

## Suggested Exercises for Database Operations

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### Suggested Introductory Activity

Databases in everyday life

Review some uses of databases in everyday life: Who uses them? What kinds of information do they hold? Databases aren't new – there have been inventories for thousands of years - why are computerised databases more useful than holding information on paper or cards?

For an interested group, students might also consider how this links in with increasing use of 'smart cards' and online shopping or might consider how organisations obtain information about individuals or about buying patterns etc.

Examples of databases in everyday life

Health records

Tax records

Census

Electoral roll /register

Examination entries and results /academic records

Attendance registers

Telephone directories

Customer database –customer accounts with particular stores or credit card companies

Employee wages database

Stock control and information

In some shops, customers can query price and availability of items for themselves

Companies using prize draw competitions and special offers to get more customer information or expand their mailing lists

Travel companies – information on accommodation availability, flight availability, flight and train times to/from different destinations, details of bookings made etc

### Exercise One

Possible activity for session plan one in the suggested scheme of work

Updating an existing database

You will need to prepare a small database in advance. Ideally, it should have at least six fields, covering between them text, numbers, dates and time. It should also contain at least fifteen or so completed records.

**NB** If the database does not support all of these types of data, then you will need to give an opportunity to work with the 'missing' types through another database. The more you can cover in your chosen database, the more likely you will be to re-use it for later sessions, too.

Suggestions for databases and possible fields.

Database	FIELD NAME Description							
<b>Hotels</b>	<b>NAME</b> Name of hotel	<b>CAT</b> Category (No. of stars)	<b>LOC</b> Hotel location	<b>ROOMS</b> No. of rooms	<b>PRICE</b> Price /room /night	<b>FAMILY</b> No. of family rooms	<b>FPRICE</b> Price / family room /night	<b>POOL</b> Hotel with Pool (Y/N)
<b>Car hire</b>	<b>MODEL</b> Model of car	<b>MAKE</b> Make	<b>TYPE</b> Saloon/hatch/estate	<b>CAT</b> Insurance category	<b>SEATS</b> Max no. seats	<b>AVAIL</b> Next available date	<b>COSTD</b> Cost/day	<b>COSTW</b> Cost/week
<b>Souvenir shop</b>	<b>NAME</b> Product name	<b>MADE</b> Made by	<b>SUPPLIER</b> Supplier	<b>DESC</b> Description	<b>PRICE</b> Price	<b>CODE</b> Product code	<b>STOCK</b> Number in stock	<b>DEL</b> Next delivery date
<b>Smart ID card</b>	<b>ID</b> ID code	<b>NAME</b> Name	<b>DEPAR</b> Department	<b>LOGIN</b> Time logged in	<b>LOGOFF</b> Time logged off	<b>START</b> Shift start time	<b>END</b> Shift end time	
<b>Exam results (fictional!)</b>	<b>NAME1</b> First name	<b>NAME2</b> Last name	<b>ENGLISH</b> English %	<b>MATHS</b> Maths%	<b>SCIENCE</b> Science %	<b>TECHNOLOGY</b> Technology %	<b>HISTORY</b> History %	<b>ICT</b> ICT %
<b>Club members</b>	<b>ID</b> ID code	<b>NAME1</b> First name	<b>NAME2</b> Last name	<b>DOB</b> Date of birth	<b>M/F</b> M/F	<b>MEM</b> Cost of membership	<b>EXP</b> Expiry date	<b>ADDRESS</b> Address
<b>Mailing list for mail-order firm</b>	<b>NAME1</b> First name	<b>NAME2</b> Last name	<b>ADD1</b> Address line 1	<b>ADD2</b> Address line 2	<b>CITY</b> City or town	<b>PCODE</b> Post code	<b>DOB</b> Date of birth	<b>INT</b> Interest

The instruction sheet will need to:

- include details of records to be edited - list about six to ten changes to be made, spread over several records
- include instructions for finding a particular record using search/find
- identify two records to be deleted
- provide all relevant information for ten more new records
- give precise instructions for saving the file under a new name

Although with only a small database it is possible to search for students to find records by browsing, it is better for them to know how to find a record quickly by using the database search facilities. Try to keep the search very simple at this stage, so that students are only looking for a match to 'field value x'.

### Exercise Two

Possible activity for session plan one in the suggested scheme of work

#### Reorganising data

This activity involves sorting data. You will need to use a previously prepared small database, which could be the database you edited previously. See exercise one for suggested databases.

Students need to understand that records can be entered in any order. Unlike card-based information, the computer database makes it easy to re organise records according to the value of one or more fields.

The precise instructions you give will depend on your choice of database. You should start by asking for sorts by one criterion only, to demonstrate ascending and descending alphabetic and numeric sorts. Then move on to simultaneous sorts by two criteria.

Your instruction sheet should give specific instructions for printing the result of at least one of those sorts: the printout should include the student's name and the sort criteria used.

#### Examples

<b>Database</b>	<b>Criterion 1</b> Field; alphabetic/numeric; ascending/descending	<b>Criterion 2</b> Field; alphabetic/numeric; ascending/descending
Exam results	ENGLISH Numeric descending	MATHS Numeric descending
Exam results	NAME 2 Alphabetic ascending	NAME 1 Alphabetic ascending
Hotels	CAT Numeric descending	PRICE Numeric descending
Hotels	LOC Alphabetic descending	PRICE Numeric ascending
Car hire	SEATS Numeric ascending	COSTD Numeric ascending
Souvenir shop	MADE Alphabetic descending	NAME Alphabetic descending

#### Exercise Three

Possible activity for session plan two in the suggested scheme of work

Solving a problem, part one: Selecting subsets of data.

This activity should be done in conjunction with exercise four.

You will need to prepare a small database in advance: this could be the one you used in the previous session, or you may prefer to introduce a new one for variety. See Exercise One for suggestions.

Show students how to carry out the different categories of search (and, or, not, >, <, =). Then give them the instructions for the specific task you have chosen:

You could produce a printed query letter/memo for this and ask students to send a printed reply, or you could send an e-mail query for this and ask for the reply by email. (Sending a letter or memo may make the activity more interesting than simply doing the search).

## Examples

Database	Memo/Letter from	Query
Club membership	Promotions manager	Identify members aged over 65, and with membership due to expire in the next three months
Hotels	Potential customer /visitor	What hotels are available with pool and with family rooms?
Hotels	Potential customer /visitor	What hotels are in location X and are three star or better?
Car hire	Potential customer	What cars are available on date X and cost less than (pick a price) per day?
Exam results	School principal	Which students achieved more than 90% in English or Maths?
Exam results	School principal	Which students achieved more than 90% in English and Maths?

Your instruction sheet should give specific instructions for printing the result of your chosen search: the printout should include the student's name and the search criteria used.

### Exercise Four

Possible activity for session plan two in suggested scheme of work

Solving a problem, part two: Producing a report

This activity uses the results of exercise three as the basis for a report.

Students should understand that a report can be more than just a print-out of a list. Many seemingly 'personalised' letters are simply a standard letter with a mail merge from a mailing list.

This activity asks students to reply to the query from Exercise Three: you can affect the difficulty of the task by the kind of reply you ask for.

For example,

Referring to the table above,

- exam results: the letter could be a simple reply to the principal, containing a list of students with the appropriate grades and displaying relevant information **or**
- exam results: each of the students identified could receive a 'certificate of merit' (only print two or three certificates, though!)
- club membership: the letter could be a reply to the promotions manager, containing a list of members who meet the criteria and supplying relevant details **or**
- club membership: the letter could be one announcing details of a special membership renewal offer to individual members (print out the first two or three letters only).
- car hire and hotels: each of these could be letters sent in reply to a single customer, giving a list of the selected cars/hotels and relevant details

### Exercise Five

Possible activity for session plan three in suggested scheme of work

Setting up a database

You will need to prepare the CSV file for this activity in advance - exercise one offers suggestions for content. Your instruction sheet will need to identify the file to be loaded and give specific instructions for setting up the database you have chosen.

Instruct students to save the database with an appropriate title.

Instruct students in selecting field names from the top row of a CSV file (using automated processes if possible), and in creating fields with the correct field types.

### Exercise Six

Possible activity for end of session plan four after practice test

Individual progress review

You could print out a sheet with tick boxes or gaps to enter information or prepare a template for students to edit and enter information on, similar to the one outlined below:

#### Individual progress review

Name: (student to enter, in bold)

Date: (student to enter)

These are the activities you should/ could have completed so far. Place a number to the right of each activity to show what you have completed: 2= completed, 1= started but unfinished, 0= not done.

List of activities

The list below shows the things you should be able to do

List (*NB tutors: these will be the performance criteria expressed less formally, perhaps in 'I can' type statements*).

Give each statement/description a number showing how well you can do it:

**I can do these independently and well = 3**

**I need some help with these / I'm not very confident with these yet = 2**

**I need help with these = 1**

**I haven't done these = 0**

### Exercise Seven

Possible activity for session plans four or five in the suggested scheme of work

Further practice in setting up a database and loading data. You will need to prepare another CSV file in advance, for students to work with, plus appropriate instructions.

Further practice in searching, sorting and producing reports: you can use an existing database with a new set of instructions, to cover any skills needing further practice.