



## Unit 3C: Introduction to Databases

### About this Unit:

In this unit children learn to collect and store information involving more than two variables. They will use a database to answer simple questions by sorting and finding the top or bottom and searching in a single field.

Children will be introduced to files, records and fields by exploring and comparing computer-based data and paper-based information. They will use a computer database, add to it, carry out simple searches and produce bar charts.

Children will apply what they have learnt in this unit when using ICT to handle and present information in geography, science, design and technology, and history.

### Where this Unit fits in:

This unit assumes that children can:

- measure in centimetres with some accuracy and reliability
- use different units to measure weight, height and other body measurements.

### Vocabulary:

Save | Retrieve | database | field | record | file | sort | classify | order | bar chart | data capture sheet |

### Resources:

A set of paper-based record cards | data capture sheets | a computer database with the information from the record cards | measuring equipment such as scales, height measures and rulers |

### Expectations: at the end of this unit,

*Most pupils will be able to:* enter data into a database with a predetermined structure and use it to answer straightforward questions and produce bar charts

*Some pupils will only be able to:* enter data into a database with a predetermined structure and find information in it by matching the query to the question

*Some pupils will also be able to:* enter data into a database with a predetermined structure and use it to answer straightforward questions and produce bar charts; turn questions into search criteria

*These units have been adapted from material available on the QCA Schemes of Work website*



Learning Objectives <i>Pupils should learn...</i>	Possible Activities	Learning Outcomes <i>Pupils can...</i>	Consider
<b>Setting the Scene</b>			
<ul style="list-style-type: none"><li>• <b>key idea:</b> that collecting and storing information in an organised way helps them find answers to question.</li></ul>	<ul style="list-style-type: none"><li>◆ Take a random selection of papers and books and discuss how difficult it is to find information when it is not organised. Explain that information can be structured and discuss how this can help them find information more easily.</li><li>• Introduce the class to a set of paper-based record cards containing information on a particular subject, such as mini-beasts. Explain how the information is structured into fields with all the information on one object held on a single card called a 'record'. Discuss the possible advantages this might have for finding information quickly.</li></ul>	<ul style="list-style-type: none"><li>• Understand the need to structure information</li></ul>	
<b>Short Focused Tasks</b>			
<ul style="list-style-type: none"><li>• <b>key idea:</b> that information on record cards is divided into fields and that a set of record cards is called a file</li></ul>	<ul style="list-style-type: none"><li>• Divide the class into small groups and give each group a set of numbered record cards.</li><li>• Ask the children to use the record cards to answer questions such as: <i>what information is on the fifth record card in the field 'legs'; which record contains the animal called 'woodlouse' in its name field; how many records are in the file; how many fields are in each record?</i></li></ul>	<ul style="list-style-type: none"><li>• Use fields correctly to answer questions</li></ul>	<ul style="list-style-type: none"><li>• Only a small number of record cards are needed. Children are not required to find the answers to complex questions. Use number and word information in the fields but do not explain specifically the difference between them. Fields could contain information about the mini-beasts' names, sizes, numbers of legs, habitats, colours, and whether or not they have wings.</li></ul>

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Learning Objectives <i>Pupils should learn...</i>	Possible Activities	Learning Outcomes <i>Pupils can...</i>	Consider
<b>Short Focused Tasks (Cont.)</b>			
<ul style="list-style-type: none"><li>• <b>key idea:</b> that information can be held as numbers, choices (such as yes/no) or words</li><li>• <b>key idea:</b> that information can be taken from pictures or text</li></ul>	<ul style="list-style-type: none"><li>• Use the record cards from the above activity and explain how to add information to a record card and point out where the information should be entered as numbers <i>eg the number of legs</i>, text <i>eg colour</i> or as a choice <i>eg 'yes' or 'no' in the wings field</i>. Divide the children into groups and give each group written descriptions, or pictures, of three new mini-beasts. Ask them to extract the relevant information and add three new record cards to the file.</li><li>• Explain how each card holds information on one mini-beast and that this information is divided into fields with different headings, for example name, size, colour. Tell the class that the fields are the same on each card and discuss how this will help them find information and answer simple questions, such as: how many mini-beasts have four legs?</li></ul>	<ul style="list-style-type: none"><li>• identify appropriate information for specific fields within a textual or visual description</li><li>• add new records to a file and place information in the correct fields using the correct conventions</li></ul>	<ul style="list-style-type: none"><li>• Descriptions need to be carefully matched to the children's reading abilities.</li></ul>
<ul style="list-style-type: none"><li>• <b>key idea:</b> that ICT can be used to store and sort information</li><li>• <b>technique:</b> to add a record to a file in a computer database</li></ul>	<ul style="list-style-type: none"><li>• Prepare a database containing information on mini-beasts including details of: name, habitat, number of legs, wings, colour.</li><li>• Demonstrate how to enter the program and select the correct file on mini-beasts. Show the class how to move through the records. Point out the features that the computer database shares with the paper-based record cards. Demonstrate how to add a record to the database and ask children in turn to add records.</li></ul>	<ul style="list-style-type: none"><li>• recognise the similarities between the computer and paper-based systems and add records to a database</li></ul>	<ul style="list-style-type: none"><li>• Make connections between the manual task and the use of the computer data</li></ul>

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Learning Objectives <i>Pupils should learn...</i>	Possible Activities	Learning Outcomes <i>Pupils can...</i>	Consider
<b>Short Focused Tasks (Cont.)</b>			
<ul style="list-style-type: none"> <li>• <b>technique:</b> to answer simple questions by matching the contents of a single field</li> <li>• <b>technique:</b> to answer simple questions by ordering records by a key field and then taking the top or bottom record</li> </ul>	<ul style="list-style-type: none"> <li>◆ Show the class how to turn questions, such as <i>which animals are green?</i>; <i>which animal has the most legs?</i>, into appropriate search criteria, such as <i>colour field = green</i> or <i>order by field legs</i>. Discuss the advantages and disadvantages of using the computer for this.</li> </ul>	<ul style="list-style-type: none"> <li>• Translate questions into search criteria that can be used to find answers from a database.</li> </ul>	<ul style="list-style-type: none"> <li>• Children often assume that they have made a mistake if the answer is zero or no records. Give an example where this will happen and explain the answer (or lack of one) to the class.</li> </ul>
<ul style="list-style-type: none"> <li>• <b>technique:</b> to use a database to produce bar charts</li> </ul>	<ul style="list-style-type: none"> <li>◆ Use the record cards to demonstrate how a database can produce bar charts. For example, group the cards according to the number in the 'legs' field and stack them to produce a bar chart showing the numbers of animals with each amount of legs.</li> <li>◆ Demonstrate how to use the computer database of mini-beasts to produce bar charts. Discuss the advantages of using ICT to draw graphs, such as accuracy and speed. Divide the children into groups and ask them to create their own bar chart. Ask them to print their bar chart and to write about it. Ask them to think of three questions to ask other children about the graph.</li> </ul>	<ul style="list-style-type: none"> <li>• Use a database to generate bar charts and interpret data.</li> </ul>	<ul style="list-style-type: none"> <li>• Paper based bar charts created manually by the children and computer generated charts could be displayed in the classroom with samples of the questions mounted around them to promote discussion and encourage interpretation of the data displayed.</li> </ul>

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Learning Objectives <i>Pupils should learn...</i>	Possible Activities	Learning Outcomes <i>Pupils can...</i>	Consider
<b>Assessment Task</b>			
<ul style="list-style-type: none"><li>• to use a database to sort and classify information and to present their findings.</li></ul>	<ul style="list-style-type: none"><li>◆ Tell the class that they are going to create a database containing information on each child in the class. Ask them to think of some questions they would like to ask, such as: <i>how many children have brown eyes; who is the tallest in the class?</i> Encourage them to think of questions which require numerical and non-numerical data.</li><li>◆ Divide the children into pairs and discuss the specific information that they need to collect. Explain the structure and ask the children to measure and record their personal information on a record card or data capture sheet. Then ask each pair to add their information to the computer data file. Once all pairs have added their information, create a class list of questions and discuss how they can be translated into search criteria. Allocate questions and give each pair some time to work out and print their answers. Discuss and summarise the information with the class.</li></ul>	<ul style="list-style-type: none"><li>• Collect appropriate information, enter it into a database and use the database to answer simple questions.</li><li>• Use a database to generate bar charts and interpret data.</li></ul>	<ul style="list-style-type: none"><li>• Children who find the work difficult could be given simple questions, such as: who is the tallest in the class? More able children could be asked questions which require them to produce bar charts illustrating the numbers with particular eye colours, shoe sizes or favourite sports.</li><li>• This could link with welsh vocabulary on body features, such as, gwallt du, llygaid glas etc.</li></ul>

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