



**Computer Science**  
**Python Programming**  
Applicant Study Pack

Introduction	<p><b>Course Outline</b></p> <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><b>Recommended Skills and Interests</b></p> <ul style="list-style-type: none"> <li>• Programming and solving problems</li> <li>• Always wanting to know “how things work”</li> <li>• Mathematics, in particular “Maths for Computing”</li> <li>• Looking for a career within Computing i.e. Cyber Security, Artificial Intelligence, Software Development etc.</li> </ul> <p>You can be working on your programming ability right now in whatever language you choose! At Clarendon Sixth form you will use <b>Python, Swift</b> and <b>JavaScript</b>. If you have a strong ability in any of those languages coming into the course, you will hit the ground running.</p>								
Objectives	<p>We use Python here at Clarendon, so it would be beneficial for you to upskill your knowledge and cover GCSE level programming so you are able to hit the ground running in September.</p> <p>Objectives:</p> <ul style="list-style-type: none"> <li>- Successfully write simple programs using Python including inputs, selection statements and loops.</li> <li>- Correctly utilise different data types in order to solve problems.</li> </ul> <table border="1" data-bbox="387 1523 1493 1798"> <tr> <th colspan="2">Literacy – Key Words</th></tr> <tr> <td>Variable</td><td>A memory location containing a single piece of data that can change whilst the program is running.</td></tr> <tr> <td>Constant</td><td>A memory location containing a single piece of data that cannot change whilst the program is running.</td></tr> <tr> <td>Data Type</td><td>A formal description of the kind of data used in a computer program.</td></tr> </table>	Literacy – Key Words		Variable	A memory location containing a single piece of data that can change whilst the program is running.	Constant	A memory location containing a single piece of data that cannot change whilst the program is running.	Data Type	A formal description of the kind of data used in a computer program.
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Task 1	<p>Create an account on <a href="http://www.replit.com">www.replit.com</a> and create a new Python file.</p> <p>Complete the following 'Python for Beginners Tutorial' using repl.it to write the code rather than IDLE. Repl.it will save your code to the cloud so you can access it from any machine.</p> <p>Python for Beginners Tutorial  <a href="https://www.youtube.com/watch?v=b093aqAZiPU">https://www.youtube.com/watch?v=b093aqAZiPU</a></p>
Task 2	<p>Complete the following tutorials on the use of For loops and While loops in Python. Continue to use repl.it to complete this work.</p> <p>For Loops in Python  <a href="https://www.youtube.com/watch?v=0ZvaDa8eT5s">https://www.youtube.com/watch?v=0ZvaDa8eT5s</a></p> <p>While Loops in Python  <a href="https://www.youtube.com/watch?v=HZARImviDxg">https://www.youtube.com/watch?v=HZARImviDxg</a></p>
Further reading / links	<p>Sub-routines in Python  <a href="https://www.youtube.com/watch?v=7u5WChUU_Wk">https://www.youtube.com/watch?v=7u5WChUU_Wk</a></p> <p>Lists in Python  <a href="https://www.youtube.com/watch?v=xM_JfIJV8gA">https://www.youtube.com/watch?v=xM_JfIJV8gA</a></p> <p>String handling in Python  <a href="https://www.youtube.com/watch?v=Rz511gLipAk">https://www.youtube.com/watch?v=Rz511gLipAk</a></p> <p>Reading and writing to files in Python  <a href="https://www.youtube.com/watch?v=wkrQ9AsG-cg">https://www.youtube.com/watch?v=wkrQ9AsG-cg</a></p>
Call to action	<p>Visit our website – <a href="http://www.clarendon.ac.uk">www.clarendon.ac.uk</a> 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>