



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.

For this unit, both you and your learners will need access to the j2data Pictogram, Branch, and Database tools (see <https://www.j2e.com/jit5#branch> or similar).

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"> • I can investigate questions with yes/no answers • I can make up a yes/no question about a collection of objects

		<ul style="list-style-type: none"> I can create two groups of objects separated by one attribute
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"> I can select an attribute to separate objects into groups I can create a group of objects within an existing group I can arrange objects into a tree structure
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"> I can select objects to arrange in a branching database I can group objects using my own yes/no questions I can test my branching database to see if it works
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"> I can create yes/no questions using given attributes I can compare two branching database structures I can explain that questions need to be ordered carefully to split objects into similarly sized groups

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 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.	To plan the structure of a branching database <ul style="list-style-type: none"> • I can independently create questions to use in a branching database • I can create questions that will enable objects to be uniquely identified • I can create a physical version of a branching database
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.	To independently create an identification tool <ul style="list-style-type: none"> • I can create a branching database that reflects my plan • I can work with a partner to test my identification tool • I can suggest real-world uses for branching databases

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. 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.

Please see the learning graph for this unit for more information about progression.

Curriculum links

National curriculum links

- 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

Further national curriculum links

Various contexts are used to create branching databases throughout the unit. You can change these contexts to fit in with other areas of the curriculum.

Assessment

Formative assessment opportunities are provided in each of the lesson plan documents. For summative assessment, please see the document of multiple choice questions for this unit.

Subject knowledge

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. In computer science, these are known as binary trees.

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.

Enhance your subject knowledge to teach this unit through the following training opportunities:

Online training courses

If you are a teacher in England:

- You can access our [online training courses via the teachcomputing.org website](#) (filter the courses to select from online training)

If you are not a teacher in England:

- You can access our [online training courses via the FutureLearn platform](#)

In particular, the following courses may be of interest to you:

- Get Started Teaching Computing in Primary Schools: Preparing to teach 5- to 11-year-olds
- Teaching Computing Systems and Networks to 5- to 11-year-olds
- Teaching Physical Computing to 5- to 11-year-olds
- Teaching Programming to 5- to 11-year-olds

Face-to-face courses

If you are a teacher in England, you can take part in our [face-to-face training courses](#) (filter the courses to select from face-to-face or live remote training).

Resources are updated regularly — the latest version is available at: nccce.io/tcc.

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