Australian Curriculum V9.0 **Digital Technologies**
Programming
Implementation describes the automation of an algorithm, typically by writing a computer program or using appropriate software

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DIGITAL TECHNOLOGIES HUB

Years 3–4

From a sequence of steps, I can make working visual programs that can take an input, repeat things and make decisions while running.

Years 5–6

The visual programs I make now also include variables to remember data I want to use in the program.

A **visual programming language** is represented and manipulated as graphic blocks. These graphic blocks can be composed to form programs for an algorithm.
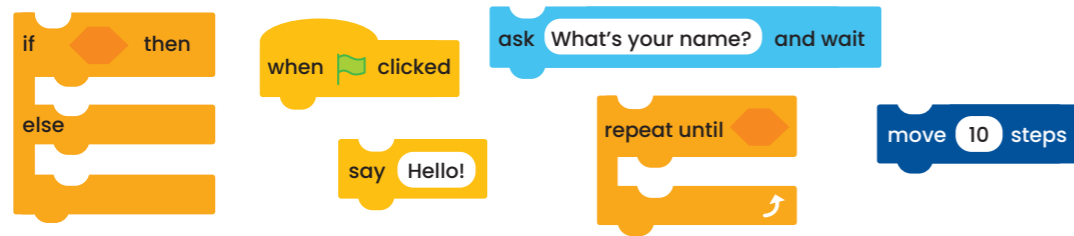
The program is a sequence of steps that includes decisions (**branching**) and specific steps that may be repeated (**iteration**).
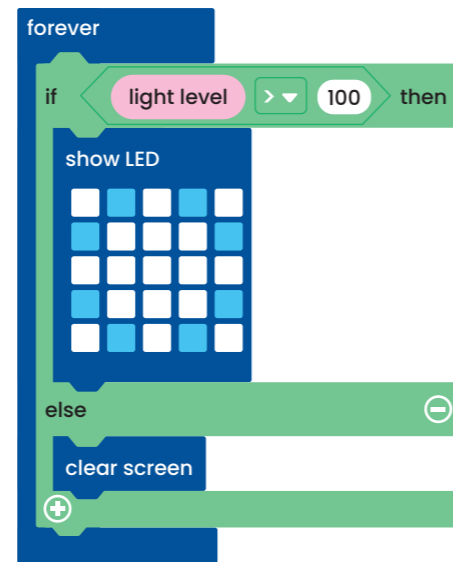
An **input** enables the user to interact with the program. The 'ask' block enables the user to enter some input. The input can be any text string or number and the user's response 'answer' block is stored and can be used in the program.

Input can also be data from a sensor, for example, a temperature or light sensor.

Control structures are the code blocks or keywords that allow the program to make decisions, or to repeat parts. Some examples:

- A character performs an action IF the temperature is higher than 35 degrees.
- A robot keeps moving forward WHILE it is not touching an object.
- IF the light level is > 100 then show LEDs on screen. **Forever** loops can be used when sensing the environment.


Branching allows for the creation of multiple paths within a program, which can be triggered by user **input** or other factors. Decisions can be made, such as IF-THEN blocks. Data including user input can be stored as **variables** and used throughout the program.

Creating and using a variable is like having a code 'bucket' to store a number or text.

Some examples of a **variable** include:

- guess (stores a player's guess for a secret number)
- pin (stores a four digit number)
- feedback (stores specific feedback to display for a correct or incorrect answer).

In this example a random number is stored as a variable. IF random number =1, then the farmer starts planting.
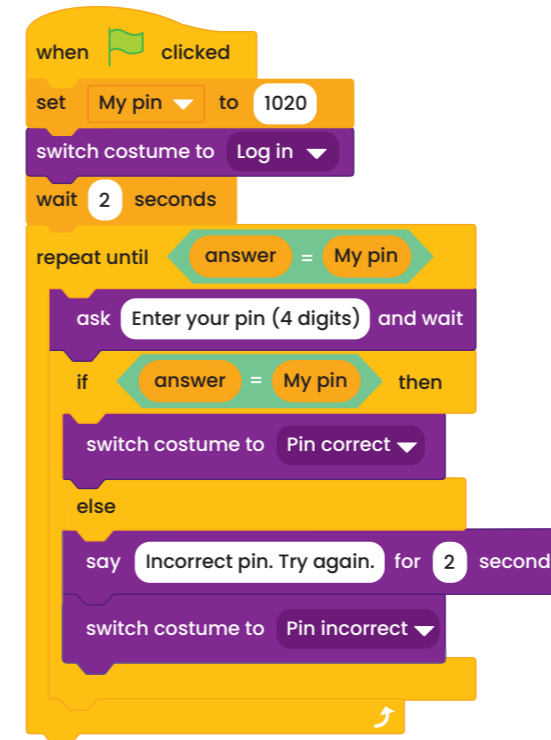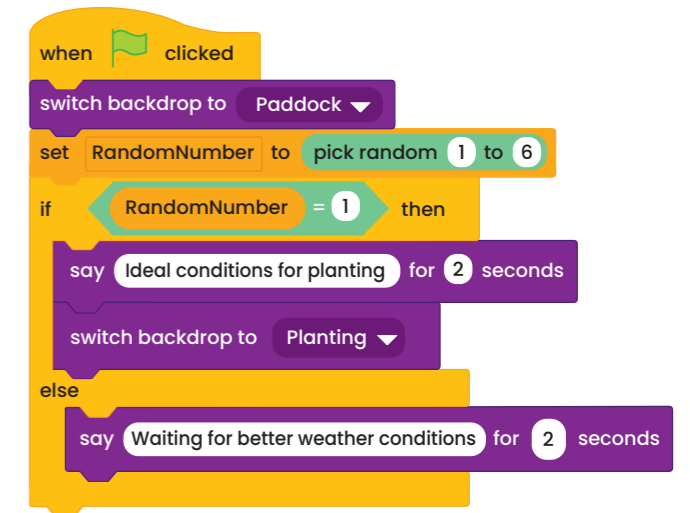
A REPEAT UNTIL block can be used when a certain action or set of actions will be executed repeatedly until a specific condition is met. Examples may include:

Repeat until:

- ANSWER = value
- SCORE is > 1000
- Temperature is < 20

In this example the program repeats until ANSWER = My pin (variable)

Achievement standard	Students follow and describe simple algorithms involving branching and iteration and implement them as visual programs.
Content descriptions	Implement simple algorithms as visual programs involving control structures and input ‖ AC9TDI4P04

Achievement standard	Students design algorithms involving complex branching and iteration and implement them as visual programs including variables.
Content descriptions	Implement algorithms as visual programs involving control structures, variables and input ‖ AC9TDI6P05