

Prior learning (Y4): Learners will consider how and why data is collected over time, the senses that humans use to experience the environment and how computers can use special input devices called sensors to monitor the environment. Learners will collect data as well as access data captured over long periods of time.

Year 5

Data and Information: Flat-file databases

Current learning (Y5): Learners look at how a flat-file database can be used to organise data in records. Learners will use tools within a database to order and answer questions about data. They will create graphs and charts from their data to help solve problems. They will also use a real-life database to answer a question, and present their work to others.

Future learning (Y6): Learners are introduced to spreadsheets and are supported in organising data into columns and rows to create their own data set. Learners will be taught the importance of formatting data to support calculations, while also being introduced to formulas and will begin to understand how they can be used to produce calculated data. Learners will be taught how to apply formulas that include a range of cells, and apply formulas to multiple cells by duplicating them. Learners will use spreadsheets to plan an event and answer questions. Finally, learners will create charts, and evaluate their results in comparison to questions asked.

Key vocabulary: Database, Record, Field, Sort, Order, Group, Value, Criteria, Graph, Chart, Axis, Compare, Filter

Overview

Flat-File Databases

Data is raw numbers and figures. Information is what we can understand from analysing data.

There are lots of different ways that we can collect, log and interpret data, including by using databases.

-Databases organise data so that it can be easily added to, amended, stored and accessed. Computer databases can allow large amounts of data to be sorted, filtered and edited more easily.



Using a Computer Database

-Computer databases often contain large amounts of data. We can find the data that we need by using the 'search', 'filter' and 'sort' functions. Search functions allow us to type in the exact word/s that we are looking for. This can be useful if we are looking for a particular record.

-If we are looking for records that share certain information we can filter out data by different fields. For example, we filter in the 'age' field for all students aged 23. The database will then present only the students aged 23.

-We can also sort records by the data in particular fields. e.g. we may sort by the students' ages, from youngest to oldest. The youngest student will then appear at the top.



College Enrollment 2016 - 2017			
Student ID	Last Name	Initial	Age
ST348-245	White	R.	21
ST348-246	Wilson	P.	19
ST348-247	Thompson	A.	18
ST348-248	Holt	R.	23
ST348-249	Armstrong	J.	37
ST348-250	Graham	S.	20
ST348-251	McFadden	H.	26
ST348-252	Jones	S.	22
ST348-253	Russell	W.	20
ST348-254	Smith	L.	19

Types of Databases

Database: A database is a collection of organised data that is easily stored and used. Databases often structure data in logical ways (e.g. in columns, rows and tables) so that it can be accessed by those who need it easily.

Databases are made up of individual records, which contain information in different fields (categories).

-Paper Databases: Paper databases require the creator to manually write in individual records, and to sort the records in an appropriate order. Paper records can still be useful in small databases, particularly where information is not changing and does not need to be amended frequently. However, most large databases are now stored on computers.

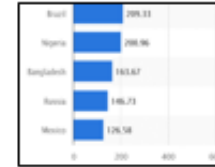
-Computer Databases: Many computer programs allow us to create databases, e.g. *jddata* or *Microsoft Excel*. Computer databases have become more popular than paper databases, as data can be easily and quickly added or removed, sorted, filtered, edited, or viewed at any time.

Student ID	Last Name	Initial	Age	Program
12345678	Smith	J.	22	Marketing
12345679	Johnson	A.	23	Marketing
12345680	Williams	M.	24	Marketing
12345681	Brown	K.	25	Marketing
12345682	Miller	L.	26	Marketing
12345683	Wilson	N.	27	Marketing
12345684	Moore	O.	28	Marketing
12345685	Taylor	P.	29	Marketing
12345686	Anderson	Q.	30	Marketing

Presenting Data

-Data can be shown visually, by using graphs and charts. This allows users to quickly and easily find answers to the questions that they need. It helps the user to easily see trends and to sequence information.

-Charts and graphs can be created by selecting the charts icon and selecting which fields to display in the x-axis and y-axis



Using Databases

-Remember that databases are used in order to quickly and easily find information. Databases are only able to do this if the data is organised logically into clear records and fields.

-Databases are used in most institutions across the world. Think about: medical records, school student information, flight logs and business accounts.

Date	Amount	Balance
2000-01-01	100.00	100.00
2000-01-15	50.00	50.00
2000-02-01	200.00	250.00
2000-02-15	100.00	150.00
2000-03-01	300.00	450.00
2000-03-15	150.00	300.00
2000-04-01	400.00	700.00
2000-04-15	200.00	500.00
2000-05-01	500.00	1000.00
2000-05-15	250.00	750.00