Name: _____

IAL IT Topic 5 Questions

Date:

Time:

Total marks available:

Total marks achieved: _____

Questions

Q1.

A garden centre stores information about its plants and customers.

A customer brings in a photograph of a plant she wants to buy.

She says that the plant has white flowers and is at least two metres tall.

The garden centre identifies the plant as a type of mimosa.

Write an SQL query that:

- finds all the mimosa plants that meet the criteria
- displays the official name of each plant, and the names and telephone numbers of the suppliers, if any, who stock that plant
- orders the list alphabetically by supplier name.

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(Total for question = 6 marks)

Q2.

A small online store uses a database to track its transactions.

These five entities will be used in the database:

Buyer (Buyer_ID, Username, Password, Email, Shipping_name, Shipping_address, Phone)

Product (Product_ID, Product_name, Description, Price, Stock_remaining)

Purchase (Purchase_ID, Buyer_ID, Product_ID, Quantity, Delivery_stage)

Shopcart (Shopcart_ID, Buyer_ID, Product_ID, Quantity)

Review (Review_ID, Buyer_ID, Product_ID, Comment)

A buyer can purchase only one product at a time.

The buyer puts a product into their shopcart until they are ready to pay for it.

Once paid for, a purchase record is generated for the product.

Buyers can leave product reviews.

The owner of the online store uses structured query language (SQL) to get information from the database.

Give **three** reasons why SQL is used to manipulate data in databases.

(3)

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(Total for question = 3 marks)

Q3.

A hotel uses a relational database to manage room bookings, customer details and housekeeping.

(i) Explain the difference between 'data' and 'information'.

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(ii) Figure 3 shows customer details.

idcustomers	lastname	firstname	creditCardNumber	email
41163	Hartley	Henry	151515151515151	hhartley@somewhere.com
49684	Jones	Joseph	4545454545454	jj@somewhereelse.com
55006	Weidmann	Wendy	7129286127513409125	weidmannw@somewhere.com
93210	Scott	Sarah	6937461968162	sscott@somewhere.com

Figure 3

Give **one** example of data and one example of information relating to the customer details.

(2)

Data:

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Information:

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(Total for question = 4 marks)

Q4.

A car dealer has a spare parts department where customers buy parts for their cars.

A customer places an order. The order is passed to a member of staff who finds the part in the stockroom. The part is then given to the customer together with an invoice.

The number in stock of that part is updated. The manager orders further stock from a supplier when needed.

A customer wants to buy a replacement light bulb for a car. The bulb is no longer manufactured. The car dealer can order one from a specialist supplier. A member of staff uses a specialist database to find suppliers of the bulb.

The database includes these tables. Sample data is included.

tbl_supplier		
supplierID	**name**	**telephone**
S784	Bloggs Rare Parts	01521665717
S131	Vintage Spares	01265775836
S461	Bulbs and Batteries	01831231445

tbl_bulb						
bulbID	**manufacturer**	**partnumber**	**voltage**	**supplierID**	**stocklevel**	**watts**
LA563	Lucas Electrical	LLB71Ba15d	12	2784	4	36
LA517	Lucas Electrical	LLB187APG20/4	12	1154	9	24
LA461	Osram	581 PY21W	12	1887	12	21

The manufacturer of the bulb is Lucas Electrical. The member of staff can only make out **LL~~80 1157 BAY~~D** of the part number: where the symbol ~ indicates an unreadable character.

(i) Write an SQL query that will display names and contact details of suppliers who are likely to have the bulb in stock. List the suppliers in alphabetical order.

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(ii) Explain **one** advantage for the **car dealer** of having access to the specialist database.

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(Total for question = 9 marks)

Q5.

A hotel uses a relational database to manage room bookings, customer details and

housekeeping.

The hotel has a housekeeper table, a room table, and a cleaned by table in the database. Example tables are shown.

tbl_housekeeper

idhousekeepers	workinghoursperweek	phone	hourlyrate	lastname	firstname
3842	35	52468975316	10.45	Jones	Joe
6723	20	21928374657	7.50	Wilson	Will
9464	40	12234567890	9.75	Jones	Joan

tbl_room

idcleanedby	room	housekeeper	date
1	312	9464	2016-11-10
3	534	3842	2017-12-11
5	211	6723	2015-10-01
7	101	6723	2017-12-10
9	275	9464	2016-03-11
11	312	6723	2017-12-16
13	534	3842	2017-12-14
15	211	9464	2017-12-10

tbl_cleanedby

idRooms	smoking	maxOccupancy
101	1	2
211	1	2
275	0	6
312	0	4
534	0	2

Figure 4

Write an SQL query that ranks housekeepers by the number of rooms cleaned for the month of December 2017.

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(Total for question = 6 marks)

Q6.

A small online store uses a database to track its transactions.

These five entities will be used in the database:

Buyer (Buyer_ID, Username, Password, Email, Shipping_name, Shipping_address, Phone)

Product (Product_ID, Product_name, Description, Price, Stock_remaining)

Purchase (Purchase_ID, Buyer_ID, Product_ID, Quantity, Delivery_stage)

Shopcart (Shopcart_ID, Buyer_ID, Product_ID, Quantity)

Review (Review_ID, Buyer_ID, Product_ID, Comment)

A buyer can purchase only one product at a time.

The buyer puts a product into their shopcart until they are ready to pay for it.

Once paid for, a purchase record is generated for the product.

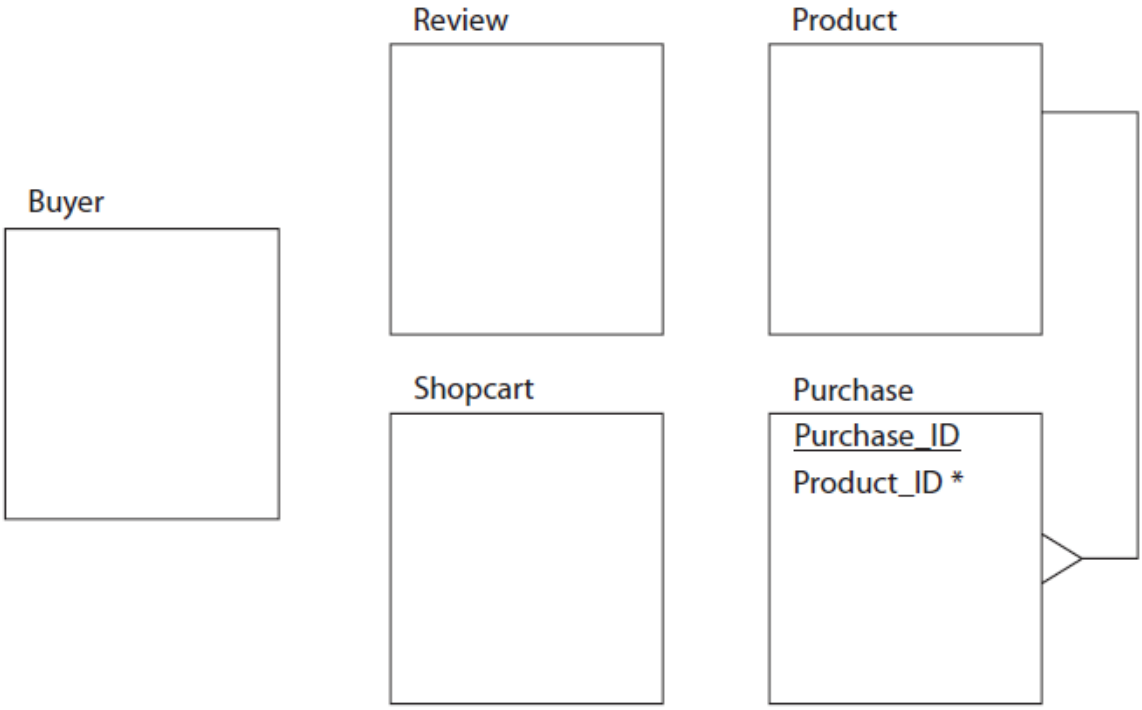
Buyers can leave product reviews.

Here is a partially completed entity relationship diagram for this database.

Complete the diagram to show:

- primary keys, which must be underlined
- foreign keys, which must have an asterisk (*)
- relationships and types.

(6)



(Total for question = 6 marks)

Q7.

A school is designing a database to record details of its students and the subjects they study.

A student can study many subjects.

A teacher can teach many classes.

A class is taught by one teacher.

These five entities will be used in the database:

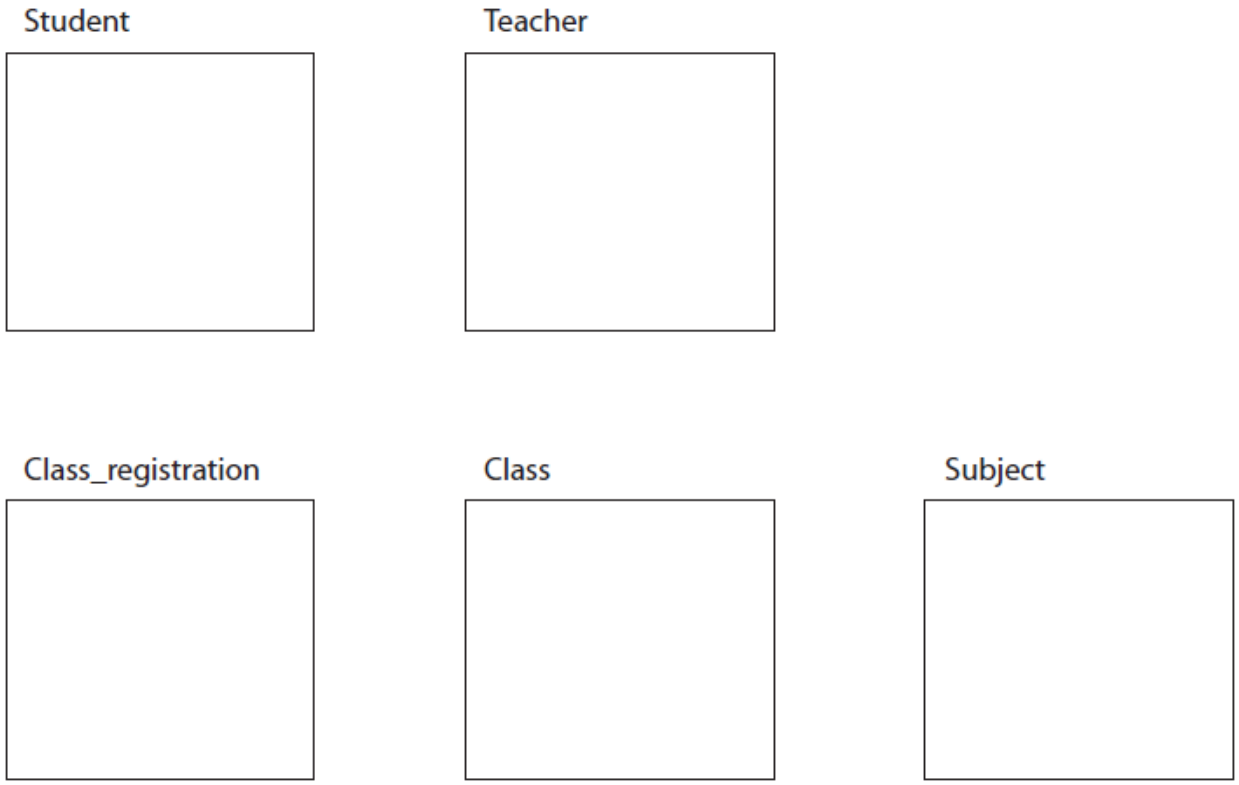
Student (Last name, First name, StudentID, Date of birth)
Subject (SubjectID, Subject title)
Teacher (TeacherID, Last name, First name)
Class (Start date, TeacherID, End date, SubjectID, Room number, ClassID)
Class registration (ClassID, StudentID)

Here is a partially completed entity relationship diagram for this database.

Complete the diagram to show:

- primary keys, underlined
- composite primary keys, underlined
- foreign keys, with an asterisk
- relationships.

(6)



(Total for question = 6 marks)

Q8.

A garden centre stores information about its plants and customers.

The garden centre database includes these tables.

Sample data is shown in the tables.

tbl_supplier		
supplierID	**supplierName**	**telephoneNumber**
GS35	Jon's Plant Nursery	07700900563
GS67	Hall's Cross Plants	01632775999
GT06	The Bulb and Tuber Centre	02079460883

tbl_plant					
productID	**officialName**	**commonName**	**flowerColour**	**height**	**supplierID**
GC56	Teucrium fruticans	Tree germander	Purple	1.2	GS67
GC57	Cheilocostus speciosus	Crêpe ginger	White	1.3	GS22
GD39	Mimosa pudica	Sensitive plant	Pink	1.5	GT03
GD40	Mimosa turneri	Desert mimosa	Pink	3	GT03

(i) Name a primary key used in the database.

(1)

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(ii) Name a foreign key used in the database.

(1)

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(iii) State the data type for height.

(1)

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(iv) State the data type for telephoneNumber

(1)

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(Total for question = 4 marks)

Q9.

A garden centre stores information about its plants and customers.

The garden centre collects and stores both structured and unstructured data.

Explain the difference between structured and unstructured data.

Where possible, support your explanation using examples of structured and unstructured data that the garden centre might use.

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(Total for question = 6 marks)

Q10.

Julie is a website developer. She designs and builds websites to meet the requirements of clients.

Some of the websites have processes that use data and information.

(i) State what is meant by the term **data**.

(1)

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(ii) State what is meant by the term **information**.

(1)

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(Total for question = 2 marks)

Q11.

A school is designing a database to record details of its students and the subjects they study.

A student can study many subjects.

A teacher can teach many classes.

A class is taught by one teacher.

These five entities will be used in the database:

Student (Last name, First name, StudentID, Date of birth)
Subject (SubjectID, Subject title)
Teacher (TeacherID, Last name, First name)
Class (Start date, TeacherID, End date, SubjectID, Room number, ClassID)
Class registration (ClassID, StudentID)

Here is a partially completed entity relationship diagram for this database.

Complete the diagram to show:

- primary keys, underlined
- composite primary keys, underlined
- foreign keys, with an asterisk
- relationships.

The school database will hold structured data.

Discuss why a relational database is suitable for handling structured data.

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(Total for question = 6 marks)

Q12.

Maira organises a video-gaming league, where teams of players compete against each other in online battles. Each team plays every other team twice, once in a defending role and once in an attacking role.

Each player belongs to one team.

Each player may create and own multiple characters.

Maira is creating a database to store the information needed.

These four entities will be used in the database:

Team (Team_ID, Team_name, Team_email, League_position, Points, Battles_fought)

PlayerPersonal (Player_ID, Team_ID, Player_name, Player_email)

PlayerCharacter (Character_ID, Player_ID, Character_name, Character_role, Gender, Species, Level)

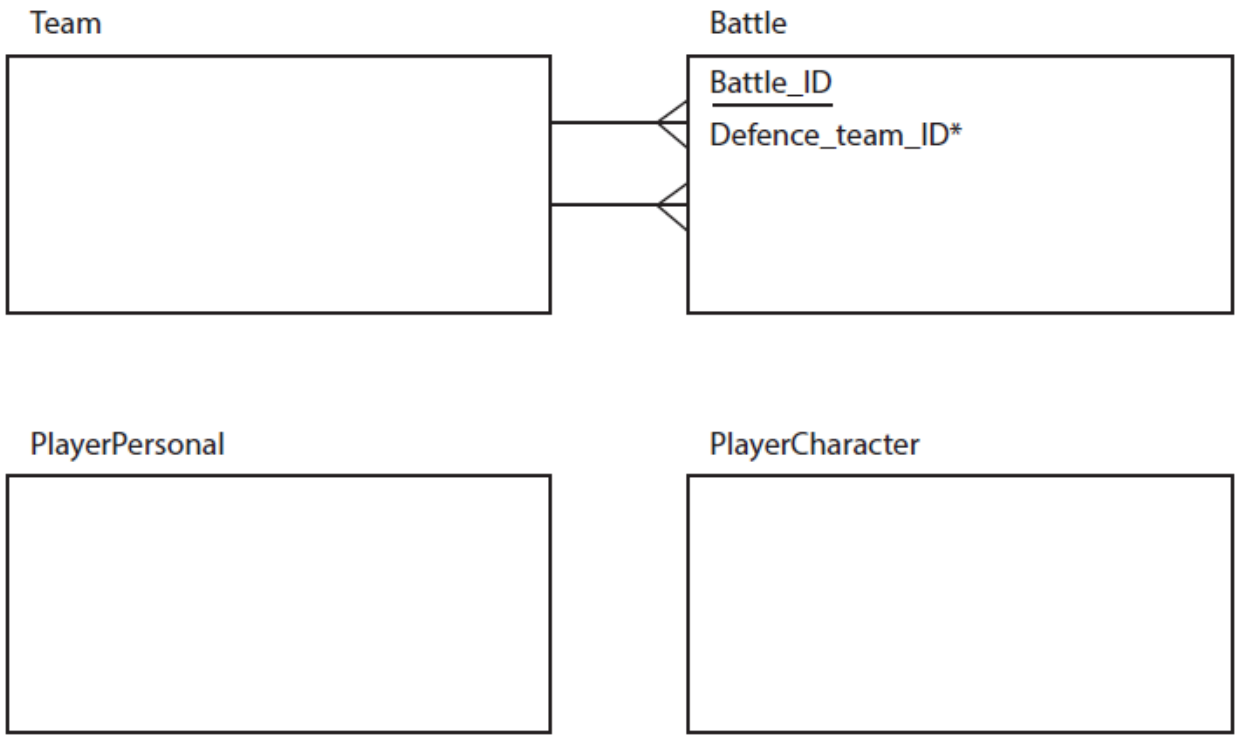
Battle (Battle_ID, Defence_team_ID, Attack_team_ID, Battle_date, Battle_time)

Here is a partially completed entity relationship diagram for this database.

Complete the diagram to show:

- primary keys, underlined
- foreign keys, with an asterisk
- relationships.

(6)



(Total for question = 6 marks)

Q13.

Answer the question with a cross in the box you think is correct ☒. If you change your mind about an answer, put a line through the box ☒ and then mark your new answer with a cross ☒.

A small online store uses a database to track its transactions.

These five entities will be used in the database:

Buyer (Buyer_ID, Username, Password, Email, Shipping_name, Shipping_address, Phone)

Product (Product_ID, Product_name, Description, Price, Stock_remaining)

Purchase (Purchase_ID, Buyer_ID, Product_ID, Quantity, Delivery_stage)

Shopcart (Shopcart_ID, Buyer_ID, Product_ID, Quantity)

Review (Review_ID, Buyer_ID, Product_ID, Comment)

A buyer can purchase only one product at a time.

The buyer puts a product into their shopcart until they are ready to pay for it.

Once paid for, a purchase record is generated for the product.

Buyers can leave product reviews.

Sometimes a value for a field is calculated rather than input.

Identify which **one** of these fields can be calculated.

(1)

☒ **A** Purchase.Quantity

☒ **B** Shopcart.Quantity

☒ **C** Purchase.Delivery_stage

☒ **D** Product.Stock_remaining

(Total for question = 1 mark)