

The Online Research Database Service (ORDS)

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What is the ORDS?

- Online Research Database Service
- Simple online database management system for research data
- Designed and developed by University of Oxford IT Services
- Free service
- Part of a wider drive to facilitate good research data management
 - Good documentation
 - Open formats
 - Low overheads



<http://researchdata.ox.ac.uk/>

What isn't the ORDS?

- Visualization tool
- Sophisticated system for designing forms and reports
- Approved for sensitive non-anonymized patient data
- Designed for 'big data'



Background

- Response to 2009 survey of researcher requirements
- Initially developed for collaborative humanities projects
- Scope since expanded to cover all academic disciplines
- Funded from a mixture of internal money and JISC / HEFCE funding
- Launched in August 2014
- Development work is on-going

Administer projects



Archive data (forthcoming)



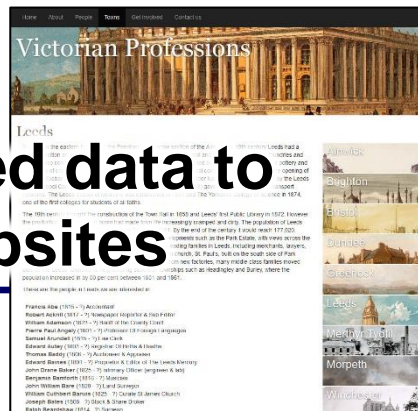
Import & export data



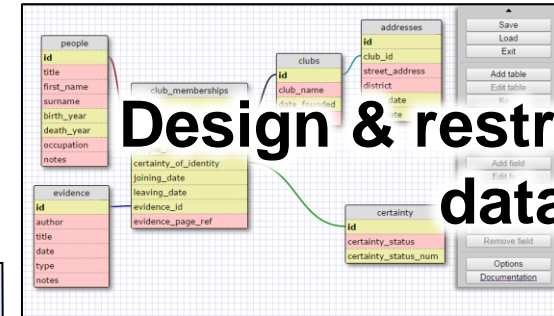
Securely host databases



Feed data to websites



Design & restructure databases



Edit data

My Projects > DHOXSS - Introduction to Relation Databases workshop > Database Details > View, Edit, and Query Data >

Table data for club_memberships. This is the main database version.

records #1 to 5 of 5 Page: 1 of 1 Go To Record:

Edit data

id [auto increment]	club_id Links to table: clubs Viewed field: club_name ▾	verbosely_named	group Viewed field: occupation ▾	Viewed field: certainty_status ▾	join
1	Brooks's	J Albury Esq	Gentleman ▾	Probable ▾	1822
2	Beefsteak Club	The Hon. Julian Carstar	Gentleman ▾	Definite ▾	1676
3	Carlton Club	Stephen	Doctor ▾	Probable ▾	1833
4	The Athenaeum	Michael Swamey	Lawyer ▾	Definite ▾	1690
5	Carlton Club	M. Swam??	Lawyer ▾	Possible ▾	1694

Query & share data

My Projects > Another test project > Mondial > Table List for Mondial > Datasets

Dataset List for Mondial

Dataset Name	General	city query	Even bigger cities	Countries
city query	cities with a population of over 2 million	select * from "city" WHERE population>2000000	public	false
Even bigger cities	the countries table	select * from "country" order by "population" desc	public	false

Query data using query builder

Query data using SQL

What else can you do with the ORDS?

Collaborate with researchers at Oxford and beyond

Start typing the name of your organisation (e.g. Anywhere College) in the search box, and you will see a list of suggestions.





University of C

Search

University of Cambridge

Sign In

University of Central Lancashire

Assign different roles to different project members

Project Members			Ad
Member name	Role		Delete
James Wilson	owner		
Meriel Patrick	contributor	Remove member	
David Paine	contributor	Edit project member	Remove member
Mark Johnson	contributor		
Kristian Kocher	viewer		

See who's done what

ADD USER TO DATABASE FOR ODBC	2014-09-16 10:05:48	James A J Wilson	User hasmichael.moss@northumbria.ac.uk been added to database
CREATE PROJECT USER	2014-09-16 10:05:48	James A J Wilson	User michael.moss@northumbria.ac.uk added to project
UPDATE PROJECT USER	2014-09-16 10:31:23	James A J Wilson	User with email administrator.su added to project
RUN USER QUERY	2014-09-19 15:11:39	Unknown	Query: select "degree_id","he_id" from "degrees" run
RUN USER QUERY	2014-10-15 09:35:24	Unknown	Query: select "town_sample" from "persons" run
EDIT LOGICAL DATABASE	2014-10-24 15:24:23	James A J Wilson	Logical database 19th-Century Professions Database - August 2014 edited

Main database version information

This area provides details of the main version of your database.

Original file name: mondial_fixed.acddb

Original file size: 928 Kbytes

View and edit database structure

View, edit, and query

Set as milestone version

Export database

Delete

Milestone database version information

You can set your main database to become a milestone database at any time.

A milestone database may be considered to be a "snapshot" within your main database.

When you have finished working with the test database, you can either set it to be the main database, or simply delete it.

Set as milestone version

Export database

Delete

Test database version information

You can create a test version of the database to work on. This allows you to try different ideas (changes to the database structure, for example) without compromising the integrity of your main database.

When you have finished working with the test database, you can either set it to be the main database, or simply delete it.

Set as milestone version

Export database

Delete

Make different versions of your databases

Edit ORDS data via your own choice of database management software

Oxford Degrees : Database 19th-Century Professions Database edited			
DEGREECODE	DEGREE NAME	UCASCODE	QUALIFICATION
archanth	Archaeology	Q800/Q810	BA
archhist	Classical Archaeology	Q800/Q810	BA
art	Fine Art	Q800/Q810	BA
biochem	Biochemistry (Molecular and Cellular)	Q800/Q810	BA
biol	Biology	Q800/Q810	BA
biomed	Biochemistry (Molecular and Cellular)	Q800/Q810	BA
chem	Chemistry	F100	MChem
class	Classics	Q800/Q810	BA
classeng	Classics and English	Q800/Q810	BA
classmod	Classics and Modern Languages	Q800/Q810	BA
classorient	Classics and Oriental Studies	Q800/Q810	BA
comp	Computer Science	G400	BA/MComp

Why use ORDS?

(as opposed to other database software)

- Secure, centrally-hosted, backed-up every night
- Built for collaboration
- Easy to expose data to public
- Can save datasets and reference them from publications
- Simple, relatively intuitive interface
- Open-source, and with in-house expertise
- Simple to archive (forthcoming)
- Free!

Let's get started...

- Registering
- Logging-in
- Creating a project
- Trial & full projects
- Defining project membership

Logging in

- Oxford users log in using Single Sign-On (same as for email access and other services)
- External collaborators can log-in using their local equivalent of SSO, if their institution is part of the UK Access Federation
- Collaborators outside of the UK Access Federation can apply for a Virtual Card
- Log in THEN register
- Log in via <http://app.ords.ox.ac.uk/> (normally), but today use:

<https://staging.ords.ox.ac.uk/>

Welcome to ORDS

The Online Research Database Service (ORDS) is an online relational database management system for researchers. It is securely hosted on the University of Oxford's private cloud network and supported by staff at IT Services.

Search for projects

 Search ORDS projects

Register to Use the ORDS

Please enter your details below to register for the ORDS

Name * Your name in the form you would like it to appear within the ORDS system

Email address * This is where notifications relating to your ORDS account will be sent. For members of the University of Oxford, this should normally be your Oxford email address.

ORDS in numbers

Total visible ORDS projects: 0

Total records managed by ORDS: 0

[Privacy](#) | [Help](#) | [About us](#) | [Contact us](#)

University of Oxford

Current Version: 1.0.5 - 3698

Creating a new project

- Only Oxford users can create a new project
- One project may contain multiple databases
- Requires some basic information
- Trial and full projects

The screenshot shows the 'Create a New Project' page in the ORDS interface. The header includes the 'ORDS' logo, a search bar, and user information for 'James A J Wilson' with a 'Log out' link. The University of Oxford logo is also present. The main heading is 'Create a New Project'. Below this, a note states: 'The project you are about to create is a trial project. Trial projects are subject to some limitations. You will not be able to add more than a hundred records to any database table (you can upload tables of over a hundred records, but will not be able to add any further records to these), and you will not be able to make your data publicly available by creating and publishing datasets.' A sub-note says: 'Once you have created the project, you will be able to request that the project be converted to a full project, without these limitations.' The form fields include: 'Name' (required, minimum 2 characters), 'Description' (required, appears in project list and search results), 'Start date' (calendar icon), 'End date' (calendar icon), 'Hide project metadata?' (checkbox), and 'ODBC access for project' (checkbox with explanatory text). At the bottom are 'Cancel' and 'Create' buttons.

ORDS

Search ORDS projects

James A J Wilson Log out

UNIVERSITY OF OXFORD

Create a New Project

The project you are about to create is a trial project.

Trial projects are subject to some limitations. You will not be able to add more than a hundred records to any database table (you can upload tables of over a hundred records, but will not be able to add any further records to these), and you will not be able to make your data publicly available by creating and publishing datasets.

Once you have created the project, you will be able to request that the project be converted to a full project, without these limitations.

Name * A name for the project (minimum 2 characters).

Description * Please give a brief description of the project. This will appear in your project list, and, if you have not chosen to hide the project's metadata, in publicly viewable ORDS project search results.

Start date The date the project started

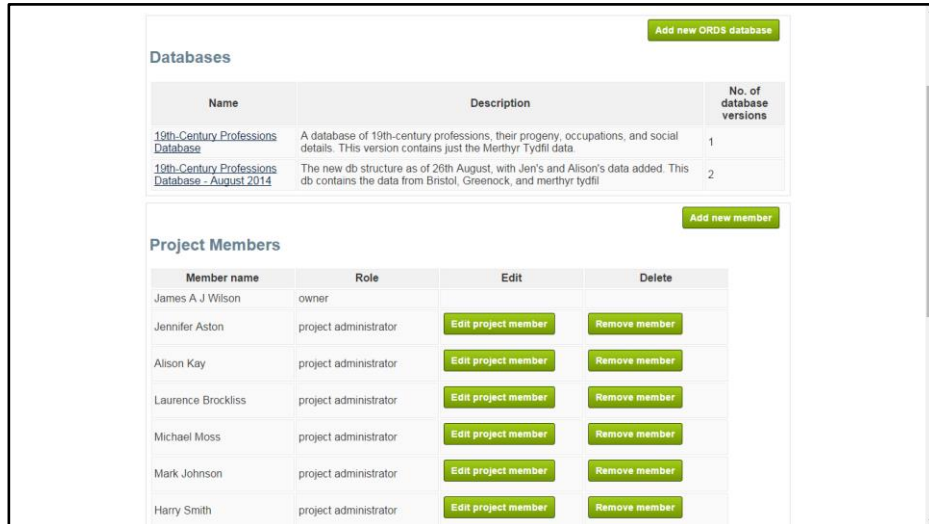
End date The actual or anticipated end date of the project

Hide project metadata? ☐
If this box is checked, no information about this project will be publicly accessible via ORDS

ODBC access for project ☐
If this box is checked, project members will be able to access project data via ODBC (Open Database Connectivity) and potentially bypass the ORDS interface completely. Only check this box if you are sure this is what you want

Cancel Create

Defining project membership



Databases Add new ORDS database

Name	Description	No. of database versions
19th-Century Professions Database	A database of 19th-century professions, their progeny, occupations, and social details. This version contains just the Merthyr Tydfil data.	1
19th-Century Professions Database - August 2014	The new db structure as of 26th August, with Jen's and Alison's data added. This db contains the data from Bristol, Greenock, and merthyr tydfil	2

Project Members Add new member

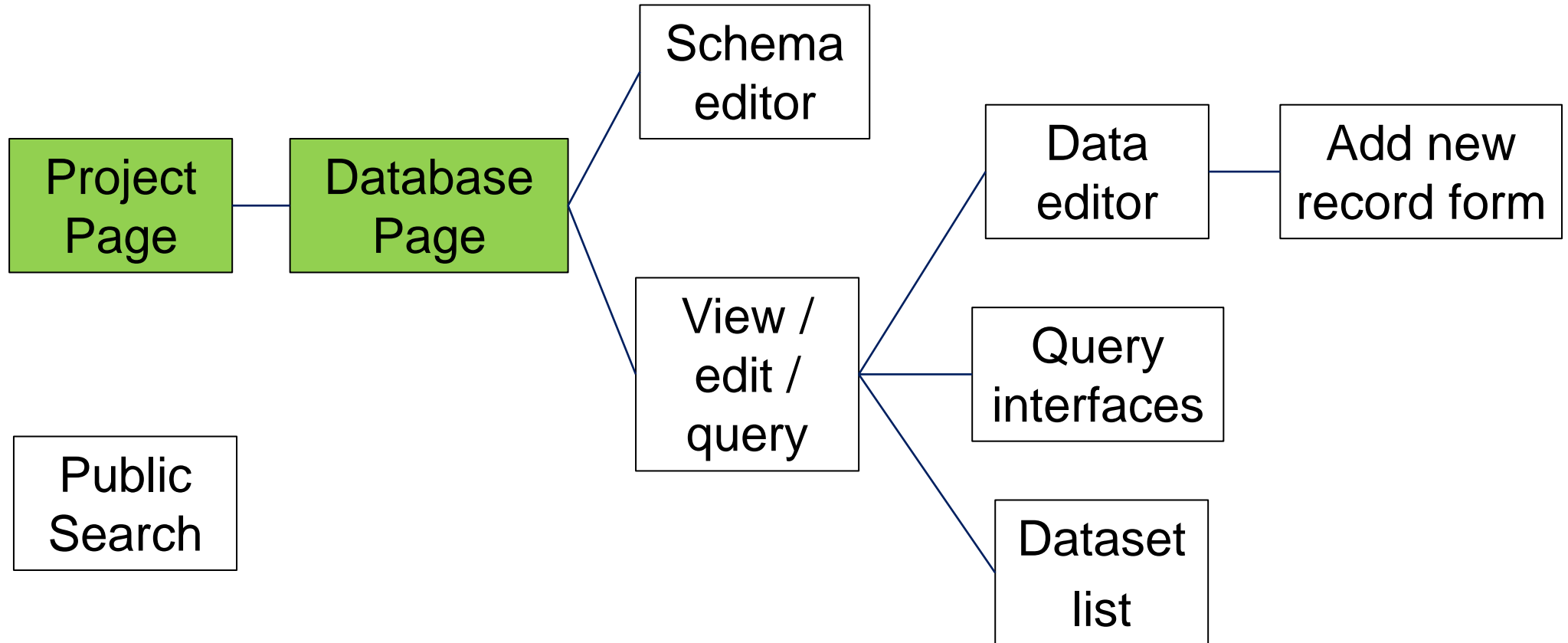
Member name	Role	Edit	Delete
James A J Wilson	owner		
Jennifer Aston	project administrator	Edit project member	Remove member
Alison Kay	project administrator	Edit project member	Remove member
Laurence Brockliss	project administrator	Edit project member	Remove member
Michael Moss	project administrator	Edit project member	Remove member
Mark Johnson	project administrator	Edit project member	Remove member
Harry Smith	project administrator	Edit project member	Remove member

- Projects can have multiple members
- Each member can have one of four levels of permission
 - Owner
 - Administrator
 - Contributor
 - Viewer
- New members added by email address

Creating a database in ORDS

- Defining a database
- Importing an existing database
- Importing spreadsheets
- Creating a database from scratch
- Database versions

Navigation

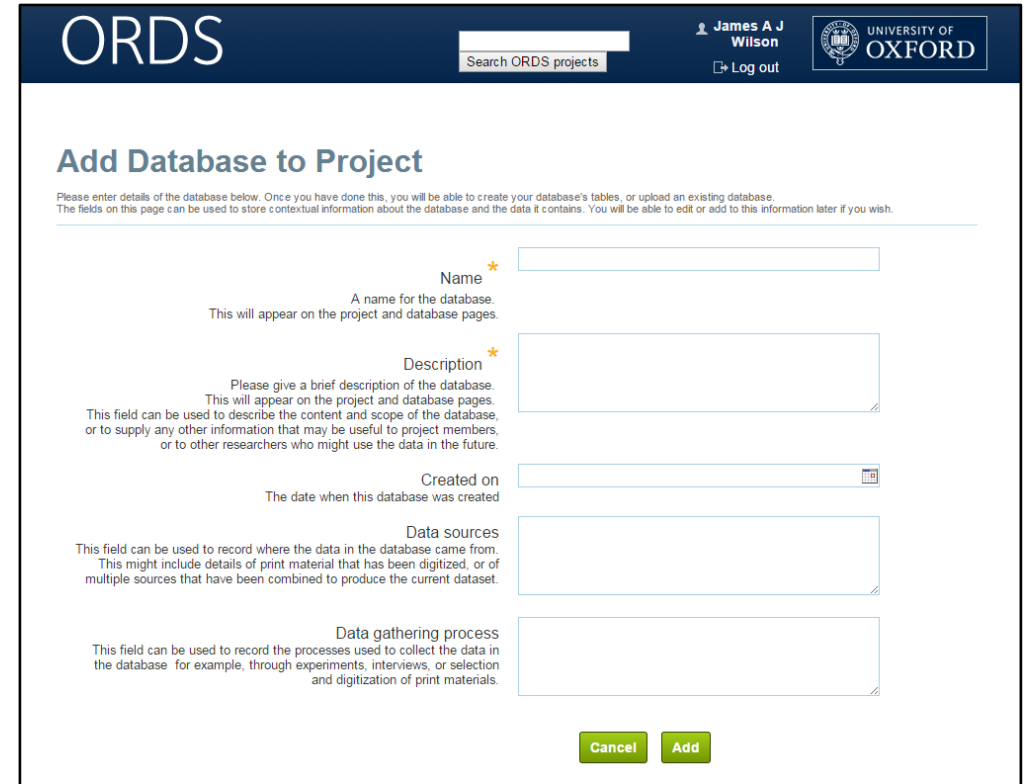


Relational Databases

- ORDS is a relational database management system
- Underlying database format is PostgreSQL
- Data can be imported from other RDMS
 - Directly from Microsoft Access files
 - Indirectly as comma-separated values (.csv files)
- Spreadsheets can be imported and 'stitched together' to form relational databases
- Data can be exported as SQL dumps and as .csv files

Defining a database

- Need to create a 'logical' database to get started
- Information should enable you, the team, and possibly the wider community to understand your data



The screenshot shows the 'Add Database to Project' form in the ORDS interface. The header bar is dark blue with the 'ORDS' logo on the left, a search bar in the center, and user information 'James A J Wilson' and a 'Log out' link on the right. The University of Oxford logo is also present. The main content area is white and titled 'Add Database to Project'. Below the title is a small instructional text: 'Please enter details of the database below. Once you have done this, you will be able to create your database's tables, or upload an existing database. The fields on this page can be used to store contextual information about the database and the data it contains. You will be able to edit or add to this information later if you wish.' The form contains five fields: 'Name' (with a red asterisk), 'Description' (with a red asterisk), 'Created on' (with a calendar icon), 'Data sources', and 'Data gathering process'. Each field has a text input area and a small instructional text below it. At the bottom right of the form are two green buttons: 'Cancel' and 'Add'.

ORDS

Search ORDS projects

James A J Wilson
Log out

UNIVERSITY OF OXFORD

Add Database to Project

Please enter details of the database below. Once you have done this, you will be able to create your database's tables, or upload an existing database. The fields on this page can be used to store contextual information about the database and the data it contains. You will be able to edit or add to this information later if you wish.

Name *

A name for the database.
This will appear on the project and database pages.

Description *

Please give a brief description of the database.
This will appear on the project and database pages.
This field can be used to describe the content and scope of the database, or to supply any other information that may be useful to project members, or to other researchers who might use the data in the future.

Created on

The date when this database was created

Data sources

This field can be used to record where the data in the database came from.
This might include details of print material that has been digitized, or of multiple sources that have been combined to produce the current dataset.

Data gathering process

This field can be used to record the processes used to collect the data in the database for example, through experiments, interviews, or selection and digitization of print materials.

Cancel Add

Importing databases and spreadsheets

ORDS

James A J Wilson

Search ORDS projects

Log out

My Projects > My First Project > New database

Database Name: New database

Database Details

Name	New database
Description	A database, as yet empty.
Database type	Relational
Created on	13/11/2014
Data sources	To be added
Data gathering process	To be added

[Delete database](#) [Edit database details](#)

From this page, you can manage your ORDS database. You can have up to three copies of each database: the main or live version, a milestone version (to preserve a snapshot of the database as it was at a particular point), and a test version (which allows you to try out changes before making these in the live version). Use the buttons below to upload, create, or edit a database version.

Main database version information

This area provides details of the main version of your database. You haven't uploaded a database yet.

[Upload existing database](#)

[Create new database](#)

- Select the file containing your data and upload it
 - Access databases
 - SQL databases
 - .csv files
- Spreadsheets must be uploaded one at a time in .csv format
 - May need to be tidied up first
- Can't mix spreadsheets and databases

Database versions

- Main database
 - The principal version of the database
 - Deleting the main database deletes all other versions
- Milestone database
 - Intended to host a 'stable' version of the database
 - Good for public sharing
- Test Database
 - A good version for trying out potentially risky restructuring
 - Can overwrite the main database once changes are verified

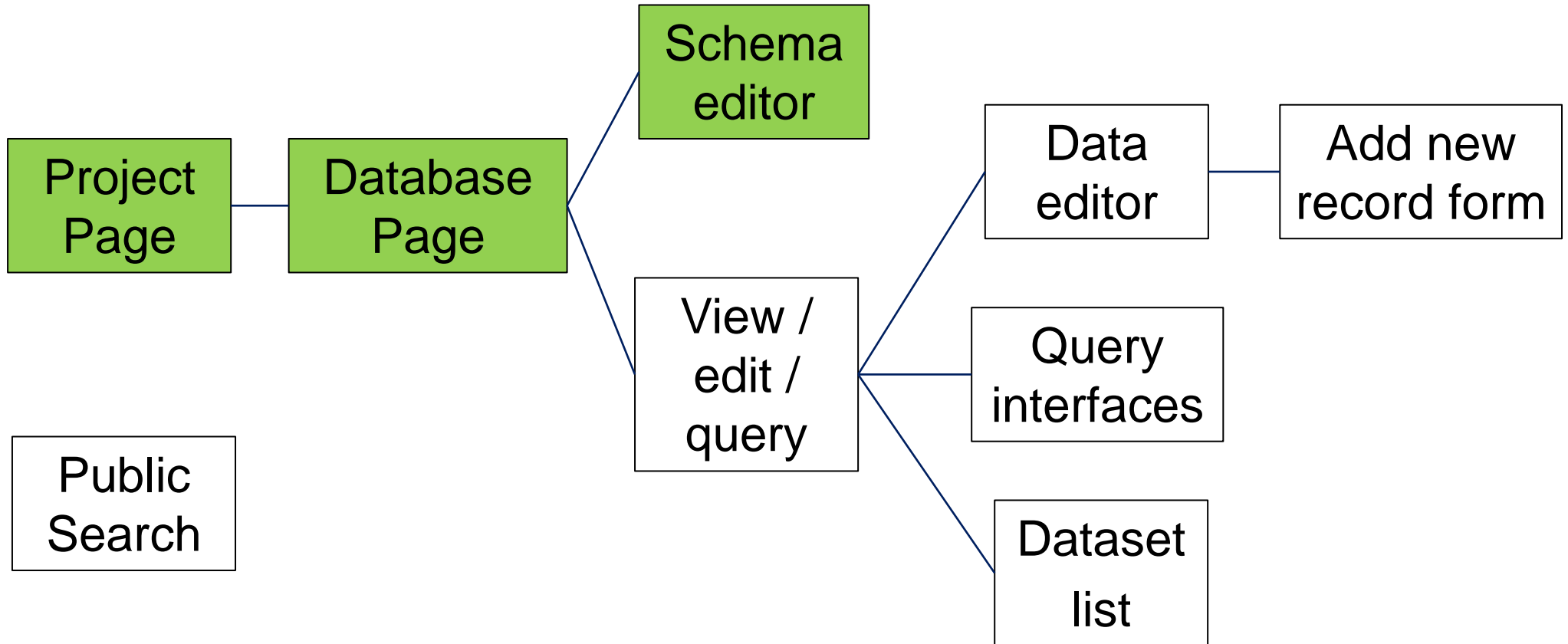
Turn to exercises 1 and 2 in the course handbook

<https://staging.ords.ox.ac.uk/>

Changing database structures with ORDS

- Understanding relationships
- Adding tables and fields
- Editing field types
- Defining relationships

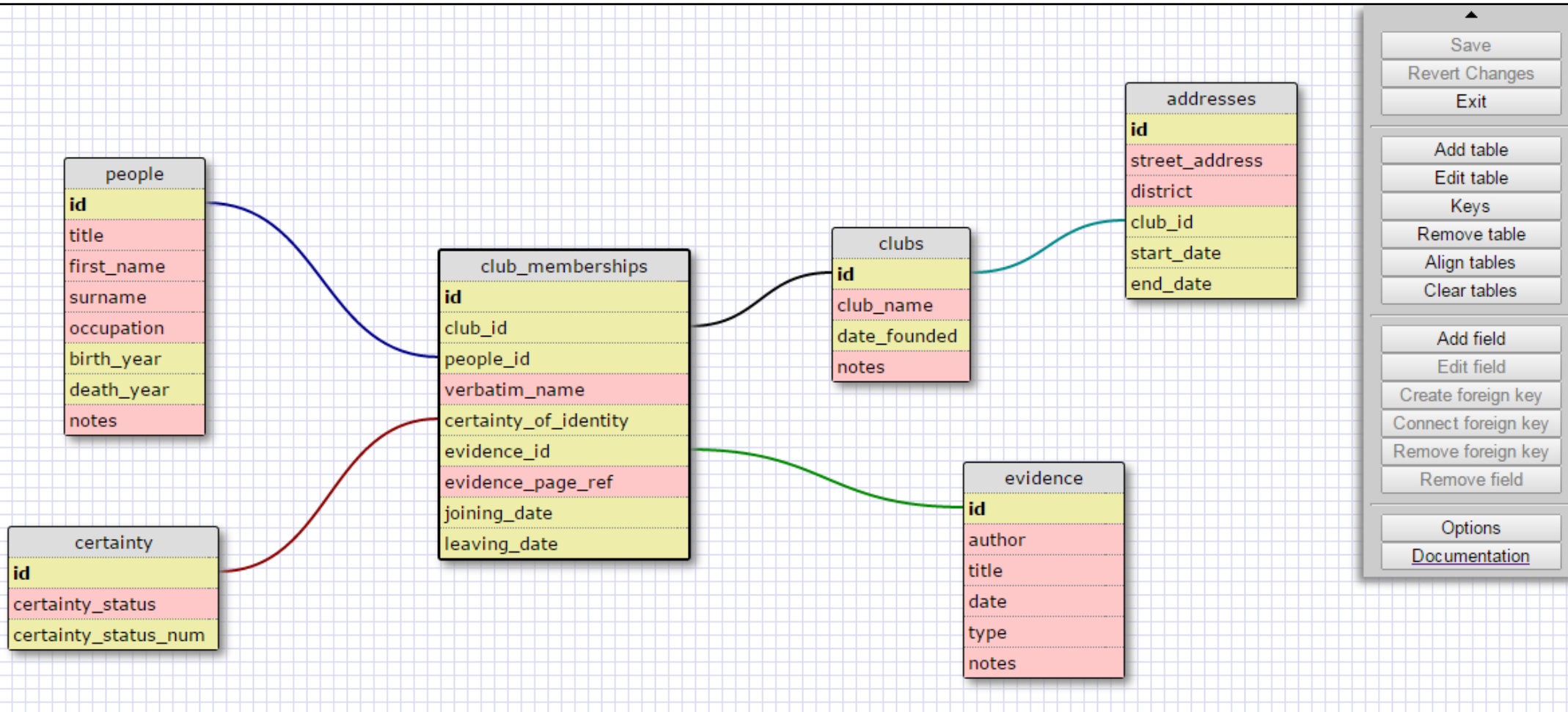
Navigation



Relationships between tables

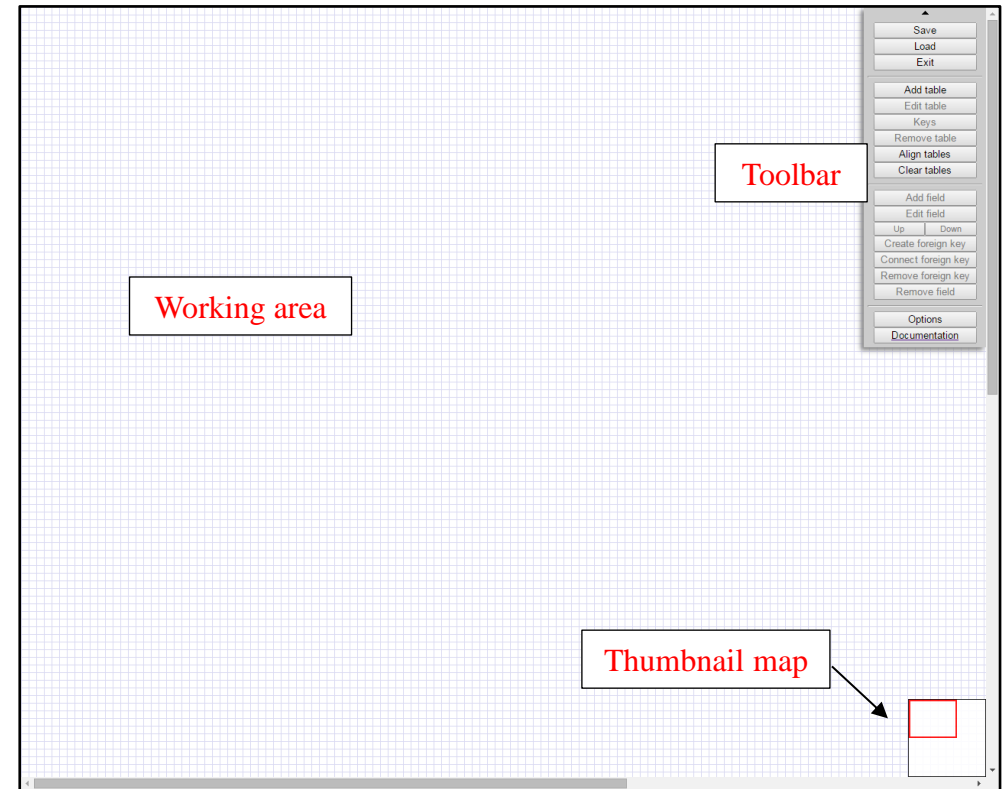
- Different types of 'thing' go into different tables
- Fields in a table represent the different properties of that sort of thing
- Relationships between things consist of three types
 - One-to-many
 - Many-to-many
 - One-to-one

Relationships between tables



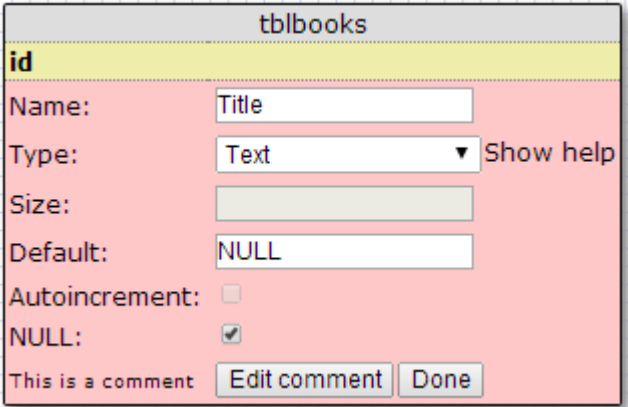
Adding new tables and fields

- Toolbar contains buttons to add tables and new fields
- To place a new table, simply click on the button, then in the working area
- Tables are given a default 'primary key'
- To add a new field, click once on the table, then on the 'add field' button in the toolbar



Field types

- Click on a field to expand it
- Select a field type from the drop-down list
- Basic types are:
 - Text
 - Integer
 - Decimal
- Others are explained within the interface and in the course book



The screenshot shows a configuration window for a field in a table named 'tblbooks'. The field is named 'id'. The configuration options are as follows:

tblbooks	
id	
Name:	Title
Type:	Text Show help
Size:	
Default:	NULL
Autoincrement:	<input type="checkbox"/>
NULL:	<input checked="" type="checkbox"/>
This is a comment Edit comment Done	

Defining Relationships

- Two methods:
 - Select a primary key field in a table (this is the 'one' part of the one-to-many relationship), then 'connect foreign key', then on the related field in another table (the 'many' part of the one-to-many relationship)
 - Select a primary key field in a table, then 'create foreign key', then on the related table (the linked field will be created)
- For 'many-to-many' relationships, you will need to create an intermediary table

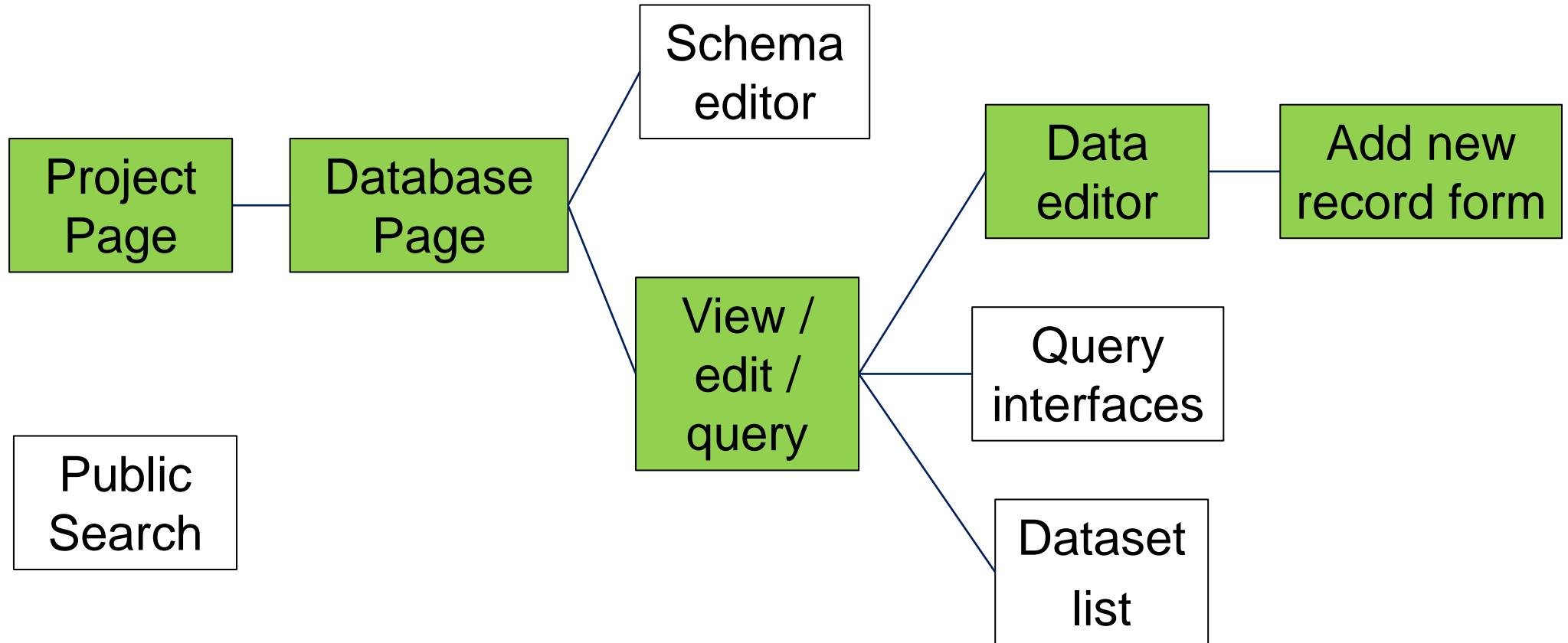
What PostgreSQL doesn't like

- Table or field names beginning with a number
- Duplicate table and field names
- Spaces in table and field names
- Data that contradicts the defined data type
- Relationships between fields of different types

Editing data in ORDS

- Editing data
- Working with linked tables
- Adding new records
- Deleting records

Navigation



Editing data

Table data for tblauthors. This is the main database version.

records #: 1 to 9 of 9 Page: 1 of 1 Go To Row: Records per page: 100 ▼

id [auto increment]	author_name	date_of_birth	date_of_death	Delete
2	Smith, Alice	1894	1986	Delete
3	Jones, Gerard	1968	-	Delete
4	Hills, Paul	Unknown	-	Delete
5	Painter, Mary	1969	-	Delete
6	Michaels, Sarah	Unknown	-	Delete
7	Market, Bob	1945	-	Delete
8	French, George	1952	-	Delete
9	Stacey, P. G.	1955	-	Delete
10	Appleton, Lucy	1936	-	Delete

[Save changes](#)

[Add new record](#)

- Click in a cell to edit the data
- Click 'save changes' to enter the data
- Linked fields are different
 - Only allow selection of records in the linked table
- 100 records displayed per screen

Adding new records

- Data entry form generated automatically by ORDS
- Each field type indicated
- Choice of displayed field for linked tables
- ORDS team can help with bulk uploads

Add New Record

To add a new record to the table, complete the fields below. Fields marked '[auto increment]' will be completed automatically by the ORDS system.

The capitalized label beneath the field name indicates the field's data type. This may restrict what can be entered in the field. If you need to change a field's data type, you can do this via the schema design page.

year	<input type="text"/>
VARCHAR	
volume	<input type="text"/>
VARCHAR	
author	<input type="text" value="[null value]"/>
(links to table: tblauthors) Viewed column:	
author_name	<input type="text"/>
pages	<input type="text"/>
VARCHAR	
id	<input type="text" value="[auto increment]"/>
INTEGER	
title	<input type="text"/>
VARCHAR	
journal	<input type="text" value="[null value]"/>
(links to table: tbljournals) Viewed column:	
journal_name	<input type="text"/>

Deleting records

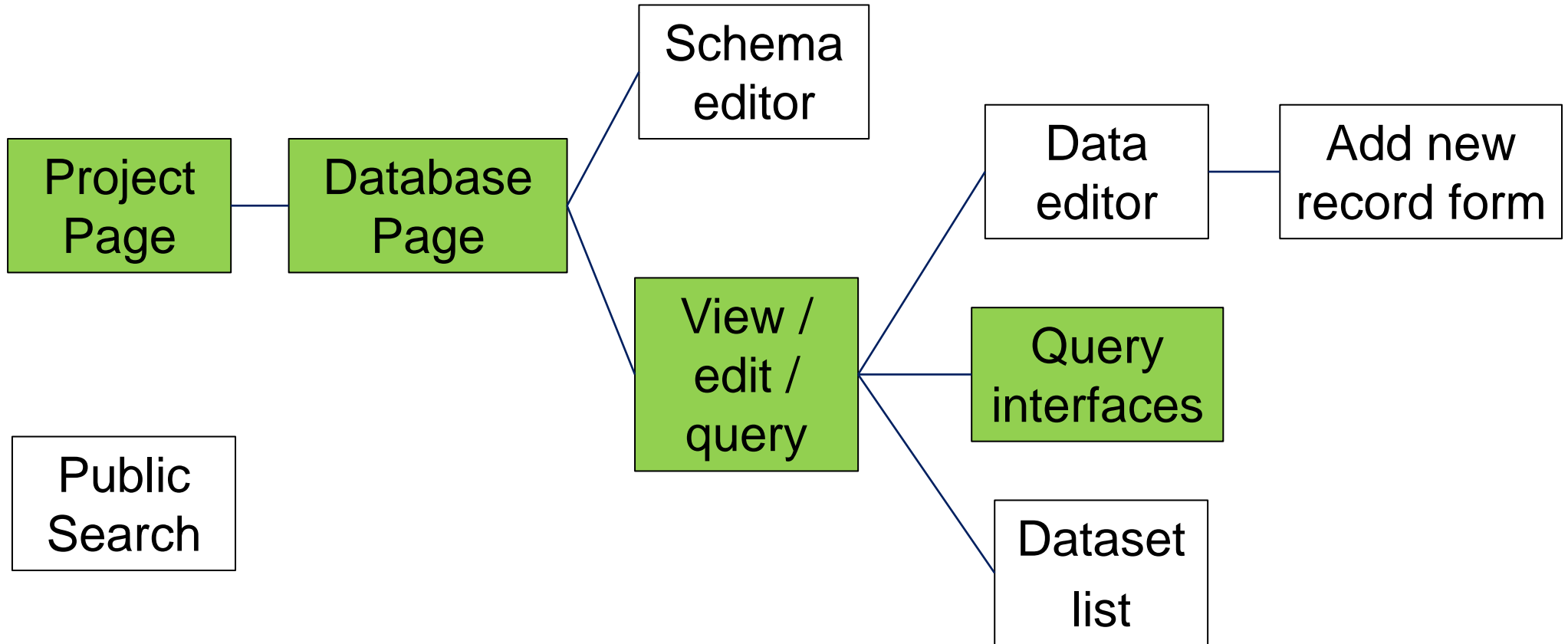
- Simply click 'delete'
- You cannot delete a record which another record is referencing

Turn to exercises 3 and 4
in the course handbook

Querying data

- Using the query builder
- Working with SQL
- Conditional queries
- Exporting and analysing results

Navigation



ORDS Query Builder

- Select a table and which columns you would like to view
- Will be extended during 2015

[My Projects](#) [Sample project](#) > [Database Details](#) > [View, Edit, and Query Data](#) > [Datasets](#) >

Build a query for main version of Bibliography database.

This screen will allow you to construct simple database queries. Please note that this tool is a work in progress.

When you select a table from the drop-down list below, a list of the columns within that table will appear. Select the columns whose contents you'd like to see displayed (you can select multiple columns by holding down Ctrl as you click), then click the 'Build query' button. Finally, click 'Run query' to see the results.

Query Builder

Table	Columns to show
Select table ... ▾	

Build query

Save query results as dataset

Export query results as CSV

SQL Query

Clear query

Run query

Query results

Query data for 'select "author","journal","title" from "tblarticles"'. This is the main database version.

records #:1 to 15 of 15

Page: 1 of 1

Go To Row:

author	journal	title
9	5	Medieval Saints
4	2	Feudal Lords and Ladies
2	4	Art and Architecture in 17th Century Parish Churches
3	5	Politics of Identity in the Early Church
2	5	Ecclesiastical Courts and Changing Ideas of Justice
7	2	England, our England
3	3	Colonial Conceptions of Identity
8	3	Symbolism in West African Traditional Art
8	5	The Spirituality of Slavery
6	4	Doctors of the Church: Religion and Health in Medieval Europe
9	2	The War of the Roses and Female Emancipation
7	3	Early Modern Perceptions of Englishness

- May be:
 - Sorted
 - Exported
 - Saved
 - Published

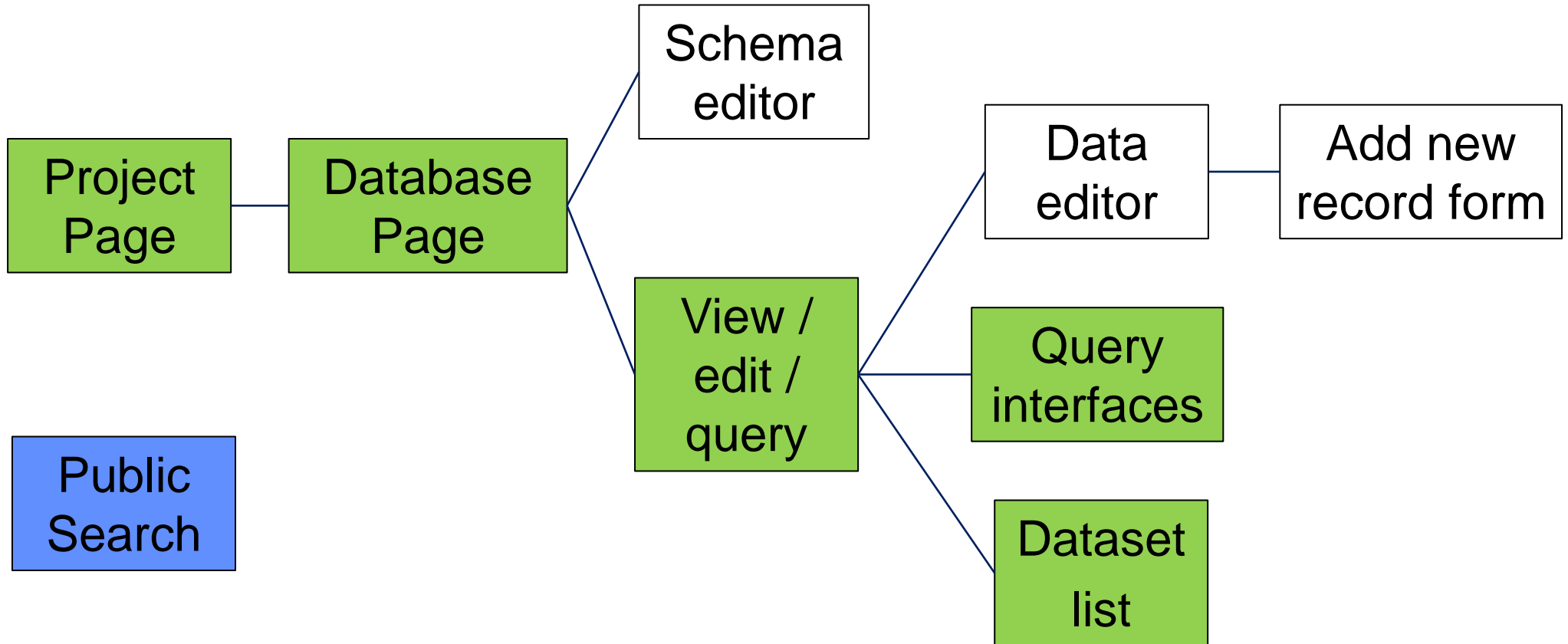
SQL queries

- Much more sophisticated queries are possible using SQL
- Can add to the SQL queries generated using the query builder
- Enables data to be pulled from multiple tables
- **SELECT** statements indicate which fields should be returned
- **FROM** statements indicate the table(s) in which those fields are to be found
- **JOIN** / **ON** statements are used when you wish to query multiple tables
- **WHERE** statement provide the conditions that a record must meet in order to be listed in results; **AND** and **OR** can be used for advanced queries
- **ORDER BY** statements control the order in which results are returned

Saving and Sharing Datasets

- Saving and re-running queries
- 'Static' and 'dynamic' datasets
- Sharing and publishing datasets
- Exporting entire databases

Navigation



Saving and sharing datasets

- Export query results as .csv
- Save as a 'dataset'
 - For group or public sharing
 - 'static' and 'dynamic' option
- Saved datasets can be re-run and edited
- Public datasets viewable via the ORDS interface

The screenshot shows the ORDS interface for saving query results as a dataset. The header includes the ORDS logo, a search bar, the user name 'James A J Wilson', a 'Log out' link, and the University of Oxford logo. The main heading is 'Save query results as dataset'. The form contains several fields: 'Dataset name' (with a subtext 'The name of this dataset'), 'Description' (with a subtext 'Please give a description of this dataset'), and 'Query' (with a subtext 'The query used to create this dataset'). The 'Query' field contains the text 'select "cityname","id" from "city"'. Below these fields is a checkbox for 'Create as static dataset' with a subtext explaining that it creates a snapshot of the data. At the bottom, there is an 'Authorization' dropdown menu currently set to 'public', with a subtext 'You can specify who is allowed to see this data.' The form ends with 'Cancel' and 'Save' buttons.

Exporting Entire Databases

Which format would you like for the export?

Multiple CSV files	▼
Multiple CSV files	
Single CSV file	
SQL database dump	

Export **Return to database page**

- Whole databases can be exported from the database page
- Three export options
 - SQL; multiple .csv files; single .csv file
 - Enables easy switching between database management software
 - Enables snapshots of databases and local copies

Future Developments

- Launched in August, development on-going
- We'll be adding:
 - Improved database designer
 - One-click data deposit mechanism
 - Conditional query builder
 - Easier ODBC access (for editing data using other software)
 - Improved interface (for long text fields, etc.)
 - Image-handling capabilities
- Also intending to enable use by other universities

Support with ORDS

- ORDS supported by Research Support Group (IT Services):
 - Data upload and merging
 - SQL queries
 - Resolving bugs and issues
- IT Services also offer:
 - Hands-on courses on using ORDS
 - Courses relating to relational database design
 - Project website development (with ORDS back-end)
- ORDS user group to be formed shortly

Accessing the ORDS

- The ORDS: <https://app.ords.ox.ac.uk/>
- The documentation: <http://ords.ox.ac.uk/>
- To contact the team: ords@it.ox.ac.uk

Turn to exercises 5 and 6
in the course handbook