

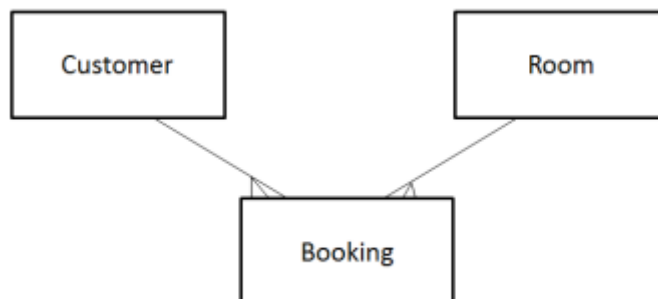


1.3.2 Relational Databases

1. A hotel stores data about rooms, customers and bookings in a database. Each customer can book multiple rooms, and each room can be booked multiple times.

a) Draw an Entity-Relationship Diagram for this database.

[4 marks]



- b) Define what is meant by the term 'foreign key', giving **one** example of where a foreign key would be used in the hotel booking database.

[3 marks]

- A field in one table that links to a primary key in a second table
- Example: CustomerID is a primary key in the Customer table and a foreign key in the Booking table

- c) Explain what referential integrity means and how this could potentially be broken in the hotel booking system.

[2 marks]

- Relationships are consistent // each foreign key links to an existing primary key
- Example: If a customer is deleted from the Customer table but the Booking table still has entries that link to that customer

2. Customer' details are stored in the flat file database table Customer. An extract of the table is shown below.

<u>CustomerID</u>	Surname	Title	Phone	CarReg
IS879	Ives	Ms	07483748371	TK21 LMN
CH113	Conradie	Mr	07952112761	PN23 ASE
BO989	Black	Mr	07963715983	EK25 WFG
SU012	Taylor	Mrs	07184432890	JO20 BBZ





- a) State what is meant by the term 'primary key', identifying the primary key in the table above.

[2 marks]

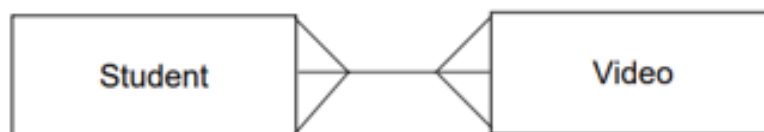
- A field that acts as a unique identifier for a record
- CustomerID

- b) Describe **one** problem that would arise with the flat file database structure if a customer wanted to insure more than one car at the same time.

[2 marks]

- Only one customer entry is allowed in the table
- ... so would not be able to entry a second entry
- Customer data already present would be repeated
- ... resulting in redundant data
- ... resulting in inconsistencies should changes be made

3. An exam board wants to use a database to keep track of which videos each student has viewed. The structure it plans to use is shown below:



- a) Identify **one** reason why this structure would not be suitable.

[1 mark]

- Many to many relationships are not allowed in normalised databases

- b) Draw a new version of the structure to solve this problem.

[3 marks]

Look for table added in the middle
1:M from student to new table
M:1 for new table to video





4. A database stores information about songs on a music streaming service.

One of the tables called Song has the fields:

Title, Artist, Genre, Length

a) Explain why none of these fields would be suitable as a primary key.

[2 marks]

- A primary key must have a unique key for every record
- The values for all these fields could repeat

b) Give **one** advantage and **one** disadvantage of indexing the field Artist.

[2 marks]

- Advantage: Searches of Artist can be performed more quickly
- Disadvantage: The index takes up extra space in the database

