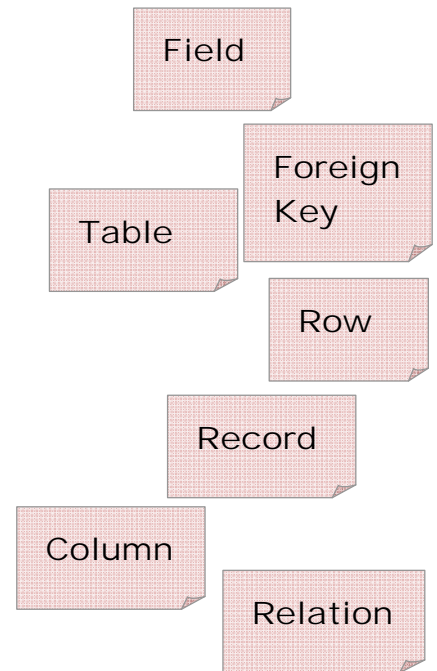


## TUTORIAL 2: Designing database tables SOLUTIONS

### Question 1

Feature in data model	Representation in RDBMS
Class (or entity)	table, relation
Attribute	field, column
Object	row, record
Relationship	foreign key

Copy this table and fill in the blank boxes using the correct words from the notes on the right - some boxes have more than one correct answer.



### Question 2

Here are some examples of items of data you might find in a database table. Decide which data type makes the most sense for each one. Some of the descriptions of the data have been left for you to think about – for example, what is the form of a UK postcode?

Field name	Description	Example	Data type
price	The price of an item	£23.54	Currency
postcode	Up to 8 characters of text	KA15 6TF	Text(8)
comments	Large block of text, more than 255 characters	A long, rambling comment...	Memo
quantity	Number of items in a purchase order	5	Integer or Long
gender	One character, M or F	M	Text(1)
phoneNumber	Up to 12 digits if not including country code	01413313000	Text(12)
dateOfBirth	Date	01/03/1987	Date/Time (DateTime in SQL)
photograph	A bitmap image	Image	OLE Object (Long Binary in SQL)
appointment	Time and day	12:30 01/03/2008	Date/Time
lastName	String of text, set sensible limit on length	Brown	Text(20)

#### SOME ACCESS DATA TYPES

Text(size)

Memo

Number:  
Integer  
Long Integer  
Double  
Decimal(precision, decimal places)

Date/Time

Currency

AutoNumber

Yes/No

OLE Object

<b>taxRate</b>	Percentage	4.65%	Decimal(4,2)
<b>atomicWeight</b>	A very precise scientific measurement	28.0855	Double
<b>customerID</b>	A value which is guaranteed to be unique	12	AutoNumber (Counter in SQL)
<b>completed</b>	Yes or No	Yes	Yes/No (Yes/No in SQL)

### Question 3

Decide whether or not the following data items should be defined as **NOT NULL** – give reasons for your decisions. In each case, consider whether any additional **constraints** or **default values** might help to make sure that the data stored is valid.

**gender** in a *Persons* table

NOT NULL, IN 'M','F'

**discount** in a *Products* table (the value should be a percentage)

NOT NULL, BETWEEN 0 AND 100, DEFAULT 0

**dayOfWeek** in a *Shifts* table work schedule database

NOT NULL, IN 'Mon','Tues',....

**email** in a *Persons* table

NULL

**category** in a *DVDs* table

NOT NULL

**title** in a *Books* table

NOT NULL

**returnDate** in a *Loans* table in a library database

NULL, > loanDate

**returned** in a *Loans* table in a library database

NOT NULL, DEFAULT NO

**numberOfSides** in a *Shapes* table

NOT NULL, > 0

**advisor** in a *Students* table

NULL

**rating** in a *Responses* table in a survey database

NULL, BETWEEN 1 AND 5

## Question 4

Identify a suitable primary key for each of the following tables. In each case, write down a row of new data which would be **allowed** by your choice of primary key, and a row which would **not** be allowed.

Persons				
firstname	lastname	email	jobtitle	
John	Smith	jsmith@example.com	manager	
Sue	Wilson	swilson@example.com	manager	
Muhammad	Rafiq	mrafiq@example.com	engineer	
Jane	Lee		engineer	
Sue	Wilson	swilson2@example.com	administrator	
Tim	Jones	tjones@example.com	administrator	

Hotels			
hotelName	town	address	rating
Holiday Lodge	Worcester	1 First Street	3
Sea View Hote	Morecambe	2 Second Street	2
Northern Star	Aberdeen	3 Third Street	3
Best Eastern	Perth	4 Fourth Street	4
Holiday Lodge	Perth	5 Fifth Street	3
Best Eastern	Aberdeen	6 Sixth Street	5

Bookings				
roomNumber	bookingDate	rate	customer	
12	12/10/2007	£45.00	23	
11	16/10/2007	£45.00	9	
12	13/10/2007	£45.00	25	
12	14/10/2007	£45.00	25	
12	15/10/2007	£45.00	25	
7	13/10/2007	£65.00	9	
7	17/10/2007	£55.00	23	
7	18/10/2007	£55.00	23	

Accounts				
accountNun	accountType	customerID	branchID	balance
00665544	current	4	99-10-65	£345.00
00665549	current	6	99-10-65	-£20.50
00665551	savings	4	99-10-65	£1,200.00
00665557	savings	10	99-10-67	£2,500.00
00665559	current	12	99-10-67	£12.76

**Persons:** should create ID field as no existing fields are suitable (names may not be unique, email can be NULL)

**Hotels:** (town, address) or create ID field

**Bookings:** (roomNumber, date) or create ID field

**Accounts:** accountNum

**NOTE:** these are all suggested solutions. There may be other valid answers in some cases in Q2,3 and 4