Stage 7

Computational Thinking

- **7CT.01** Follow, understand, edit and correct algorithms that are presented as flowcharts.
- **7CT.02** Know how to create algorithms using flowchart symbols.
- **7CT.03** Follow and understand the logic of AND, OR, NOT.
- **7CT.04** Understand and use selection statements, limited to IF, THEN, ELSE, presented as flowcharts.
- **7CT.05** Predict the outcome of flowcharts that use selection.
- **7CT.06** Explain the importance of pattern recognition when designing solutions to tasks.
- **7CT.07** Follow, understand, edit and correct algorithms that use sub-routines.
- **7CT.08** Select and use appropriate constructs in algorithms written as flowcharts, limited to sequence and selection.
- **7CT.09** Select and use appropriate comparison operators in algorithms, limited to <,>, <=, >=, == (equal to) and != (not equal to).

Programming

- **7P.01** Identify and describe data types in text-based programs, including Integer, Real and String.
- **7P.02** Know how to develop text-based programs that use input and output.
- **7P.03** Know how to develop text-based programs using data types, including Integer, Real, and String.
- **7P.04** Know how to use variables in text-based programs.
- **7P.05** Know how to develop text-based programs that use different arithmetic operators, including +, −, *, /.
- **7P.06** Evaluate prototypes for software development projects.
- **7P.07** Explain the purpose of project plans for software development projects.
- **7P.08** Know how to apply test plans.
- **7P.09** Understand how errors can be introduced into programs.
- **7P.10** Know how to systematically identify and debug errors in text-based programs.
- **7P.11** Know how to develop programs for a physical computing device to generate multiple outputs, based on multiple inputs.

Managing Data

- **7MD.01** Know that there are many systems that can be used to model real-life scenarios, such as simulators.
- **7MD.02** Evaluate the effectiveness of data capture forms.
- **7MD.03** Know how to write rules to apply conditional formating to cells.
- **7MD.04** Understand the purpose of a primary key.
- **7MD.05** Select appropriate fields to be the primary key.
- **7MD.06** Know how to search pre-existing databases using a single criterion, such as <,>.
- **7MD.07** Know that data is used to model scenarios within a range of industries, including health, manufacture and retail.

Networks and Digital Communication

- **7DC.01** Explain the use of IP addresses and URLs.
- **7DC.02** Explain how DNS enables users to access websites.
- **7DC.03** Know the differences between Bluetooth®, wi-fi and cellular networks, including the different generations of cellular networks (4G, 5G).
- **7DC.04** Outline why errors occur in data transmission.
- **7DC.05** Explain the use of encryption to keep data secure during data transmission.
- **7DC.06** Explain how to check whether a website is secure.

Computer Systems

- **7CS.01** Evaluate the design of digital devices and systems.
- **7CS.02** Understand the differences between application software and system software.
- **7CS.03** Describe how analogue images are digitised.
- **7CS.04** Understand that a binary number can represent different data, such as numbers, characters, images, and sounds.
- **7CS.05** Know that computers are made up of logic gates that are represented by Boolean logic.
- **7CS.06** Understand the role of logic gates in circuits, including AND, OR and NOT.
- **7CS.07** Know that Artificial Intelligence (AI) allows computers to take information from their surroundings to produce outputs based on how they are able to process that information.
- **7CS.08** Explain the use of automation in at least two industries, such as health, manufacture or advertising.
- **7CS.09** Explain a range of applications of AI, including in image recognition and in computer games.