09 Databases

SrWL Learning · Complete Classroom Teaching Version · 2026–2028 target

Organise and query a single table

55 editable slides / Explanation · Visual · Practice · Teacher Check

By the end of this chapter

- Fields and records.
- Data types and validation.
- Primary keys.
- SQL SELECT queries.

Learning goals are organised into bite-sized lessons.

Our learning route

10 mini-lessons · each includes one guided check

- 01 Single-table databases: A
- 02 Single-table databases: B
- 03 Data types and validation: A
- 04 Data types and validation: B
- 05 Primary keys: A
- 06 Primary keys: B
- 07 SQL: reading one table: A
- 08 SQL: reading one table: B
- 09 SQL conditions and sorting: A
- 10 SQL conditions and sorting: B

01 Single-table databases · Foundations

One clear idea to explain before moving to practice

A database stores structured data.

TEACHER EXPLANATION

Discuss why this principle matters in real computer systems.

Single-table databases — key points

- A database stores structured data.
- A table contains records (rows) and fields (columns).

Worked context: STUDENT table: StudentID, Name, Class, Age.

Single-table databases — connect the ideas

Follow the concept from left to right

01

A database stores structured data.

→

02

A table contains records (rows) and fields (columns).

Apply the principles to this example: STUDENT table: StudentID, Name, Class, Age.

Try it · Single-table databases

Think (30 s) · Pair discussion (1 min) · Share

Explain the meaning of this idea and give a relevant example:

A table contains records (rows) and fields (columns).

YOUR TASK

Use accurate technical vocabulary. Add a second point or a specific example where possible.

Teacher check · Single-table databases

Model response · Correct misconceptions

A table contains records (rows) and fields (columns).

EXAM TIP / EXTENSION

Use this worked context to add detail: STUDENT table: StudentID, Name, Class, Age.

02 Single-table databases · Applications

One clear idea to explain before moving to practice

Each record represents one item or person.

TEACHER EXPLANATION

Discuss why this principle matters in real computer systems.

Single-table databases — key points

- Each record represents one item or person.
- A field stores one type of attribute.

Worked context: STUDENT table: StudentID, Name, Class, Age.

Single-table databases — connect the ideas

Follow the concept from left to right

01

Each record represents one item or person.

→

02

A field stores one type of attribute.

Apply the principles to this example: STUDENT table: StudentID, Name, Class, Age.

Try it · Single-table databases

Think (30 s) · Pair discussion (1 min) · Share

Describe when this principle applies:

A field stores one type of attribute.

YOUR TASK

Use accurate technical vocabulary. Add a second point or a specific example where possible.

Teacher check · Single-table databases

Model response · Correct misconceptions

A field stores one type of attribute.

EXAM TIP / EXTENSION

Use this worked context to add detail: STUDENT table: StudentID, Name, Class, Age.

03 Data types and validation · Foundations

One clear idea to explain before moving to practice

TEXT, CHAR, BOOLEAN, INTEGER, REAL and DATE/TIME.

TEACHER EXPLANATION

Discuss why this principle matters in real computer systems.

Data types and validation — key points

- TEXT, CHAR, BOOLEAN, INTEGER, REAL and DATE/TIME.
- Choose the type that matches the stored values.

Worked context: Age may use an INTEGER with a range check.

Data types and validation — connect the ideas

Follow the concept from left to right

01

TEXT, CHAR, BOOLEAN, INTEGER, REAL and DATE/TIME.

→

02

Choose the type that matches the stored values.

Apply the principles to this example: Age may use an INTEGER with a range check.

Try it · Data types and validation

Think (30 s) · Pair discussion (1 min) · Share

Identify the key technical terms and describe their roles:
Choose the type that matches the stored values.

YOUR TASK

Use accurate technical vocabulary. Add a second point or a specific example where possible.

Teacher check · Data types and validation

Model response · Correct misconceptions

Choose the type that matches the stored values.

EXAM TIP / EXTENSION

Use this worked context to add detail: Age may use an INTEGER with a range check.

04 Data types and validation · Applications

One clear idea to explain before moving to practice

Range, length, type and presence checks may validate input.

TEACHER EXPLANATION

Discuss why this principle matters in real computer systems.

Data types and validation — key points

- Range, length, type and presence checks may validate input.
- Validation does not guarantee the entered data is true.

Worked context: Age may use an INTEGER with a range check.

Data types and validation — connect the ideas

Follow the concept from left to right

01

Range, length, type and presence checks may validate input.

→

02

Validation does not guarantee the entered data is true.

Apply the principles to this example: Age may use an INTEGER with a range check.

Try it · Data types and validation

Think (30 s) · Pair discussion (1 min) · Share

Compare this concept with a related alternative:
Validation does not guarantee the entered data is true.

YOUR TASK

Use accurate technical vocabulary. Add a second point or a specific example where possible.

Teacher check · Data types and validation

Model response · Correct misconceptions

Validation does not guarantee the entered data is true.

EXAM TIP / EXTENSION

Use this worked context to add detail: Age may use an INTEGER with a range check.

05 Primary keys · Foundations

One clear idea to explain before moving to practice

A primary key uniquely identifies each record.

TEACHER EXPLANATION

Discuss why this principle matters in real computer systems.

Primary keys — key points

- A primary key uniquely identifies each record.
- Primary key values must not repeat.

Worked context: StudentID is preferable to student name.

Primary keys — connect the ideas

Follow the concept from left to right

01

A primary key uniquely identifies each record.

→

02

Primary key values must not repeat.

Apply the principles to this example: StudentID is preferable to student name.

Try it · Primary keys

Think (30 s) · Pair discussion (1 min) · Share

Apply this idea to a new computer science scenario: Primary key values must not repeat.

YOUR TASK

Use accurate technical vocabulary. Add a second point or a specific example where possible.

Teacher check · Primary keys

Model response · Correct misconceptions

Primary key values must not repeat.

EXAM TIP / EXTENSION

Use this worked context to add detail: StudentID is preferable to student name.

06 Primary keys · Applications

One clear idea to explain before moving to practice

Choose a field that stays unique and stable.

TEACHER EXPLANATION

Discuss why this principle matters in real computer systems.

Primary keys — key points

- Choose a field that stays unique and stable.
- Add an identifier field when natural fields are not unique.

Worked context: StudentID is preferable to student name.

Primary keys — connect the ideas

Follow the concept from left to right

01

Choose a field that stays unique and stable.

→

02

Add an identifier field when natural fields are not unique.

Apply the principles to this example: StudentID is preferable to student name.

Try it · Primary keys

Think (30 s) · Pair discussion (1 min) · Share

Explain the meaning of this idea and give a relevant example:

Add an identifier field when natural fields are not unique.

YOUR TASK

Use accurate technical vocabulary. Add a second point or a specific example where possible.

Teacher check · Primary keys

Model response · Correct misconceptions

Add an identifier field when natural fields are not unique.

EXAM TIP / EXTENSION

Use this worked context to add detail: StudentID is preferable to student name.

07 SQL: reading one table · Foundations

One clear idea to explain before moving to practice

SELECT chooses fields to show.

TEACHER EXPLANATION

Discuss why this principle matters in real computer systems.

SQL: reading one table — key points

- SELECT chooses fields to show.
- FROM identifies the table.

Worked context: SELECT Name FROM STUDENT WHERE Age >= 15;

SQL: reading one table — connect the ideas

Follow the concept from left to right

01

SELECT chooses fields to show.

→

02

FROM identifies the table.

Apply the principles to this example: SELECT Name FROM STUDENT WHERE Age >= 15;

Try it · SQL: reading one table

Think (30 s) · Pair discussion (1 min) · Share

Describe when this principle applies:

FROM identifies the table.

YOUR TASK

Use accurate technical vocabulary. Add a second point or a specific example where possible.

Teacher check · SQL: reading one table

Model response · Correct misconceptions

FROM identifies the table.

EXAM TIP / EXTENSION

Use this worked context to add detail: SELECT Name FROM STUDENT WHERE Age >= 15;

08 SQL: reading one table · Applications

One clear idea to explain before moving to practice

WHERE filters records using a condition.

TEACHER EXPLANATION

Discuss why this principle matters in real computer systems.

SQL: reading one table — key points

- WHERE filters records using a condition.
- ORDER BY sorts the output; COUNT and SUM aggregate.

Worked context: SELECT Name FROM STUDENT WHERE Age >= 15;

SQL: reading one table — connect the ideas

Follow the concept from left to right

01

WHERE filters records using a condition.

→

02

ORDER BY sorts the output; COUNT and SUM aggregate.

Apply the principles to this example: SELECT Name FROM STUDENT WHERE Age >= 15;

Try it · SQL: reading one table

Think (30 s) · Pair discussion (1 min) · Share

Identify the key technical terms and describe their roles: ORDER BY sorts the output; COUNT and SUM aggregate.

YOUR TASK

Use accurate technical vocabulary. Add a second point or a specific example where possible.

Teacher check · SQL: reading one table

Model response · Correct misconceptions

ORDER BY sorts the output; COUNT and SUM aggregate.

EXAM TIP / EXTENSION

Use this worked context to add detail: SELECT Name FROM STUDENT WHERE Age >= 15;

09 SQL conditions and sorting · Foundations

One clear idea to explain before moving to practice

Use comparison operators such as =, > and <=.

TEACHER EXPLANATION

Discuss why this principle matters in real computer systems.

SQL conditions and sorting — key points

- Use comparison operators such as =, > and <=.
- AND and OR combine conditions.

Worked context: SELECT Name FROM STUDENT ORDER BY Name DESC;

SQL conditions and sorting — connect the ideas

Follow the concept from left to right

01

Use comparison operators such as =, > and <=.

→

02

AND and OR combine conditions.

Apply the principles to this example: SELECT Name FROM STUDENT ORDER BY Name DESC;

Try it · SQL conditions and sorting

Think (30 s) · Pair discussion (1 min) · Share

Compare this concept with a related alternative:
AND and OR combine conditions.

YOUR TASK

Use accurate technical vocabulary. Add a second point or a specific example where possible.

Teacher check · SQL conditions and sorting

Model response · Correct misconceptions

AND and OR combine conditions.

EXAM TIP / EXTENSION

Use this worked context to add detail: SELECT Name FROM STUDENT ORDER BY Name DESC;

10 SQL conditions and sorting · Applications

One clear idea to explain before moving to practice

BETWEEN, IN and LIKE express additional filtering.

TEACHER EXPLANATION

Discuss why this principle matters in real computer systems.

SQL conditions and sorting — key points

- BETWEEN, IN and LIKE express additional filtering.
- DESC sorts results in descending order.

Worked context: SELECT Name FROM STUDENT ORDER BY Name DESC;

SQL conditions and sorting — connect the ideas

Follow the concept from left to right

01

BETWEEN, IN and LIKE express additional filtering.

→

02

DESC sorts results in descending order.

Apply the principles to this example: SELECT Name FROM STUDENT ORDER BY Name DESC;

Try it · SQL conditions and sorting

Think (30 s) · Pair discussion (1 min) · Share

Apply this idea to a new computer science scenario: DESC sorts results in descending order.

YOUR TASK

Use accurate technical vocabulary. Add a second point or a specific example where possible.

Teacher check · SQL conditions and sorting

Model response · Correct misconceptions

DESC sorts results in descending order.

EXAM TIP / EXTENSION

Use this worked context to add detail: SELECT Name FROM STUDENT ORDER BY Name DESC;

Five essential ideas

Recall these without looking at the teaching slides

01 Single-table databases

02 Data types and validation

03 Primary keys

04 SQL: reading one table

05 SQL conditions and sorting

End-of-chapter challenge

Answer in your notebook, then compare with a partner

Write SQL to display Name from STUDENT where Class = "10A".

TEACHER MODEL ANSWER

```
SELECT Name FROM STUDENT WHERE Class = '10A';
```