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# KS4 – Databases and SQL

## Unit introduction

This unit introduces learners to the world of databases and SQL. Learners explore the key terms used in a database and learn why relational databases are used to eliminate the redundancy and inconsistencies that can occur in a flat file database. Next, they explore increasingly challenging SQL commands where they retrieve, update, and delete data in a relational database.

## Overview of lessons

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| **Lesson** | **Brief overview** | **Learning objectives** |
| Lesson 1: Database essentials  | This lesson gives your learners the key terminology required to be able to use SQL to search and update a relational database. It steps learners through the key concepts using a music database as an example. first as a flat file database and then as a relational database. Learners are then given their first experience with a database management system (DBMS) where they learn to navigate and investigate some of the tools that they offer.  | * Describe a database
* Define database key terms (table, record, field, primary key, foreign key)
* Describe a flat file database
* Describe a relational database
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| Lesson 2: SQL searches  | SQL is introduced in this lesson. Learners use the music database from the previous lesson to write their first SQL commands. The activities start with learners retrieving data using SELECT, FROM, and WHERE statements. They complete increasingly challenging tasks for different search terms. They then move on to retrieving data from multiple tables. | * Describe the function of SQL
* Use SQL to retrieve data from a table in a relational database
* Use SQL to retrieve data from more than one table in a relational database
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| Lesson 3: Insert, Update, Delete  | This lesson continues to build on previous learning where learners were introduced to SQL queries for the first time. In this lesson the learners will understand the purpose of INSERT, UPDATE, and DELETE queries. They will have the opportunity to implement these queries using their music database and will be required to draw upon their learning from the previous lesson to use SELECT. These queries will be used to help them work out how to solve other problems and to prove that their INSERT, UPDATE, and DELETE queries work. The lesson will conclude by giving the learners a Parsons problem to solve based on an INSERT query.  | * Describe the function of different data types
* Use SQL to insert, update, and delete data in a relational database
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| Lesson 4: Swim challenge – part 1  | In this lesson the learners will bring together the learning that has taken place prior to this lesson. The main activity that will take this lesson and part of the next lesson is to complete an assignment based around building, interrogating, and updating a database to manage swimming lessons. The learners will start the lesson by recapping some key learning points about database relationships. They will then be given time to work through the swim lesson activities before completing the lesson with a set of multiple choice questions.  | * Interrogate and update an existing database
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| Lesson 5: Swim challenge – part 2  | In the final lesson of the unit, the learners will continue to practise their database and SQL skills by completing the swim challenge exercises they started in the previous lesson. This lesson will also give the learners an opportunity to practice exam-style questions by completing a more formal end of unit assessment.  | * Interrogate and update an existing database
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## Progression

This unit progresses students’ knowledge and understanding of databases and SQL.

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

## Curriculum links

[**National curriculum links**](https://www.gov.uk/government/publications/national-curriculum-in-england-computing-programmes-of-study/national-curriculum-in-england-computing-programmes-of-study)

* develop their capability, creativity and knowledge in computer science, digital media and information technology

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## Assessment

### Summative assessment

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

Assessment rubric (based on work completed in Lessons 4 and 5)

* Please see the Swim challenge rubric document, which is in Lesson 4 - Swim challenge part 1

## Subject knowledge

This unit focuses on databases and SQL.

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

### Online training courses

* [Introduction to databases and SQL](https://teachcomputing.org/courses/CO225/introduction-to-databases-and-sql) (teachcomputing.org/courses/CO225/introduction-to-databases-and-sql)

Resources are updated regularly — the latest version is available at: [ncce.io/tcc](http://ncce.io/tcc).

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