

**Curriculum objectives**

- To 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 and repetition in programs; use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.

**Lesson objectives**

- To understand how selection can be used within a Scratch quiz to achieve different outcomes.
- To understand how inputs and outputs can be used within a Scratch quiz.
- To plan their own algorithms including inputs, outputs and selection.
- To work collaboratively to debug their algorithms.

**Expected outcomes**

- Can create a simple quiz using a visual programming language.
- Can solve problems by decomposing them into smaller parts.

**Resources**

Photocopiable page 196 'Rainforest quiz algorithms'; completed photocopiable page 195 'Rainforest quiz planning' sheets from last lesson; Scratch file 'Rainforest animals quiz'

## Planning algorithms and programming a quiz

In this lesson, the children will begin the process of creating their quiz. First, they examine how selection and inputs and outputs are used in a Scratch quiz and then using this knowledge they plan their own algorithms and Scratch code.

**Introduction**

- Remind the children that they have been planning their rainforest quiz.
- This week they will be creating the algorithms for their quiz, firstly on paper and then using Scratch.

**Whole-class work**

- Explain that you are first going to be focusing on *inputs and outputs* and *selection*.
- Display the Scratch file 'Rainforest animals quiz' (opened from the Quick links section on the CD-ROM) on the whiteboard and ask the children to identify where the first input box is ('ask what is your name?' – *name* being the input).
- Ask them to identify the output ('hello name' – *name* being the output).
- Explain that this is the Scratch programming language making use of inputs and outputs and that they may choose to use this in their quiz. Ask: *Can you identify any other inputs in the sample quiz? Where could other outputs go?* (For example, an output could repeat the answer you typed.)

**Paired work**

- Ask the children to open Scratch and experiment with input and output scripts, getting a sprite to ask for an input and then giving an output (asking to input the name, then saying 'hello name' is an easy start).

**Whole-class work**

- Displaying the Scratch file 'Rainforest animals quiz' on the whiteboard, ask the children to identify the first selection script (where the program has to make a selection or decision – an *if* statement is a good sign, for example *If the answer is monkey, say 'well done', else say 'sorry, I'm a monkey'*).
- Explain that children will need to use selection in their quiz to identify the correct and incorrect answers and talk through how the quiz does this.
- You may also wish to recap the use of 'broadcast' and 'when I receive'.

**Paired work**

- Give out photocopiable page 196 'Rainforest quiz algorithms' and explain to the children that they should use this to plan the algorithms for their quiz.
- Emphasise that they need to work step by step through their quiz, thinking of what action needs to happen first, then expanding it to create an algorithm and then the code. They may need more space to write their algorithms, and they can continue on the back of their sheet.
- They can use Scratch and the sample files to help them if they wish. Working collaboratively will help them to debug their algorithms and code.

**Differentiation**

- Support: Less confident learners may need further support and to work through further simple examples of how to use selection before going on to plan their algorithms.
- Challenge: More confident learners will be able to understand the concepts of selection more easily and will be able to plan their algorithms with ease. They should be encouraged to use multiple selection.

**Review**

- Display a new Scratch file on the board and, using volunteers, as a class come up with a start to a quiz that uses inputs, outputs and selection.
- Assess the children's progress through their algorithms planning sheet.