AQA Computer Science A-Level

4.10.4 Structured Query Language (SQL)

Past Paper Questions

Additional Specimen Paper 2

0 6 A dynamic web page allows users to search for books in a library so that their details can be viewed online.

The web page uses the Websocket protocol and is able to update the list of books found by a query without having to reload the entire page.

The details of the books that the library owns, library members and loans are stored using the three relations in **Figure 4**.

Figure 4

Book (BookID, Title, Author, Price, Category, Publisher)

Member (MemberID, Forename, Surname, MaxBooks, DateOfBirth)

Loan (LoanID, BookID, MemberID, DateLoaned, Returned)

0 6 . 1 Write the SQL instructions that are required to create the Member table.

[3 marks]

```
CREATE TABLE Member (
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0 6 . 2 Write an SQL query to retrieve the BookID, Title, Author, Price and Category of all books written by "David Ferguson" that cost less than £25.00. The books should be listed in order, with the most expensive book at the top of the list and the cheapest at the bottom.

[4 marks]

June 2011 Comp 3

7 A company is building an e-commerce website. The website will display details of the products that the company sells and allow customers to place orders. Customers must register on the website before they can place an order and each order can be for one or more different products.

The product, customer and order details will be stored in a relational database.
It was originally proposed that the following three relations were required:

Product(ProductNumber, ProductPrice, ProductDescription, QuantityInStock)

Order(OrderNumber, OrderDate, CustomerID, OrderingComputerIPAddress, ProductNumber, Quantity)

Customer(CustomerID, CustomerName, Address, Postcode, EmailAddress, PaymentCardNumber)

The computer programmer identified a problem with the Order relation and stated that it should be divided up into two separate relations:

Order(OrderNumber, OrderDate, CustomerID, OrderingComputerIPAddress)

OrderLine(OrderNumber, ProductNumber, Quantity)

7 (c) Complete the following Data Definition Language (DDL) statement to create the Product relation, including the key field.

CREATE TABLE Product (

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.....)

(3 marks)

7 (f) A web page is required that will display a summary of the products that are on a particular order.

The summary must include only the ProductNumber, ProductDescription, ProductPrice and the Quantity of the product that has been ordered. These must be displayed in ascending order of ProductNumber.

Write an SQL query that will find the data needed to produce the order summary web page for order number 4013.

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(5 marks)

June 2012 Comp 3

9 A library uses a database management system (DBMS) to store details of the books that it stocks, its members and the loans that it has made. These details are stored in a database using the following three relations:

Book(BookID, Title, Author, Publisher)

Member(MemberID, Surname, Forename, HouseNumber, StreetName, Town, County, Postcode, DateOfBirth, EmailAddress)

Loan(MemberID, BookID, LoanDate, DueBackDate, Returned)

The library does not stock more than one copy of the same book.

9 (d) The library is holding a 'meet the author' event at which members will be able to meet the author Lucas Bailey. The librarian wants to send e-mails to all of the library members who have read any of his books to invite them to the event.

Write an SQL query to retrieve the EmailAddress, Forename and Surname of the people to whom e-mails should be sent.

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SELECT

FROM


WHERE
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(5 marks)

9 (e) A new book is to be added to the library stock. The book details are:

- BookID: 837023
- Title: Kenyan Safari
- Author: Karen Matu
- Publisher: African Travel Guides

Write the SQL commands that will add this book into the database.

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INSERT INTO .....

VALUES .....

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(2 marks)

June 2017 Paper 2

1 0 A garage services and repairs cars. It uses a relational database to keep track of the jobs that customers have booked for it to carry out. The database includes jobs that have been completed and jobs that are waiting to be done.

The details of the jobs that the garage does, together with the parts that it stocks and uses are stored in the database using the four relations shown in **Figure 7**.

Figure 7

Job (JobID, CarRegNo, JobDate, InGarage, JobDuration)

Car (CarRegNo, Make, Model, OwnerName, OwnerEmail, OwnerTelNo)

Part (PartID, Description, Price, QuantityInStock)

PartUsedForJob (JobID, PartID, QuantityUsed)

- Each car has a unique CarRegNo.
- A type of car can be uniquely identified by the combination of its Make and Model. Different Makes may use the same Model name and a particular manufacturer (Make) will produce several different car Models.
- A booking made for a car on a particular date counts as one job, regardless of how many different tasks are completed upon it.
- A job might require the use of any number of parts, including zero.
- Some of the details are stored in the database as soon as a booking is made and others are only added when a job has been completed.

The attribute JobID is the Entity Identifier (Primary Key) of the Job relation.

When an appointment is made for a job, this is represented in the Job relation. At the time of booking, the InGarage attribute is set to False and the JobDuration attribute is set to 0:00. When the car arrives at the garage the value of the InGarage attribute is changed to True. When the job is finished the value of the JobDuration attribute is updated to indicate how long the job took and details of the parts used are recorded in the database.

The Job with JobID 206 has been completed. The job took 1 hour 30 minutes (1:30) and used two of the parts with PartID 12.

1 0 . 4 Write the SQL commands that are required to record the amount of time that the job took in the database.

[3 marks]

1 0 . 5 Write the SQL commands that are required to record in the database the fact that two of the parts with PartID 12 were used.

[2 marks]

Figure 7 is repeated below.

Figure 7 (repeated)

Job (JobID, CarRegNo, JobDate, InGarage, JobDuration)
Car (CarRegNo, Make, Model, OwnerName, OwnerEmail, OwnerTelNo)
Part (PartID, Description, Price, QuantityInStock)
PartUsedForJob (JobID, PartID, QuantityUsed)

A mechanic needs to produce a list of all of the parts used on the job with JobID 93 for a customer.

This list must include the PartID, Description, Price (each) and QuantityUsed of each part, and no other details. The parts in the list should be ordered by PartID with the parts with the lowest PartIDs nearest to the top of the list.

10.6 Write an SQL query to produce the list.

[5 marks]

June 2013 Comp 3

9 A company sells furniture to customers of its store. The store does not keep the furniture in stock. Instead, a customer places an order at the store and the company then orders the furniture required from its suppliers. When the ordered furniture arrives at the store a member of staff telephones or e-mails the customer to inform them that it is ready for collection. Customers often order more than one type of furniture on the same order, for example a sofa and two chairs.

Details of the furniture, customers and orders are to be stored in a relational database using the following four relations:

Furniture(FurnitureID, FurnitureName, Category, Price, SupplierName)

CustomerOrder(OrderID, CustomerID, Date)

CustomerOrderLine(OrderID, FurnitureID, Quantity)

Customer(CustomerID, CustomerName, EmailAddress, TelephoneNumber)

9 (c) Complete the following Data Definition Language (DDL) statement to create the Furniture relation, including the key field.

CREATE TABLE Furniture (

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(3 marks)

9 (d) A fault has been identified with the product that has FurnitureID number 10765. The manager needs a list of the names and telephone numbers of all of the customers who have purchased this item of furniture so that they can be contacted. This list should contain no additional details and must be presented in alphabetical order of the names of the customers.

Write an SQL query that will produce the list.

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(6 marks)

9 (e) The system requirements have changed. When an order is placed the system must now record the name of the sales person who took the order.

Place **one** tick next to the correct SQL command below that should be used to update the structure of the database so that this information can be recorded.

Command	Correct? (Tick one)
ALTER TABLE	
CREATE FIELD	
INSERT COLUMN	

(1 mark)

Specimen Paper 2

0 9 A school stores information about its sports day in a relational database.

The details of the track events are stored using the three relations in **Figure 7**.

Figure 7

Athlete (AthleteNumber, Forename, Surname, Class, Gender, DateOfBirth)

Race (RaceNumber, Gender, Distance, Type, StartTime)

RaceEntryAndResult (RaceNumber, AthleteNumber, TimeSet)

Each athlete who takes part in a race is given a unique AthleteNumber. Athletes can run in more than one race. If they do, they keep the same AthleteNumber for the entire day.

Many races are run throughout the day. An example race would be the boys 80m hurdles, the third race of the day, which starts at 13:30. The entry in the Race table for this race is shown in **Table 4**:

Table 4

RaceNumber	Gender	Distance	Type	StartTime
3	Boys	80	Hurdles	13:30

When an athlete is entered into a race, a record of the entry is created in the RaceEntryAndResult table. Initially, the TimeSet is recorded as 00:00.00 (meaning 0 minutes, 0 seconds, 0 hundredths of a second) to indicate that the race has not yet been run. After the race has been run, if the athlete successfully completes it, then their TimeSet value is updated to record the time that they achieved in minutes, seconds and hundredths of a second. The TimeSet value remains at 00:00.00 for athletes who fail to complete the race.

The primary keys in the Athlete and Race relations have been identified in **Figure 7** by underlining them. The correct primary key for the RaceEntryAndResult relation has not been identified.

0 9 . 4 Write the SQL commands that are required to make this entry.

[2 marks]

Figure 7 is repeated below.

Figure 7 (repeated)

Athlete(AthleteNumber, Forename, Surname, Class, Gender, DateOfBirth)

Race(RaceNumber, Gender, Distance, Type, StartTime)

RaceEntryAndResult(RaceNumber, AthleteNumber, TimeSet)

Athlete number 27 sets a time of 0:18.76 (0 minutes, 18 seconds, 76 hundredths of a second) for race number 6.

0 9 . 5 Write the SQL commands that are required to update the athlete's entry for this race, to store this time in the TimeSet field.

[3 marks]

The competition organisers want to produce a list of all of the athletes who took part in race number 6 with the athlete who won (set the lowest time) at the top and the other athletes below the winner in the order in which they finished.

Only athletes who finished the race should be included in the list.

The following information should appear for each athlete: AthleteNumber, Forename, Surname and TimeSet.

0 9 . 6 Write an SQL query to produce the list.

[5 marks]