Year 11 Revision Checklist - Computer Science			
Paper 1	**RAG**	**Revised?**	**Comments**
1.1 Systems Architechture			
Von Neumann architecture:			
MAR (Memory Address Register)		☐	
MDR (Memory Data Register)		☐	
Program Counter		☐	
Accumulator		☐	
Common CPU components and their function:			
ALU (Arithmetic Logic Unit)		☐	
CU (Control Unit)		☐	
Cache		☐	
The function of the CPU as fetch and execute instructions stored in memory		☐	
How common characteristics of CPUs affect their performance:			
clock speed		☐	
cache size		☐	
number of cores		☐	
Embedded systems:			
purpose of embedded systems		☐	
examples of embedded systems		☐	
1.2 Memory and Storage			
The purpose of ROM in a computer system		☐	
The purpose of RAM in a computer system		☐	
The need for virtual memory		☐	
Flash memory		☐	
The need for secondary storage		☐	
Data capacity and calculation of data capacity requirements		☐	
Common types of storage:			
optical		☐	
magnetic		☐	
solid state		☐	

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Suitable storage devices and storage media for a given application, and the advantages and disadvantages of these, using characteristics:			
capacity		☐	
speed		☐	
portability		☐	
durability		☐	
reliability		☐	
cost		☐	
Units:			
bit, nibble, byte, kilobyte, megabyte, gigabyte, terabyte, petabyte		☐	
how data needs to be converted into a binary format to be processed by a computer		☐	
Numbers:			
how to convert positive denary whole numbers (0–255) into 8 bit binary numbers and vice		☐	
how to add two 8 bit binary integers and explain overflow errors which may occur		☐	
binary shifts		☐	
how to convert positive denary whole numbers (0–255) into 2 digit hexadecimal numbers		☐	
how to convert from binary to hexadecimal equivalents and vice versa		☐	
check digits		☐	
Characters:			
the use of binary codes to represent characters		☐	
the term ‘character-set’		☐	
the relationship between the number of bits per character in a character set and the numb		☐	
Images:			
how an image is represented as a series of pixels represented in binary		☐	
metadata included in the file		☐	
the effect of colour depth and resolution on the size of an image file.		☐	
Sound:			
how sound can be sampled and stored in digital form		☐	
how sampling intervals and other factors affect the size of a sound file and the quality of it		☐	
sample size		☐	
bit rate		☐	
sampling frequency		☐	
Compression:			

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need for compression		☐	
types of compression:		☐	
lossy		☐	
lossless		☐	
1.3 Computer Networks, Connections and Protocols			
Types of networks:			
LAN (Local Area Network)		☐	
WAN (Wide Area Network)		☐	
Factors that affect the performance of networks		☐	
The different roles of computers in a client-server and a peer-to-peer network		☐	
The hardware needed to connect stand-alone computers into a Local Area Network:			
wireless access points		☐	
routers/switches		☐	
NIC (Network Interface Controller/Card)		☐	
transmission media		☐	
The internet as a worldwide collection of computer networks:			
DNS (Domain Name Server)		☐	
hosting		☐	
the cloud		☐	
Web servers and Clients		☐	
Star and mesh network topologies		☐	
Methods of Connection:			
Wired: Ethernet		☐	
Wireless: Wi-Fi and Bluetooth		☐	
Encryption		☐	
The uses of IP addressing, MAC addressing		☐	
Standards		☐	
Common Protocols Including:			
TCP/IP (Transmission Control Protocol/Internet Protocol)		☐	
HTTP (Hyper Text Transfer Protocol)		☐	

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HTTPS (Hyper Text Transfer Protocol Secure)		☐	
FTP (File Transfer Protocol)		☐	
POP (Post Office Protocol)		☐	
IMAP (Internet Message Access Protocol)		☐	
SMTP (Simple Mail Transfer Protocol)		☐	
The *concept* of layers		☐	
Packet switching		☐	
1.4 Network Security			
Forms of attack		☐	
Threats posed to networks:			
malware		☐	
people as the 'weak point' in secure systems (social engineering), phishing etc		☐	
brute force attacks		☐	
denial of service attacks		☐	
data interception and theft		☐	
the concept of SQL injection		☐	
Identifying and preventing vulnerabilities:			
penetration testing		☐	
network forensics		☐	
network policies		☐	
anti-malware software		☐	
firewalls		☐	
user access levels		☐	
passwords		☐	
encryption.		☐	
1.5 System Security			
The purpose and functionality of systems software		☐	
Operating systems:			
user interface		☐	

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memory management/multitasking		☐	
peripheral management and drivers		☐	
user management		☐	
file management		☐	
Utility system software:			
encryption software		☐	
defragmentation		☐	
data compression		☐	
1.8 Ethical, legal, cultural and environmental concerns			
How to investigate and discuss Computer Science technologies while considering:			
ethical issues		☐	
legal issues		☐	
cultural issues		☐	
environmental issues.		☐	
privacy issues		☐	
Open source vs proprietary software		☐	
Legislation relevant to Computer Science:			
The Data Protection Act 1998		☐	
Computer Misuse Act 1990		☐	
Copyright Designs and Patents Act 1988		☐	