



## Burst the bubbles

### Overview

In this lesson children will learn that objects can be programmed to do actions at the start or when they are clicked on, they will learn that start and click are events

### Learning objectives

Learn how to combine start events and click events to make a simple game

### Success Criteria

**ALL** I can write code to make a bubble pop when it is clicked on

**MOST** I can write code to make a bubble move when my app starts, and pop when it is clicked on

**SOME** I can write code to make three bubbles move when my app starts, and pop when they are clicked on

### Key words

code, icon, object, action, design, click

## Up in the air (PC/Mac)

### Overview

In this lesson children will practise using a keypress event to make an object change direction, and begin to use the terms 'algorithm' and 'execute' in a computer programming context

### Learning objectives

Learn how to code an object to change direction when different keys are pressed on a keyboard

### Success Criteria

**ALL** I can program an object to change direction when a key is pressed

**MOST** I can program an object to move and change direction when different keys are pressed

**SOME** I can design and program an app and explain which lines of code execute when different keys are pressed

### Key words

run, execute, direction, code, control, key pressed

# Fly a helicopter

## Overview

In this lesson children will learn that objects can be programmed to do an action when a button is clicked and that different buttons can be programmed to make different actions happen

## Learning objectives

Learn how to program buttons to move another object around

## Success Criteria

**ALL** I can write code to program a button to make a helicopter move

**MOST** I can write code to program different buttons that can be used to control a helicopter

**SOME** I can write code to program a button to make a helicopter stop and hover and explain how my code works

## Key words

button, program, direction, run, execute, control, click

# Space travel

## Overview

In this lesson children will practise using time in their code. They will create simple animations using time events to make objects perform actions in a sequence.

## Learning objectives

Practise using time to program a sequence of actions and make simple animation

## Success Criteria

**ALL** I can use time in my code to program a rocket to fly straight to the moon

**MOST** I can use time in my code to control a rocket to fly in a sequence of directions

**SOME** I can explain how I used time in my code to control a rocket to fly in a sequence of directions to different locations

## Key words

time, sequence, algorithm, function box, after, execute, seconds

# That's amazing!

## Overview

In this lesson children will learn that objects can be programmed to respond to their background or environment and begin to understand what the word 'condition' means in computer programming

## Learning objectives

Learn how to use conditional 'if' statements to program a maze game

## Success Criteria

**ALL** I can write code to program a spaceship to move in different directions when different keys are pressed

**MOST** I can use a conditional 'if' statement in my code to program a spaceship to stop when it hits a wall in a maze

**SOME** I can explain how I used a conditional 'if' statement in my code to make the spaceship stop when it hits a wall

## Key words

keys, wall, condition, if/then, background

# Hungry snake

## Overview

In this lesson children consolidate their understanding of conditions in programming and learn how different types of conditions can be used in code for different purposes.

## Learning objectives

Learn how to use conditional 'if' statements to program a simple game; use 'if hit' statements to check if objects have collided

## Success Criteria

**ALL** I can write code to program a snake to move in different directions when different keys are pressed

**MOST** I can use a conditional 'if' statement in my code to program an egg to disappear when the snake hits it

**SOME** I can design a simple game and explain how the code used to create my app executes as the game is being played

## Key words

background, if/then, condition, conditional function, key pressed

# Pop game

## Overview

In this lesson children will be introduced to variables and how they can be used in computer programming. They will begin to understand that a score in an app is written into the code as a variable.

## Learning objectives

Learn how to use variables to keep track of the score in a game

## Success Criteria

**ALL** I can write code which includes a variable that will increase in value each time a balloon is popped

**MOST** I can program the variable to increase in value by different amounts when different balloons are popped

**SOME** I can add a time limit to my app and explain how I have used a variable to keep the score

## Key words

variable, condition, score, start, click, place, time

# Loops in Space

## Overview

In this lesson children consolidate their understanding of repetition and loops by using them in code to make an object turn repeatedly, and to make an animation.

## Learning objectives

Learn how to use a loop to make a space animation

## Success Criteria

**ALL** I can write code that uses a loop to create a timer that counts down

**MOST** I can program a button to start the countdown and a rocket to launch when the countdown is finished

**SOME** I can use loops in my code to program a rocket to turn repeatedly so it flies in a loop until it is instructed to stop

## Key words

if... equals, condition, repetition, loops, animation, countdown, reset

## Faster and slower

### Overview

In this lesson children will begin to develop an understanding of the relationship between values used in code and the action of the object they relate to. They will explore setting values in code to program the speed of an object.

### Learning objectives

In this lesson children will begin to develop an understanding of the relationship between values used in code and the action of the object they relate to. They will explore setting values in code to program the speed of an object.

### Success Criteria

**ALL** I can write code that sets a value to set the speed of a car

**MOST** I can program buttons to increase or decrease the speed of a car and to stop the car

**SOME** I can create an app in which a player can control the speed of a car by pressing different keys and I can explain how my app works

### Key words

numbers, debug, object, action, speed, acceleration, deceleration

## Simple driving game

### Overview

In this lesson children will use variables to control the direction and speed of a car within a game. They are introduced to the concept of working iteratively and explore what it means to use computational thinking to solve challenges.

### Learning objectives

Learn how to change an object's direction and heading to create a driving game

### Success Criteria

**ALL** I can use values in my code to control the speed and direction of a car

**MOST** I can use conditional events and values that represent angles in my code

**SOME** I can use computational thinking to design and create an app that solves a challenge and explain how my app works

### Key words

angle, speed, heading, if, assign, decompose, iteratively

# Caterpillar catcher

## Overview

In this lesson children will practise writing code which uses random number generation to determine how objects will move and to change their locations. They will practise using variables and conditional events in code.

## Learning objectives

Learn how to code a game that uses random numbers to move objects in random directions

## Success Criteria

**ALL** I can write code that uses random numbers to move a caterpillar in random directions

**MOST** I can write code that uses random numbers to move a caterpillar to random locations

**SOME** I can design and create a game which uses random numbers and includes conditions. I can explain how my app works

## Key words

random number, generate, angle, coordinates, variable, degrees, value, condition, score

# Sheepdog

## Overview

In this lesson the children will learn to write code that detects the length of a swipe/drag event and use it to set the speed of the object. They will learn to set parameters for how objects move by writing code to detect the movements of other objects.

## Learning objectives

Learn to make a game that moves objects around by getting information from events and setting object parameters.

## Success Criteria

**ALL** I can write code which uses friction and drag end events to control how a dog moves across the screen

**MOST** I can write code which detects the length and direction of the drag and uses these values to set the parameters for how the dog will move

**SOME** I can develop my app using conditional events and a variable, and explain how my app works

## Key words

drag end, parameter, score, variable, ev.d, ev.a, dog. Heading

# Football

## Overview

In this lesson children practise using the drag end event and writing code that detects the length of the drag. They will learn to set parameters for how objects move by writing code to detect the movements of other objects

## Learning objectives

Learn to make a football game by setting an object's parameters from the values returned by a swipe/drag event

## Success Criteria

**ALL** I can write code which uses friction and drag end events to control how a dog moves across the screen

**MOST** I can use coordinates and random numbers in my code to make a goalie move up and down the Y axis in front of the goal

**SOME** I can develop my app using conditional events and a variable, and explain how my app works

## Key words

friction, direction, angle, speed, variable, score, equal, drag, swipe

# Space travel

## Overview

In this lesson children will practise setting parameters for the movements of objects by using values in code or writing code to detect the movements of other objects. They will combine these concepts with conditions and variables in their code to create a space game.

## Learning objectives

Learn how to move objects around the screen by accessing and changing their parameters

## Success Criteria

**ALL** I can set parameters in my code and use them to control the movements of a rocket

**MOST** I can set parameters in my code and use them to control the movements of an asteroid

**SOME** I can develop my app so the rocket can blast the asteroid to score points, and I can explain how my app works

## Key words

friction, direction, angle, speed, variable, score, equal

## Don't feed the birds

### Overview

In this lesson children will combine their knowledge of coordinates, conditional events, random numbers and variables together in code to create a bird game. They will create an app that uses a different way of scoring.

### Learning objectives

Create game moving objects around the screen by accessing and changing their parameters

### Success Criteria

**ALL** I can write code that uses random numbers and variables to control when an object moves

**MOST** I can write code that uses conditional events and coordinates to either stop and relocate an object, or stop the game

**SOME** I can program three objects in the game and add a score. I can explain how my app works

### Key words

random, numbers, property, objects, variable, location, events

## Golf game

### Overview

In this lesson children will practise setting parameters for how objects move by assigning values in code or writing code to detect the movements of other objects. They will combine these concepts with conditions and variables in their code to create a golf game.

### Learning objectives

To create a golf game moving objects around the screen by accessing and changing their parameters

### Success Criteria

**ALL** I can write code which detects the length and direction of a drag event and uses it to set the parameters for an object's movements

**MOST** I can create an app which uses conditional events to stop an object when a condition is met a variable to keep track of a score

**SOME** I can design and develop my app by using buttons and coordinates, and I can explain how it works

### Key words

random, objects, variable, location, X axis, Y axis, coordinates, conditions

# Your own app

## Overview

In this lesson children will apply the computer programming concepts they learned in Unit 6b to design, create and debug programs. They will use logical reasoning to explain how their code executes.

## Learning objectives

Learn how to program your own app, choosing your own objects and events; practise writing code that detects values to set parameters.

## Success Criteria

**ALL** I can write code that detects the distance and angle of a drag and uses these values to set the parameters for how an object moves

**MOST** I can develop my app, using variables and conditions to make a game

**SOME** I know I can include random numbers, coordinates and loops in my code and use them where I think they would be most effective. I can explain how my app works.

## Key words

random, objects, variable, location, X axis, Y axis, coordinates, conditions