

User Guide

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Introduction

Ss2db is a software that allows to convert spreadsheets organized like relational databases into sqlite relational databases. The aim of this software is to enhance data fairness by providing structured, standardized, rich metadata in a more reusable format that facilitates understanding of researchers' work.

Spreadsheet template

Different choices were made to both ensure that the relational database requirements are met and also to guarantee the value of metadata produced. For this, a template for the spreadsheet has been defined. Requirements are split in two categories, those relative to relational databases and those imposed to enhance metadata's value. A third part provides guidelines that are not mandatory but should be considered to produce more valuable documents and take full advantage of the software.

Relational database requirements

Additionally of the requirements listed in the Relational Database Good Sense Guidelines document, some rules must be respected to not break sqlite requirements.

Table and field names must contain only letters or underscores (no parenthesis, no dot, no space, no special character, no number).

Parenthesis in table and field name break SQL statements because they are used to encapsulate fields in table and composite key's fields.

Dot break Relational DataBase Management System because to access a table in a database one syntax is the following: "*SELECT database_name.table_name*" so having a dot in database or table or column name generates error.

Metadata requirements

Foreign keys must have the same name as the keys to which they are associated.

This rule is not required by the relational database system but has been added to ensure consistency of metadata. Indeed, when metadata is produced each distinct field name is

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added to the metadata dictionary, this rule prevents having two different names associated with the same definition.

Advices

Choose a naming convention and follow it.

If you decide to call a table in CamelCase like TreeSpecies do not use different underscore naming conventions for other tables like Experiment_methods.

Be descriptive and try to not use abbreviations.

Try to choose names that are descriptive both for tables and columns so that anyone could understand what they contain immediately. For example, use customer for customer table instead of cust ; use customer_id instead of id.

Be careful not to use reserved words for your table and column name.

[Microsoft Support - SQL reserved words](#)

Using those words will cause errors when querying the database.

Metadata tables

Several tables called metadata tables are added to sqlite to provide rich and standardized metadata.

Below list of metadata tables added with their purposes detailed.

- **metadata_term:** this table contains Datacite schema metadata terms. All mandatory terms from the DataCite must be completed by researchers while optional and recommended ones can be filled or not. This is used both to produce the documentation and enhance machine readability of metadata.
- **ddict_table:** this table contains description of tables in the database. Descriptions are provided by the researcher to enhance future reuse and understanding.
- **ddict_attribute:** this table contains description of attributes present in the database. Descriptions are provided by the researcher to enhance future reuse and understanding.
- **table_info:** this table is like an information_schema, it contains information about table names, their attributes and attributes constraints, that is if there are or not Primary or Foreign keys and potential reference table (parent table for Foreign keys). It is up to the researcher to fill those fields based on the schema he defined for the database.
- **metadata_extra:** this table allows adding an abstract and a description for the dataset that will appear in the documentation automatically generated by the software.

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Software Use

Command Line Interface

```
usage: Ss2db_v0_5_0-alpha [-h] -i INPUT -o OUTPUT [--ow [OVERWRITE]] [--filename [FILENAME]] [--from-sqlite [FROM_SQLITE]]

Welcome into Ss2db. Let's convert spreadsheets into sqlite databases

optional arguments:
  -h, --help            show this help message and exit
  -i INPUT, --input INPUT
                        Absolute path to the spreadsheet to convert
  -o OUTPUT, --output OUTPUT
                        Absolute path to the output directory of your choice
  --ow [OVERWRITE], --overwrite [OVERWRITE]
                        default False, set on True to overwrite previously generated output
  --filename [FILENAME]
                        basename of output, default behavior will be using spreadsheet name
  --from-sqlite [FROM_SQLITE]
                        default False, set on True if you provide path to sqlite file and want a PDF creation from it only
```

Mandatory arguments to provide are:

- **input** corresponds to the file path to the spreadsheet to convert.
example:
/Users/username/my_folder/spreadsheet_name.xlsx on UNIX
C:\username\my_folder\spreadsheet_name.xlsx on windows
- **output** corresponds to the folder where generated documents will be stored. The folder must exist, it will not be created.
example:
/Users/username/my_existing_output_folder/
Example of minimal command:
`Ss2db -i /Users/username/my_folder/spreadsheet_name.xlsx -o /Users/username/my_existing_output_folder/`

Optional arguments:

- **overwrite** allows to overwrite existing outputs having the name of the spreadsheet or having the same name as the specified `--filename`.
example:
`Ss2db -i /Users/username/my_folder/spreadsheet_name.xlsx -o /Users/username/my_existing_output_folder/`
- **filename** allows to choose output name's.
example:
`Ss2db -i Users/username/my_folder/spreadsheet_name.xlsx -o /Users/username/my_existing_output_folder/ --filename test`
This command will create `test.sqlite`, `test.svg` and `test.pdf` instead of `spreadsheet_name.sqlite`, etc.
- **from-sqlite** option should be used carefully, it allows to generate the pdf documentation directly from a sqlite file that still needs to respect the original template.
example:
`Ss2db -i Users/username/my_folder/my_database.sqlite -o /Users/username/my_existing_output_folder/ --filename test --from-sqlite True`
This will generate a `test.pdf` documentation from `my_database.sqlite`.
!!WARNING!!: the **overwrite** flag even when set on false does not prevent from

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overwriting previous output in pdf format. This means that if pdf documentation has already been generated with its entity relation diagram and you run the command with “from-sqlite” set on true, even having -ow set on False, the already existing pdf will be overwritten.

Graphical User Interface mode

screenshots incoming