Team Hydrogen Design Document

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Team Hydrogen

The goal of this project is to implement a (very) rudimentary database engine that is based on a simplified file-per-table variation on the SQLite file format, which we call DavisBase.
Summary of Supported Commands :

Our database engine supports the following DDL, DML, and DQL commands.
All commands are terminated by a semicolon (;).

SUPPORTED COMMANDS

All commands below are case insensitive

SHOW TABLES;
Display the names of all tables.

CREATE TABLE <table_name> (<column_name> <data_type> <not_null> <unique>);
Creates a table with the given columns.

DROP TABLE <table_name>;
Remove table data (i.e. all records) and its schema.

UPDATE <table_name> SET <column_name> = <value> [WHERE <condition>];
Modify records data whose optional <condition>
is <column_name> = <value>.

INSERT INTO <table_name> (<column_list>) VALUES (<values_list>);
Inserts a new record into the table with the given values for the given columns.

SELECT <column_list> FROM <table_name> [WHERE <condition>];
Display table records whose optional <condition>
is <column_name> = <value>.

DELETE FROM TABLE <table_name> [WHERE <condition>];
Delete table records whose optional <condition>
is <column_name> = <value>.

CREATE INDEX ON <table_name> (col_name)
Creates Index on the given col_name (only single column supported)

VERSION;
Display the program version.

HELP;
Display this help information.

EXIT;
Exit the program.

DATA TYPES

Date Type Code	Data Type Name	C	Description
0x00	NULL	0	Data type is a NULL (requires no bytes in the record body)
0x01	TINYINT	1	Data type is an 8-bit twos-complement integer.
0x02	SMALLINT	2	Data type is a big-endian 16-bit twos-complement integer.
0x03	INT	4	Data type is a big-endian 32-bit twos-complement integer.
0x04	BIGINT, LONG	8	Data type is a big-endian 64-bit twos-complement integer.
0x05	FLOAT	4	Data type is a big-endian IEEE 754-2008 32-bit floating point number.
0x06	DOUBLE	8	Data type is a big-endian IEEE 754-2008 64-bit floating point number.
0x08	YEAR	1	Data type is an 8-bit twos-complement integer. Both positive and negative numbers are supported in the range -128 to 127. This indicates a year with respect to the epoch year 2000.
0x09	TIME	4	Data type is a big-endian 32-bit twos-complement integer. Indicates time of day in milliseconds since midnight, i.e. “millis”. Note that only values of 0-86400000 (0x00-0x05265c00) are valid.
0x0A	DATETIME	8	Data type is a big-endian unsigned LONG integer that represents the specified number of milliseconds since the standard base time known as "the epoch”. It should display as a formatted string string: YYYY-MM-DD_hh:mm:ss, e.g. `2016-03-23_13:52:23`.
0x0B	DATE	8	A datetime whose time component is 00:00:00, but does not display.
0x0C + *n*	TEXT	0+	Value is data type of “ASCII string of length *n* ”. C-style string null terminators are not used or needed. A value of 0x0C is the empty string and would have no bytes in the record body.