Achievement Standard

Subject Reference	Digital Technologies 2.44
Title	Demonstrate understanding of advanced concepts from computer science

Level 2 **Credits** 4 **Assessment** External

Subfield Technology

Domain Digital Technologies

Status Registered **Status date** 17 November 2011

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This achievement standard requires demonstrating understanding of advanced concepts from computer science.

Achievement Criteria

Achievement	Achievement with Merit	Achievement with Excellence
• Demonstrate understanding of advanced concepts from computer science.	• Demonstrate in-depth understanding of advanced concepts from computer science.	• Demonstrate comprehensive understanding of advanced concepts from computer science.

Explanatory Notes

1   This achievement standard is derived from Level 7 of the Technology learning area in *The New Zealand Curriculum*, Learning Media, Ministry of Education, 2007; and is related to the material in the *Teaching and Learning Guide for Technology*, Ministry of Education at http://seniorsecondary.tki.org.nz.

Further information can be found at http://www.technology.tki.org.nz/.

Appropriate reference information is available in *Safety and Technology Education: A Guidance Manual for New Zealand Schools,* Ministry of Education at http://technology.tki.org.nz/Curriculum-support/Safety-and-Technology-Education, and the Health and Safety in Employment Act 1992.

This standard is also derived from Te Marautanga o Aotearoa. For details of Te Marautanga o Aotearoa achievement objectives to which this standard relates, see the Papa Whakaako for the relevant learning area.

2   *Demonstrate understanding of advanced concepts from computer science* involves:
- describing ways in which different types of data can be represented using bits
- describing the concept of encoding information using compression coding, error control coding, and encryption; and typical uses of encoded information
- providing examples from human-computer interfaces that illustrate usability heuristics.

Demonstrate in-depth understanding of advanced concepts from computer science involves:
- comparing and contrasting different ways in which different types of data can be represented using bits and discussing the implications
- discussing how a widely used technology is enabled by one or more of compression coding, error control coding, and encryption
- evaluating a given human-computer interface in terms of usability heuristics.

Demonstrate comprehensive understanding of advanced concepts from computer science involves:
- evaluating a widely used system for compression coding, error control coding, or encryption
- suggesting improvements to a given human-computer interface based on an evaluation in terms of usability heuristics.

3   *Advanced concepts from computer science* are the concepts of data representations, encoding, and usability heuristics.

4   Data representations may include binary representations for signed and unsigned integers, real numbers, characters, text, colours, sound, and images.

5   Assessment Specifications for this achievement standard can be accessed through the Technology Resources page found at http://www.nzqa.govt.nz/qualifications-standards/qualifications/ncea/subjects/.

Quality Assurance

1   Providers and Industry Training Organisations must have been granted consent to assess by NZQA before they can register credits from assessment against achievement standards.

2   Organisations with consent to assess and Industry Training Organisations assessing against achievement standards must engage with the moderation system that applies to those achievement standards.

Consent and Moderation Requirements (CMR) reference   0233