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| **Year 13 Term 2****A Level Computer Science** | In the field of Computing, our goal is to foster creativity and problem-solving skills in students, enhancing their comprehension and practical application of fundamental concepts in Computer Science and Information Technology (IT). Our aim is to empower students to critically analyse computational issues and devise innovative solutions through the process of designing, writing, developing, and assessing digital solutions |
| **Enquiry Questions: Is drawing a flowchart for an entire software system effective to software development?** |
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| **Component 03: Computer Science Programming Project - Design**Students will have the opportunity to demonstrate their programming skills in creating their own programming project. Learners will be expected to analyse, design, develop, test, evaluate and document a program written in Python. The underlying approach to the project is to apply the principles of computational thinking to a practical coding problem. Learners are expected to apply appropriate principles from an agile development approach to the project development. |

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| **Knowledge**Students will know about… | **Application/Skills**Students will be able to… | **Vocabulary** | **Home Learning** | **Assessment** | **Extra Resources****Extended Reading** | **Cultural Capital** |
| * At this stage students will be expected to plan out how their proposed system will be developed.
* Using prior knowledge students are expected to describe the solution and show logical structures to outline their project.
* It will be expected of students to draw out a test plan to outline their approach to testing.
 | * Break down the problem into smaller parts suitable for computational solutions justifying any decisions made.
* Explain and justify the structure of the solution.
* Describe the parts of the solution using algorithms justifying how these algorithms form a complete solution to the problem.
* Describe usability features to be included in the solution.
* Identify key variables / data structures / classes justifying choices and any necessary validation.
* Identify the test data to be used during the iterative development and post development phases and justify the choice of this test data.
 | * Abstraction
* Decomposition
* Computational Thinking
* Success Criteria
* Flowcharts
* Pseudocode
* Algorithm
* Data Structure
* Sequence
* Selection
* Iteration
* Subroutine
* Libraries
* Packages
* Variables
* Data Types
* Testing
* Evaluation
* Input Validation
* Object Oriented Programming
* Prototyping
* Version Control
* Polymorphism
* Instantiation
* Inheritance

Class Diagram | Teach-ICT.comPG Online – ClearRevise A Level Computer ScienceIsaac Computer Science | Controlled AssessmentStudents are expected to complete this independently with guided learning. | [Teach-ICT.com](https://teach-ict.com/2016/GCSE_Computing/OCR_J277/OCR_J277_home.html)[Isaac Computer Science](https://isaaccomputerscience.org/topics/gcse?examBoard=all&stage=all#all)Seneca – [Computer Science](https://app.senecalearning.com/classroom/course/a1ce4570-6e27-11e8-af4b-35cf52f905c2/section/65ac2e24-3b57-4598-b4dc-01e04eddee1b/session)BBC BitesizeHodder Education – Revision Book A Level Computer SciencePG Online - AS and A Level Computer Science | The National Science Museum (free events)<https://www.sciencemuseum.org.uk/>The Royal Institute of Science (free events)<https://www.rigb.org/families/family-fun-days>**National Museum of Computing, Bletchley Park (Near Milton Keynes)** <http://www.tnmoc.org/> <https://www.bletchleypark.org.uk/><http://www.codesandciphers.org.uk/bletchleypark/>(virtual tour) Centre for Computing History, Cambridge<http://www.computinghistory.org.uk/> |