A Packet's Tale – How the Internet Works – World Science Fair

https://www.youtube.com/watch?v=ewrBaIT_eBM

An overview of how a web page is transferred from a web server to your browser.

Do

Two tasks for you to complete...



1 Independent research task

Emerging computer technology

In this task you get to investigate any area of emerging computer technology which interests you.

You can pick any area which interests you, but examples could be:

- Artificial intelligence
- Robotics
- Automated self driving cars
- Quantum computing

In no more than ONE side of A4 summarise the area you have chosen under the following four headings:

1. What is it?
2. What are the possible Social, Moral, Cultural and Ethical **benefits** of this technology on society
3. What are the possible Social, Moral, Cultural and Ethical **risks** of this technology on society
4. My conclusion on this technology and what it will mean for our world 10 years from now

Additional help:

For additional help and support in structuring your answer you might like to watch some of the videos from the following Craig 'n' Dave playlists:

OCR:

SLR 17 – Ethical, morale and cultural issues

<https://student.craighndave.org/videos/slr-17-ethical-moral-and-cultural-issues>

AQA:

SLR 19: Moral, social, legal, cultural issues

<https://student.craighndave.org/videos/slr19-moral-social-legal-cultural-issues>

Binary task – Representing Negative Numbers

Representing negative numbers in binary

In GCSE computer science you will have learnt how to represent positive whole numbers in binary e.g. 47

At A Level you will need to know how to represent negative as well e.g. -47

Start to recapping (or learning if you didn't do the GCSE) how to represent positive whole numbers between 0-255 in binary

Now research how to represent negative numbers in binary using the method known as:

- Two's complement

Complete the tasks on the following slides.

Additional help:

For additional help and support in structuring your answer you might like to watch some of the following videos from Craig 'n' Dave:

GCSE recap: How to represent positive binary values 0-255

<https://student.craigndave.org/videos/aqa-gcse-sl13-number-bases>

A Level: Representing negative binary values using Two's Complement

<https://student.craigndave.org/videos/aqa-alevel-sl11-twos-complement>

Binary task – Representing Negative Numbers

Representing negative numbers in binary

1. Write out the positive binary number 107, the answer should be displayed in 8 bits.

[illegible]

3. How would you represent the lowest negative number possible using Two's Complement, given 8 bits.

[illegible]

2. Write out the negative binary number -107 using Two's Complement, the answer should be displayed in 8 bits.

[illegible]

4. How would you represent the largest positive number possible using Two's Complement, given 8 bits.

[illegible]

Assessment

For your first week back in September...



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Your settling in grade will be based on the 'Do' tasks which I expect to be submitted in the first week back. Please submit..

- “emerging technologies” research document (1 page A4 max.
- Twos complement binary number conversions tasks.