Portfields Primary School Medium Term Plan

Year Group – **5** Subject - **Computing** Strand – **Information technology** Topic – **Flat file databases** Term - **Summer 1**

<table>
<tr><th>National Curriculum</th><th>Key Questions</th><th>Substantive Knowledge</th><th>Key Vocabulary</th><th>Real-Life Links</th></tr>
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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

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Were they easy to sort?
How long did it take?
Did anyone make any errors?
What would happen if we combined all the class records and sorted those alphabetically?
Do they have any ideas about making the sorting easier or quicker?
How reliable do you think this method is?
How does this method compare with the manual grouping you carried out in Lesson 1? Which method do you think is better and why?
How well would this method work if you had 2,000 records in your database?
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Understand what form to use to record information.
Understand how you can answer questions by grouping and then sorting data.
Understand that tools can be used to select specific data.
Understand that computer programs can be used to compare data visually.
Understand how to use a real-world database to answer questions.

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Data
Information
Record
Sort
Order
Group
Search
Compare
presentation
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Links to maths curriculum – gathering data, creating graphs from data and interpreting data.
Links to science curriculum – gathering data, creating graphs from data and interpreting data.
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Technical Questions
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Where have you heard the word database before?
They may recall work on branching databases in Year 3, or work on data in maths.

Why might someone want to use a database on a computer?
Answers may include:

To keep our data secure
To keep a large amount of data organised easily
To allow us to search our data more quickly
To sort our data easily
To prevent manual errors being made

Why might data in a database be inaccurate?
Answers may include:

It's entered by a human — maybe it's a typo
Someone entered the wrong information
The data is out of date
The data is labelled incorrectly

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Where might you have used or seen a chart before?

Answers may include:

within statistics in maths,
in science experiments,
Or a chart of the weather.

Why might we use charts?
Charts can make it easier to display and present data.

What is the first chart is showing you, and what information can you gather after looking at it?
A bar chart showing countries on the x axis and their populations on the y axis.

How did you decide on which chart type to use?
You probably scrolled through the different chart types and tested what worked for the data.

If we had been creating these charts on paper, how would this process have been different?
E.g. how much time and effort might it take in comparison?
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Technical Vocabulary
Database
Field
Value
Criteria
Graph
Chart
Axis
Compare
Filter
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Devices used
Computer
Laptops
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Disciplinary Knowledge

Will create a data set and complete records for each of the animals in their database and then they will physically sort the cards to answer questions about the data.
Will be able to use 'grouping' and 'sorting' to answer questions about the data and explain how records can be grouped.
Can use advanced techniques to search for more than one field, and will do this through both unplugged methods (without using computers), and using a computer database.
Identify what makes a useful chart, and how charts can be used to compare data.
Will be able to use a real-life database to ask and answer questions on set parameters and present these findings.

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<tr><td colspan="5">End of unit assessment questions</td></tr>
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Lesson Breakdown

Lesson 1

Flashback Four		Learning Objectives	Star Knowledge
Last Lesson What are selection statements in computing? *Selection statements in a computer program can help the computer decide what to do next.*	Last Topic What is an example of a microcontroller that can control outputs when it responds to inputs? *A crumble kit.*	Learning objective: LO: To use a form to record information Success criteria: • I can create a database using cards • I can explain how information can be recorded • I can order, sort, and group my data cards Task 1: Explain that learners will be creating their own database using record cards. Tell students that they will need to choose eight to ten animals and create a record for each. Hand out blank record cards, and ask learners to complete approximately eight records using information they already know about animals. **KEEP THESE CARDS FOR LESSON 3.** Task 2: Organise learners into pairs. Tell them that they are going to be timed whilst they sort their cards. They are going to mix their cards up. A partner will then time how long it takes, in total, to sort their cards alphabetically by animal name, mix them up, and then sort them again in reverse alphabetical order. Task 3: Organise learners into pairs and ask them to combine their database cards, removing any duplications. Learners will take it in turns to pose a question about the database to their partner, who then search the records to answer the question.	'Data' can be letters, words, numbers, dates, images, sounds, etc. 'Information' is data that has been processed so a human can read, understand, and use it.
Last Year What would this code snippet do?  *It will draw a square.*	Previous Key stage What is the difference between a closed question and an open question? *A closed question is a question that can only be answered with a yes or a no.* *An open-ended question is a question that is answered in the person's own words and can be longer than yes or no.*		

Lesson 2

Flashback Four		Learning Objectives	Star Knowledge
Last Lesson How would you define the word 'data' and the word 'information?' *'Data' can be letters, words, numbers, dates, images, sounds, etc.* *'Information' is data that has been processed so a human can read, understand, and use it.*	Last Topic How would you define what a count-controlled loop is? *A count-controlled loop is a code that tells the microcontroller specifically how many times it needs to complete a command.*	Learning objective: LO: To compare paper and computer-based databases Success criteria: • I can explain what a field and a record is in a database • I can navigate a flat-file database to compare different views of information • I can choose which field to sort data by to answer a given question Task 1: Ask the learners to sort the data from A to Z or high to low to find the answers to these questions and record their answers on whiteboards: • Which minibeast has the most legs? • Which minibeasts have the fewest legs? • Which minibeast name is first alphabetically? • Which minibeast name is last alphabetically? Task 2: Learners to find out whether there is any difference between sorting in the **form** view and the **table** view. Divide the class into pairs and ask each member to choose a different view to work in. Give learners time to explore the data view they have been assigned. Ask each learner to feed back to their partner on the advantages and disadvantages of sorting data in the view they are using.	Form view is a window or screen that contains lots of fields, or spaces to enter data. Table view displays many records at the same time.
Last Year How would you define what an infinite loop is? *In an infinite loop, commands are repeated over and over again, without an end point.*	Previous Key stage How would you define a database? *A database is a collection/group of information that is specifically organised in a way that makes it easy to identify/find the information.*		

Lesson 3

Flashback Four		Learning Objectives	Star Knowledge
Last Lesson How would you define 'form view' and 'table view?' *Form view is a window or screen that contains lots of fields, or spaces to enter data.* *Table view displays many records at the same time.*	Last Topic What is a condition in computing? *A condition is the rule that tells the microcontroller if the command can be carried out in the count-controlled loop.*	Learning objective: LO: To outline how you can answer questions by grouping and then sorting data Success criteria: • I can explain that data can be grouped using chosen values	We should always review data critically and check anything that doesn't sound correct. Just because it's on a computer, does not mean it is correct.

Last Year Describe what an event block is in coding. *An event block is the part of the code which tells your script (code) when to run (start). Without event blocks, the script can't run.*	Previous Key stage What is the word that is used when you are testing to see if your code work and fixing any problems that may arise? *Debugging.*	• I can group information using a database • I can combine grouping and sorting to answer specific questions Task 1: Explain to learners that they are going to alter the cards so they can pull out a group of records which have something in common. Using your own set of animal record cards, demonstrate how the corners of the cards without a tick can be cut off to help sort the database. Ask learners to carefully cut off the corners of their animal database cards in the same way, and then use their record cards to answer the following questions. • How many animals in your database have six legs? • How many animals in your database can fly? • How many animals are more than one colour? Task 2: Ask learners to use the search function to answer the following questions and record them on whiteboards. Remind the learners of the 'more than' and 'less than' symbols, and also show learners how to clear a search by clicking on the red cross. • Which countries in the database use the Euro as currency? • Which two countries are Chinese-speaking? • Which country has a population of 8,800,000? • Which countries have a population of over 100,000,000? Task 3: Ask learners to use 'search', then 'sort by', to find answers to these questions and complete their responses in their jotters: • Which Spanish-speaking country has the largest population? • Which Chinese-speaking country has the smallest population? • Which country using the Euro currency has the smallest area? • Which country using the Euro currency has the smallest population? • Out of all the countries with a population of over 100,000,000, which has the largest area?	

Lesson 4

Flashback Four		**Learning Objectives**	**Star Knowledge**
Last Lesson True or false: Data on a computer is always accurate and correct? *False: We should always review data critically and check anything that doesn't sound correct. Just because it's on a computer, does not mean it is correct as it could've been inputted inaccurately or be out of date.*	Last Topic What do If, then statements do? *If and then statements show the cause and effect of the outputs of a microcontroller.*	Learning objective: LO: To explain that tools can be used to select specific data Success criteria: • 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 Task 1: Explain to learners that you can search a database for a field containing a specific value. Tell learners that they are going to be using a database that contains records for passengers of the Titanic. The database contains 1,317 records. Using a computer they can search the Titanic database for passengers who were 16 years old. As a class, search the records to answer this question: • How many 16-year-olds were on board the Titanic? Learners work individually to answer the two questions on the slide: • How many people were in third class on board? • How many people survived? Task 2: Ask learners to use the 'AND' tool to answer the following questions: • How many males were in first class? (answer is 180) • How many females died? (answer is 143) • How many females boarded in Belfast? (answer is none) • How many males under 10 years old were on board? (answer is 52) Task 3: Explain that you are going to use the 'OR' tool in the computer database to answer the question 'How many people were in first or second class?' Learners will now use the database to answer more complex questions: • How many people boarded at Belfast or Queenstown? (133) • How many of the passengers were under 18 or over 70? (188) • Who was the oldest person in First or Second class? (Mr Ramon Artagaveytia (71), Mr George B.	Criteria are standards by which something is judged against.
Last Year What will happen if a wait block is added to a code? *The wait block pauses the code for a chosen amount of time before letting the program run the next block of code.*	Previous Key stage What is an attribute? *An attribute is a physical characteristic of an object/person.*		

		Goldschmidt (71), Henry Michael Mitchell (71)) • Who was the oldest person out of people who boarded at Southampton or Cherbourg? (Mr Johan Svensson (74))	
Lesson 5			
Flashback Four		**Learning Objectives**	**Star Knowledge**
Last Lesson What is criteria? *Criteria are standards by which something is judged against.*	Last Topic How would you define an algorithm? *An algorithm is a specific set of instructions that is followed to successfully complete a task.*	Learning objective: LO: To explain that computer programs can be used to compare data visually Success criteria: • 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 charts Task 1: Ask the learners to answer the question 'Which chart answers the questions best and why?' (Charts displayed on the board). Ask them to decide which chart is more suitable for answering the questions given. Discuss their findings and ask the learners to explain their reasoning. Task 2: Ask learners to use the 'Titanic' database to create charts thinking carefully about which chart type is the best for illustrating the answer to the following questions: • Were there more males or females on board the Titanic? • Who was the oldest passenger on board the Titanic? • How many males were in First class? • How many people boarded at Belfast or Queenstown?	Charts are used to help give a quick visual representation of data to help answer questions quickly and efficiently.
Last Year What are some examples of how information can be shared across the internet? *Some examples are:* • *Instant messaging* • *Emails* • *Videos* • *Audio clips* • *Blogs / blog posts*	Previous Key stage When creating branching databases, what is a key factor to consider when deciding on what questions to use? *The questions in a branching database need to specific and focus on the attributes of the objects/people which are being organised.*		