CAMBRIDGE IGCSE (0478)

Module N: Databases and SQL

Workbooklet · 5 parts · 103 marks

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MODULE N DATABASES AND SQL · N1

Databases: tables, records and fields

Original practice questions · 20 marks · ~25 minutes · Cambridge 0478 syllabus 9.1

Name _____ Date _____

Instructions. Answer all questions in the spaces provided. The marks for each part are shown in brackets [ ]. The total for this worksheet is **20 marks**. All data on this sheet is made up.

1

Total: 3 marks

(a) Tick (✓) **one** box in each row to show whether each statement about a single-table database is true or false. **[3]**

Statement	True	False
A field is one row of a table that holds all the data about one item.		
Every record in a table has the same fields.		
Adding a new record to a table also adds a new field to the table.		

2 **Total: 5 marks**

A tool-hire shop uses a single-table database. The table `TOOL` stores details of the tools the shop hires out. `DailyCharge` and `Deposit` are amounts in dollars. `Available` shows whether the tool can be hired today.

ToolCode	ToolName	Category	DailyCharge	Deposit	Available
T01	Hedge trimmer	Garden	12.50	40.00	TRUE
T02	Floor sander	Decorating	28.00	100.00	FALSE
T03	Pressure washer	Cleaning	22.00	75.00	TRUE
T04	Tile cutter	Building	18.00	60.00	TRUE
T05	Wallpaper steamer	Decorating	9.50	30.00	TRUE
T06	Cement mixer	Building	25.00	90.00	FALSE
T07	Carpet cleaner	Cleaning	20.00	50.00	FALSE
T08	Lawn scarifier	Garden	16.00	50.00	TRUE

(a) State the number of fields in the table `TOOL`. **[1]**

(b) State the number of records in the table `TOOL`. **[1]**

(c) Give the name of the field that stores the type of work a tool is used for. **[1]**

(d) Write down the `ToolCode` of **every** tool that has a `Deposit` of 50.00 or more **and** cannot be hired today. **[2]**

3 **Total: 8 marks**

A community orchestra is setting up a single-table database. The table `MUSICIAN` will store this data about each musician:

Item	Data to be stored	Field name
1	a membership number that is different for every musician	
2	the musician's first name	
3	the musician's family name	
4	the instrument the musician plays	
5	the musician's mobile phone number	
6	whether the musician has paid this year's membership fee	

(a) Complete the table above by writing a suitable field name for each item of data. Each field name must be meaningful and must not contain any spaces. **[3]**

(b) Complete the table below with **two** example records that could be stored in `MUSICIAN`. Put the data for each item in the matching column. **[2]**

	Item 1	Item 2	Item 3	Item 4	Item 5	Item 6
Record 1						
Record 2						

(c) The orchestra also wants to store the date that each musician joined. State the change that must be made to the design of the table `MUSICIAN`. **[1]**

(d) After the change in part (c), the table stores data about 64 musicians. State the number of fields and the number of records in the table. **[2]**

Fields

Records

4 **Total: 4 marks**

(a) Describe what is meant by a **record** and by a **field** in a database table. Use the table TOOL in Question 2 to give an example of each. **[4]**

Record

Field

Total for this worksheet: 20 marks

MODULE N DATABASES AND SQL · N2

Database data types and validation

Original practice questions · 22 marks · ~25 minutes · Cambridge 0478 syllabus 9.1, 9.2 (with 7.5(a))

Name _____ Date _____

Instructions. Answer all questions in the spaces provided. The marks for each part are shown in brackets [ ]. The total for this worksheet is **22 marks**. Use these database data types in your answers: text/alphanumeric, character, Boolean, integer, real, date/time.

A plant nursery keeps details of the plants it sells in a single-table database called **PLANT**. Part of the table is shown.

PlantID	CommonName	PotSize	Price	Stock	Evergreen	DateArrived
EV0193	Holly	M	12.50	120	Yes	03/11/2026
HY0088	Hydrangea	L	24.00	45	No	28/10/2026
LV0207	Lavender	S	4.99	310	Yes	06/11/2026

PotSize is always one letter: S, M or L. Price is in dollars. Stock is the number of pots the nursery has. Evergreen can only be Yes or No.

1 Total: 5 marks

Tick (✓) **one** box in each row to show the most appropriate data type for each field in the table PLANT. **[5]**

Field	Text/ alphanumeric	Character	Boolean	Integer	Real	Date/time
PotSize						
Price						
Stock						
Evergreen						
DateArrived						

2 **Total: 2 marks**

The nursery adds a field, SupplierPhone, to store the phone number of each plant's supplier, for example 01632 960482

State the most appropriate data type for the field SupplierPhone and give a reason for your choice. **[2]**

Data type

Reason

3 **Total: 7 marks**

Validation checks are set up on the fields in the table PLANT.

(a) State the purpose of a validation check. **[1]**

(b) The table shows six rules. Complete the table by writing the name of the most appropriate validation check for each rule. **[6]**
Use each of these checks **once**: check digit, format check, length check, presence check, range check, type check.

Field	Rule	Validation check
Stock	The value must be from 0 to 500 inclusive.	
DateArrived	The field must not be left empty.	
PlantID	The value must be two capital letters followed by four digits, for example EV0193	
CommonName	The value must have no more than 30 characters.	
Price	Only a number can be entered; letters are rejected.	
Barcode (a new field)	The last digit of the barcode number is worked out from the other digits.	

4 **Total: 2 marks**

Each plant label has a barcode number. The last digit of the number is a check digit.

Describe how the check digit is used to validate a barcode number when it is entered. **[2]**

5 **Total: 6 marks**

The nursery runs gardening workshops for adults. It is setting up a second single-table database called **WORKSHOP** to store the bookings. These are some of the data storage requirements:

- **BookingRef**: a unique reference made of the letter B followed by three digits, for example B207
- **Seats**: the number of seats booked; a booking is for at least 1 seat and at most 12 seats
- **WorkshopDate**: the date of the workshop

Complete the table. For each field, give the most appropriate data type and identify a suitable validation check. Describe what the check would test for that field. **[6]**

Field	Data type	Validation check and what it would test
BookingRef		
Seats		
WorkshopDate		

Total for this worksheet: 22 marks

MODULE N DATABASES AND SQL · N3

Primary keys

Original practice questions · 20 marks · ~25 minutes · Cambridge 0478 syllabus 9.3 (with 9.1)

Name _____ Date _____

Instructions. Answer all questions in the spaces provided. The marks for each part are shown in brackets [ ]. The total for this worksheet is **20 marks**.

1

Total: 4 marks

(a) Tick (✓) **one** box in each row to show whether each statement about primary keys is true or false. **[4]**

Statement	True (✓)	False (✓)
A primary key uniquely identifies each record in a database table.		
Two records can have the same primary key value if all their other fields are different.		
A primary key field can only store whole numbers.		
If no existing field in a table has unique values, a new field can be added to be the primary key.		

2

Total: 4 marks

An art gallery stores details of its paintings in a database table called `PAINTING`. Part of the table is shown.

PAINTING				
Title	**Artist**	**YearPainted**	**Medium**	**Room**
Harbour at Dawn	E. Marsh	1921	Oil	3
Untitled	R. Tanaka	1968	Acrylic	5
Winter Orchard	E. Marsh	1925	Watercolour	3
Untitled	J. Adeyemi	1974	Oil	5
The Blue Door	R. Tanaka	1968	Acrylic	2

(a) Explain why **none** of the fields in the table `PAINTING` is suitable to be the primary key. **[2]**

(b) The gallery adds a new field to be the primary key. Suggest a suitable name for the new field, and give an example of a value it could store for the painting *Harbour at Dawn*. **[2]**

Field name .....

Example value .....

3 **Total: 9 marks**

The organiser of a city marathon stores details of the adult runners in a database table called `RUNNER`. Part of the table is shown.

RUNNER					
RunnerNumber	**FirstName**	**Surname**	**AgeGroup**	**Club**	**FinishTime**
1032	Amara	Okafor	40-49	Hillside Runners	03:41:22
1047	Daniel	Hughes	18-39	Canal Path AC	04:05:10
1058	Priya	Shah	50-59	Hillside Runners	03:58:47
1103	Tom	Hughes	40-49	Northgate Joggers	04:22:05
1119	Lena	Novak	18-39	Canal Path AC	03:29:56
1126	Daniel	Mensah	60-69	Northgate Joggers	04:47:31

(a) Identify the field that is most suitable to be the primary key for the table `RUNNER`. **[1]**

.....

(b) Describe the purpose of the primary key in the table `RUNNER`. **[2]**

.....

.....

.....

(c) A volunteer suggests using `Surname` as the primary key. Explain why `Surname` is **not** suitable. Use data from the table in your answer. **[2]**

.....

.....

.....

(d) Every value in the `FinishTime` field in this part of the table is different. Explain why `FinishTime` is still **not** a suitable primary key. **[2]**

.....

.....

.....

(e) The volunteer tries to add a record for a new runner, with the `RunnerNumber` 1058. Explain why the new runner's record must **not** be stored with this `RunnerNumber`. **[2]**

4

Total: 3 marks

A city council keeps a database table called `PERMIT`. Each record stores the details of one parking permit. A permit lasts one year. When a permit ends, the driver can buy a new permit for the same vehicle, and the record of the old permit is kept in the table.

Fields in the table `PERMIT`

- `PermitNumber`: the code printed on the permit, for example RP04815; each permit has a different code
- `VehicleReg`: the registration of the vehicle the permit is for
- `HolderSurname`: the surname of the permit holder
- `StreetName`: the street where the vehicle can be parked
- `StartDate`: the date the permit starts
- `Paid`: whether the permit has been paid for, Yes or No

(a) Identify the field that is most suitable to be the primary key for the table `PERMIT`. **[1]**

(b) No two vehicles have the same registration. Explain why `VehicleReg` is still **not** suitable to be the primary key for the table `PERMIT`. **[2]**

Total for this worksheet: 20 marks

MODULE N DATABASES AND SQL · N4

SQL: SELECT, FROM and WHERE

Original practice questions · 20 marks · ~25 minutes · Cambridge 0478 syllabus 9.4

Name _____ Date _____

Instructions. Answer all questions in the spaces provided. The marks for each part are shown in brackets [ ]. The total for this worksheet is **20 marks**. All questions use the database table TREES shown in Question 1. All data on this sheet is made up.

1

Total: 3 marks

A community orchard keeps a single-table database of its fruit trees. Part of the table TREES is shown. HeightM is the height of the tree in metres and Planted is the year the tree was planted.

TreeID	Variety	Planted	HeightM	Section
T01	Apple	2015	4.2	A
T02	Pear	2019	2.8	B
T03	Plum	2012	5.1	C
T04	Apple	2021	1.9	B
T05	Cherry	2016	3.6	A
T06	Pear	2014	4.8	C
T07	Plum	2020	2.4	B
T08	Apple	2017	3.5	C

Look at this SQL statement.

```
SELECT Variety, Section
FROM TREES
WHERE Planted > 2018;
```

Describe what each line of this statement does when it is run on the table TREES. **[3]**

Line	What it does
SELECT Variety, Section	
FROM TREES	
WHERE Planted > 2018	

2 **Total: 4 marks**

(a) Write the output from this SQL statement. **[3]**

```
SELECT TreeID, Variety
FROM TREES
WHERE HeightM > 4.0;
```

(b) State the number of records that this SQL statement would display. **[1]**

```
SELECT *
FROM TREES
WHERE Section = 'C';
```

3 **Total: 3 marks**

Complete this SQL statement to display only the tree ID and the year planted of all the trees in section B. **[3]**

SELECT .....

FROM .....

WHERE ..... **;**

4 **Total: 3 marks**

Write an SQL statement to display only the variety and height of all the trees planted before 2016. **[3]**

5 **Total: 5 marks**

This SQL statement should display the tree ID and height of all the plum trees. It contains **three** errors.

```
01 SELECT TreeID HeightM
02 FROM TREE
03 WHERE Variety = Plum;
```

(a) Identify the line number of each error and write the corrected line. **[3]**

Error 1 Line number ..... Correction

Error 2 Line number ..... Correction

Error 3 Line number ..... Correction

(b) Write the output from the corrected SQL statement. **[2]**

6 **Total: 2 marks**

Write an SQL statement to display **all** the fields for the tree with the tree ID T05. **[2]**

Total for this worksheet: 20 marks

MODULE N DATABASES AND SQL · N5

SQL: ORDER BY, SUM, COUNT, AND and OR

Original practice questions · 21 marks · ~25 minutes · Cambridge 0478 syllabus 9.4

Name _____ Date _____

Instructions. Answer all questions in the spaces provided. The marks for each part are shown in brackets [ ]. The total for this worksheet is **21 marks**. Write SQL with one clause on each line. Text values in a condition are written in quotation marks. All questions use the database table `RepairJob` shown below. All data on this sheet is made up.

A community repair café fixes household items for free and charges only for any parts it uses. It stores details of each repair job in a single database table called `RepairJob`.

JobID	Item	Category	Minutes	PartsCost	Fixed
R01	Desk lamp	Electrical	25	3.50	TRUE
R02	Winter coat	Textiles	40	2.00	TRUE
R03	Toaster	Electrical	50	8.00	FALSE
R04	Dining chair	Furniture	35	0.00	TRUE
R05	Road bike	Bicycle	45	6.50	TRUE
R06	Jeans	Textiles	15	1.00	TRUE
R07	Radio	Electrical	60	4.00	TRUE
R08	Folding bike	Bicycle	20	0.00	FALSE
R09	Curtains	Textiles	20	0.50	TRUE
R10	Kettle	Electrical	30	2.50	TRUE

`Minutes` is the time the repair took. `Fixed` is TRUE if the item was repaired.

1

Total: 4 marks

(a) Complete the table by writing the SQL keyword or keywords that match each description. **[4]**

Description	SQL keyword(s)
adds together the values in a numeric field for the records that match	
gives the number of records that match	
sorts the results so the largest value of a field comes first	
includes a record if at least one of two conditions is true	

2

Total: 5 marks

The café manager runs this SQL statement.

```
SELECT Item, Minutes
FROM RepairJob
WHERE Category = 'Electrical' AND Fixed = TRUE
ORDER BY Minutes DESC;
```

(a) Write the output from this SQL statement. **[3]**

(b) A volunteer says that changing `DESC` to `ASC` in this statement would change which repair jobs are output. **[2]**

Explain why the volunteer is wrong.

3

Total: 2 marks

(a) State the output from this SQL statement. **[1]**

```
SELECT COUNT(JobID)
FROM RepairJob
WHERE Category = 'Bicycle' OR Minutes > 40;
```

(b) State the output from this SQL statement. **[1]**

```
SELECT SUM(PartsCost)
FROM RepairJob
WHERE Category = 'Textiles';
```

4 Total: 4 marks

The café wants a list of the item and parts cost for every **Textiles** repair job that took **less than 30** minutes. The job with the lowest parts cost must be shown first.

(a) Complete this SQL statement. **[4]**

```
SELECT Item, PartsCost

FROM ....................................

WHERE Category = 'Textiles' .............. Minutes .......... 30

.......................................................... ;
```

5 Total: 3 marks

(a) Write an SQL statement to output the total number of minutes spent on all **Bicycle** repair jobs. **[3]**

6 Total: 3 marks

This SQL statement should output the number of **Electrical** repair jobs that were fixed. It contains **three** errors.

```
01 SELECT SUM(JobID)
02 FROM RepairJob
03 WHERE Category = Electrical
04 OR Fixed = TRUE;
```

(a) Identify the line number of each error and write the corrected line. **[3]**

Error 1 Line number ..... Corrected line

Error 2 Line number ..... Corrected line

Error 3 Line number ..... Corrected line

Total for this worksheet: 21 marks