Edexcel 2020
Paper 1 – Principles of Computer Science
Paper 2 – Application of Computational Thinking

GCSE COMPUTER SCIENCE LEARNING JOURNEY

Exam Paper 2

Exam Paper 1

Exam Practice

2.5 End of Unit Test

2.5 Programming Languages & IDEs
What are the characteristics of languages; high and low-level. What is the purpose of translators, compilers, interpreters? What is Little Man Computer? Tools in an IDE; editors, error diagnostics, run-time environments & translators.

Revision

1.6 Ethical, Legal and Cultural Concerns
What are the issues created and addressed by technology and the impact on society including ethical, legal, cultural, environmental and privacy. Legislation, Data Protection, computer misuse, copyright and licences.

1.6 End of Unit Test

2.3 Producing Robust Programs
Why use defensive programming? Use of defensive designs. Testing to make sure it works and debugging, is that normal, boundary, invalid or erroneous? Refine it! Create code which is easy to maintain. Know the purpose of testing and types used for validation.

2.3 End of Unit Test

1.4 End of Unit Test

1.4 Network Security
What forms of attack happen to computers and networks? What's malware, phishing, brute force attacks, DoS and Interception & theft. How to prevent attacks. What is an SQL injection, Firewalls, password encryption and security.

1.5 End of Unit Test

1.5 Systems Software
What are operating systems & interfaces? What is memory, peripheral, user and file management? What is utility software and why do they need encryption, defragmentation and file management & data compression?

YEAR 11 GCSE

2.1 Algorithms
Using abstraction, decomposition and algorithmic thinking to define a problem. Create structure diagrams & flowcharts. How to efficiently search and sort data. Writing algorithms using Python. What are binary, bubble, merge, insertion sorts. How do I identify bugs and fixes? What are trace tables?

2.1 End of Unit Test

2.2 Programming Fundamentals
Using variables, constants, operators, inputs/outputs. Sequences, selection & iteration. Arithmetic, integers, Boolean. Characters & string manipulation, data types and casting. String manipulation & file handling, open, read, write, close. Storing data in records. Using SQL to search for data. Using arrays, sub programs.

2.2 End of Unit Test

2.4 Boolean Logic
Creating simple logic diagrams and truth tables. Combine Boolean and logical operators to solve problems

1.2 End of Unit Test

1.2 Memory & Storage
What is primary & secondary storage and what is the purpose of RAM and ROM, the differences between them, the advantages and disadvantages? Why do we need virtual memory? What is flash memory? What are the common types of storage? What types are use for what? What is data capacity? What's a nibble? What is binary, denary, hexadecimal and ASCII? What is a character set? What are bitmaps, image resolution, colour depth and metadata? How can sound be sampled and stored? How does sampling rates, duration and bit depth affect the size of sound files and quality of its playback? What is compression? What is the difference between lossy and lossless compression?

2.4 End of Unit Test

1.3 Computer Network Connections & Protocols
What are LANS & WANs? What factors affect the performance of networks? What does client server and peer-to-peer mean? What hardware do you use on a LAN? What is the Internet really? What is a DNS, hosting, the cloud, web server and client mean? Routers & switches. What are star and mesh network topologies? Wired or not to be wired, is that the question? What is Ethernet, Wi-Fi and Bluetooth connections and how do they work? Why is cryptography and encryption. What are private and public keys and how do they work? What's an IP and MAC address? How do I learn these TCP/IP, HTTP, HTTPS, FTP, POP, IMAP, SMTP, and what are layers?

Start of GCSE

YEAR 10 GCSE

Introduction
Specification requirements. Mark Scheme. Course calendar. Where to find resources. Folder Setup. Workbooks. Homework calendar. Student/Teacher expectations

1.1 Systems Architecture
What is the CPU? How does it function? What are the components it is made of? What are the common characteristics which affect performance? What are embedded systems? Who is Von Neumann

1.1 End of Unit Test

1.3 End of Unit Test