Achievement Standard

Subject Reference	Digital Technologies and Hangarau Matihiko 1.7
Title	Develop a computer program

Level 1   **Credits** 4   **Assessment** Internal

Subfield Technology

Domain Digital Technologies

Status Registered   **Status date** 23 November 2017

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This achievement standard requires the development of a computer program.

Achievement Criteria

Achievement	Achievement with Merit	Achievement with Excellence
● Develop a computer program.	● Develop an informed computer program.	● Develop a refined computer program.

Explanatory Notes

1   This achievement standard is derived from Level 6 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/Technology-in-the-NZC/Safety-in-Technology-Education-revised-2017, and the Health and Safety at Work Act 2015.

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

2 *Develop a computer program* involves:
   ● writing code for a program that performs a specified task using a suitable programming language
   ● setting out the program code clearly
   ● documenting the program with comments
   ● testing and debugging the program to ensure that it works on a sample of expected cases.

   Develop an informed computer program involves:
   ● documenting the program with variable names and comments that describe code function and behaviour
   ● following conventions for the chosen programming language
   ● testing and debugging the program in an organised way to ensure that it works on expected and relevant boundary cases.

   Develop a refined computer program involves:
   ● ensuring that the program is a well-structured, logical response to the task
   ● making the program flexible and robust
   ● comprehensively testing and debugging the program.

3 The programming language may be graphical, drag-and-drop or text based. The language chosen must support the required data types, procedural structures, and good commenting facilities.

4 A *computer program* uses:
   ● variables storing at least two types of data (e.g. numeric, text, Boolean)
   ● sequence, selection and iteration control structures
   ● input from a user, sensors or another external source
      and one or more of:
   ● data stored in collections (e.g. lists, arrays, dictionaries)
   ● user-defined methods, functions or procedures.

5 Example of ways of making a program flexible and robust include:
   ● using methods, functions, procedures, actions, conditions and control structures effectively
   ● checking input data for validity
   ● correctly handling expected, boundary and invalid values
   ● using constants, variables and derived values in place of literals.

6 Conditions of Assessment related to this achievement standard can be found at http://ncea.tki.org.nz/Resources-for-Internally-Assessed-Achievement-Standards.

Replacement Information
This achievement standard replaced AS91075 and AS91076.

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