Year 13 Computer Science Revision Timetable 2024

We will be asking you to revise different topics each week using weekly revision activities via a Showbie class to be completed as homework and during revision lessons. Ask your teacher for the class code.

Resources

- Diagnostic Questions Online, Seneca Assignments, Craig n Dave Online Videos (YouTube), Isaac Computing web site.
- Quizlet https://quizlet.com/join/6mPgbfnVY

Exam

Computer Science (A Level)

H446/01	Computer systems	2 h 30 min	Mon	10 June pm
H446/02	Algorithms and programming	2 h 30 min	Tue	18 June pm

Date	Paper 1	Paper 2	Revision Sessions	Revised & Tested?
Week 1 19 th Feb	 Structure and function of the processor ALU, CU, Registers, Buses, data, address and control and how they relate to assembly language. FDE Cycle and its effects on the registers. CPU performance, pipelining and architectures. GPUs and their uses (including those not related to graphics). Multicore and Parallel system - Pipelining 	 Elements of computational thinking Thinking abstractly Thinking ahead Thinking procedurally Thinking logically Thinking concurrently 	FDE cycle Von Neumann, Harvard and contemporary processor architecture. Types of processor The differences between and uses of CISC and RISC processors.	
	CISC and RSIC, GPUs and Multicore and Parallel systems.			

	Input, output and Storage		
	• Different types of devices, Magnetic, flash and		
	optical storage, RAM and ROM, Virtual Storage		
Week 2 26 th Feb	Systems Software • Operating Systems Types • Real time • Distributed • Embedded • Multi-tasking • Multi-user • Memory Management • Interrupts • Scheduling • BIOS • Device Drivers • Virtual Machines. •	 Programming techniques Variables vs Constants Programming Constructs (Selection, Sequence, Iteration) Scope of variables (Local vs Global) Data types Modularity (Function vs Procedure) Passing by value vs passing by reference Arrays Files IDE Tools Type of errors and suitable test data Programming Standards and maintainability 	System software Interrupts, interrupt service routines and scheduling Operating system types
Week 3 4 th March	 Applications Generation Application software Utilities Open source vs closed source. Translators: Interpreters, compilers and assemblers. Stages of compilation Linkers and loaders and use of libraries How compliers work 	Algorithms 2.3.1 Algorithms Analysis and design of algorithms for a given situation. • Bubble Sort • insertion sort • merge sort • quick sort Binary search and linear search.	Sorting and search algorithms
Week 4 11 th March	Data Types • Binary calculations • sign and magnitude • two's complement	Programming techniques Procedural vs OO programming Class, objects, attributes,	OOP pseudo coding

Week 5 18 th March	 Hexadecimal Character Sets (ASCII AND UNICODE CHARACTER SETS) Addition and subtraction of binary Databases Relational database, flat file, primary key, foreign key, secondary key, entity relationship modelling, normalisation and indexing. 	constructor method, getter/setter methods encapsulation, inheritance, polymorphism Algorithms Stacks & Queues Explain how stacks and queues work as dynamic, linear data structures.	Stacks and queues algorithms
	 Methods of capturing, selecting, managing and exchanging data. 	Algorithms for stack push and pop Algorithms for queues dequeue and enqueue for both linear and circular queues Use of pointers	
Week 6 25th March Easter Hols	 HTML and CSS Networks Characteristics of networks and the importance of protocols and standards. The internet structure: The TCP/IP Stack. DNS Protocol layering. LANs and WANs. Packet and circuit switching. Network security and threats, use of firewalls, proxies and encryption. Network hardware. Client-server and peer to peer. 	Algorithms Linked Lists Describe a linked list, as a dynamic structure, the use of nodes and pointers, class node. Algorithm for inserting a node. Describe how to remove a node. Describe how to traverse a linked list. Record data structure. Algorithm for creating a record structure, adding new data, array of records. Compare record and class data structure - similarities and differences.	Linked Lists algorithms
Week 7 1st April Easter Hols	 Software Development methodologies Waterfall lifecycle, agile methodologies, extreme programming, the spiral model and rapid application development. Merits and drawbacks of each methodology 	Algorithms Describe a Binary Tree, how to add and delete a node. Describe the Tree Traversals: DFS (In order, post and pre) BFS Describe different types of graphs	Binary trees and graphs Shortest path algorithms

Week 8 8 th April	Data types Floating point numbers Addition, Subtraction Normalisation Bitwise manipulation and masks	Describe traversals (DFS and BFS) Algorithms: Binary tree traversal algorithms Dijkstra's and A* shortest path algorithm Tracing algorithms and Recursion Trace an algorithm Recursive vs iterative algorithms Adv/ disadv	Floating point numbers and normalisation	
Week 9 15 th April	Types of Programming Language Need for and characteristics of a variety of programming paradigms. Procedural, Assembly, Object-oriented languages. LMC Modes of address memory	BigO Time and memory efficiency • Constant • Logarithmic • Linear • Polynomial • Exponential		
Week 10 22 nd April	Compression Lossy vs Lossless compression. Encryption and Hashing Run length encoding and dictionary coding for lossless compression. Symmetric and asymmetric encryption.	Computational Methods Backtracking Data mining Heuristics Performance modelling Visualisation Pipelining Divide and conquer	Database Normalisation and SQL	
Week 11 29 th April	Web Technology HTML, CSS and JavaScript. See appendix 5d. Search engine indexing. PageRank algorithm. Server and client-side processing.	Paper 2 Practice	HTML and CSS	
Week 12 6 th May	Boolean Algebra Logic Gates and Truth Tables Simplifying Boolean expressions	Paper 2 Practice	Boolean Algebra	

	Karnaugh maps		
Week 13 13 th May	Legal, moral, cultural and ethical issues Computing related legislation The Data Protection Act 1998. The Computer Misuse Act 1990. The Copyright Design and Patents Act 1988. The Regulation of Investigatory Powers Act 2000.	Paper 2 Practice	Hashing and Encryption
Week 14 20 th May	Moral and ethical Issues The individual moral, social, ethical and cultural opportunities and risks of digital technology: Computers in the workforce. Automated decision making. Artificial intelligence. Environmental effects. Censorship and the Internet. Monitor behaviour. Analyse personal information. Piracy and offensive communications. Layout, colour paradigms and character sets.	Paper 2 Practice	Past Paper Practice
Week 15 27 th May Holiday	Paper 1 Practice		Past Paper Practice
Week 16 3 rd June	Paper 1 Practice		Past Paper Practice
Week 17 10 th June	Paper 1 Exam		
Week 18 17 th June		Paper 2 Exam	