



Computer Science
Compressions
Applicant Study Pack

Introduction	<p>Over the full two years, you will continually develop your programming ability in multiple languages, and as a result be a highly desirable candidate to potential universities and employers.</p> <p>You will begin with programming from the very first day and apply what you learn to more advanced programming concepts such as data structures and algorithms. This will be predominantly done within the first term, alongside learning about the fundamentals of computation.</p> <p>When you return after the first term, you will then be moving onto web development, databases and networks. What you learn here will also prepare you for your final year project during the second year of your course.</p> <p>The following term you will then learn about the fundamental low-level concepts of Computer Science, these include the system architecture such as processors and other hardware, and system software such as operating systems and memory management. After this point you will be able to explain exactly how a computer operates from the ground up.</p> <p>Recommended Skills and Interests</p> <ul style="list-style-type: none"> • Programming and solving problems • Always wanting to know “how things work” • Mathematics, in particular “Maths for Computing” • Looking for a career within Computing i.e. Cyber Security, Artificial Intelligence, Software Development etc. <p>You can be working on your programming ability right now in whatever language you choose! At Clarendon Sixth form you will use Python, Swift and JavaScript. If you have a strong ability in any of those languages coming into the course, you will hit the ground running.</p>								
Objectives	<p>Objectives:</p> <ul style="list-style-type: none"> - Identify the purpose of file compression. - Recognise the difference between lossy and lossless compression. <table border="1"> <thead> <tr> <th colspan="2">Literacy – Key Words</th> </tr> </thead> <tbody> <tr> <td>Compression</td> <td>The process of reducing the size of a file.</td> </tr> <tr> <td>Lossy Compression</td> <td>A compression method which reduces the size of a file by permanently removing some of the file’s data.</td> </tr> <tr> <td>Lossless Compression</td> <td>A compression method, which reduces the size of a file by temporarily removing some of the file’s data.</td> </tr> </tbody> </table>	Literacy – Key Words		Compression	The process of reducing the size of a file.	Lossy Compression	A compression method which reduces the size of a file by permanently removing some of the file’s data.	Lossless Compression	A compression method, which reduces the size of a file by temporarily removing some of the file’s data.
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Task 1	<p>Using the following link, answer the questions below:</p> <p>BBC Bitesize - Compression https://www.bbc.co.uk/bitesize/guides/zpfdwmn/revision/4</p> <ol style="list-style-type: none"> 1) What are the benefits of file compression? 2) When might we want to use lossy compression? 3) When might we want to use lossless compression?
Task 2	<p>Run length encoding and dictionary encoding are two methods of lossless compression.</p> <p>Using the following resource, write a brief description of how each method works in order to compress and decompress data:</p> <p>Isaac Computer Science – Compression https://isaacomputerscience.org/concepts/data_compr_loss#dictionary</p>
Further reading / links	<p>Craig N Dave – Compression @ GCSE https://www.youtube.com/watch?v=kOFA8FPL5kE</p> <p>Craig N Dave – Compression @ A level https://www.youtube.com/watch?v=xMQIMdXlu-A</p>
Call to action	<p>Visit our website – www.clarendon.ac.uk for more information.</p> <p>Attend our New Student Day</p> <p>Join us for enrolment in August. Letters will be sent to all applicants at the end of July with more details.</p>