

GCSE COMPUTER SCIENCE

Y11 REVISION CHECKLIST

REVISED

PAPER 1: COMPUTER SYSTEMS

Topic	CGP Revision Guide pages	Done?
1.1 Systems Architecture		
The purpose of the CPU	Pages 2, 3, 5	<input type="checkbox"/>
Common CPU components and features		<input type="checkbox"/>
Von Neumann Architecture		<input type="checkbox"/>
Questions	1. Describe the function of the ALU 2. Identify one function of the control unit 3. Name one register and its purpose 4. What is meant by clock speed? 5. What is the purpose of the CPU?	<input type="checkbox"/>
1.2 Memory and Storage		
Primary storage – RAM and ROM	Page 4	<input type="checkbox"/>
Virtual Memory		<input type="checkbox"/>
Secondary Storage (optical, magnetic, solid state)	Pages 6, 7	<input type="checkbox"/>
Units of data (bit, nibble, byte, KB, MB, GB, TB, PB)	Page 66	<input type="checkbox"/>
Numbers (denary, binary, hexadecimal, binary shift, binary addition)	Pages 67, 68, 69, 70, 71	<input type="checkbox"/>
Questions	1. State the purpose of RAM 2. Why is virtual memory needed? 3. Give three characteristics to consider when choosing a suitable type of secondary storage 4. Convert 167 into Binary 5. Convert the hexadecimal number 89 into denary 6. What is 10011000 + 1010011? 7. Perform a left binary shift by 2 places on 10001111	<input type="checkbox"/>

Topic	Resources	Done?
1.2 Memory and Storage		
Characters (ASCII, Unicode)	Page 72	<input type="checkbox"/>
Images	Page 73	<input type="checkbox"/>
Sound	Page 74	<input type="checkbox"/>
Compression (Lossy VS Lossless)	Page 75	<input type="checkbox"/>
Questions	<ol style="list-style-type: none"> 1. What is the difference between ASCII and Unicode? 2. How many different colours are possible with a colour depth of 4? 3. What is the difference between lossy and lossless compression? 4. What would the effect be on audio quality and file size if the bit rate was increased? 5. What is meant by the term 'sampling'? 	<input type="checkbox"/>
1.3 Computer networks, connections and protocols		
Factors that affect performance	Page 13	<input type="checkbox"/>
Hardware needed	Page 14	<input type="checkbox"/>
The Internet as a worldwide collection of computer networks.	Page 20	<input type="checkbox"/>
Modes of connection		<input type="checkbox"/>
Encryption.		<input type="checkbox"/>
IP addressing and MAC addressing.	Page 17	<input type="checkbox"/>
Standards.	Page 18	<input type="checkbox"/>
Common protocols	Page 19	<input type="checkbox"/>
Cloud Computing and virtual networks	Page 20	<input type="checkbox"/>

Topic	Resources	Done?
Questions (1.3)	<ol style="list-style-type: none"> 1. What is a LAN? (Local Area Network)? 2. State the function of a router 3. Explain TWO factors that can affect the performance of the network 4. State the function of the DNS 5. Explain one advantage of using cloud computing 6. What is the FTP protocol used for? 7. What protocol is used to send data over the Internet securely? 	<input type="checkbox"/>
1.4 Network security		
Network threats	Page 21, 22	<input type="checkbox"/>
Identifying and preventing vulnerabilities	Page 23	<input type="checkbox"/>
Questions	<ol style="list-style-type: none"> 1. Explain what is meant by a brute force attack? 2. What is a penetration tester? 3. What could be used to help prevent viruses? 	<input type="checkbox"/>
1.6 Ethical, legal, cultural and environmental impacts of digital technology		
Impacts of digital technology on wider society	Pages 25, 26, 27, 28, 29	<input type="checkbox"/>
Legislation relevant to Computer Science.	Page 30, 31	<input type="checkbox"/>
Questions	<ol style="list-style-type: none"> 1. What is meant by E-waste? 2. Identify two principles of the Data Protection Act 3. What is meant by Copyright? 4. What does the Computer Misuse Act protect? 	<input type="checkbox"/>

"Nothing is impossible.

The word itself says
"I'm Possible"

AUDREY HEPBURN

END OF PAPER 1

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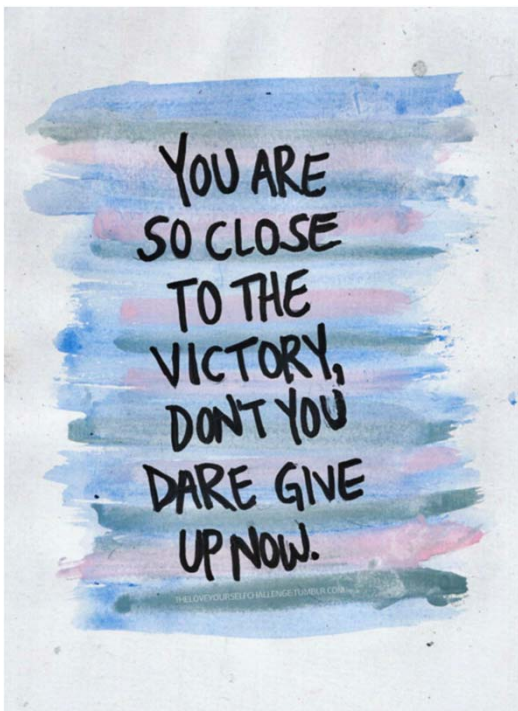
PAPER 2 COMPUTATIONAL THINKING, ALGORITHMS & PROGRAMMING

Topic	Resources	Done?														
2.1 Computational Thinking																
Principles of computational thinking (decomposition, abstraction)	Page 33	<input type="checkbox"/>														
Pseudocode & flowcharts	Pages 34, 35	<input type="checkbox"/>														
Identifying errors		<input type="checkbox"/>														
Trace tables	This is just when you complete a dry run of the program. Completing a table as you go through the program.	<input type="checkbox"/>														
Searching algorithms: <ul style="list-style-type: none"> • binary • linear 	Page 36	<input type="checkbox"/>														
Sorting algorithms: <ul style="list-style-type: none"> • Bubble sort • Merge sort • Insertion sort 	Pages 37, 38, 39	<input type="checkbox"/>														
Questions	<table border="1" style="width: 100%; text-align: center;"> <tr> <td>3</td> <td>6</td> <td>8</td> <td>11</td> <td>13</td> <td>15</td> <td>18</td> </tr> </table> <p>1. Use a binary search to find "8" in the list 2. Use a linear search to find "11" in the list 3. What is meant by 'decomposition'?</p> <table border="1" style="width: 100%; text-align: center;"> <tr> <td>12</td> <td>6</td> <td>8</td> <td>15</td> <td>17</td> <td>2</td> <td>5</td> </tr> </table> <p>4. Use a bubble sort to put the above in order</p>	3	6	8	11	13	15	18	12	6	8	15	17	2	5	<input type="checkbox"/>
3	6	8	11	13	15	18										
12	6	8	15	17	2	5										

Topic	Resources	Done?
2.2 Programming fundamentals		
The use of variables, constants, operators, inputs, outputs & assignments	Page 41	<input type="checkbox"/>
Programming techniques: <ul style="list-style-type: none"> • Sequence • Selection • Iteration 	Pages 45, 46, 47	<input type="checkbox"/>
Arithmetic operators	Page 42	<input type="checkbox"/>
BOOLEAN operators (AND, NOT, OR)	Page 48	<input type="checkbox"/>
Data types	Page 43	<input type="checkbox"/>
String manipulation	Page 44	<input type="checkbox"/>
File handling	Page 51	<input type="checkbox"/>
Use of records	Page 52	<input type="checkbox"/>
Use of SQL	Page 53	<input type="checkbox"/>
Use of arrays	Pages 49, 50	<input type="checkbox"/>
Sub programs	Pages 54, 55	<input type="checkbox"/>
Questions	<ol style="list-style-type: none"> 1. What is meant by 'iteration'? 2. What is a variable? 3. What would the data type of 'goals scored' in a football game be? 4. True or false: 3>4? 5. True or False? 4 == 4? 6. What is an array? 	<input type="checkbox"/>

Topic	Resources	Done?
2.3 Defensive design		
Defensive design considerations	Pages 57, 58	<input type="checkbox"/>
Maintainability		<input type="checkbox"/>
Testing	Pages 59, 60	<input type="checkbox"/>
Syntax and logic errors		<input type="checkbox"/>
Selecting and using suitable test data: <ul style="list-style-type: none"> • Normal • Boundary • Invalid • Erroneous 	Page 60	<input type="checkbox"/>
Questions	<ol style="list-style-type: none"> 1. What is meant by input sanitisation? 2. Identify one method of authentication 3. What is the difference between syntax and logic errors? 4. What is meant by iterative testing? 5. A program wants the user to enter a number between 10 and 20. Identify ONE type of erroneous data 	<input type="checkbox"/>
2.4 Boolean Logic		
Logic diagrams	Pages 64, 65	<input type="checkbox"/>
Truth tables		<input type="checkbox"/>
Questions	<ol style="list-style-type: none"> 1. Draw a logic diagram for the expression: (NOT A) AND B 2. $P = A \text{ AND } B$ What would the output be if $A = 1$ and $B = 0$? Draw a logic diagram that represents (NOT A) AND (B AND C)	<input type="checkbox"/>

Topic	Resources	Done?
2.5 Programming languages and Integrated Development Environments		
Characteristics and purpose of different levels of programming language: <ul style="list-style-type: none"> • High-level languages • Low-level languages 	Page 61	<input type="checkbox"/>
The purpose of translators		<input type="checkbox"/>
The characteristics of a compiler and an interpreter		<input type="checkbox"/>
Common tools and facilities available in an Integrated Development Environment (IDE): <ul style="list-style-type: none"> • Editors • Error diagnostics • Run-time environment • Translators 	Page 62	<input type="checkbox"/>
Questions	<ol style="list-style-type: none"> 1. Describe one advantage of using high level language 2. Explain ONE common tool of an IDE? 3. Identify one purpose of a translator? 4. Machine code – High or low level language? 	<input type="checkbox"/>



END OF PAPER 2

ALGORITHM PRACTICE

practice makes perfect

Create an algorithm that:

- Asks the user for the length of a rectangle
- Asks the user for the width of a rectangle
- Calculate the area of the square
- Displays a message “the area of the square is” and displays the area of the square.

Pseudocode

High level language

Create an algorithm that:

- Asks the user to input how many minutes and texts they have used in the last month
- Outputs the total cost of the bill. This is calculated by working out:
 - The total cost of the minutes (at £0.10 per minute)
 - Adding this to the total cost of the texts (at £0.05 per text) and....
 - Adding on an additional monthly charge of £10.00

Pseudocode

High level language

Create an algorithm that:

- Ask the user to enter a number between 1 and 20.
- If the number is greater or equal to 10 then display a message “The number is equal or higher than 10”.
- However, if the number is less than 10 it should display the message “**The number is less than 10**”.

Pseudocode

High level language

A taxi firm charges £3 for the first mile and £2 for every mile after that. If there are 5 or more passengers, an extra 50% is added to the price.

Write an algorithm which calculates the cost of a journey.

The algorithm should:

- Ask the user to enter the number of passengers
- Ask the user to enter the distance (as an integer)
- Calculate the price of the journey
- Output the price on the screen

Pseudocode

High level language