



Bishop Milner Catholic College Year 10 Computing GCSE



<p>The programming project develops a student's ability to use the knowledge and skills gained through the course to solve a problem. Students will be expected to follow a systematic approach to problem solving, consistent with the skills described in Section 8 of the subject content. The skills developed can be applied to exam questions on computational thinking.</p>		
<p>HALF TERM 1: Algorithms</p> <p>STUDENTS MUST KNOW:</p> <ul style="list-style-type: none"> • the term algorithm and compare their efficiency. • decomposition and abstraction. • how to use pseudocode and flowcharts effectively. • the concept of data type. • How to use arithmetic operations in programming language <p>HOW THIS WILL BE ASSESSED: Assessment will be assessed by means of both practical programming tasks as well as written assignments.</p>	<p>HALF TERM 2: Algorithms contd.</p> <p>STUDENTS MUST KNOW:</p> <ul style="list-style-type: none"> • the concepts of data structures • how linear and binary search algorithms work. • how both bubble and merge algorithms work. • variables; declarations assignment; iteration and subroutines can be combined in programming. • How to use string handling operations and know Boolean data types <p>HOW THIS WILL BE ASSESSED: Assessment will be assessed by means of both practical programming tasks as well as written assignments.</p>	<p>HALF TERM 3: Algorithms cont.</p> <p>STUDENTS MUST KNOW:</p> <ul style="list-style-type: none"> • How to read/Write from/to a text file • How to use two dimensional arrays. • How to use nested iteration • How to use constants. <p>HOW THIS WILL BE ASSESSED: Assessment will be assessed by means of both practical programming tasks as well as written assignments.</p>
<p>HALF TERM 4: Algorithms contd.</p> <p>STUDENTS MUST KNOW:</p> <ul style="list-style-type: none"> • How to use records in the design of simple problems • How to write simple authentication • How to use pseudocode and flowcharts • that there are different levels of programming language. • that machine code is represented in binary. • that there are three types of translator. <p>HOW THIS WILL BE ASSESSED: Assessment will be assessed by means of both practical programming tasks as well as written assignments.</p>	<p>HALF TERM 5: Programming consolidation</p> <p>STUDENTS MUST KNOW:</p> <ul style="list-style-type: none"> • Why computers use binary. • How to convert between binary; decimal and hexadecimal. • How hexadecimal is used to represent whole numbers • The units that are used to measure quantities of bytes. • How to add together three binary numbers. • How to perform logical shifts. • The different character sets including ASCII and Unicode. • How both graphic files and sound files are stored. • How to compress/ decompress data using RLE <p>HOW THIS WILL BE ASSESSED: Assessment will be assessed by means of both practical programming tasks as well as written assignments.</p>	<p>HALF TERM 6: Hardware and cybersecurity</p> <p>STUDENTS MUST KNOW:</p> <ul style="list-style-type: none"> • How to construct truth tables for NOT, AND, OR gates. • How to create simple logic programs • The Von Neumann architecture and the main components. • The Fetch-Execute cycle. • The difference between RAM and ROM. • The different types of secondary storage. • How to describe embedded systems. • The difference between hardware and software and the functions of the OS • How to evaluate WAN; LAN and PAN networks and their topologies. • The 4-layer TCP/ IP model. <p>HOW THIS WILL BE ASSESSED: Assessment will be assessed by means of both practical programming tasks as well as written assignments.</p>
<p>Embedding this knowledge can be supported by cross curricular experiences as well as developing computational thinking skills by use of programs such as Serif Web Plus and Microsoft Excel. Using the Micro-bit or getting a Raspberry Pi will also help develop programming skills and computational thinking.</p>		