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, they will begin to use the terms 'algorithm' and 'execute' in a computer programming context

Learning objectives
Learn how to program an object to change direction when different keys are pressed on a keyboard

Success Criteria
ALL I can program a plane to change direction when a key is pressed
MOST I can program a plane 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, algorithm

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

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

Catch the coconuts

Overview
In this lesson children will consolidate their understanding of variables and how they can be used in an app to keep score.
They will learn that the value of a variable can change as a result of an input or event, or in response to a condition being met

Learning objectives
Practise using variables to keep track of the score in a game; practise using conditional events in your code

Success Criteria
ALL I can write code which includes a variable that will increase in value each time a monkey catches a coconut
MOST I can write code to program the coconuts to appear in a new place when they are caught by the monkey
SOME I can program the value of a variable to increase or decrease each time a monkey catches a coconut, and add a
time limit to my app

Key words
variable, condition, score, time, negative

Shop till

Overview
In this lesson children will continue to consolidate their understanding of variables. They will assign different values to variables and will learn that the computer can use variables in calculations.

Learning objectives
Learn how to count and total up objects and prices, simulating a shop till

Success Criteria
ALL I can write code which uses a variable to display the cost of an item in a shop
MOST I can make an app that simulates a shop till, using a variable to display the total cost of several items
SOME I can program a button that will reset the variable and explain how my app works

Key words
variable, assign, value, event, click, execute

Pirate gold

Overview
In this lesson children will apply their understanding of conditional events and variables in code to create an app for an iPad/tablet. They will break down the challenge and use computational thinking to help them plan and write their code.

Learning objectives
Practise using variables to keep track of the score in a game designed for an iPad/tablet; practise using conditional
events in your code

Success Criteria
ALL I can write code which includes a variable that will increase in value when a condition is met
MOST I can program the value of a variable to increase by different amounts when different conditions are met
SOME I can explain how variables are used to keep track of the score in my game

Key words
if, statement, var_s, variab

Healthy eating

Overview
In this lesson children will practise applying their understanding of conditional events and variables in code to create an app. They will break down the challenge and use computational thinking to help them plan and write their code.

Learning objectives
Practise using variables to keep track of the score in a game; practise using conditional events in your code

Success Criteria
ALL I can write code which includes a variable that will increase in value each time a condition is met
MOST I can program the value of a variable to increase by different amounts when different conditions are met
SOME I can explain how variables are used to keep track of the score in my game

Key words
var_s, variable, value, event, executele, value, event

Your own app (advanced)

Overview
In this lesson children will design write and debug programs that accomplish specific goals. They will use logical reasoning to explain how their code executes and to detect and correct errors as they work. They will add their own pictures and events, and use variables and conditions in their code.

Learning objectives
Learn how to design and make your own app. Practise using variables and conditionalevents in code and debugging when there is a problem.

Success Criteria
ALL I can design and create an app in which an object moves around the screen in different directions
MOST I can design and create an app which uses variables and conditions when it runs
SOME I can explain how each line of code in my app works and how I debugged the code when there was a problem

Key words
variable, assign, value, if, event, click, true

Why use a loop?

Overview
In this lesson children will combine their understanding of using time events and variables in code. They will be introduced to the concepts of 'repeat' and 'loop' in coding.

Learning objectives
Learn how to use a loop to do something repeatedly in a program and create a timer

Success Criteria
ALL I can write code that includes time events and a variable to create a timer that counts up in seconds
MOST I can include a loop in my code to create a timer that counts in multiples
SOME I can set a time condition to make my timer stop and explain why it is more efficient to use a loop than lots of 'after'
time events

Key words
variable, stop, timer, multiples, negative, repetition, loops

Stopwatch

Overview
In this lesson children will gain further practice in designing and creating an app for a specific purpose. They will consolidate their understanding of repetition and loops, as well as knowledge of their uses.

Learning objectives
Practise using a loop to do something repeatedly and make a stopwatch

Success Criteria
ALL I can write code that uses a loop to create a stopwatch that counts up in tenths of a second
MOST I can program my stopwatch to count in tenths of a second and program stop, start and reset buttons
SOME I can design and create a stopwatch app for a smartphone and explain how my code makes the app work

Key words
stopwatch, repetition, loops, variable, simulation, reset, button

Countdown timer

Overview
In this lesson children will gain further practice in designing and creating an app for a specific purpose. They will consolidate their understanding and use of repetition and loops.

Learning objectives
Practise using a loop to make a simple countdown timer

Success Criteria
ALL I can write code that uses a loop to create a timer that counts down
MOST I program my timer to show a 'Time up!' message when the counter reaches 0
SOME I can design and create a countdown timer app for a smartphone and explain how my code makes the app work

Key words
countdown timer, start condition, end condition, if... equals, repetition, loops

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

Animations with loops

Overview
Computer programming learning objective(s): To understand that when a computer does something it is following instructions called code

Learning objectives
Learn how to use loops to create animations that repeat infinitely

Success Criteria
ALL I can use variables and conditional statements in my code to make a ball bounce up and down
MOST I can use loops and variables in my code to make a ball bounce up and down continuously
SOME I can use loops and variables in my code to make a car drive round a track continuously

Key words
if... equals, condition, repetition, loops, animation, reset, variable

Your own app (advanced)

Overview
In this lesson children will design, write and debug programs. They will use logical reasoning to explain how their code executes and detect and correct errors as they work. They will add their own pictures and events, and use repetition and loops in their code.

Learning objectives
Learn to design and make your own app. Practice using repetition and loops in code and debugging code when there is a problem.

Success Criteria
ALL I can design and create an app in which an object moves around the screen in different directions
MOST I can design and create an app and use repetition and loops in my code
SOME I can design an app to solve a challenge, explain how my app works and how I debugged the code when there
was a problem

Key words
condition, repetition, loops, animation, reset, variable, infinite loop