

## Introduction

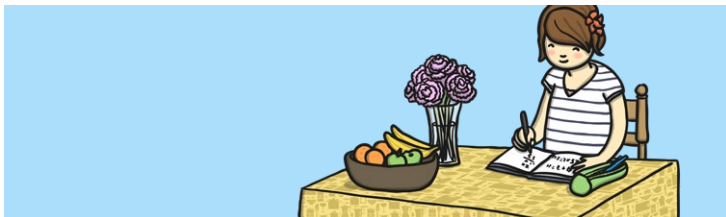
This unit builds on the previous unit in Year 4 (Questions and Quizzes) using Scratch to build and edit algorithms for simple games. The unit is designed to help children develop their skills in writing their own algorithms as well as editing and debugging existing codes.



## Health & Safety

General safety in using a computer and e-safety rules, particularly if accessing the Internet.

Encourage good posture when sitting at the computer.



## Home Learning

**Improving the Game:** Children are challenged to design a new maze for the first game, an additional level or additional features. Algorithms can be written on paper or designed on the Scratch application at home, via the Internet or free software download.

**Creating a New Game:** Children are challenged to create a new game of their own, based on those practised in lessons. Existing games could be researched and compared first – or this could form the focus of a lesson/discussion in the classroom first.

## Assessment Statements

By the end of this unit...

### ...all children should be able to:

- move and edit blocks as part of an algorithm.

### ...most children will be able to:

- program an algorithm as a sequence of game instructions with actions and consequences.

### ...some children will be able to:

- add additional effects and features, such as sound or point scoring, to enhance the appeal of a game.

# Lesson Breakdown

# Resources

## 1. Creating a Maze Game

Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.

Use sequence, selection, and repetition in programs; work with variables and various forms of input and output.

Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.

Design a set of instructions on paper for a character game, to convert into Scratch algorithm.

- I can design and program a character game.

- Desktop computers, laptops or tablets. (This lesson is intended for use in conjunction with Scratch 3 software installed.)
- Whiteboards and pens.

## 2. Designing Characters & Backdrops

Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.

Use sequence, selection, and repetition in programs; work with variables and various forms of input and output.

Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.

Design an original character or backdrop for a specific purpose within a computer game.

- I can design an original character or backdrop for a game.

- Desktop computers, laptops or tablets. (This lesson is intended for use in conjunction with Scratch 3 software installed.)
- Whiteboards and pens.

## 3. Adding Effects

Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.

Use sequence, selection, and repetition in programs; work with variables and various forms of input and output.

Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.

Improve an existing game by adding additional features such as sound, movement or speech bubbles.

- I can add features or effects to enhance a game.

- Desktop computers, laptops or tablets. (This lesson is intended for use in conjunction with Scratch 3 software installed.)
- Whiteboards and pens.

## 4. Splat Game

Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.

Use sequence, selection, and repetition in programs; work with variables and various forms of input and output.

Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.

Use forms of animation to create a new computer game, with a specific purpose or goal. Make an object move automatically and change its appearance.

- I can create an original animated game with a specific goal.

- Desktop computers, laptops or tablets. (This lesson is intended for use in conjunction with Scratch 3 software installed.)
- Whiteboards and pens.

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## 5. Changing Costumes

Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.

Use sequence, selection, and repetition in programs; work with variables and various forms of input and output.

Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.

Improve the effect of the game by add further costumes and programming costume changes to sprites as a consequence to an event.

- I can program costume changes for a sprite.

- Desktop computers, laptops or tablets. (This lesson is intended for use in conjunction with Scratch 3 software installed.)
- Whiteboards and pens.

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## 6. Scoring & Levels

Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.

Use sequence, selection, and repetition in programs; work with variables and various forms of input and output.

Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.

Complete game playability by adding scoring and levels.

- I can add point-scoring and levels to game code.

- Desktop computers, laptops or tablets. (This lesson is intended for use in conjunction with Scratch 3 software installed.)
  - Whiteboards and pens.
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