

Achievement Standard

Subject Reference Digital Technologies 1.46

Title Construct a basic computer program for a specified task

Level 1 **Credits** 3 **Assessment** Internal

Subfield Technology

Domain Digital Technologies

Status Registered **Status date** 20 January 2011

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This achievement standard requires students to construct and test a basic computer program for a specified task.

Achievement Criteria

Achievement	Achievement with Merit	Achievement with Excellence
<ul style="list-style-type: none"> Construct a basic computer program for a specified task. 	<ul style="list-style-type: none"> Skilfully construct a basic computer program for a specified task. 	<ul style="list-style-type: none"> Efficiently construct a basic computer program for a specified task.

Explanatory Notes

- 1 This achievement standard is derived from the Level 6 achievement objectives from 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, 2010 at <http://seniorsecondary.tki.org.nz>.

Further information can be found at <http://www.techlink.org.nz>.

- 2 *Construct a basic computer program* involves:
- writing a program with sequence, selection and iteration control structures
 - testing and debugging the program to ensure that it works correctly on a sample of expected inputs.

Skilfully construct a basic computer program involves:

- writing a program with multiple data types and iteration control structures nested inside other iteration control structures
- testing and debugging the program in an organised way to ensure that it works correctly on a range of inputs.

Efficiently construct a basic computer program involves:

- writing a program with multiple data types, iteration control structures nested inside other iteration control structures, and structures in which complex logical conditions are expressed economically
- comprehensively testing and debugging the program in an organised and time effective way to ensure the program is correct on all inputs.

3 *Specified task* refers to a set task with an algorithmic structure or structures provided. The task must be of sufficient rigour to allow the student to meet the standard. The algorithmic structure or structures need to be agreed prior to the program being developed. They may be teacher-given or developed in negotiation with the student.

4 *A basic computer program* is a program, written in a programming language, that:

- includes variables, assignment, predefined actions (eg predefined methods, functions, or procedures), expressions, sequence, selection and iteration control structures
- obtains and uses input from a user, sensors, or other external source.

5 Expected inputs are the normal, non-exceptional, non-error inputs. A range of inputs may include some exceptional, out-of-range, boundary, or invalid inputs.

Testing for all inputs involves analysis of the program to identify the ways it could go wrong and run tests that explore categories of ways it could go wrong.

6 A programming language could be a drag-and-drop language, a specialised programming language or a general purpose programming language.

7 Conditions of Assessment related to this achievement standard can be found at <http://www.tki.org.nz/e/community/ncea/conditions-assessment.php>.

Quality Assurance

1 Providers and Industry Training Organisations must be accredited by NZQA before they can register credits from assessment against achievement standards.

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

Accreditation and Moderation Action Plan (AMAP) reference

0233