# Digital Solutions
## General senior subject

In Digital Solutions, students learn about algorithms, computer languages and user interfaces through generating digital solutions to problems. They engage with data, information and applications to generate digital solutions that filter and present data in timely and efficient ways while understanding the need to encrypt and protect data. They understand computing's personal, social and economic impact, and the issues associated with the ethical integration of technology into our daily lives.

Students engage in problem-based learning that enables them to explore and develop ideas, generate digital solutions, and evaluate impacts, components and solutions. They understand that solutions enhance their world and benefit society. To generate digital solutions, students analyse problems and apply computational, design and systems thinking processes. Students understand that progress in the development of digital solutions is driven by people and their needs.

Learning in Digital Solutions provides students with opportunities to develop, generate and repurpose solutions that are relevant in a world where data and digital realms are transforming entertainment, education, business, manufacturing and many other industries. Australia's workforce and economy requires people who are able to collaborate, use creativity to be innovative and entrepreneurial, and transform traditional approaches in exciting new ways.

By using the problem-based learning framework, students develop confidence in dealing with complexity, as well as tolerance for ambiguity and persistence in working with difficult problems that may have many solutions. Students are able to communicate and work with others in order to achieve a common goal or solution. Students write computer programs to generate digital solutions that use data; require interactions with users and within systems; and affect people, the economy and environments. Solutions are generated using combinations of readily available hardware and software development environments, code libraries or specific instructions provided through programming. Some examples of digital solutions include instructions for a robotic system, an instructional game, a productivity application, products featuring interactive data, animations and websites.

Digital Solutions prepares students for a range of careers in a variety of digital contexts. It develops thinking skills that are relevant for digital and non-digital real-world challenges. It prepares them to be successful in a wide range of careers and provides them with skills to engage in and improve the society in which we work and play. Digital Solutions develops the 21st century skills of critical and creative thinking, communication, collaboration and teamwork, personal and social skills, and information and communication technologies (ICT) skills that are critical to students' success in further education and life.

## Pathways

A course of study in Digital Solutions can establish a basis for further education and employment in the fields of science, technologies, engineering and mathematics.

## Objectives

By the conclusion of the course of study, students will:

- recognise and describe elements, components, principles and processes

- symbolise and explain information, ideas and interrelationships

- analyse problems and information

- determine solution requirements and criteria

- synthesise information and ideas to determine possible digital solutions

- generate components of the digital solution

- evaluate impacts, components and solutions against criteria to make refinements and justified recommendations

- make decisions about and use mode-appropriate features, language and conventions for particular purposes and contexts.

## Structure

| Unit 1 | Unit 2 | Unit 3 | Unit 4 |
|---|---|---|---|
| **Creating with code**<br>• Understanding digital problems<br>• User experiences and interfaces<br>• Algorithms and programming techniques<br>• Programmed solutions | **Application and data solutions**<br>• Data-driven problems and solution requirements<br>• Data and programming techniques<br>• Prototype data solutions | **Digital innovation**<br>• Interactions between users, data and digital systems<br>• Real-world problems and solution requirements<br>• Innovative digital solutions | **Digital impacts**<br>• Digital methods for exchanging data<br>• Complex digital data exchange problems and solution requirements<br>• Prototype digital data exchanges |

## Assessment

Schools devise assessments in Units 1 and 2 to suit their local context.

In Units 3 and 4 students complete *four* summative assessments. The results from each of the assessments are added together to provide a subject score out of 100. Students will also receive an overall subject result (A–E).

**Summative assessments**

| Unit 3 | | Unit 4 | |
|---|---|---|---|
| Summative internal assessment 1 (IA1):<br>• Technical proposal | 25% | Summative internal assessment 3 (IA3):<br>• Digital solution | 25% |
| Summative internal assessment 2 (IA2):<br>• Digital solution | 25% | Summative external assessment (EA):<br>• Examination — combination response | 25% |