A Level Computer Science – Yr12 to Yr13 SIL (Summer Independent Learning)

Deadline: First lesson back after Summer 2024

Compulsory – must do!

Part 1 – Project Design

You will complete the remainder of your project design section ready for hand in by the end of the summer holiday. The design section has been explained to you in lessons, and resources for support are available on our course page. A large portion of your time should be spent on creating the algorithms within the design section. A reminder of the marking criteria is shown below.

	Design (maximum 15 marks)			
	1–4 marks	**5–8 marks**	**9–12 marks**	**13–15 marks**
	The candidate will have:			
Decompose Problem		Broken the problem down systematically into a series of smaller problems suitable for computational solutions describing the process.	Broken the problem down systematically into a series of smaller problems suitable for computational solutions explaining the process.	Broken the problem down systematically into a series of smaller problems suitable for computational solutions, explaining and justifying the process and decisions made.
Define Structure		Defined the structure of the solution to be developed.	Explain and justify in detail the structure of the solution to be developed.	
Algorithms	Described elements of the solution using algorithms.	Described the solution fully using appropriate and accurate algorithms.	Described the solution fully using appropriate and accurate algorithms explaining how these algorithms form a complete solution to the problem.	Described the parts of the solution fully using appropriate and accurate algorithms justifying how these algorithms form a complete solution to the problem.
Usability Features	Described some usability features to be included in the solution.	Described the usability features to be included in the solution.	Described, explaining choices made, the usability features to be included in the solution.	Described, justifying choices made, the usability features to be included in the solution.
Variables / Data Structures / Validation	Identified the key variables / data structures / classes (as appropriate to the proposed solution).	Identified the key variables / data structures / classes (as appropriate to the proposed solution) and any necessary validation.	Identified and justified the key variables / data structures / classes (as appropriate to the proposed solution) explaining any necessary validation.	Identified and justified the key variables / data structures / classes (as appropriate to the proposed solution) justifying choices and explaining any necessary validation.
Iterative Test Data	Identified some test data to be used during the iterative or post development phase of the process.	Identified the test data to be used during the iterative development of the solution.	Identified and justified the test data to be used during the iterative development and post development phases of the solution and justify choice of test data	
Post Development Test Data		Identified any further data to be used in the post development phase.	Identified and justified any further data to be used in the post development phase	

Part 2 – Progression action plan

In preparation for Y13 you will complete specific practice on all the topics featured in the progression exam. You have created an action plan which your teacher has approved. Evidence must be submitted via Teams in time for the first lesson back. You will complete a mini retake of the progression exam in this lesson (57 marks, 60 mins). A good place to start addressing your actions is the course website.

Topic name	What knowledge gaps exist? What were you not able to do in this assessment? Where were marks lost? Consider the wider topic and not just the specific question in this exam. Look at Cornell notes to see the whole topic content.	What specific actions and practice will you complete? What evidence will you have to show this action has been completed?	June 2024 Actions Confirmed (✔)	Sept 2024 Evidence Confirmed (✔)
LMC				
FDE Cycle				
Databases – SQL, Methods of capture, ACID				
Legislation - copyright				
Data Types – binary conversions, ASCII, Unicode				
Moral, Cultural, Social – AI bias				
Tracing code output				
Translators – Compilers, Interpreters				
Networks - TCP/IP				
Writing pseudocode – Iteration				
Sorting – Merge, Insertion, Bubble				
Big O complexity				
Graphs – Theory, Dijkstra's & A*				
Recursion – Theory and tracing				
Data Structures – Stacks, Arrays - Theory & Code				
Object Oriented				

Ed Stout – IT Support Services Manager at Leeds Beckett University. Talks about his journey from college to current managerial position. Tips on how to gain experience, routes into the industry and what he looks for when recruiting.

IT Work Experience Talk

Here are a collection of interesting talks and interviews that will expand your understanding of the world of IT and Computing:

Joe Rogan Experience #1368 - Edward Snowden

YouTube CEO Susan Wojcicki | Full interview | Code 2019

How I used to rob banks! by FC (aka Freaky Clown)

GOTO 2018 • The Future of the Web • Sir Tim Berners-Lee

The mind behind Linux | Linus Torvalds

There are a series of good YouTube channels that regularly post interesting videos about the world of IT and Computing:

Linus Tech Tips

Computerphile

Techquickie

Crash course computing

Explaining computers

Another great exercise is to regularly read news articles and stories. These will keep you up to date with all of the latest happenings in technology:

BBC
Sky
The Guardian
Computer World
CNET