

GCSE Computer Science – Topic Help Guide

The objective of this document is to help you progress through the course using additional support material and also to help with revision in Year 11 leading up to the exams.

This help document makes reference to FOUR different books

This is the book which the students have access to in class.



PG Online AQA GCSE (9-1) Computer Science by S Robson and PM Heathcote. This is an AQA approved course text book. It covers all of the main elements of the course. **The green column in the revision links table below refers to this book.**

https://www.amazon.co.uk/AQA-GCSE-9-1-Computer-Science/dp/1910523097/ref=sr_1_2?s=books&ie=UTF8&qid=1516565507&sr=1-2



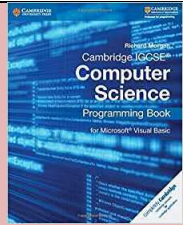
Hodder Education AQA GCSE (9-1) Computer Science by Steve Cushing. This is an additional AQA approved course text book. It covers all of the main elements of the course. **The yellow column in the revision links table below refers to this book.**

https://www.amazon.co.uk/Computer-Science-GCSE-Student-Book/dp/147186619X/ref=sr_1_8?s=books&ie=UTF8&qid=1516219500&sr=1-8



Hodder Education AQA GCSE Computer Science Revision Guide by Steve Cushing. This book is authored by the same person who wrote the course book highlighted above. Much of the content mirrors the course book, however this book is laid out to support revision with self test sections, practice exam questions and check lists. **The blue column in the revision links table below refers to this book.**

https://www.amazon.co.uk/GCSE-Computer-Science-Revision-Notes/dp/147188659X/ref=pd_bxgy_14_img_2?encoding=UTF8&psc=1&refRID=YCJSSB3CDVM2XPFGK1Z1



I-GCSE Programming Book for Microsoft Visual Basic. This book is actually aimed at the I-GCSE course, however is an effective and detailed guide to programming in Visual Basic. It is a very good book to help students with the programming element of the GCSE Computer Science course. This book is useful for the NEA element of the course, but is less useful for the exam element of the course. **The light red column in the revision links table below refers to this book.**

https://www.amazon.co.uk/Cambridge-IGCSE%C2%AE-Computer-Science-Programming/dp/1107518644/ref=sr_1_2?s=books&ie=UTF8&qid=1516216767&sr=1-2

Exam Technique Tips:

Command words – helping you to understand command words and how to use them to maximise your marks

<https://www.youtube.com/watch?v=j-V8N4FMYKY&list=PLCiOXwirraUBkaFcyChfn0DGPPD6n7nvq&index=1>

Guidance for the actual exam – looking at the number of marks etc

<https://www.youtube.com/watch?v=KHbvbHW155Q&list=PLCiOXwirraUBkaFcyChfn0DGPPD6n7nvq&index=2>

Tips on handling 9+ mark questions:

<https://www.youtube.com/watch?v=ZVQqDMQ8Fb0&index=4&list=PLCiOXwirraUBkaFcyChfn0DGPPD6n7nvq>



The table below outlines the main topic areas of the course. Each topic area is matched to the relevant page in the books highlighted on page 1. The VB book is aimed at the programming element of the course and therefore is only relevant to specific sections of the course. Equally not all of the topics have a YouTube link or a BBC Bitesize link. This is because there isn't online revision material for every topic.

You should be aware that the YouTube links make reference to the Python programming language rather than Visual Basic, therefore you will need to keep this in mind.

Topic Number	Topic Area	Paper this topic is in	YouTube Revision Link	PG Online Course Book	Hodder Course Book	I-GCSE VB Book	Hodder Revision Guide	BBC Bitesize link
1	3.1 Fundamentals of Algorithms	1						
2	Representing Algorithms	1	https://www.youtube.com/watch?v=TVUvDdpml70&index=1&list=PLCiOXwirraUAf7ueVPI99gktxzJNElyCC	Pg 2 - 9	Pg 1 – 14		Pg 13 – 15	https://www.bbc.co.uk/education/guides/z22wwmn/revision https://www.bbc.co.uk/education/guides/zrxncdm/revision
3	Efficiency of Algorithms	1			Pg 214 – 216		Pg 16	
4	Searching Algorithms	1	https://www.youtube.com/watch?v=X3xRQ-j_sOI&index=3&list=PL04uZ7242_M6yYkM_hA2mzBZGcvEnLSOU	Pg 13	Pg 202 – 213		Pg 17 – 18	
5	Sorting Algorithms	1	Bubble Sort: https://www.youtube.com/watch?v=5GqZ0Gueb0Q&index=42&list=PLCiOXwirraUAvkTPDWeeSqAKty3LAG37- Merge Sort: https://www.youtube.com/watch?v=TcNNPUIRqI8&index=43&list=PLCiOXwirraUAvkTPDWeeSqAKty3LAG37-	Pg 15	Pg 202 – 213		Pg 19 – 20	



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	3.2 Programming	1						
6	Data Types	1	Variables, constants, inputs and outputs https://www.youtube.com/watch?v=AaLk_fEVCiY&index=1&list=PLCiOXwirraUDRk5TIB2uIS3V2-0tB3vcS Data Types https://www.youtube.com/watch?v=_lgVcodSjHM&list=PLCiOXwirraUDRk5TIB2uIS3V2-0tB3vcS&index=8	Pg 25	Pg 166 – 175		Pg 21 – 22	https://www.bbc.co.uk/education/guides/zc6s4wx/revision
7	Programming Concepts	1	https://www.youtube.com/watch?v=TuysZSLqh4M&index=2&list=PLCiOXwirraUDRk5TIB2uIS3V2-0tB3vcS	Pg 25 – 57	Pg 14 – 29 Pg 54 – 63 Pg 64 – 117	Chp 2 - 7	Pg 24 – 28	
8	Arithmetic Operations	1	https://www.youtube.com/watch?v=k3TNqA8tI8Y&index=9&list=PLCiOXwirraUDRk5TIB2uIS3V2-0tB3vcS	Pg 27	Pg 30 – 45	Chp 3	Pg 29 – 30	
9	Relational Operations	1		Pg 27	Pg 81 – 84	Chp 4	Pg 31 – 32	
10	Boolean Operations	1	https://www.youtube.com/watch?v=Qlff2wXoRSw&list=PLCiOXwirraUDRk5TIB2uIS3V2-0tB3vcS&index=10	Pg 27	Pg 46-54	Chp 4	Pg 33 – 34	
11	Data Structures (arrays)	1	https://www.youtube.com/watch?v=-tBUH5qfL4&list=PLCiOXwirraUDRk5TIB2uIS3V2-0tB3vcS&index=6	Pg 36 – 40	Pg 176 – 187	Chp 10	Pg 35 – 37	https://www.bbc.co.uk/education/guides/z4tf9j6/revision



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12	Input / Output and File Handling	1		Pg 41 - 42	Pg 194 – 198		Pg 38 – 39	
13	String Handling	1	https://www.youtube.com/watch?v=daxsSKLRlIa&index=48&list=PLCiOXwirraUAvkTPDWeeSqAKty3LAG37-	Pg 28 - 29	Pg 65		Pg 41 – 43	
14	Random Numbers	1			Pg 32		Pg 44	
15	Sub routines	1	https://www.youtube.com/watch?v=9gyO0ZOXQU4&index=52&list=PLCiOXwirraUAvkTPDWeeSqAKty3LAG37-	Pg 38	Pg 109 – 117	Chp 7	Pg 45 – 48	https://www.bbc.co.uk/education/guides/z9hykqt/revision
16	Structured Programming	1		Pg 47 - 51	Pg 118 – 124		Pg 49 – 50	
17	Robust and Secure Programming	1		Pg 52 - 61	Pg 217 – 232	Chp 8 Chp 9	Pg 51 – 54	https://www.bbc.co.uk/education/guides/z8n3d2p/revision
18	Classification of Programming Languages	1	<p>Very Early Software and how the computer uses it https://www.youtube.com/watch?v=FZGugFqdr60&list=PL8dPuuaLjXtNIUrzyH5r6jN9ullqZBpdo&index=8</p> <p>The first programming languages https://www.youtube.com/watch?v=RU1u-js7db8</p>	Pg 62 - 64	Pg 137 – 144		Pg 55 – 57	



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	3.3 Fundamentals of Data Representation	1 & 2						
19	Number Bases	1 & 2	<p>Why Data is represented in Binary https://www.youtube.com/watch?v=KUfPsCJ-zzE&index=56&list=PLCiOXwirraUAvkTPDWeeSqAKty3LAG37-</p> <p>Computer Related Maths and Number Bases https://www.youtube.com/watch?v=ubz0iZci3yE&index=59&list=PLCiOXwirraUAvkTPDWeeSqAKty3LAG37-</p>	Pg 68 - 74	Pg 125 – 136		Pg 58	https://www.bbc.co.uk/education/guides/zwsbwmn/revision
20	Converting Between Number Bases	1 & 2		Pg 74	Pg 125 – 136		Pg 59 – 61	
21	Units of Information	1 & 2	https://www.youtube.com/watch?v=X7RImULa80c&index=8&list=PLCiOXwirraUAvkTPDWeeSqAKty3LAG37-	Pg 76 - 79	Pg 144 – 153		Pg 63 – 64	
22	Binary Arithmetic	1 & 2		Pg 71 - 72	Pg 129 - 131		Pg 65 – 66	https://www.bbc.co.uk/education/guides/zifgjsx/revision
23	Character Encoding	1 & 2		Pg 75 - 76	Pg 145		Pg 68 – 69	
24	Representing Images	1 & 2		Pg 76 - 78	Pg 155		Pg 71 – 72	https://www.bbc.co.uk/education/guides/zqyrq6f/revision
25	Representing Sound	1 & 2		Pg70 - 80	Pg 156		Pg 74 – 76	https://www.bbc.co.uk/education/guides/z7vc7ty/revision



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26	Data Compression	1 & 2	https://www.youtube.com/watch?v=X7RImULA80c&list=PLCiOXwirraUAvkTPDWeeSqAKty3LAG37-&index=8	Pg 80 – 82	Pg 161 – 165 Pg 198 – 201		Pg 77 – 81	
	3.4 Computer Systems	1 & 2						
27	Hardware and Software	1 & 2	<p>CPU Characteristics https://www.youtube.com/watch?v=BYlq8ugedxA&index=2&list=PLCiOXwirraUAvkTPDWeeSqAKty3LAG37-</p> <p>Embedded Computer Systems https://www.youtube.com/watch?v=Bsyag_1Pfm0&index=3&list=PLCiOXwirraUAvkTPDWeeSqAKty3LAG37-</p> <p>RAM and ROM (Primary Memory) https://www.youtube.com/watch?v=tsH7IGcWSLg&list=PLCiOXwirraUAvkTPDWeeSqAKty3LAG37-&index=4</p> <p>The need for virtual memory https://www.youtube.com/watch?v=qr6IPzYW1eY&index=5&list=PLCiOXwirraUAvkTPDWeeSqAKty3LAG37-</p> <p>Flash Memory https://www.youtube.com/watch?v=djPYjHK3JH0&index=6&list=PLCiOXwirraUAvkTPDWeeSqAKty3LAG37-</p> <p>The need for secondary storage (hard disk etc) https://www.youtube.com/watch?v=w_0A3EWoIU4&list=PLCiOXwirraUAvkTPDWeeSqAKty3LAG37-&index=7</p>	Pg 97 – 106	Pg 232 – 244		Pg 82 – 86	https://www.bbc.co.uk/education/guides/zmb9mp3/revision



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28	Boolean Logic	1 & 2		Pg 86 – 90			Pg 88 – 90	https://www.bbc.co.uk/education/guides/zc4bb9q/revision
29	Software Classification	1 & 2	<p>The purpose and functionality of operating systems https://www.youtube.com/watch?v=dJH_ev7DR5I&index=26&list=PLCiOXwirraUAvkTPDWeeSqAKty3LAG37-</p> <p>Operating Systems – Part 1 https://www.youtube.com/watch?v=IOAMkJSjy2k&list=PLCiOXwirraUAvkTPDWeeSqAKty3LAG37-&index=27</p> <p>Operating Systems – Part 2 https://www.youtube.com/watch?v=F1AuCLLW2o&list=PLCiOXwirraUAvkTPDWeeSqAKty3LAG37-&index=28</p> <p>Utility Software https://www.youtube.com/watch?v=8oMmtm4zJ2E&list=PLCiOXwirraUAvkTPDWeeSqAKty3LAG37-&index=29</p>	Pg 91 – 96	Pg 298 – 307		Pg 91 – 96	https://www.bbc.co.uk/education/guides/z6r86sg/revision https://www.bbc.co.uk/education/guides/ztcdftr/revision
30	System Architecture	1 & 2	https://www.youtube.com/watch?v=t8H6-anK0t4&index=1&list=PLCiOXwirraUAvkTPDWeeSqAKty3LAG37-	Pg 97	Pg 232 – 244		Pg 97 – 106	https://www.bbc.co.uk/education/guides/zxgkxnb/revision



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31	3.5 Fundamentals of Computer Networks	2	<p>Types of Networks https://www.youtube.com/watch?v=ZAMbMcYqK_0&list=PLCiOXwirraUAvkTPDWeeSqAKty3LAG37-&index=11</p> <p>Factors which impact network performance https://www.youtube.com/watch?v=KdNHXq-trQk&list=PLCiOXwirraUAvkTPDWeeSqAKty3LAG37-&index=12</p> <p>Client / Server and Peer to Peer networks https://www.youtube.com/watch?v=3qRCxu9C_AI&index=13&list=PLCiOXwirraUAvkTPDWeeSqAKty3LAG37-</p> <p>Hardware needed to connect to a LAN https://www.youtube.com/watch?v=SrZd6uqr8rs&list=PLCiOXwirraUAvkTPDWeeSqAKty3LAG37-&index=14</p> <p>What is the internet? https://www.youtube.com/watch?v=5-IY6UGZF4s&index=15&list=PLCiOXwirraUAvkTPDWeeSqAKty3LAG37-</p> <p>What are virtual networks? https://www.youtube.com/watch?v=rbMm6BJM1jg&index=16&list=PLCiOXwirraUAvkTPDWeeSqAKty3LAG37-</p> <p>Star and Mesh network topologies https://www.youtube.com/watch?v=vW3PeQOXYc&index=17&list=PLCiOXwirraUAvkTPDWeeSqAKty3LAG37-</p>	Pg 111 - 124	Pg 308 – 317		Pg 108 – 121	https://www.bbc.co.uk/education/guides/zh4whyc/revision https://www.bbc.co.uk/education/guides/zp9jpv4/revision https://www.bbc.co.uk/education/guides/znkqn39/revision



		<p>What is WiFi? https://www.youtube.com/watch?v=1e4WT2YsT7s&index=18&list=PLCiOXwirraUAvkTPDWeeSqAKty3LAG37-</p> <p>https://www.youtube.com/watch?v=syllixFnMQ4&index=19&list=PLCiOXwirraUAvkTPDWeeSqAKty3LAG37-</p> <p>What is "Ethernet"? https://www.youtube.com/watch?v=dJSaY-B9GiY&list=PLCiOXwirraUAvkTPDWeeSqAKty3LAG37-&index=20</p> <p>Network Layer Model https://www.youtube.com/watch?v=HJ6wg-roj7c&index=21&list=PLCiOXwirraUAvkTPDWeeSqAKty3LAG37-</p> <p>What is "Packet Switching"? https://www.youtube.com/watch?v=Wj3nYkxPTT0&list=PLCiOXwirraUAvkTPDWeeSqAKty3LAG37-&index=22</p>					
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	3.6 Fundamentals of Cyber-Security	2						
32	Cyber Security Threats	2	<p>Different forms of attack https://www.youtube.com/watch?v=v6Qgr1wT4uE&list=PLCiOXwirraUAvkTPDWeeSqAKty3LAG37-&index=23</p> <p>Threats posed by networks https://www.youtube.com/watch?v=tHly47lhAqQ&index=24&list=PLCiOXwirraUAvkTPDWeeSqAKty3LAG37-</p>	Pg 126-127	Pg 268 – 274		Pg 122 – 126	https://www.bbc.co.uk/education/guides/zs87sbk/revision
33	Social Engineering	2		Pg 128-129	Pg 275 – 276		Pg 122	
34	Malicious Code	2		Pg 130-131	Pg 268 – 278		Pg 124	
35	Detecting and Preventing cyber security threats	2	https://www.youtube.com/watch?v=jmJ4nSHcDEU&list=PLCiOXwirraUAvkTPDWeeSqAKty3LAG37-&index=25	Pg 131 - 134	Pg 279 – 286		Pg 127 – 128	



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36	3.7 Ethical, Legal and Environmental Impacts of Digital Technology	2	<p>What privacy issues affect computers? https://www.youtube.com/watch?v=A_6NfRS3nt0&list=PLCiOXwirraUAvkTPDWeeSqAKty3LAG37-&index=30</p> <p>Legislation relevant to Computer Science https://www.youtube.com/watch?v=N1QUHzTs-cs&list=PLCiOXwirraUAvkTPDWeeSqAKty3LAG37-&index=31</p> <p>The cultural implications of Computer Science https://www.youtube.com/watch?v=SlvGvZ1ZoNQ&index=32&list=PLCiOXwirraUAvkTPDWeeSqAKty3LAG37-</p> <p>The environmental impact of Computer Science https://www.youtube.com/watch?v=v5_urd3UbWA&list=PLCiOXwirraUAvkTPDWeeSqAKty3LAG37-&index=33</p> <p>Discussing & investigating Computer Science technologies https://www.youtube.com/watch?v=cJZlnORzWys&index=34&list=PLCiOXwirraUAvkTPDWeeSqAKty3LAG37-</p>	Pg 136 - 146	Pg 288 – 297		Pg 132 - 134	<p>https://www.bbc.co.uk/education/guides/z46s4wx/revision</p> <p>https://www.bbc.co.uk/education/guides/z9tf9j6/revision</p> <p>https://www.bbc.co.uk/education/guides/zkhykqt/revision</p> <p>https://www.bbc.co.uk/education/guides/zdn3d2p/revision</p>