



Raspberry Pi

# Year 3 – Branching databases

## Unit introduction

Learners will develop their understanding of what a branching database is and how to create one. They will use yes/no questions to gain an understanding of what attributes are and how to use them to sort groups of objects. Learners will create physical and on-screen branching databases. To conclude the unit, they will create an identification tool using a branching database, which they will test by using it. They will also consider real-world applications for branching databases.

## Software and Hardware requirements

For this unit, both you and your learners will need access to the j2data free tools; Pictogram, Branch, and chart tools, which can be accessed via any web browser (via any device: desktop, laptop, Chromebook, tablet) here <https://www.j2e.com/jit5#branch> (see menu at the top for navigation between tools). Pupils do not need J2E logins, as only free tools are used.

If you've adapted this unit to better suit your school, please [share your adapted resources](#) with fellow teachers in the STEM community. Alternatively, if this unit isn't quite right for your school, why not see if an adapted version which better suits has already been shared?

## Overview of lessons

Lesson	Brief overview	Learning objectives
1 Yes or no questions	Learners will start to explore questions with yes/no answers, and how these can be used to identify and compare objects. They will create their own yes/no questions, before using these to split a collection of objects into groups.	To create questions with yes/no answers <ul style="list-style-type: none"><li>• I can investigate questions with yes/no answers</li><li>• I can make up a yes/no question about</li></ul>

		<p>a collection of objects</p> <ul style="list-style-type: none"> <li>I can create two groups of objects separated by one attribute</li> </ul>
2 Making groups	Learners will develop their understanding of using questions with yes/no answers to group objects more than once. They will learn how to arrange objects into a tree structure and will continue to think about which attributes the questions are related to.	<p>To identify the attributes needed to collect data about an object</p> <ul style="list-style-type: none"> <li>I can select an attribute to separate objects into groups</li> <li>I can create a group of objects within an existing group</li> <li>I can arrange objects into a tree structure</li> </ul>
3 Creating a branching database	Learners will continue to develop their understanding of ordering objects/images in a branching database structure. They will learn how to use an online database tool to arrange objects into a branching database, and will create their own questions with yes/no answers. Learners will show that their branching database works through testing.	<p>To create a branching database</p> <ul style="list-style-type: none"> <li>I can select objects to arrange in a branching database</li> <li>I can group objects using my own yes/no questions</li> <li>I can test my branching database to see if it works</li> </ul>
4 Structuring a branching database	Learners will continue to develop their understanding of how to create a well-structured database. They will use attributes to create questions with yes/no answers, and will apply these to given objects. Learners will compare the efficiency of different branching databases, and will be able to explain why questions need to be in a specific order.	<p>To explain why it is helpful for a database to be well structured</p> <ul style="list-style-type: none"> <li>I can create yes/no questions using given attributes</li> <li>I can compare two branching database structures</li> <li>I can explain that questions need to be ordered carefully to split objects into similarly sized groups</li> </ul>
5 Planning a branching database	Learners will independently plan a branching database by creating a physical representation of one that will identify different types of dinosaur. They will continue to think about the attributes of objects to write questions with yes/no	<p>To plan the structure of a branching database</p> <ul style="list-style-type: none"> <li>I can independently create questions to use in a branching database</li> </ul>

	answers, which will enable them to separate a group of objects effectively. Learners will then arrange the questions and objects into a tree structure, before testing the structure.	<ul style="list-style-type: none"> <li>• I can create questions that will enable objects to be uniquely identified</li> <li>• I can create a physical version of a branching database</li> </ul>
6 Making a dinosaur identifier	Learners will independently create a branching database to identify different types of dinosaur, based on the paper-based version that they created in Lesson 5. They will then work with a partner to test that their database works, before considering real-world applications for branching databases.	<p>To independently create an identification tool</p> <ul style="list-style-type: none"> <li>• I can create a branching database that reflects my plan</li> <li>• I can work with a partner to test my identification tool</li> <li>• I can suggest real-world uses for branching databases</li> </ul>

## Subject knowledge and opportunities

This unit focuses on branching databases. A branching database is a collection of data organised in a tree structure using yes/no or true/false questions. You will also need to be familiar with the term ‘attributes’. An attribute includes its name and a value. For example, a ball will have a colour, which might be red. ‘Colour’ is the attribute name, and ‘red’ is the attribute value. Learners may be familiar with the term ‘property’ introduced in Year 1 – ‘Grouping data’. The terms ‘property’ and ‘attribute’ are interchangeable; however, ‘property’ has been used in resources designed for younger children to make them more accessible.

Throughout this unit, learners will use the online database tool j2data Branch. You should be familiar with using this tool. Support with navigating j2data Branch can be found at [www.j2e.com/help/videos/datags3](http://www.j2e.com/help/videos/datags3).

### Continual Professional Development

Enhance your subject knowledge to teach this unit through the following free CPD:

- [Getting started in Year 3 – short course](#)
- [Introduction to primary computing remote or face to face](#)

### Teach primary computing certificate

To further enhance your subject knowledge, enrol on the [teach primary computing certificate](#). This will support you to develop your knowledge and skills in primary computing and gain the confidence to teach great lessons, all whilst earning a nationally recognised certificate!

## Progression

This unit progresses learners' knowledge and understanding of the categories of data handling, with a particular focus on implementation. It builds on their knowledge of data and information from Key Stage 1; [Grouping data in Year 1](#) and [Pictograms in Year 2](#). They will continue to develop their understanding of attributes and begin to construct and interrogate branching databases as a means of displaying and retrieving information.

## Common Misconceptions

Learners must be aware that questions within branching databases must have a yes/no answer. Learners could be prompted to start their questions using 'does it' and 'is it'. When looking at creating questions, they will be based on attributes, however this is simply another way to say 'properties'. Learners must think carefully about how they order the questions, as this will affect the branching database's structure. Learners need to know that it is important to order questions carefully to ensure that objects are separated as evenly as possible.

## Curriculum links

### Computing

- select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information
- use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact

### Science (Lower Key Stage 2)

- gathering, recording, classifying and presenting data in a variety of ways to help in answering questions

### Maths

- Statistics: interpret and present data using bar charts, pictograms and tables

## Assessment

### **Formative assessment**

Assessment opportunities are detailed in each lesson plan. The learning objectives and success criteria are introduced in the slide decks at the beginning of each lesson and then reviewed at the end. Learners are invited to assess how well they feel they have met the learning objective using thumbs up, thumbs sideways, or thumbs down.

### **Summative assessment**

Please see the summative assessment document of multiple-choice questions for this unit. This can be downloaded as a paper copy, with answers, or in a digital format to be shared.

Resources are updated regularly — the latest version is available at: [ncce.io/tcc](https://ncce.io/tcc).

**Attribution statement**

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The original version can be made available on request via [info@teachcomputing.org](mailto:info@teachcomputing.org).