Year 9 Computing Curriculum Overview

Year 9 Overview	The Year 9 Computing curriculum consolidates and extends students' digital, creative, and computational skills in preparation for GCSE-level study. The year begins with a **Cybersecurity and MakeCode Arcade** project, combining digital safety knowledge with programming through game design. Students explore real-world cyber threats, ethical hacking, and digital protection strategies. They then progress to **advanced Python programming**, reinforcing computational thinking and problem-solving through structured coding projects and Rapid Router challenges. The **Computer Networks** unit deepens students' theoretical understanding of how devices communicate, exploring data transfer, network hardware, and internet security. Creativity is reignited through the **Thunkable App Development** unit, where students design and build functional mobile applications, applying coding and user interface design principles. Students further develop independence and ambition through **advanced Scratch game projects**, showcasing creativity, planning, and teamwork while applying advanced coding features. Finally, in **Future Technologies**, learners explore innovations such as AI, robotics, and IoT, creating multimedia "websites" that communicate their vision of digital futures. Throughout the year, students refine their **problem-solving, creativity, and digital literacy**, applying technical knowledge in practical, purposeful contexts. By the end of Year 9, learners are confident digital creators, coders, and critical thinkers, well-prepared for the challenges of **Enterprise and marketing or Creative iMedia or CS.**

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Week Number	Themes/ Topics	Key Knowledge & Skills	Digital Literacy Homework Themes	Key Assessments
1- 7 Autumn 1	**Unit 1: Cybersecurity & Game Programming (MakeCode Arcade)**	In this unit, students explore the vital topic of cybersecurity, understanding how personal and organisational data can be protected from online threats. They learn about common cyberattacks, including phishing, malware, and hacking, and how to recognise and prevent them. Students examine password security, data encryption, and the importance of digital citizenship. Alongside this, learners use **MakeCode Arcade** to design and code a simple interactive game. Through hands-on programming, they apply computational concepts such as loops, conditionals, and variables. The unit encourages creative problem-solving while embedding safety and ethical awareness. Students also reflect on the role of cybersecurity professionals and ethical hackers. By the end, they can explain how digital systems are protected and demonstrate secure programming practices in their projects. - Understand key cybersecurity threats such as phishing, malware, and hacking. Learn about data protection, passwords, and online security best practices. Explore ethical hacking and how cybersecurity specialists protect systems. Use MakeCode Arcade to design and program a secure, interactive game. Apply algorithms, variables, loops, and conditional logic in programming. - Understand encryption and data privacy concepts. - Develop problem-solving through debugging and iterative design. - Learn about the consequences of poor cybersecurity in real life. - Discuss careers in cybersecurity and ethical technology use.	→ - Recognising and responding to cybersecurity threats. - Protecting personal data and online identity. - Using cloud platforms safely when coding and publishing games. → **1.** Revise key cybersecurity vocabulary (phishing, encryption, malware). **2.** Mid-point quiz: identify and prevent cyber threats. **3.** Create flashcards for cybersecurity and MakeCode programming terms.	Practical cybersecurity quiz and scenario tasks. - Game design using MakeCode Arcade. - End-of-unit assessment on cybersecurity and coding principles.

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8-13 Autumn 2	→ **Unit 2: Python Programming Continued & Rapid Router (Advanced)**	→ This unit builds on the Python knowledge gained in Year 8, challenging students to apply more complex programming structures. Learners write efficient code using functions, lists, and iteration to solve practical problems. They strengthen their logical reasoning and debugging skills through **Rapid Router Python** challenges. Emphasis is placed on algorithmic thinking, code efficiency, and accuracy in syntax. Students plan, test, and refine programs to meet defined outcomes, mirroring real-world programming practice. They are introduced to structured programming techniques and how to document their work effectively. The unit enhances computational resilience by encouraging trial, error, and self-correction. By the end, students are able to create functional, well-structured Python programs with increasing independence and confidence. - Extend prior Python skills from Year 8 to develop more complex programs.Use functions, lists, loops, and conditionals effectively. - Reinforce problem-solving through Rapid Router Python challenges. Introduce file handling and basic data validation. - Apply computational thinking to real-world problem-solving. - Develop resilience in debugging and error correction. - Explore how programming supports automation and data analysis. - Produce fully working projects using Python syntax and structure. - Build independence and confidence in text-based coding.	- Managing and saving code securely. - Understanding ethical coding and data privacy. - Using digital platforms (e.g., Replit) responsibly for collaboration. **1.** Revise Python terminology (function, list, syntax). **2.** Mid-point Rapid Router programming task. **3.** Create flashcards of Python code examples and uses.	Python project challenge using defined success criteria. - Debugging assessment using student-written code. - End-of-unit practical coding assessment.

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14-18 Spring 1	→ Unit 3: Computer Networks	→ In this theory-focused unit, students discover how digital devices communicate across networks and the internet. They explore the difference between **LAN**, **WAN**, and **WLAN**, gaining an understanding of how data travels using packets, IP addresses, and protocols. Learners identify and describe key hardware such as routers, switches, and servers. The concept of network topologies is introduced, allowing students to compare advantages and disadvantages of star, mesh, and bus structures. Cybersecurity is revisited through the lens of network protection, firewalls, and encryption. Students also study client-server and peer-to-peer models to understand how data sharing works in real-world environments. The unit builds technical vocabulary and digital awareness while linking theory to practical, everyday applications. → By the end, learners can explain how networks enable modern communication and collaboration. - Understand the purpose and types of computer networks (LAN, WAN, WLAN). Learn how data is transmitted using packets, IP addresses, and protocols. Explore hardware involved in networking: routers, switches, and servers. - Understand how the internet functions as a global network of networks. Learn about network topologies and their advantages/disadvantages. Explore security risks and protective measures in networking.	→ - Understanding how online systems connect and share information safely. - Awareness of data transmission and digital communication ethics. - Safe and responsible use of shared networks in school and at home. → **1.** Revise network terms (router, IP address, LAN/WAN). **2.** Mid-point task: label and describe a network diagram. **3.** Create flashcards of key network hardware and functions.	- Network diagram labelling and explanation task. - Scenario-based quiz on network security. - End-of-unit test on networks and data transmission.

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19-24 Spring 2	→ **Unit 4: App Development using Thunkable**	→ Students become digital creators by designing and building their own interactive mobile applications using **Thunkable**. They are introduced to user interface (UI) and user experience (UX) principles, learning how to design apps that are both functional and visually appealing. Using a block-based programming environment, students develop event-driven apps that respond to user input. They apply computational thinking to plan, test, and debug their code. The unit encourages creativity, problem-solving, and iterative design. Learners also explore issues of data privacy, accessibility, and ethical design within mobile development. Collaboration and peer feedback play a key role in improving their projects. By the end, each student produces a working prototype that demonstrates both technical understanding and thoughtful design. → - Introduce app development concepts using the Thunkable platform. Design and create a functional mobile app prototype. - Use drag-and-drop coding to build interactive app features. - Learn to plan user interfaces (UI) and user experiences (UX). - Understand input/output, event handling, and app logic. - Develop problem-solving and creativity through iterative design. - Test and refine apps to ensure usability and accessibility. - Explore data storage and app connectivity basics. - Discuss ethical design and user data protection. - Evaluate finished apps against design and functionality criteria.	Safe and ethical app design and publication. - Understanding privacy in mobile development. - Communicating digital ideas through modern platforms. **1.** Revise app design terminology (UI, UX, prototype). **2.** Mid-point app draft review. **3.** Create flashcards of Thunkable components and coding blocks.	- App prototype design and development task. - Peer feedback and usability testing. - End-of-unit project evaluation and presentation

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25-30 Summer 1	→ **Unit 5: Advanced Game Development in Scratch**	→ This unit takes students' programming and design skills to a higher level through **advanced Scratch game development**. Learners revisit key coding concepts such as loops, conditionals, and variables, and extend their skills using broadcasts, clones, and custom blocks. They design and code a complex, multi-level game featuring scoring systems, sound, and user interaction. Creativity is balanced with structured programming and testing, ensuring games are both engaging and functional. Students work through the full project lifecycle from concept design to debugging and evaluation. Collaboration and peer testing help them refine gameplay and fix logical errors. The unit also encourages reflection on the wider gaming industry and responsible content creation. By the end, learners confidently showcase their coding abilities through polished, original games. Build on previous Scratch knowledge to create advanced, multi-level games. Use complex programming concepts including broadcasts, variables, and custom blocks. Design original sprites, sound effects, and backgrounds. Incorporate scoring systems, timers, and interactive challenges. - Apply structured project planning, testing, and debugging. - Develop understanding of player experience and game mechanics. - Work collaboratively to test and improve game design. - Analyse how professional games are developed and structured. - Reflect on coding progress and creativity.	- Ethical creation and sharing of digital content. - Understanding copyright in multimedia assets. - Responsible online publishing of games and projects. **1.** Revise Scratch advanced commands (broadcast, variable, clone). **2.** Mid-point progress review of game development. **3.** Create flashcards for game design stages and features.	Advanced game development project. - Peer testing and evaluation. - End-of-unit presentation and reflection on project design.

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31-38 Summer 2	→ **Unit 6: Future Technologies – Multimedia Website Project**	→ In this forward-looking unit, students explore how emerging technologies such as **AI, VR, robotics, and the Internet of Things** are shaping our world. They research innovations and their impact on society, work, and sustainability. Learners then use **Google Slides or PowerPoint** to create a multimedia "website" presentation, combining text, images, videos, and hyperlinks. They apply design principles to ensure their digital content is clear, accessible, and engaging. The project strengthens digital literacy and communication skills while developing creativity and critical thinking. Students also discuss ethical issues linked to technology, such as automation, data ethics, and digital divide. By the end, learners can articulate informed opinions on technological futures and present their findings confidently using multimedia tools. → - Explore how emerging technologies (AI, VR, IoT) are shaping the future. Research and present findings using multimedia platforms (PowerPoint).Learn to design and structure digital content for an audience. Combine text, images, video, and hyperlinks to create a website-style presentation. Develop research, synthesis, and digital communication skills. Understand the importance of accessibility and design in web content. Evaluate how technology impacts society, employment, and ethics. Apply critical thinking to future-focused issues like automation and sustainability. Use presentation software creatively to simulate web development..	→ - Responsible use of online research tools. - Understanding digital ethics and future implications of technology. - Using cloud tools safely for collaboration and presentation. → **1.** Revise technology trends vocabulary (AI, IoT, automation). **2.** Mid-point progress check: draft multimedia presentation. **3.** Create flashcards of emerging technology concepts. →	Research project on future technologies. - Multimedia presentation assessment. - End-of-unit evaluation and reflection.