

Exercise walk-through

# 3.3

## Introduction to Databases

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GAC Computing

## You must be able to

- identify entities and their attributes
- choose a primary key
- use a foreign key to model a relationship

1

The method

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## Method — Model the relationship

A course system needs students, courses, and enrolments tables. Each table represents an **entity** 实体. `students.id` is a **primary key** 主键 because it uniquely identifies one student.

`enrolments.student_id` is a **foreign key** 外键 pointing to `students.id`. It records which student is enrolled without copying their name into every enrolment row.

2

Practice

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## Practice 2.1 ■ 1 mark

Define a primary key.

## Solution 2.1

### Worked steps

- A value that uniquely identifies a row in a table. **B1**

## Practice 2.2 ■ 1 mark

State which key points to a row in another table.

## Solution 2.2

### Worked steps

- A foreign key. **B1**

## Practice 2.3 ■ 2 marks

Explain why storing one student's name in every enrolment row can cause problems.

## Solution 2.3

Method: Model the relationship — p.4

### Worked steps

- The same detail is duplicated in many rows. **B1**
- A name change may be updated inconsistently. **A1**

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Exam-style

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## Exam-style 3.1 ■ 4 marks

A library has books, members, and loans. Explain how a loans table can connect a member to a book.

## Solution 3.1

### Worked steps

- The loans table is an entity recording each loan. **B1**
- It has its own primary key. **A1**
- It stores a member foreign key and a book foreign key. **A1**
- Each foreign key points to the matching primary key in its table. **B1**

## Exam-style 3.2 ■ 4 marks

Explain why a unique primary key is important when updating or deleting a record.

## Solution 3.2

### Worked steps

- It identifies exactly one record. **B1**
- The system updates or deletes the intended row. **A1**
- It avoids confusing two records with similar names or values. **A1**
- This protects consistency in related tables. **B1**