

HRE – DATABASE - OVERVIEW

Revision history

2018-08-27	Rod Thompson	Original draft
2018-09-05	Don Ferguson	Expanded explanation of T_204 tab; aligned example SQL with real format for T101
2018-10-16	Rod Thompson	Addition to DATA or USER tab Extra note regarding Excel sheet designators
2018-11-08	Rod Thompson	Add to the TRANS (T_204) section of DESIGN DOCUMENTATION

SCOPE

The HRE database serves multiple purposes.

1. It records the data input by the user, allowing its use for onscreen display and report creation
2. It includes 'preload' data which establishes the basic operations of the application, providing design flexibility enabling adaption to a variety of historical data uses.

DATABASE DETAIL

HRE is designed to use an H2 database.

This is an open source Java SQL database, usable in embedded and server modes.

Further detail is available at: <http://www.h2database.com/html/main.html>

DATABASE DESIGN DOCUMENTATION

Documentation of the H2 Database created for HRE is recorded in three ways.

1. A WORD document file, one for each database Table; detailing the use of each field in the Table. The filename structure links it to the equivalent spreadsheet.

Filename example: D_101-5 Schema Defns.docx

The '-5' (above) is the version number of the document.

Each document includes a 'Revision History' recording changes.

2. An EXCEL spreadsheet file, one for each database Table:

A designator is inserted in the table name, adding (X) after the version number, where X is one of I, M or U.

I – Initialization (very few of these)

M - Mixture - has preloaded records but can be extended by the user as custom definitions are added

U - User - this is User data only.

These files include the following sheets:

- LOG tab: records changes to the spreadsheet
- SQL tab: e.g, using the T_101 table data

```
CREATE TABLE SCHEMA_DEFNS (  
    SCHEMA_DEFN_PID INTEGER NOT NULL,  
    SET_RPID INTEGER NOT NULL,  
    CL_COMMIT_RPID INTEGER NOT NULL,  
    VERSION_NAME VARCHAR(160) NOT NULL,  
    MAIN_PCKG_RPID INTEGER NOT NULL,  
    REMINDER_KEY SMALLINT NOT NULL,  
    DISPLAY_ORDER SMALLINT,  
    IS_DEFAULT BOOLEAN,  
    SHOW BOOLEAN
```

-);
- **FIELDS (T_107) tab**
This tab records the preload data for the Table in accordance with the description in the T_107 Vnn (I) Field Defns file.
 - **DATA or USER tab**
This sheet records data that will be pre-loaded into the table created in the H2 database, required where this data is used to establish initial or normal operating conditions for the software.
As use of the HRE application continues, and involves storing of data in the database, additional records will be created in respective H2 tables
 - **TRANS (T_204) tab exists for one (or both) of the following reasons:**
 - another table referenced by a TABLE_RPID is a table that can have a meaningful set of ABBREV, LABEL and DESCRIPTION that can be translated
 - the schema needs a language-based link to different tables dependent on the language selected.

Specifications for GUI modules that interface (through a BR module) to a database table include large numbers of labels. These may be used for headings or button labels, etc. Each require translation for the application to be used in other languages. For convenience, such labels are added to the TRANS (T_204) sheet of the applicable table. Each is attributed a Language Code, and is identified as either System or User data.

When the database pre-loading exercise is undertaken, a copy of the data in the TRANS(T_204) sheet for each table will be copied to the DATA sheet of the T_204 Label Trans spreadsheet. Translations can then be developed.

User entered data from a GUI module (e.g., a Viewpoint name) will be added to the T_204 table, DATA sheet by the software

- Equivalent tabs exist to document each table's Commit Log version (which uses the same table number + 500:
CL_SQL
CL_FIELDS (T_107)
CL_DATA (or USER)

Filename example: T_101 V10b (I) Schema Defns.xlsx
The 'V10b' is the version number of the document.

3. A DDL file (see below).

DDL

This term is commonly used to refer to the set of instructions (in a text file format) that are used to create the H2 database.

Each DDL prepared is tracked via filename and date.

Filename example: DDL Table List v9e (2018-07-22).txt

DDL is an acronym, meaning either Data Definition Language or Data Description Language. It has a syntax especially suited to defining database structures.

The DDL file includes a complete listing of the SQL statements copied from the Table definitions included in each of the Excel spreadsheets. Additionally, it includes instructions provided to set the

PRIMARY KEY for each table. Variations to the DDL may result from the use of different tools used to create the H2 database.

The present structure adopted for HRE uses the following format:

Top line --<ScriptOptions statementTerminator="";"/>
Table SQL One for each table
 Top line, identifying the table (e.g. -- Table 101)
 Followed by the SQL set from the Table spreadsheet

Example: -- Table 101
CREATE TABLE SCHEMA_DEFNS (
SCHEMA_DEFN_PID INTEGER NOT NULL,
SET_RPID INTEGER NOT NULL,
CL_COMMIT_RPID INTEGER NOT NULL,
VERSION_NAME VARCHAR(160) NOT NULL,
MAIN_PCKG_RPID INTEGER NOT NULL,
REMINDER_KEY SMALLINT,
DISPLAY_ORDER SMALLINT,
IS_DEFAULT BOOLEAN,
SHOW BOOLEAN
);

The --- (double dash) at the beginning of the table number indicates a comment.

These are entered in Table Number order.

Primary Key Instructions

One for each table>

Example: ALTER TABLE SCHEMA_DEFNS ADD PRIMARY KEY (SCHEMA_DEFN_PID);

These are added to the text file below the table entries, in alphabetic order.

For convenience and checking purposes, a spreadsheet has been used to compile the complete set of Primary Key instructions. Example: V10 DDL Primary Key list (2018-08-26).xlsx.

This contains three sheets:

- Original a list (for each table number) of the table name, in the required instruction format. In table number order.
- Sorted the above list, sorted alphabetically
- Template documenting the template of each primary key instruction

This list is added to the foot of the DDL document.

To check the DDL syntax, it is copied into the H2 browser based console operation and run. Errors are identified, enabling attention.