Curriculum Map: Computer Science (Comp 2 & 3)

THE KING'S ACADEMY
Emmanuel Schools Foundation

In Computer Science we want our students to be inspired, motivated and challenged by following a broad, coherent, practical, satisfying and worthwhile course of study. Our subject provides insight into, and experience of how computer science works, stimulating students' curiosity and encouraging them to engage with computer science in their everyday lives and to make informed choices about further study or career choices.

NEA/coursework deadline

Academy Exam

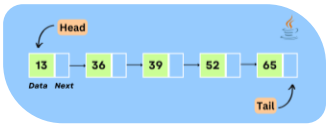
Other assessment

Unit Link

Year 13

Autumn

- How do we traverse trees using algorithms?
- What are the different shortest path algorithms and how are they implemented?
- How do the algorithms of data structures compare regarding Big O



Design Deadline

- How can we apply our thinking skills to solve a problem?

Programming Project Time

Implementation Deadline

Spring

- How can we evaluate the suitability of algorithms for a given scenario?
- How can we apply OOP to a range of given scenarios?

Evaluation Deadline

- Which computational methods are best in different scenarios?

Summer

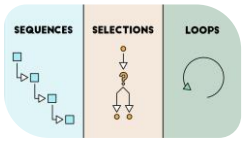
- How can we use computational methods to solve a real-world problem?

Analysis Deadline

- How can we manipulate stacks and queues using algorithms?
- How can we manipulate linked lists using algorithms?
- What are the key principles of each search and sort algorithm?
- How do we measure the complexity of an algorithm?

Progression Week

Year 12 Second Rehearsals



- What are the key principles of Object-Oriented Programming?

Year 12

Autumn

- How does recursion differ to iteration and when is it best used?
- How can we pass parameters to alter variable values within a program?
- What is the difference between global and local variables?
- How do functions and procedures work and what is the benefit of them?
- How are programs constructed using sequence, selection and iteration?

Begin Programming Project

- What is the nature and need for abstraction?
- How can we improve efficiency by thinking ahead when designing programs?
- How do we design programs by thinking procedurally?
- What logical decisions impact the paths that our programs take?
- What are the benefits and trade-offs of concurrent processing?

Spring

- What is the purpose and characteristics of an IDE

Year 12 First Rehearsals

Exams

Year 13 Final Rehearsals

- Review algorithms for all data structures considering iterative and recursive approaches.