The Online Research Database Service (ORDS)

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What is the ORDS?

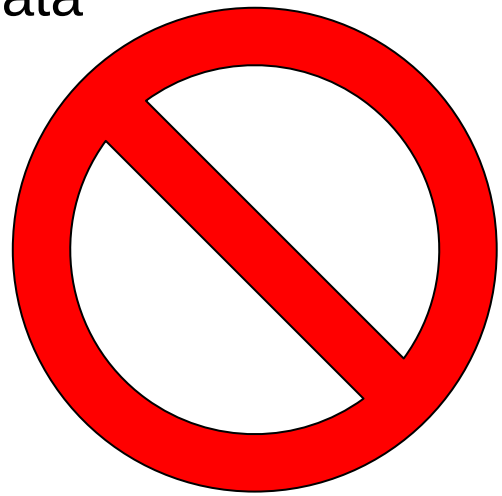
- Online Research Database Service
- Simple online database management system for research data
- Designed and developed by University of Oxford IT Services
- Free service
- Part of a wider drive to facilitate good research data management
  - Good documentation
  - Open formats
  - Low overheads

RESEARCH DATA OXFORD

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'



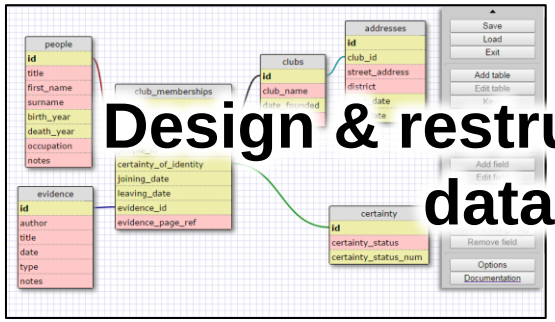
Background

- 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

What can you do with the ORDS?

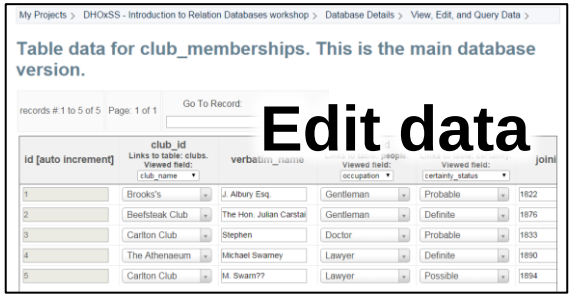
Administer projects

Import & export data



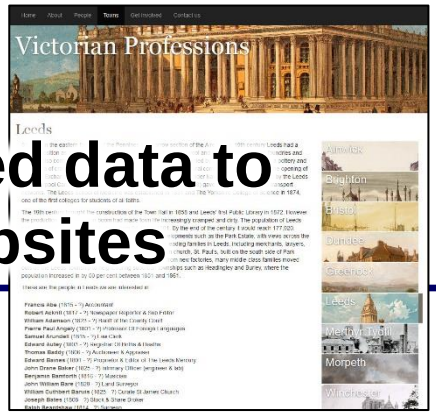
Design & restructure databases

Securely host databases

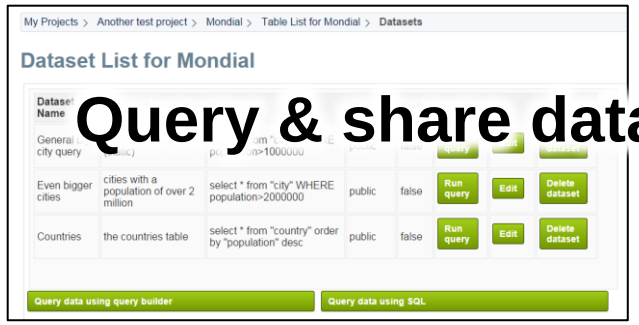


Edit data

Archive data (forthcoming)



Feed data to websites



Query & share data

iT services

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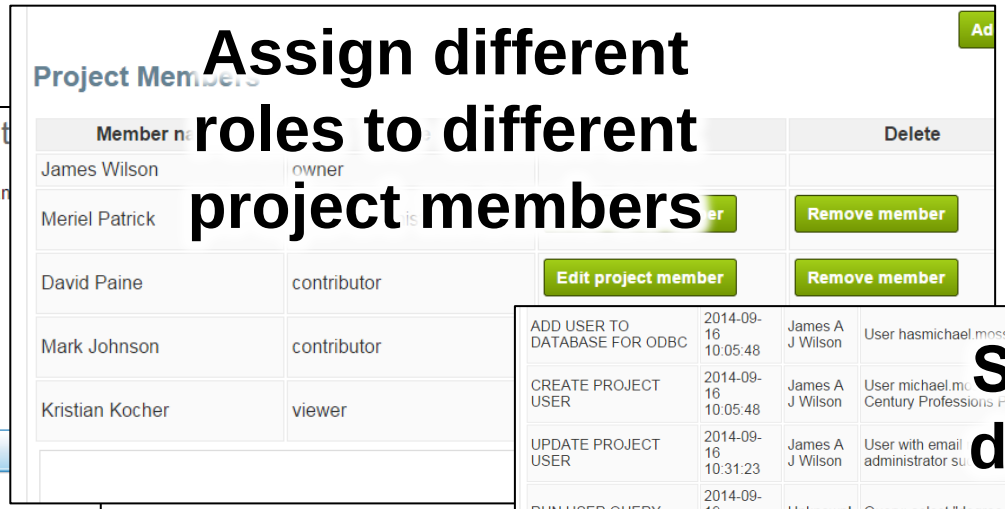
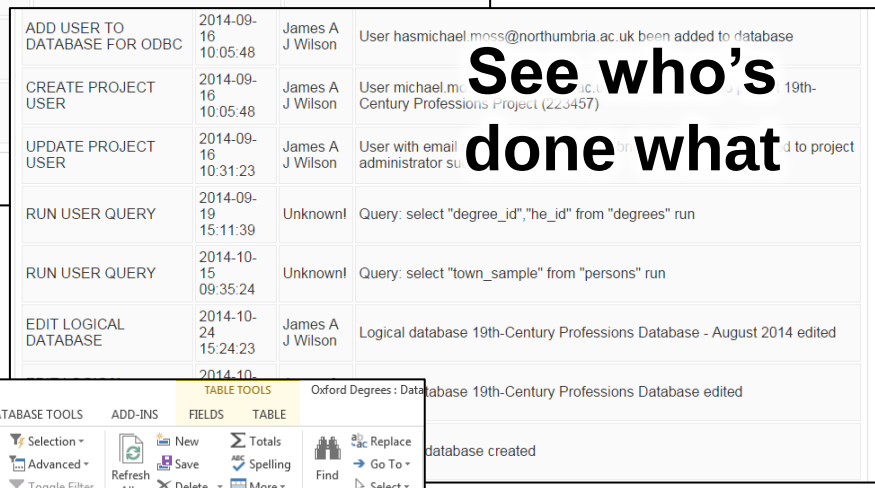
What else can you do with the ORDS?

Collaborate with researchers at Oxford and beyond

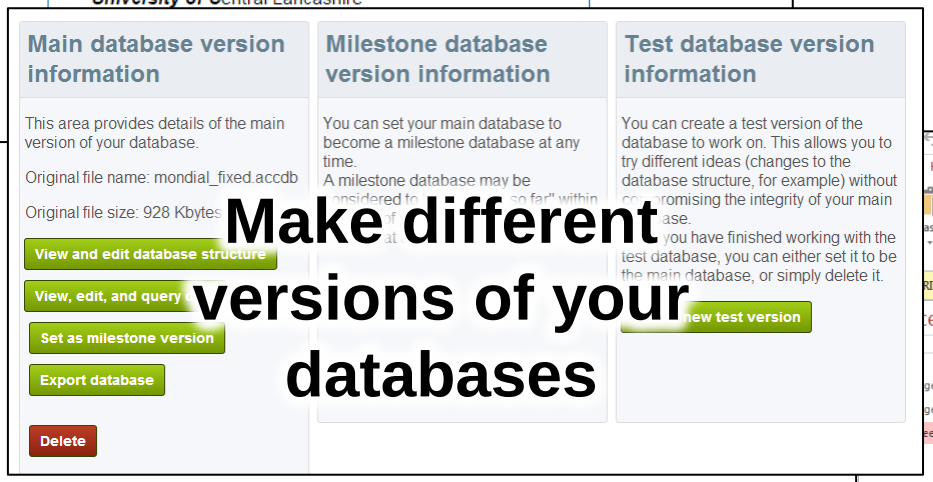
Assign different roles to different project members



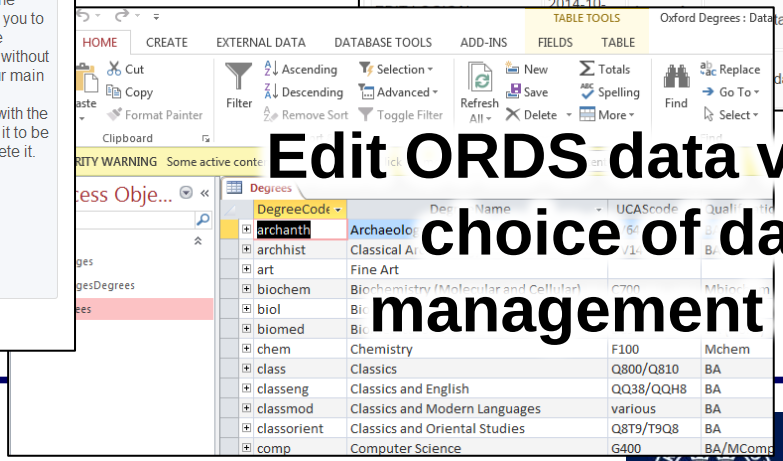
See who's done what



Make different versions of your databases



Edit ORDS data via your own choice of database management software



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/

iT services

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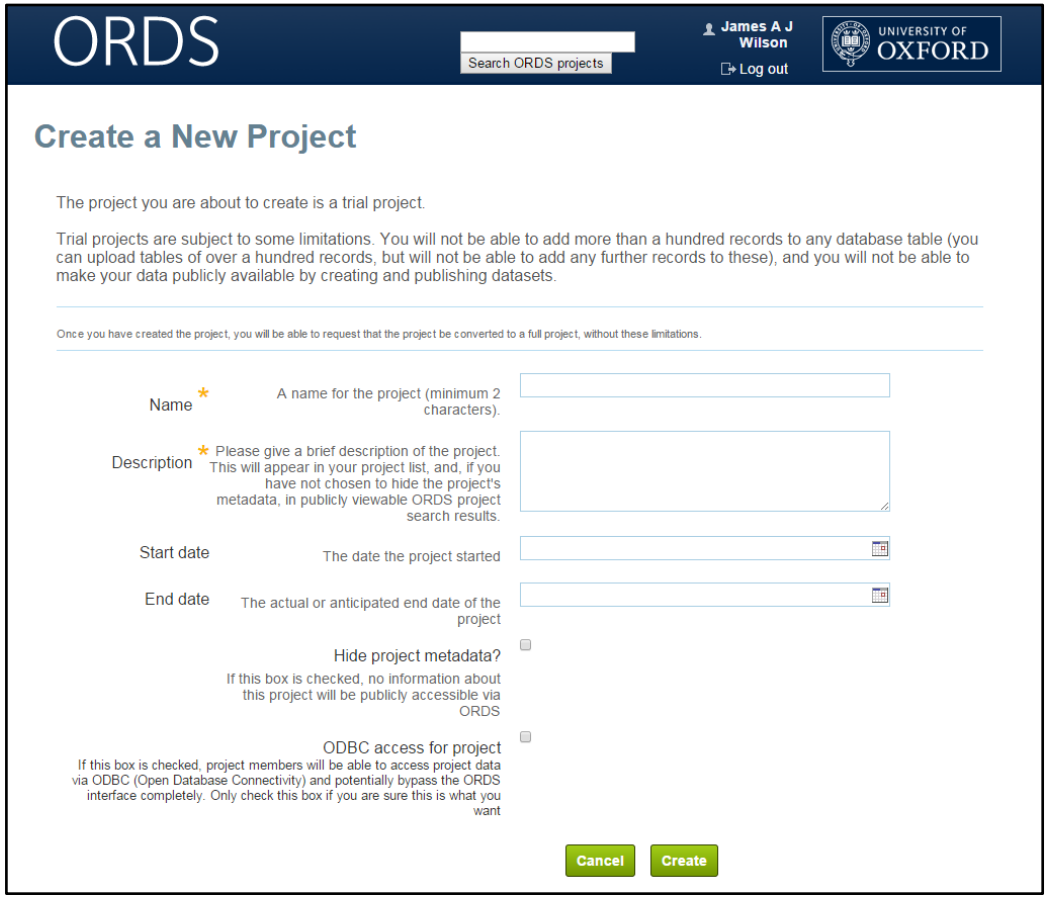
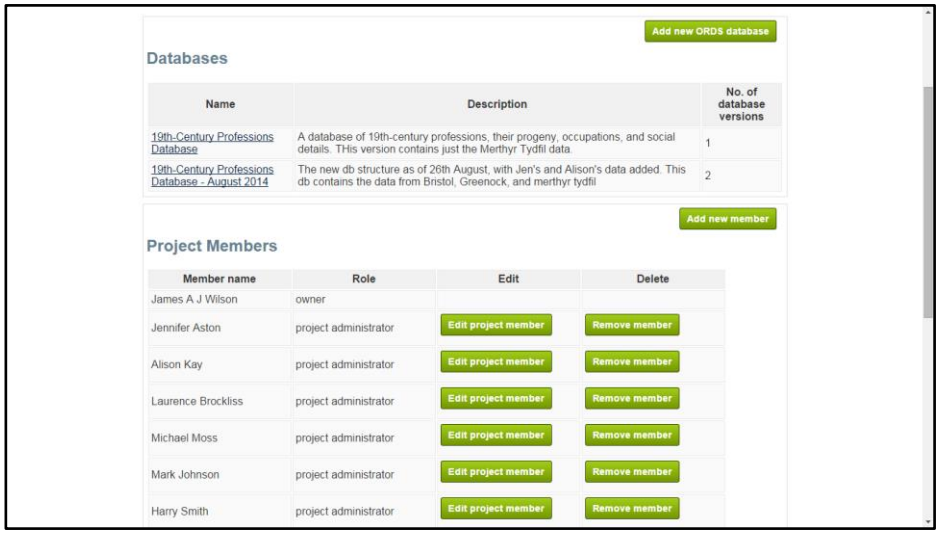
Creating a new project

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



Defining project membership

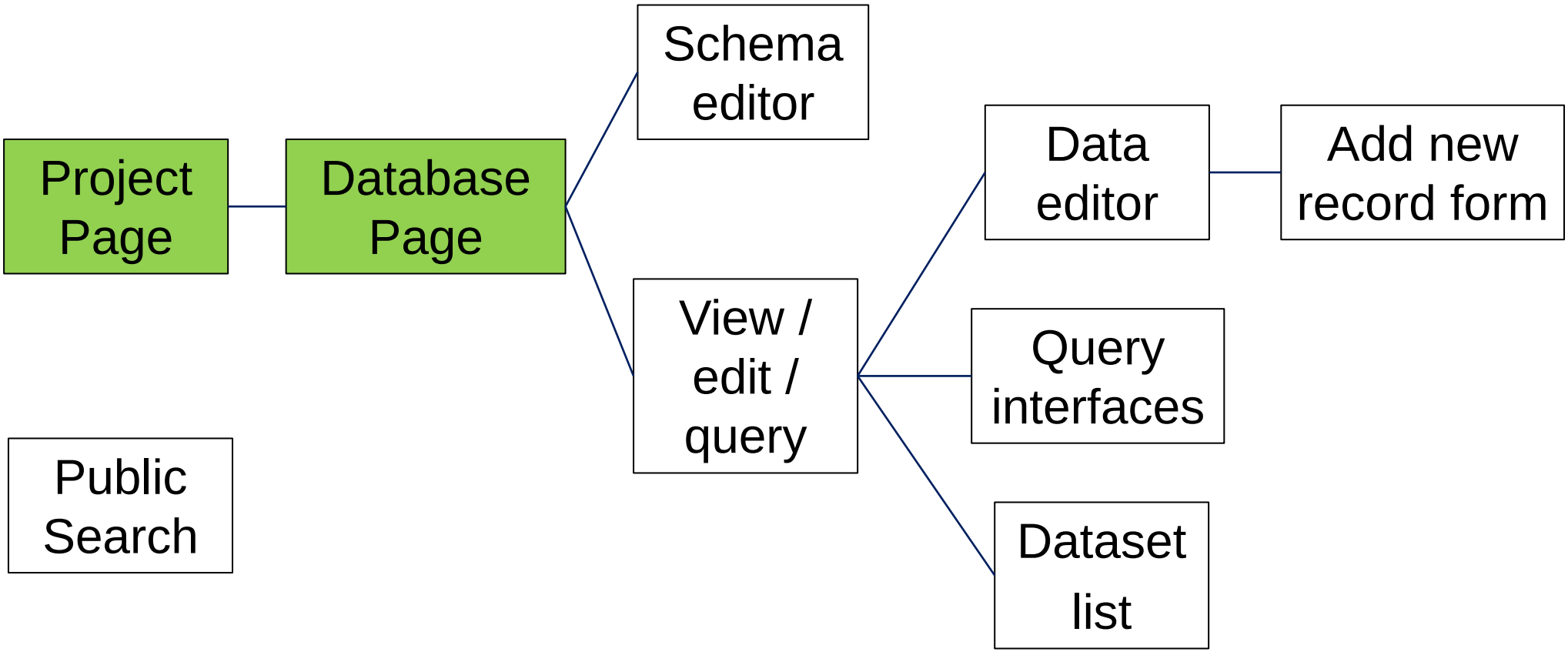


- Projects can have multiple members
- Each member can have one of four levels of permission
  - Owner
  - Administrator
  - Contributor
  - Viewer
- New members added by email address

Creating a database in ORDS

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

Navigation


Project Page
Database Page
Schema editor
View / edit / query
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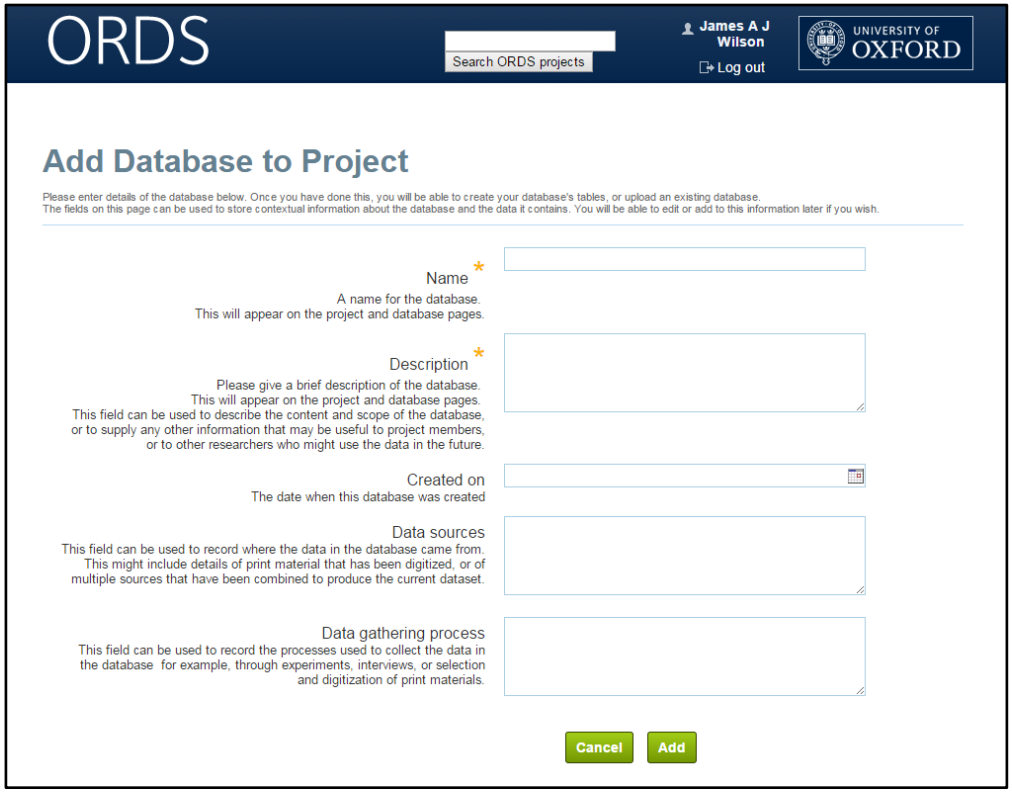
Public Search

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



Importing databases and spreadsheets

- 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

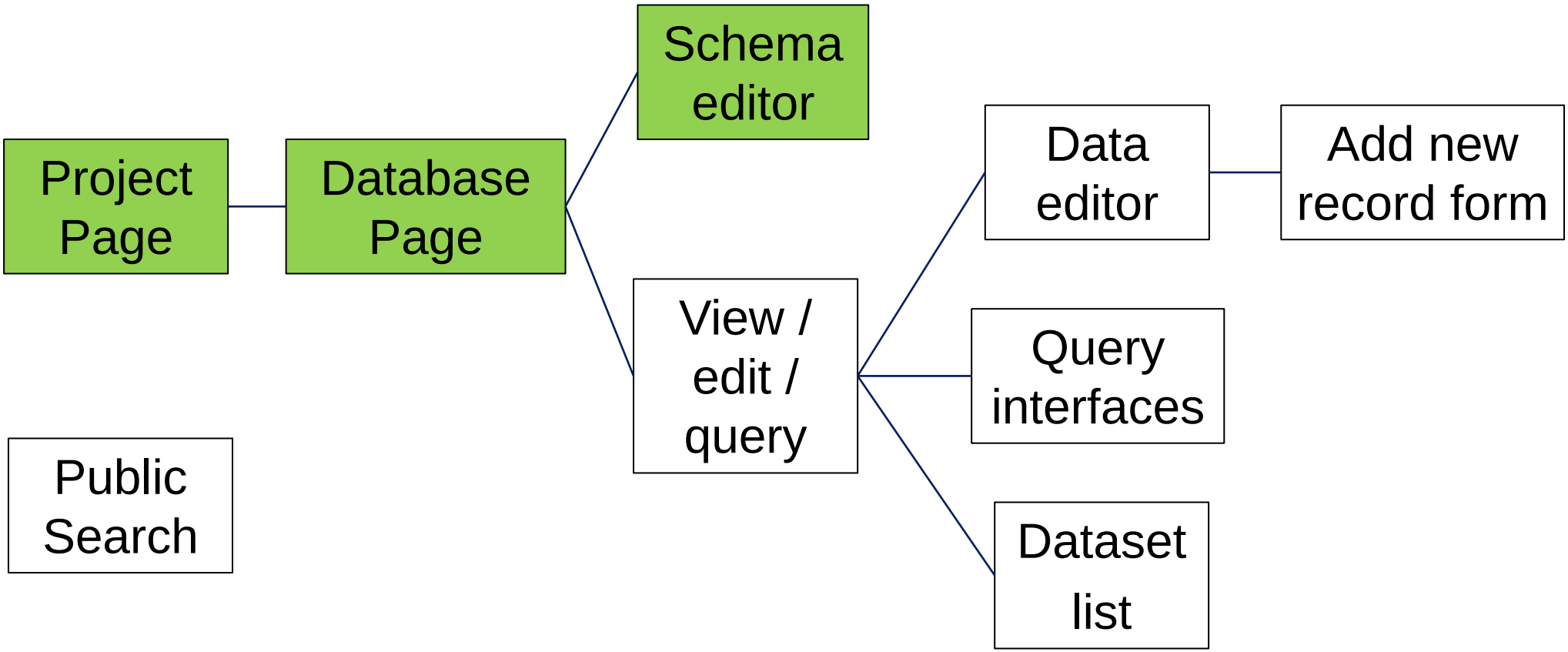
Turn to exercises 1 and 2 in the course handbook

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

Changing database structures with ORDS

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

Navigation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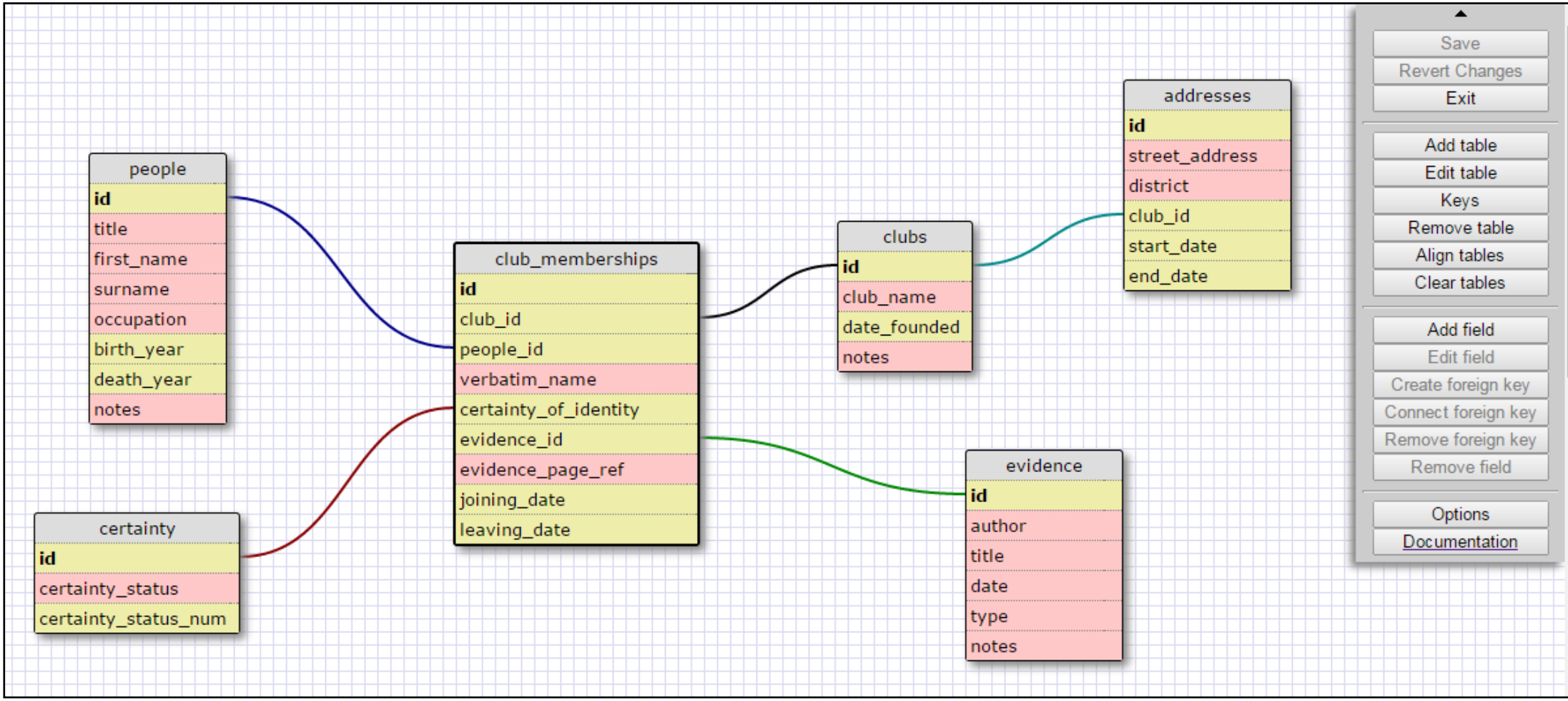
Relationships between tables

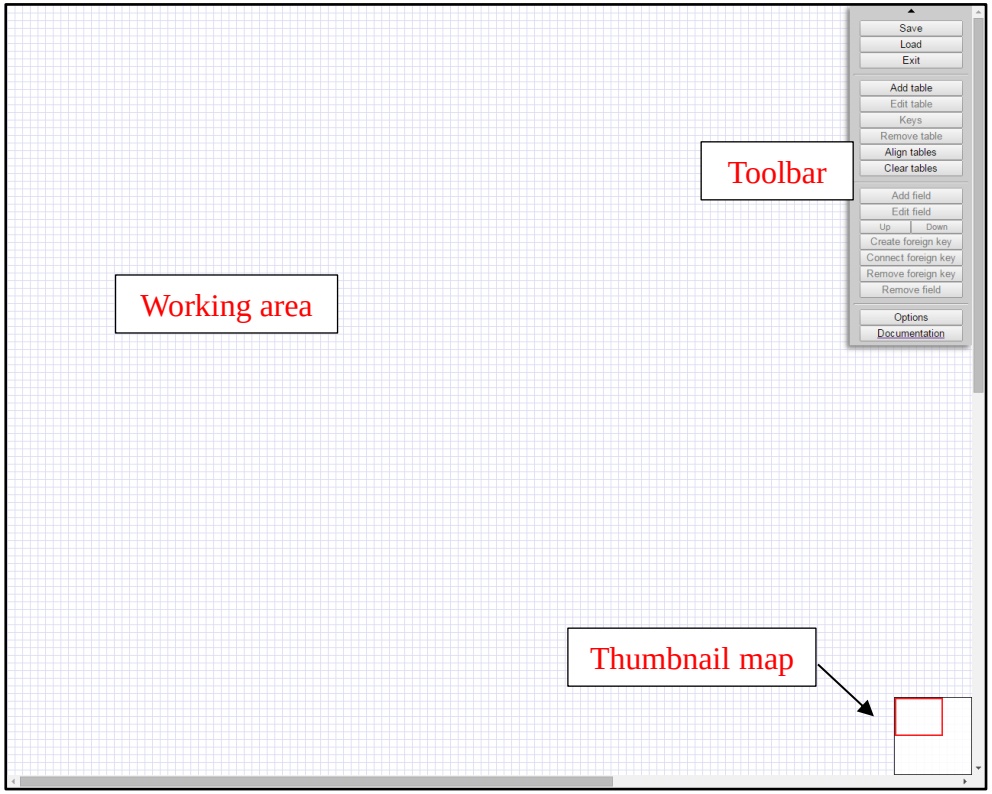
- Different types of ‘thing’ go into different tables
- Fields in a table represent the different properties of that sort of thing
- Relationships between things consist of three types
  - One-to-many
  - Many-to-many
  - One-to-one

Relationships between tables



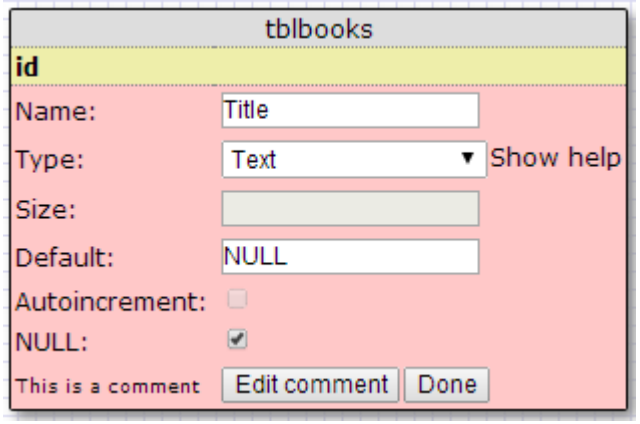
Adding new tables and fields

- 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



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

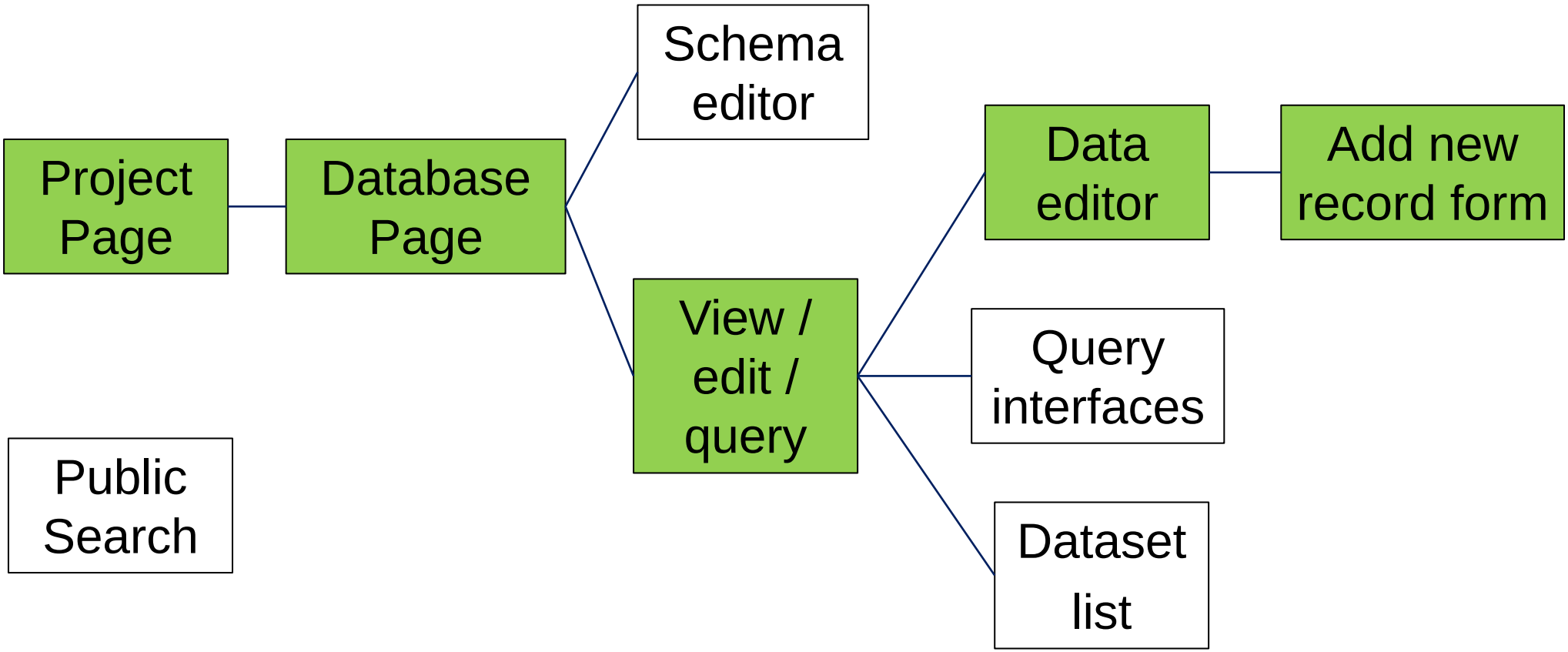
What PostgreSQL doesn't like

- 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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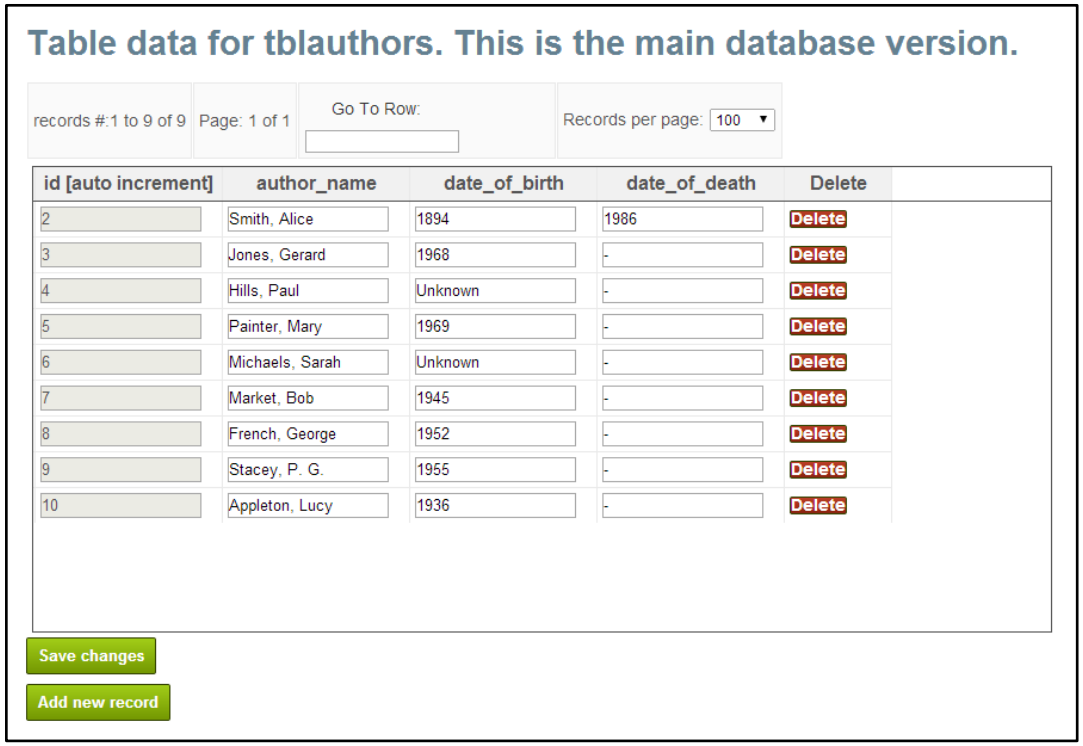
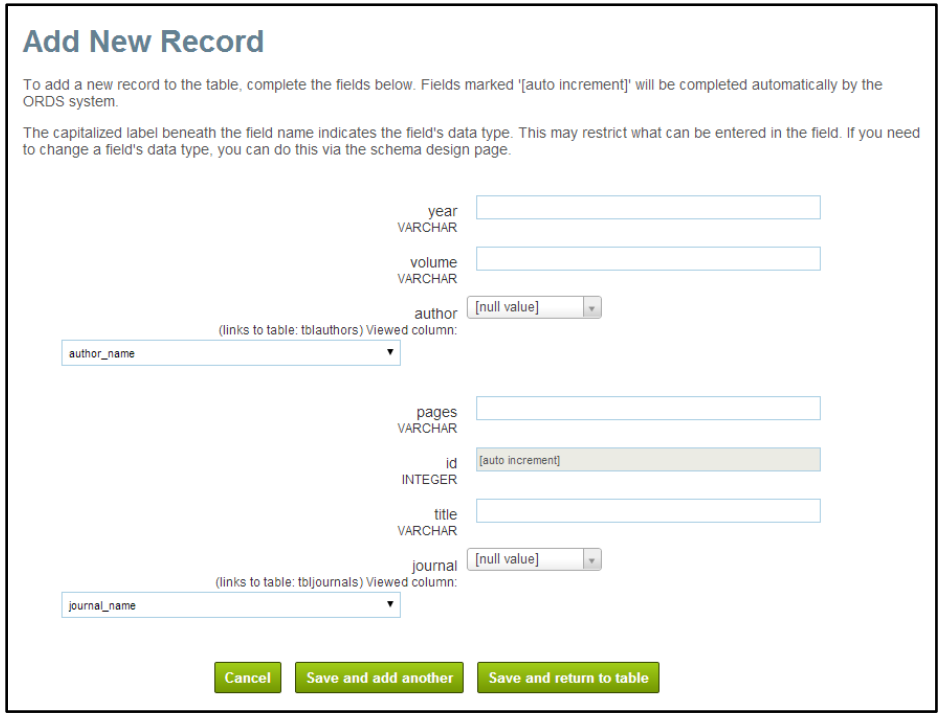
Editing data



- 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



Deleting records

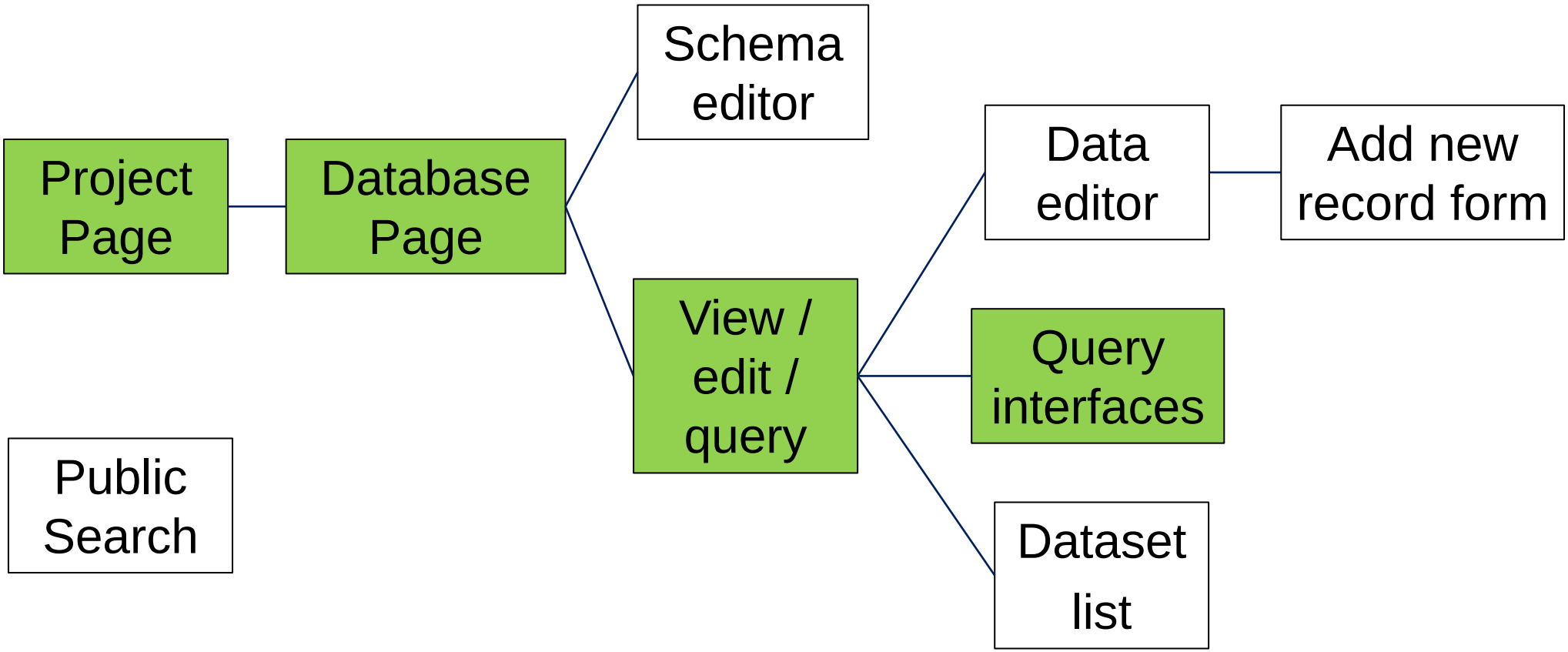
- Simply click ‘delete’
- You cannot delete a record which another record is referencing

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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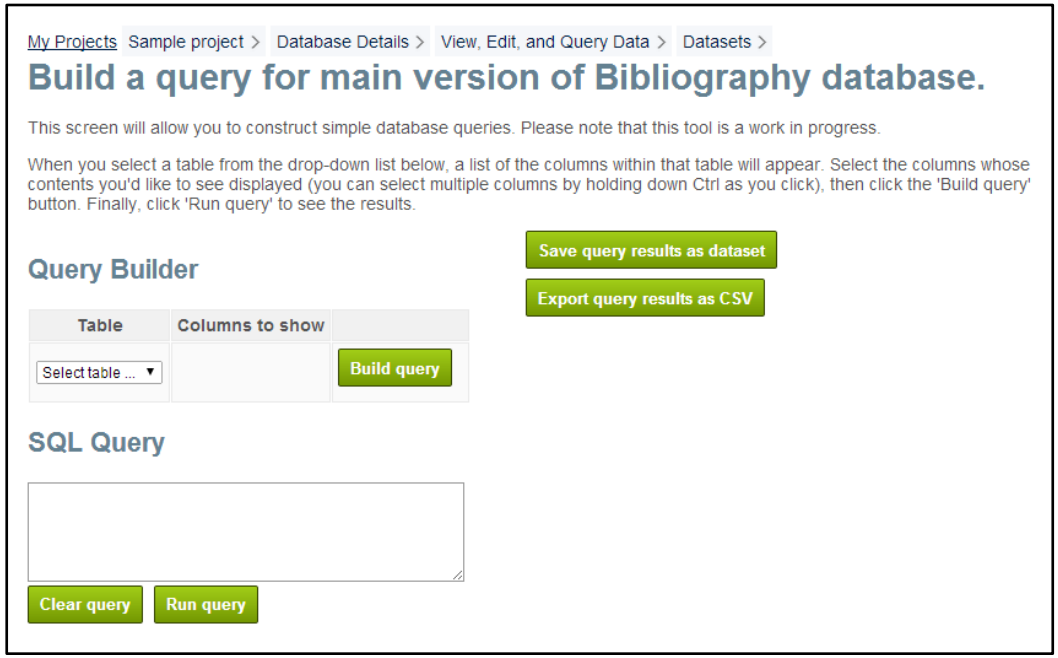
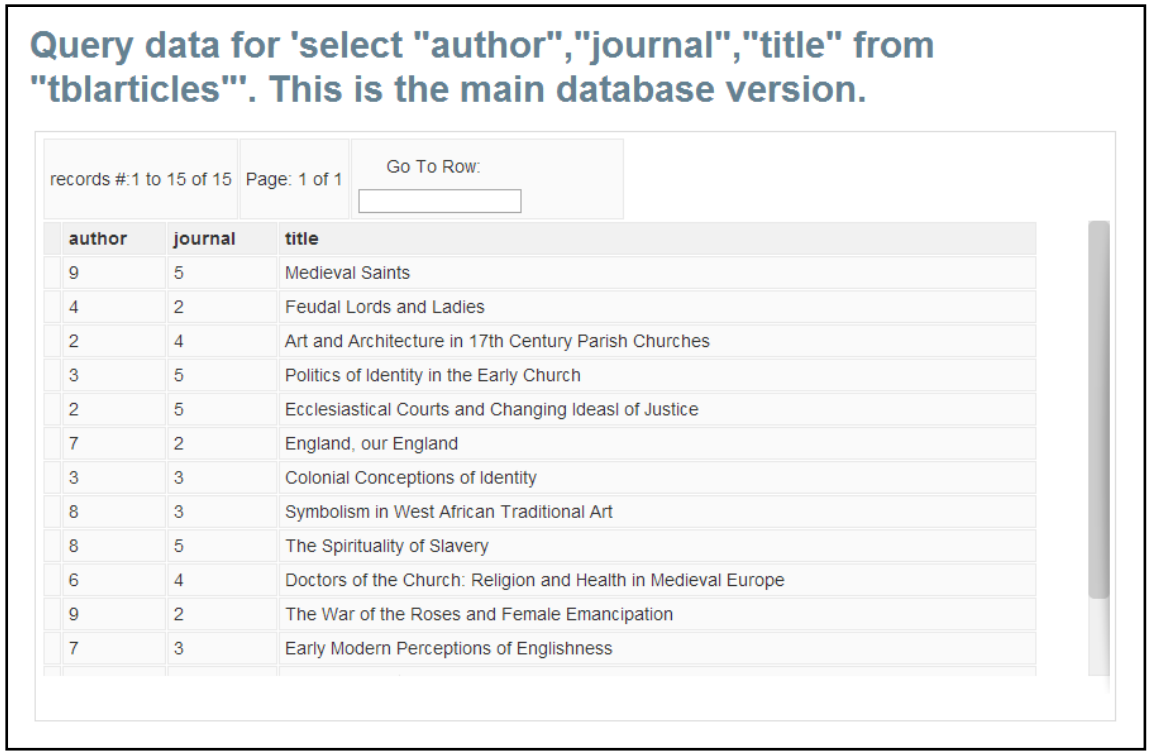
ORDS Query Builder

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



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 Ideasl 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

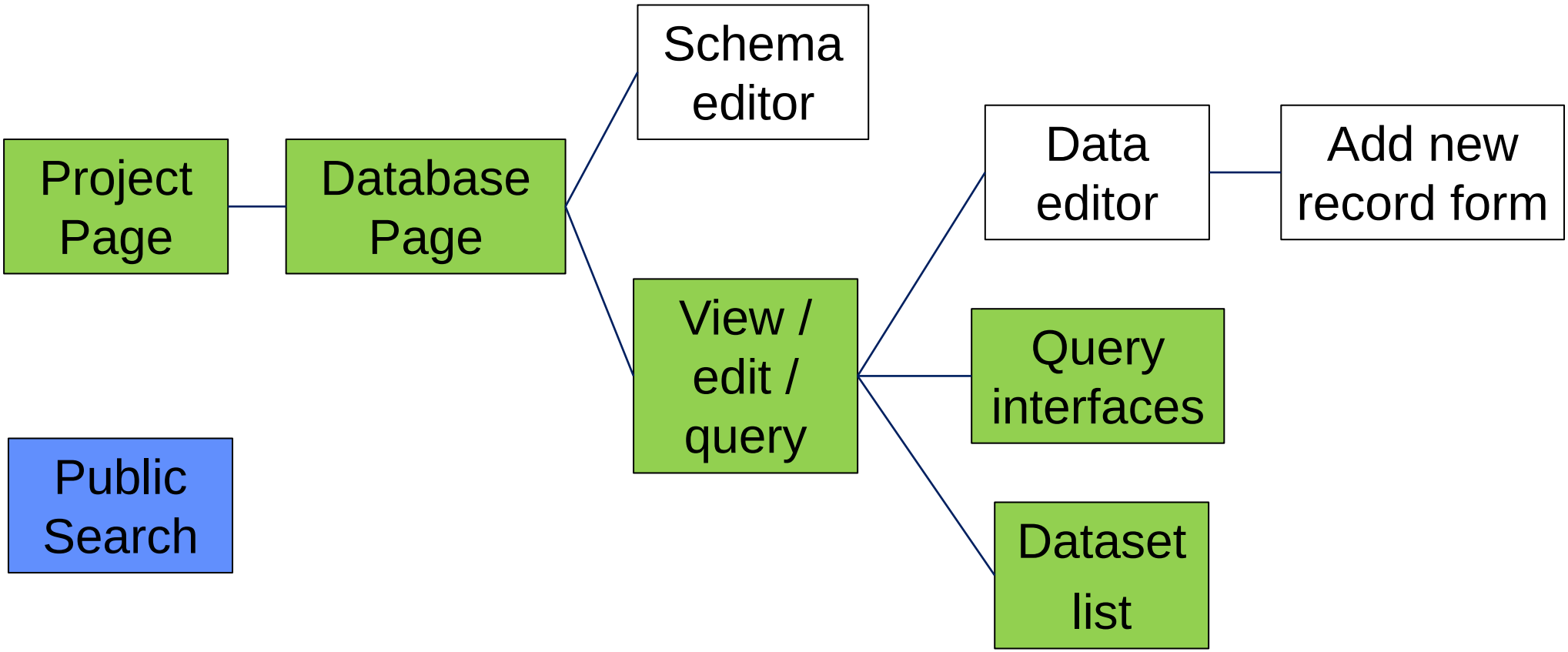
SQL queries

- 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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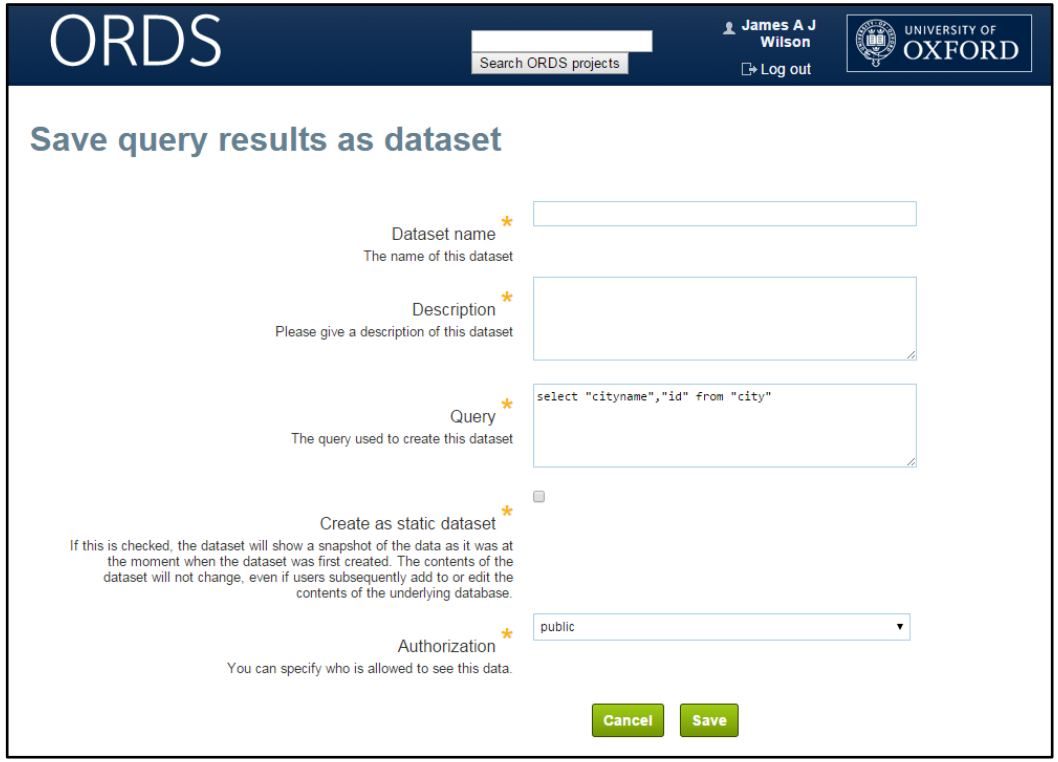
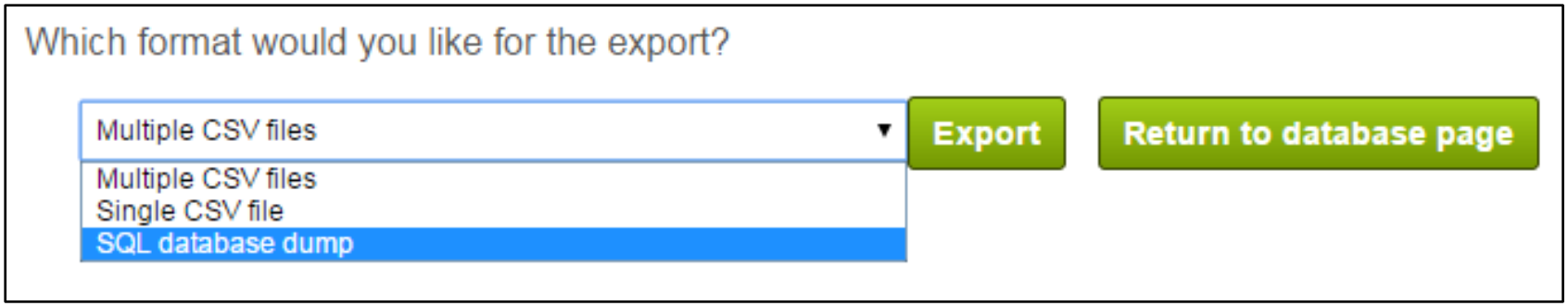
Saving and sharing datasets

- 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



Exporting Entire Databases



- 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