

Database

Candidates should be able to:

• define a single-table database from given data storage requirements

- choose a suitable primary key for a database table
- perform a query-by-example from given search criteria

Database is the organized collection of data or information.

Databases are organised by fields, records and files.

- **Field** - this is a single piece of data such as name, date of birth or telephone number
- **Record** - this is one complete set of fields, for example one pupil's school record
- **File** - this is a collection of records, for example a school database.

Primary key

- A primary key is data that is unique to each record in a database or file. This prevents any records from having the same value. The **Student ID** is the primary key field in the database below.

Q) winter 2011

Primary key

COLUMN
=FIELDS

ROWS=
RECORDS

A database has been set up to show details about countries. Part of the database is shown below.

Country code	Country	Continent	Area (millions sq km)	Population (millions)	Coastline	Currency
CH	China	Asia	9.6	1320	Yes	yuan
IN	India	Asia	3.8	1150	Yes	rupee
PO	Poland	Europe	0.3	39	Yes	zloty
BO	Bolivia	America	1.1	9	No	boliviano
TI	Tibet	Asia	1.2	2	No	yuan
BR	Brazil	America	8.5	192	Yes	real
RO	Romania	Europe	0.2	22	No	leu
SA	Saudi Arabia	Asia	2.2	28	Yes	riyal
ZA	Zambia	Africa	0.7	12	No	kwacha

(a) How many fields are in each record?

(b) Using Country code only, what would be output if the following search condition was used?

(Population (millions) > 1000) OR (Continent = "Asia")

(c) Write down a search condition to find which countries have a land area less than 3 million square km and also have a coastline.

(d) If the database was sorted in descending order of population size, using Country code only, what would be the order of countries in the database?

**DATABASE
WORKSHEETS**

October/November 2011

Q1) A database has been set up to show details about countries. Part of the database is shown below.

Country code	Country	Continent	Area (millions sq km)	Population (millions)	Coastline	Currency
CH	China	Asia	9.6	1320	Yes	yuan
IN	India	Asia	3.8	1150	Yes	rupee
PO	Poland	Europe	0.3	39	Yes	zloty
BO	Bolivia	America	1.1	9	No	boliviano
TI	Tibet	Asia	1.2	2	No	yuan
BR	Brazil	America	8.5	192	Yes	real
RO	Romania	Europe	0.2	22	No	leu
SA	Saudi Arabia	Asia	2.2	28	Yes	riyal
ZA	Zambia	Africa	0.7	12	No	kwacha

(a) How many fields are in each record?

.....[1]

(b) Using Country code only, what would be output if the following search condition was used?
(Population (millions) > 1000) OR (Continent = "Asia")

.....
.....[2]

(c) Write down a search condition to find which countries have a land area less than 3million square km and also have a coastline.

.....
.....[2]

(d) If the database was sorted in descending order of population size, using Country code only, what would be the order of countries in the database?

.....
.....
.....[2]

October/November 2012

Q2) A database was set up showing the largest ocean-going liners. Part of the database is shown below.

Liner ID	Year built	Gross Tonnage	Country of Registration	Country of Construction
OA	2009	225 282	Norway	Finland
IN	2008	154 407	Norway	Finland
QM	2004	148 528	UK	France
EX	2000	137 308	Norway	Finland
VO	1999	137 276	Norway	Finland
GP	1997	108 865	UK	Italy
DE	1996	101 509	USA	Italy
SP	1995	77 499	UK	Italy
SO	1988	73 192	Norway	France
FR	1972	66 343	France	France
QE	1940	86 673	UK	UK
NO	1935	79 280	France	France
MJ	1922	56 561	UK	Germany
TI	1912	46 329	UK	UK
MA	1907	31 938	UK	UK

(a) How many records are shown in the above part?

..... [1]

(b) Using Liner ID only, what would be output if the following search condition was typed in:
(Year built < 2000) AND (Country of Registration = Country of Construction)?

.....
..... [2]

(c) Write the search condition to find out which liners have a gross tonnage larger than 80 000 or are registered in the UK.

.....
.....
..... [2]

(a)

DATABASE WORKSHEETS

(b) CH, IN, TI, SA [2]

(c) (Area (millions sq km) < 3) AND (Coastline = "Yes")

<----- 1 mark -----><----- 1 mark ----->

OR

(Coastline = "Yes") AND (Area (millions sq km) < 3)

<--- 1 mark ---><----- 1 mark -----> [2]

(d) CH, IN, BR, PO, SA, RO, ZA, BO, TI [2]

Q2)

(a) 15 records [1]

(b) FR, QE, NO, TI, MA

(-1 mark for each error or omission) [2]

(c) (Gross Tonnage > 80 000) OR (Country of Registration = "UK")

<----- 1mark -----><----- 1 mark ----->

or

(Country of Registration = "UK") OR (Gross Tonnage > 80 000)

<----- 1mark -----><----- 1 mark -----> [2]