National Centre for Computing Education

Raspberry Pi

Lesson 3: Creating a branching database

Introduction

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.

Learning objectives

To create a branching database
- 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

Key vocabulary

Branching database, database, attribute, value, questions, objects

Preparation

Subject knowledge:
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. The L3 teacher resource also provides more information on using this tool.

The learners will use the term 'attribute' to describe objects. This is highlighted in the plan below. More information about attributes has been included in the unit overview.

You will need:
- Slides
- A1 Solutions – Using a branching database
- A2 Handout – How to create a branching database

- L3 Teacher resource – Branching databases — j2data
- Access to the example of a branching database in j2data Branch (ncce.io/minibtree)
- Access to j2data Branch (ncce.io/branchingdb)
- Homework – Creating questions (optional)

Assessment opportunities

- **Activity 1:** To assess the learners' ability to identify objects by using a branching database
- **Activity 2:** To assess the learners' ability to create yes or no questions to group objects they have chosen
- **Activity 3:** To assess the learners' ability to follow a branching database

Outline plan

Please note that the slide deck labels the activities in the top right-hand corner to help you navigate the lesson.

*Timings are rough guides

Introduction (Slides 2–4) 5 mins	**Introduction** Share the learning objectives on slide 2. Display slide 3 and explain that you will be identifying a minibeast by asking and answering questions. Share with learners the attributes of the minibeast that you will be identifying: - It can fly - It stings or bites - It makes honey Move on to slide 4 and click through the animations to show that yes/no questions can be used to identify the minibeast as a bee. Relate the structure of the questions to the tree/branching structure introduced in Lesson 2.
Activity 1 (Slides 5–6) 5 mins	**Using a branching database** Display slide 5 and show learners the complete version of the minibeast identifying branching database (from j2data Branch). Explain to learners that they will be using this branching database to identify minibeasts. **Note:** If you would like to open the branching database in j2data Branch, you can click on the image on the slide. Display slide 6 and give learners an opportunity to use the branching database, individually or in pairs, to identify a caterpillar, a ladybird, and

	a snail. You can find the path to identify each of the minibeasts in the solutions sheet.
Activity 2 (Slides 7–8) 20 mins	**Creating an online branching database** In this activity, you will demonstrate creating a branching database in j2data Branch. To support your demonstration, please see the teacher resource, which provides full instructions. The steps are also listed in the learner handout. Display slide 7. Explain to learners that they will be creating their own online branching database using j2data. Ask learners, "What do you think you need before you can begin building a branching database?" (objects to ask questions about). When learners have shared their responses, click to reveal the answer. Open j2data Branch (ncce.io/branchingdb) and select the blank template in the box. Select the 'Food And Drink' option in the library and click on eight food items (apple, banana, broccoli, carrot, cucumber, orange, pear, and pepper) for sorting. Encourage learners to follow your example on the learner handout. Select the **sort** button and remind learners that they need to try to separate their group as evenly as they can. This makes the branching database easier to follow. Demonstrate entering the question "Is it fruit?" and drag the food items into the 'thumbs up' or 'thumbs down' boxes. Press the **ok** button and explain that learners will then be able to use questions to further separate each of the groups that they have made. Explain to learners that they will be creating their branching database using a library set of their choice. They should have six to eight objects to sort. Display slide 8. Ask learners to access j2data Branch using the link provided in their handout (ncce.io/dat3-3-a2-ra). Ask learners to then follow the steps in their handout to create their own branching database. **Note:** Learners can record their work by printing or taking a screenshot of their branching database. If the learners have J2e accounts, they can save their branching databases, but they can only do this if they log in before starting their work.
Activity 3 (Slides 9–11) 10 mins	**Testing the branching database** Display slide 9. Explain to the learners that they can test their branching database to check it works. They can do this by selecting the **play** button.

	The objects they chose will be shown in the box on the left of the screen, as seen on slide 10. Display slide 11. Ask the learners to share their branching database with a partner. They need to choose one of the objects in the branching database and answer the questions to test that the branching database works. Allow the other partner to share their database and repeat the activity.
Plenary (Slide 12) 5 mins	**Plenary** Bring the learners back together. Ask the learners to think about the questions on slide 12 and to discuss these with their partner. Ask some of the learners to share their discussion with the class.
Next time (Slides 13–14) 5 mins	**This lesson, next lesson** Review the assessment and summary slides.
Homework (optional)	**Creating questions** Using the homework sheet provided, learners should first choose an object and draw a picture of it. They should then add four questions with yes/no answers that they could ask that would help them to identify the object chosen. Learners should also try to identify the attributes to which their questions relate.