

Level description: Years 9 and 10

By the end of Year 10 students should have had the opportunity to apply computational thinking by defining and decomposing real-world problems , creating user experiences , designing and modifying algorithms , and implementing them, including in an object-oriented programming language . Students use techniques, including interviewing stakeholders to develop user stories , to increase the precision of their problem definitions and solution specifications. They verify their solutions solve the problem by validating their algorithms , represented as flowcharts and pseudocode , and using test cases to confirm the correctness of their solutions. Students develop their object-oriented programming skills, and apply them to develop, modify and debug programs. They explain the importance of abstraction by representing online documents in terms of content, structure and presentation, as well as exploring simple data compression techniques and comparing their effectiveness.

Students consolidate their skills in data acquisition and interpretation, cleaning and validating data to ensure it is accurate, consistent and domain appropriate. They model multidimensional data in more complex spreadsheets and relational databases , filtering and querying it to give insights into its meaning, and to pose further questions or make conclusions. They visualise this data in customisable ways, allowing greater exploration of trends and outliers to support or challenge their analyses.

Students apply design thinking by using divergent techniques to generate design ideas for user experiences and solutions. They filter and prototype these ideas, developing user stories and applying design criteria based on current and future needs and enterprising opportunities, as well as their created user stories , and revise and further develop their preferred ideas based on their analysis. Students extend on these design criteria and user stories to evaluate the enterprise opportunities and future impact of existing solutions.

Students consolidate their systems thinking by exploring how the hardware and software components of digital systems interact to manage, control and secure access to data . They increasingly use advanced features of existing and emerging digital tools to create interactive content for a diverse audience. They explore simple tools that help plan tasks, timelines and responsibilities for individual and collaborative projects. Students extend their knowledge of the importance of security by developing cyber security threat models and exploring an example of a supply chain vulnerability . They critique the digital footprint created by existing systems and their own solutions by applying the Australian Privacy Principles.

In Digital Technologies, students should have frequent opportunities for authentic learning by making key connections to other learning areas.

Achievement standard: Years 9 and 10

By the end of Year 10 students develop and modify innovative digital solutions, decompose real-world problems, and critically evaluate alternative solutions against stakeholder elicited user stories. Students acquire, interpret and model complex data with databases and represent documents as content, structure and presentation. They design and validate algorithms and implement them, including in an object-oriented programming language. Students explain how digital systems manage, control and secure access to data; and model cyber security threats and explore a vulnerability. They use advanced features of digital tools to create interactive content, and to plan, collaborate on, and manage agile projects. Students apply privacy principles to manage digital footprints.