



# Computing @ Desborough

## KS3 Computing Long-term plan 2020 and 2021

Year 7				
<i>Headline: stay safe, code two of your own apps, understand computers and make spreadsheets</i>				
Term	Topic	Key concepts and skills	Assessment	Terminology
Term 1	Introduction, AUP, Teams, Office and online safety	<p>Introduction to our computer network, agreeing to the AUP, getting signed in, using email, using Teams, using office.com. Built in online safety discussions during all lessons</p> <ul style="list-style-type: none"> <li>• Safe and respectful communication</li> <li>• Personal and public information</li> <li>• Using safe engines safely</li> <li>• Reporting concerns, CEOP</li> </ul> <p>Outcome: WYSIWG website on online safety (Use Google Sites)</p> <p><i>The Desborough Way: Respect and Kindness</i></p>	<p>Online safety quizzes</p> <p>Website – final product</p>	<p>Antivirus software, attachment, browse, browser, chatting, cyber bullying, download, email, email address, file sharing, filter, flaming, gaming, grooming, inappropriate content, Internet, password, profile, search engine, social network, spam, tagging, troll, virus, webcam, Wi-Fi</p>
Term 2	Block coding	<p>Code Camp</p> <p>Create a Doodle Jump style game with block coding</p> <ul style="list-style-type: none"> <li>• Construct solutions (algorithms)</li> <li>• Use repetition and loops</li> <li>• Introduction to variables</li> <li>• Debugging</li> </ul> <p><i>The Desborough Way: Inspiration and Engagement</i></p>	<p>End product – final game</p> <p>Peer assessment</p>	<p>Code, debug, variable, animation, operator, block, scene, logic, input, user interface, algorithm, loop, function, coordinates</p>
Term 3 and Term 4	Coding project	<p>Creation of a top-down 2d adventure game in Code Camp</p> <p>Mainly block coding, but more able learners can move on to simple line coding</p> <ul style="list-style-type: none"> <li>• Construct and compare algorithms for efficiency</li> <li>• Solve problems through decomposition</li> <li>• Debugging</li> <li>• Desborough Stag Digital Award for game creation – judged by a panel of external professional coders</li> </ul>	<p>End product</p> <p>Peer assessment</p> <p>Awards evening</p>	<p>Code, debug, variable, animation, operator, block, scene, logic, input, user interface, algorithm, JavaScript, else, else if, loop, function</p>



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		<a href="#">The Desborough Way: Complete and Achieve</a>		
Term 5	Understanding computers	<p>Theory: inputs and outputs, hardware and software, processing and storage</p> <ul style="list-style-type: none"> <li>• History lesson of components – from cassette to NAND</li> <li>• Differences between hardware and software and classification</li> <li>• How is data stored?</li> <li>• Explain the function of the main internal parts of a computer</li> <li>• Input-process-output cycle</li> </ul> <p>Outcome: PowerPoint presentation about computers – present these to class</p>	Presentations	Data, file, operating system, input, output, hardware, software, keyboard, mouse, monitor, trackpad, speakers, microphone, webcam, storage, CPU, RAM, hard drive, motherboard, video card,
		<a href="#">The Desborough Way: Learning and Leadership</a>		
Term 6	Databases	<p>Introduction to Excel</p> <ul style="list-style-type: none"> <li>• Data classification</li> <li>• The differences between data and information</li> <li>• Filters and single criteria searches</li> <li>• Formulas and functions</li> <li>• Representing data in different ways (charts)</li> </ul>	<p>Formulas and functions quizzes</p> <p>Final outcome</p>	Data, column, row, cell, workbook, worksheet, labels, formulas, sorting, ascending, descending, format, wrap, merge, functions, AutoSum, chart, graph
		<a href="#">The Desborough Way: Achieve and Learning</a>		

<b>Year 8</b> <b>Headline: use technology responsibly, explore data and searching, code a website, start to learn Python</b>				
Term	Topic	Key concepts and skills	Assessment	Terminology
Term 1	Teams and assignments, online safety and mental health, animations	<p>Completing assignments in Teams (in case of local lockdown)</p> <p>Online safety:</p> <ul style="list-style-type: none"> <li>• Evaluating digital content</li> <li>• Safe sharing,</li> <li>• Responsible use of technologies</li> <li>• Mental health online.</li> </ul>	<p>Online safety quizzes</p> <p>Final animations</p>	Clickbait, grooming, sexting, hacker, hacking, fake news, media, private, public, critical thinking, detach, animation, frame, onionskin, framerate, graphics, import, export



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		Planning and creating online safety animations <ul style="list-style-type: none"><li>• Adobe software</li></ul> <p><a href="#">The Desborough Way: Respect and Kindness</a></p>		
Term 2	Data representation and sorting and searching	Data representation <ul style="list-style-type: none"><li>• Bit patterns</li><li>• Binary representation - images and addition</li><li>• Hex</li></ul> Sorting and searching <ul style="list-style-type: none"><li>• Linear, binary, bubble, boolean logic</li><li>• Circuitry steps</li></ul> <p><a href="#">The Desborough Way: Achieve and Progress</a></p>	Quizzes and written responses	Data, bit, binary, hexadecimal, html, css, linear, bubble, Boolean logic, denary, overflow, values, conditions, selection, iteration
Term 3 and Term 4	HTML website	Review websites, plan a website based an interest and/or hobby  Photo editing (Photoshop) – banners, graphics etc. for website <ul style="list-style-type: none"><li>• Collect quality digital content</li><li>• Manipulate digital content</li></ul> HTML coding on Code Camp <ul style="list-style-type: none"><li>• Using line coding</li><li>• Basic HTML tags</li></ul> <p><a href="#">The Desborough Way: Pride and Positivity</a></p>	Final website, marked against Rubric	Homepage, site, domain, link, hyperlink, navigation, jpeg, jpg, png, transparent, export, import, edit, contrast, brightness, crop, URL, web page, tag, debug, html, edit, crop, upload, download, import, export, filters, banner, layers
Term 5	Control systems	Draw.io and/or Flowl 3 <ul style="list-style-type: none"><li>• Logical reasoning and problem solving</li><li>• Automatic and autonomous systems</li><li>• Use reasoning to predict</li><li>• Flowcharts and pseudocode</li><li>• Build programs that solve problems</li><li>• Debugging</li></ul> <p><a href="#">The Desborough Way: Learning and Progress</a></p>	Quiz assessment	Reasoning, programming, automatic, autonomous, system, robots, reasoning, prediction, terminator, decision, process, input/output, debug



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Term 6	Line coding	Creation of a number of small Python apps Manipulation of Python code (remix) Use Edublocks to bridge the gap  <i>The Desborough Way: Enjoy and Achieve</i>	Final code  Written responses  Quizzes	Python, shell, variable, import, randint, comments, print, debugging, execute, run, run time error, integer,
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**Year 9**  
**Headline: understand the impact of computers on society, make an animation, excel within Python and understand databases and networking**

Term	Topic	Key concepts and skills	Assessment	Terminology
Term 1	Using Class Notebook, online safety ethical, moral, legal issues	Using Class Notebook (in case of local lockdown) Online safety and relationships – staying safe Ethical, moral and legal issues of computers <ul style="list-style-type: none"> <li>• Debate ethical issues – courthouse style</li> <li>• Impact of technology on society</li> <li>• Copyright</li> <li>• Regulation</li> </ul> <i>The Desborough Way: Respect and Leadership</i>	Written responses and/or arguments	Creative Commons, cyberstalking, regulation, cultural, ethical, legal, moral, society, debate, copyright, hackers, malware, cyber-criminal,
Term 2	Media project	Social media/cyber security animation and video <ul style="list-style-type: none"> <li>• Use multiple applications – Photoshop, Adobe animation software</li> <li>• Make judgements about digital content</li> <li>• Recognises audience</li> <li>• Design and create digital artefacts</li> <li>• Present projects – showcase (get local experts in to judge)</li> </ul> <i>The Desborough Way: Compete and Aspiration</i>	Final projects – rubric	Animation, framerate, export, import, frame, gif, vector, bitmap, 2d, 3d, format
Term 3 and term 4	Further programming (Python), algorithms and problem solving	Algorithm theory, advanced Python <ul style="list-style-type: none"> <li>• Turtle</li> <li>• Variables, operators, expressions, Boolean</li> <li>• Functions and lists</li> <li>• Different loops</li> <li>• If, if then, else</li> </ul>	Quizzes, code assessments  Simulation outcomes	While loop, variables, string, or, not equal to, if, int, elif, debugging, and, sensor, design environment, torque, var, return



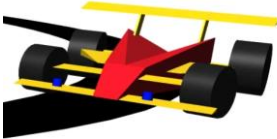

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		<ul style="list-style-type: none"><li>• Predict the behaviour of programs</li><li>• Arithmetic operators</li></ul> <p>Race car simulations and real-world problem solving using robton.io</p> <ul style="list-style-type: none"><li>• Evaluates the effectiveness of algorithms and models</li><li>• Develops and tests solutions to complex problems</li><li>• Uses logical reasoning to predict outcomes</li><li>• Abstraction</li></ul> <p><a href="#">The Desborough Way: Engagement and Complete</a></p>		
Term 5	Databases	<p>Access</p> <ul style="list-style-type: none"><li>• Analyses and evaluates data and information</li><li>• Validation, searching and sorting</li><li>• Collect, analyse, evaluate data to meet the needs of a known user</li></ul> <p><a href="#">The Desborough Way: Achieve and Learning</a></p>	Final databases	Database, data, information, tables, primary key, validation, queries, form, report,
Term 6	Understanding computer networks	<ul style="list-style-type: none"><li>• Define parts of a network</li><li>• Explore types of network</li><li>• The importance of network security</li><li>• Demonstrate data transmission</li><li>• Packets</li><li>• Topologies</li><li>• The differences between the Internet and Internet services</li></ul> <p><a href="#">The Desborough Way: Learning and Progress</a></p>	Written responses and quizzes	Network, cookie, firewall, Internet Service Provider (ISP), Internet Protocol (IP) address, kbps, mbps, peer-to-peer, client server, permissions, ping, server, web server,




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## KS3 Computing Long-term plan 2020 and 2021 – mapped against curriculum

National curriculum statement	Our curriculum	Where we go above and beyond
Design, use and evaluate computational abstractions that model the state and behaviour of real-world problems and physical systems	Year 8 - Control systems  Year 9 - Further programming (Python), algorithms and problem solving	Our students will use roboton.io which allows them to take part in coded virtual robot competitions  
Understand several key algorithms that reflect computational thinking [for example, ones for sorting and searching]; use logical reasoning to compare the utility of alternative algorithms for the same problem	Year 8 - Data representation and sorting and searching  Year 8 - Control systems	
Use 2 or more programming languages, at least one of which is textual, to solve a variety of computational problems; make appropriate use of data structures [for example, lists, tables or arrays]; design and develop modular programs that use procedures or functions	Year 7 - Block coding, Coding project  Year 8 - HTML website  Year 9 - Further programming (Python), algorithms and problem solving	Our students will be working with a platform that will allow them to publish their own apps and website for real-world use    The Year 8 Coding project will be externally judged for added engagement
Understand simple Boolean logic [for example, AND, OR and NOT] and some of its uses in circuits and programming; understand how numbers can be represented in binary, and be able to carry out	Year 8 - Data representation and sorting and searching	



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simple operations on binary numbers [for example, binary addition, and conversion between binary and decimal]		
Understand the hardware and software components that make up computer systems, and how they communicate with one another and with other systems	Year 7 – Understanding computers  Year 9 – Understand computer networks	
Understand how instructions are stored and executed within a computer system; understand how data of various types (including text, sounds and pictures) can be represented and manipulated digitally, in the form of binary digits	Year 7 – Understanding computers  Year 8 - Data representation and sorting and searching	
Undertake creative projects that involve selecting, using, and combining multiple applications, preferably across a range of devices, to achieve challenging goals, including collecting and analysing data and meeting the needs of known users	Year 8 – HTML website  Year 9 – Media project  Year 9 - Databases	Our students will be working with a platform that will allow them to publish their websites to a global audience.  The Year 9 media project will be judged externally, allowing for real-life application.
Create, reuse, revise and repurpose digital artefacts for a given audience, with attention to trustworthiness, design and usability	Year 8 – HTML website  Year 9 – Media project	
Understand a range of ways to use technology safely, respectfully, responsibly and securely, including protecting their online identity and privacy; recognise inappropriate content, contact and conduct, and know how to report concerns	Different aspects of online safety are covered at the start of every year. Every effort will be made to also incorporate online safety into other lessons.	We subscribe to eCadet's online safety provision – our students are trained to filter information to each other in classes and through assemblies  

We will also be running gifted and talented provision (computing club) for KS3