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| **Term** | **Module Title** | **Learning Content / Skills** | **Assessment Schedule\*** | **Home Learning Support** |
| Autumn 1 | Unit 1  System Architecture memory and storage | The unit begins by looking at the various components of the CPU used in the Von Neumann architecture. Subsequent lessons build on the fundamentals covered at KS3 in our unit of Understanding Computers unit, concentrating on RAM, ROM, cache and the need for virtual memory. The unit concludes by examining the need for secondary storage devices and their practical advantages in given applications.  The following topics are covered   * Topic 1 The CPU * Topic 2 Function and characteristics of the CPU * Topic 3 Memory * Topic 4 Storage | Students will be assessed at the end of each topic to demonstrate understanding. At the end of the unit a formal assessment will be given determining in more depth the students understanding the whole unit.  Peer assessment is done regularly with end of lesson assessments to help the students understand clearly what is required for the exam by using mark schemes.   Reflection time will be given to students to work on their targets which will allow for an improvements in their grades on work which has already been marked. | All presentations, tasks and worksheets are on Firefly which allows students to revisit any topics covered in this unit.  Students also have access to the Cambridge GCSE MOOC website which provides videos and resources to help reinforce the students understanding of the topics. The link for this website can be found on the Computing section of Firefly. |
| Autumn 2 | Unit 2  Wired and wireless networks | The unit begins by explaining the Internet and IP addressing, with practical exercises to help students understand the role of packet switching and DNS services. The lessons move on to look at LAN network topologies and Ethernet, with further material on virtual networking. Wireless networking, frequencies and encryption are covered in a subsequent lesson. Client-server networks and hosting are addressed with a final lesson describing common protocols and the concept of layers. At the end of the unit, students sit an assessment test comprising questions similar to those found on the OCR exam paper.  The following topics are covered   * Topic 1 The Internet * Topic 2 Local Area Networks * Topic 3 Wireless networking * Topic 4 Client-server and peer-to-peer networks * Topic 5 Protocols and layers | Students will be assessed at the end of each topic to demonstrate understanding. At the end of the unit a formal assessment will be given determining in more depth the students understanding the whole unit.  Peer assessment is done regularly with end of lesson assessments to help the students understand clearly what is required for the exam by using mark schemes.   Reflection time will be given to students to work on their targets which will allow for an improvements in their grades on work which has already been marked. | All presentations, tasks and worksheets are on Firefly which allows students to revisit any topics covered in this unit.  Students also have access to the Cambridge GCSE MOOC website which provides videos and resources to help reinforce the students understanding of the topics. The link for this website can be found on the Computing section of Firefly. |
| Spring 1 | Unit 3 Systems software and security  Unit 4 Ethical Legal and environmental concerns | Unit 3 - This unit begins by looking at the threats and vulnerabilities of computer systems and programs, including social engineering and the concept of SQL injection. Encryption and penetration testing are covered as examples of various methods of preventing vulnerabilities. The unit continues to focus on operating systems software, their function and typical utility software programs. The role and methods of backup are also covered  The following Topics are covered   * Topic 1 Network Threats * Topic 2 Identifying and preventing vulnerabilities * Topic 3 Operating systems software * Topic 4 Utility Software   Unit 4 – This unit begins by describing excellent examples of ethical, cultural and environmental considerations in relation to selected Computer Science technologies. The unit continues to focus on licencing and specific legislation related to Computer Science.  The following topics are covered   * Topic 1 Ethical and cultural issues * Topic 2 Computer systems in the modern world * Topic 3 Legislation and privacy | Students will be assessed at the end of each topic to demonstrate understanding. At the end of the unit a formal assessment will be given determining in more depth the students understanding the whole unit.  Peer assessment is done regularly with end of lesson assessments to help the students understand clearly what is required for the exam by using mark schemes.   Reflection time will be given to students to work on their targets which will allow for an improvements in their grades on work which has already been marked. | All presentations, tasks and worksheets are on Firefly which allows students to revisit any topics covered in this unit.  Students also have access to the Cambridge GCSE MOOC website which provides videos and resources to help reinforce the students understanding of the topics. The link for this website can be found on the Computing section of Firefly. |
| Spring 2 | Unit 5 Algorithms | This unit begins by looking at computational thinking, including abstraction and decomposition. Practical experience of writing, tracing and modelling algorithms using pseudocode and flowcharts is provided. These skills are subsequently used to interpret and compare relevant searching and sorting algorithms including the merge and insertion sorts. Students will also be given ample practical experience of correcting and completing algorithms (including debugging and testing) in worksheets and homework.  The following topics are covered   * Topic 1 Computational thinking * Topic 2 Searching algorithms * Topic 3 Sorting algorithms * Topic 4 Pseudocode * Topic 5 Interpreting, correcting and completing algorithms | Students will be assessed at the end of each topic to demonstrate understanding. At the end of the unit a formal assessment will be given determining in more depth the students understanding the whole unit.  Peer assessment is done regularly with end of lesson assessments to help the students understand clearly what is required for the exam by using mark schemes.   Reflection time will be given to students to work on their targets which will allow for an improvements in their grades on work which has already been marked. | All presentations, tasks and worksheets are on Firefly which allows students to revisit any topics covered in this unit.  Students also have access to the Cambridge GCSE MOOC website which provides videos and resources to help reinforce the students understanding of the topics. The link for this website can be found on the Computing section of Firefly. |
| Summer 1 | Unit 6 Programming | In this unit the basic programming constructs are covered as well as string manipulation and file handling. Computational logic is covered in a fourth lesson, before examining the use of functions and procedures to structure code. Finally, records and the use of SQL to search for data are covered. The unit is independent of any particular programming language but students will be learning Visual Basic alongside the lessons to help prepare for the Non-Examined Unit in Year 11.  The following topics are covered   * Topic 1 Programming Concepts * Topic 2 Sequence and Selection * Topic 3 Iteration * Topic 4 Arrays * Topic 5 Functions and procedures * Topic 6 Records and Files | Students will be assessed at the end of each topic to demonstrate understanding. At the end of the unit a formal assessment will be given determining in more depth the students understanding the whole unit. Students will also be given simple problems to solve using Visual Basic using the theory they have learnt and putting it into practice.  Peer assessment is done regularly with end of lesson assessments to help the students understand clearly what is required for the exam by using mark schemes.   Reflection time will be given to students to work on their targets which will allow for an improvements in their grades on work which has already been marked. | All presentations, tasks and worksheets are on Firefly which allows students to revisit any topics covered in this unit.  Students also have access to the Cambridge GCSE MOOC website which provides videos and resources to help reinforce the students understanding of the topics. The link for this website can be found on the Computing section of Firefly.  Students can also start practising programming in Visual Basic in their own time. They can remote access onto the school network and use Visual Basic. There are tutorials on Firefly but we also encourage students to access online tutorials as well. The more coding can be done the better. |
| Summer 2 | Visual Basic | Students will spend this term working on developing their knowledge of Visual Basic in preparation for their Non-Examined Unit in Year 11. The unit will look at basic understanding such as inputs, outputs, loops and selection as well as using lists, arrays, sorting and reading and writing to files.  Students will also look at what is required when documenting their work for the Non-Examined Unit including analysis, design, implementation, testing and evaluation. | Students will be given problems to solve using Visual Basic to help determine their understanding of each section. At the end of each section a longer solution will be needed to be completed by the students along with annotation of the code.  Peer assessment is used on the smaller tasks which will allow the students to understand clearly what is required for the exam by using mark schemes.  Time is given for students to improve their code in lesson. | Students should be practising programming in Visual Basic in their own time. They can remote access onto the school network and use Visual Basic. There are tutorials on Firefly but we also encourage students to access online tutorials as well. The more coding can be done the better. |