



Computer Science

Aim:

To provide a broad foundation of Computer Science knowledge and programming skills that will provide continuity for Year 11 students going into Ralph Allen 6th Form.

Key Points:

1. Work set is broad and will require students to work mainly independently
2. This work will supplement the work planned for the Induction days and the content for September 2020.
3. There is an element of the work which the students have to complete & return by May half term

Instructions for students

1. Study approach

You should complete **around 4 hours of study per week**, which can be spread across the week. How long you spend will depend on you existing knowledge of a specific area. It is important to **make notes as you complete the activities**. Not all tasks will require this, but where appropriate, do so.

2. Computational thinking

An important aspect of CS is computational thinking. Some of the tasks will be challenging, but don't give up - its important to keep trying! Think about what the task is asking you to do. Refer back to what work you have done and how you approached other similar tasks. If you are stuck, its fine to come back to it.

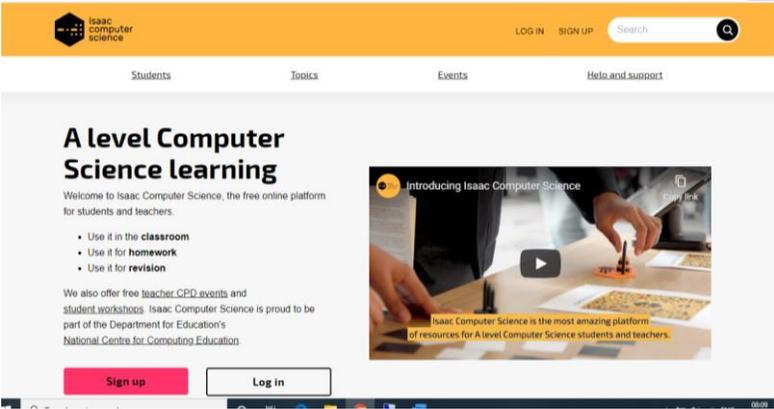
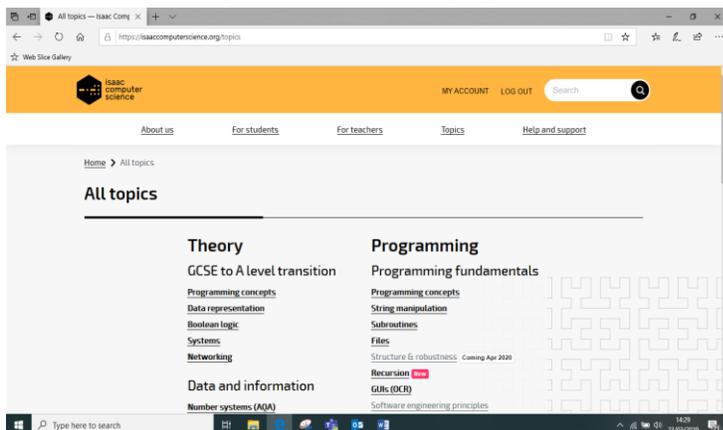
3. Submitting work - Study Summary

In order to help you benefit from this work, at the end, you are required to write a Study Summary (between 300 to 350 words). Also it will help us to see what you have learned over the course of your tasks and your approach to tackling tasks independently.

Your Study Summary should should include you own thoughts as well as answer the following questions:

- What new CS knowledge did you find the most interesting and why?
- Were you inspired to go further and study more in depth on a particular topic? If so, which topic and why?
- Have you found any links between the subjects that you have chosen?

You should email your reflective writing to Mr Torofdar (a.torofdar@ralphallenschool.com) by the deadline.

<p>Week 1</p>	<p>Click the link to access each resource</p>
	<p>Isaac Computer Science is an excellent tool that you can use to refresh and refine your GCSE level knowledge, as well as offering an introduction to the knowledge and understanding required at A Level.</p> <ul style="list-style-type: none"> • Sign up as a student: https://isaacomputerscience.org/home. Keep your log in details safe as this is likely to be a resource used throughout your course.  <p>• Select the topics tab and choose all topics (https://isaacomputerscience.org/topics).</p> <ul style="list-style-type: none"> • You will then be presented with a page that looks like this:  <p>Work through the different topics and engage with the content. Each section has a short knowledge tests that you can take to assess the level of your knowledge and understanding.</p>
	<p>In addition to the above, you may choose to do your own tasks, which you can list here:</p>

Week 2	Click the link to access each resource
	<p>Watch the series of videos explaining the mechanics of computers. This is revision of the fundamentals of Computing, all of the technology you will learn about.</p> <p>Mechanics of Computers - <i>Crash Course Computer Science YouTube</i></p> <p>(Time: 2hr)</p>
	<p>Listen to this podcast episode. Hannah Fry travels back to the 1940s to hear the incredible story of the creation, in Britain, of computer memory.</p> <p>Digital Brains - <i>Computing Britain podcast</i></p> <p>(Time: 0.5 hr)</p>
	<p>Listen to this podcast episode exploring the 20th century shift from industrial to information society. What has been the cause of this shift and how will we recover the social cohesion that preceded it?</p> <p>The Great Disruption - <i>BBC In Our Time podcast</i></p> <p>(Time: 1hr)</p>
	<p>Complete the introductory Edabit programming challenge. (email registration required).</p> <p>Challenge 1 - How Edabit works - <i>Edabit website</i></p> <p>(Time: 0.5 hr)</p>
	<p>Listen to this podcast episode. Hannah Fry reveals the surprising story of the chain of British teashops that created the first office computer.</p> <p>LEO the electronic office - <i>Computing Britain podcast</i></p> <p>(Time: 0.5 hr)</p>
	<p>In addition to the above, you may choose to do your own tasks, which you can list here:</p>

Week 3	Click the link to access each resource
	<p>Programming is a fundamental part of the A Level CS course. It is very important that you stay “Python enabled” and are able to develop what we have covered in class.</p> <p><u>You may use any Python Programming application – online or your own installed version.</u></p> <p>A useful online resource is <u>Future Learn</u> which you can use to refresh and refine your programming skills.</p>  <p>Start with this free course to begin with:</p> <p>https://www.futurelearn.com/courses/programming-102-think-like-a-computer-scientist</p> <p>The series follows a sequence of three courses titled programming-101, programming-102 and programming-103. Start from programming-102 but if you find this tricky, go back and complete programming-101 first. Upon completion of programming-102, you should then complete programming-103.</p> <p>As an extension, you may explore building up your knowledge and understanding of Object-Oriented Programming (OOP). Follow this link for the free course:</p> <p>https://www.futurelearn.com/courses/object-oriented-principles</p>
	<p>One final resource that you may already be familiar with is the Craig and Dave videos on YouTube. These will come in very handy during introduction lessons and revision so feel free to have a look at these too.</p>
	<p>In addition to the above, you may choose to do your own tasks, which you can list here:</p>

Week 4	Click the link to access each resource
	<p>Watch the TED talk. In this wide-ranging, thought-provoking talk, Kevin Kelly muses on what technology means in our lives -- from its impact at the personal level to its place in the cosmos.</p> <p>Technologies Epic Story - TED Talks – Kevin Kelly</p> <p>(Time: 0.5hr)</p>
	<p>Complete Edabit challenge 2 – The sum of 2 numbers. (email registration required).</p> <p>Challenge 2 - Sum of 2 numbers - Edabit website</p> <p>(Time: 0.5 hr)</p>
	<p>Complete Grok Learning Challenge 1 – Talking to your computer. (Registration required)</p> <p>Talking to your computer - Grok Learning website</p> <p>(Time: 1hr)</p>
	<p>Complete Grok Learning Challenge 2 – Calculating things. (Registration required)</p> <p>Calculating things - Grok Learning website</p> <p>(Time: 1hr)</p>
	<p>Listen to this podcast episode. Hannah Fry explores ERNIE, a machine made by wartime code-breakers which became an unlikely celebrity.</p> <p>ERNIE picks prizes - Computing Britain podcast</p> <p>(Time: 0.5 hr)</p>
	<p>Read this article and answer this question: Does a USB drive get heavier as you store more files on it?</p> <p>Does a USB drive get heavier - article - Science Focus</p> <p>(Time: 1hrs)</p>
	<p>In addition to the above, you may choose to do your own tasks, which you can list here:</p>