Fellside Community Primary School Computing Curriculum
Year 5 – Flat-file databases

Unit introduction

This unit looks at how a flat-file database can be used to organise data in records. Pupils use tools within a database to order and answer questions about data. They create graphs and charts from their data to help solve problems. They use a real-life database to answer a question, and present their work to others.

Overview of lessons

Lesson	Brief overview	Learning objectives
1. Creating a paper-based database	In the first lesson, pupils create a paper version of a record card database. Using a card template, they create a data set, with each pupil creating eight to ten cards linked to a theme, eg animals. They complete records for each of the animals in their database and then physically sort the cards to answer questions about the data.	To use a form to record information • I can create multiple questions about the same field • I can explain how information can be recorded • I can order, sort, and group my data cards
2. Computer databases	In this lesson, pupils use a computer-based database to examine how data can be	To compare paper and computer-based

	recorded and viewed. They learn that a database consists of 'records', and that each record contains 'fields'. In addition, they will order records in different ways and compare this database to the paper database they created in lesson 1.	databases ● I can navigate a flat-file database to compare different views of information ● I can explain what a 'field' and a 'record' is in a database ● I can choose which field to sort data by to answer a given question
3. Using a database	In this lesson, pupils investigate how records can be grouped, using both the paper record cards created in lesson 1 and a computer based database from J2E. They use 'grouping' and 'sorting' to answer questions about the data.	To outline how grouping and then sorting data allows us to answer questions ● I can explain how information can be grouped ● I can group information to answer questions ● I can combine grouping and sorting to answer more specific questions
4. Using search tools	In this lesson, pupils develop their search techniques to answer questions about the data. They use advanced techniques to search for more than one field, and practise doing this through both unplugged methods (without using computers), and using a computer database.	To explain that tools can be used to select specific data ● I can choose which field and value are required to answer a given question ● I can outline how 'AND' and 'OR' can be used to refine data selection ● I can choose multiple criteria to answer a given question

5. Comparing data visually	In this lesson, pupils consider what makes a useful chart, and how charts can be used to compare data. They create charts from their data in order to answer questions about it.	To explain that computer programs can be used to compare data visually ● I can select an appropriate chart to visually compare data ● I can refine a chart by selecting a particular filter ● I can explain the benefits of using a computer to create graphs
6. Databases in real life	The final lesson requires pupils to use a real-life database to ask questions and find answers in the context of a flight search based on set parameters. They take on the role of a travel agent and present their findings, showing how they arrived at their chosen options. Presentations may be given between groups of pupils, or by each group to the whole class, depending on the time available.	To apply my knowledge of a database to ask and answer real-world questions ● I can ask questions that will need more than one field to answer ● I can refine a search in a real-world context ● I can present my findings to a group

Progression

This unit progresses pupils' knowledge and understanding of why and how information might be stored in a database, and looks at how tools within a database can help us to answer questions about our data. It moves on to demonstrate how a database can help us display data visually, and how real-life databases can be used to help us solve problems. Finally, the pupils create a presentation showing understanding and application of all the tools used within the unit.

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

Curriculum links

National curriculum links
- use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content
- 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

Assessment

Summative assessment
- Please see the assessment question and answer documents for this unit.

Subject knowledge

Teachers will need to know that a flat-file database is a collection of data organised in a single table. The term 'database' means 'a collection of organised data that is stored on a computer'. Databases allow people to search and sort large quantities of data to find information. Data can be letters, words, numbers, dates, images, sounds etc. In addition, teachers will need to be familiar with the basic structure of a database, and the concept of 'grouping' and 'sorting' data records based on different fields. For example, grouping objects by colour, or sorting into alphabetical order.

A database is composed of 'records', which are sets of data on a particular object. Records are formed from one or more 'fields' of data. A field is one specific piece of data in a database record. For example, a record all about a country could have fields such as 'country name' and 'country population'. The value within the record is the 'answer' to each field, eg Mexico is the value in the 'country name' field and '126.2 million' is the value in the 'country population' field.

Teachers will also need to be aware that all objects have 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', 'red' is the attribute 'value'. In a flat-file database the attribute names become the fields when the data about the object is stored as a record. The values of the attributes become the values that are saved in the database fields.

Teachers will need to be familiar with using j2data sample databases. Support with navigating the databases can be found at http://www.j2e.com/help/videos/datags4. Knowledge of how to carry out a flight search using https://www.expedia.co.uk/Flights, and the ability to screenshot flight details from a web browser, would also be beneficial.

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

Online training courses
- Raspberry Pi Foundation online training courses

Face-to-face courses
- National Centre for Computing Education face-to-face training courses