Subject: HDF5 Table reading / writing for IDL
Posted by markb77 on Tue, 14 May 2013 12:52:55 GMT
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Hi,

I have written a library of IDL functions for reading, writing, and modifying HDF5 tables. I essentially ported the source code from HDF5 itself, making use of the low level H5* functions which are already implemented in IDL. The new library mimics the functionality of most of the existing HDF5 Table API (H5TB).

The library is called wmb_lib, and it is available at GitHub, here:

www.github.com/superchromix

The main hdf5 table reading/writing functions in the library are:

Table creation:
wmb_h5tb_make_table.pro

Storage:
wmb_h5tb_append_records.pro
wmb_h5tb_write_records.pro
wmb_h5tb_write_fields_index.pro
wmb_h5tb_write_fields_name.pro

Retrieval:
wmb_h5tb_read_table.pro
wmb_h5tb_read_records.pro
wmb_h5tb_read_fields_index.pro
wmb_h5tb_read_fields_name.pro

Query:
wmb_h5tb_get_table_info.pro
wmb_h5tb_get_field_info.pro

Modification:
wmb_h5tb_insert_records.pro
wmb_h5tb_add_records_from.pro
wmb_h5tb_combine_tables.pro

Documentation and examples of how to use these functions can be found in:
wmb_h5tb_examples.pro

Also, the HDF5 table functions are documented online here:
http://www.hdfgroup.org/HDF5/Tutor/h5table.html

http://www.hdfgroup.org/HDF5/doc/HL/RM_H5TB.html

Since the HDF5 Table API is based on HDF5 version 1.8, I was surprised that it was possible to create this library at all using IDL's HDF5 interface functions (based on HDF5 version 1.6). There are some limitations, however.

Limitations:
(as compared with the HDF5 Tables API in HDF5 version 1.8.10)

1. This library does not support fill values - if you want the table automatically filled with something other than zeros you have to write the fill data explicitly.

2. The library does not have a way to write to only one column of a multi-column table. The wmb_h5tb_write_fields_* functions mimic this functionality, but they do so by loading the full sized records from the table, modifying the data in memory, and writing the full records back to the table.

3. The size of a table cannot be reduced - i.e. records cannot be deleted from a table.

4. Once a table is created, fields (columns) cannot be added or removed.

At present it is not possible to view HDF5 Tables in the IDL HDF5 data browser (H5_BROWSER). For viewing / editing tables therefore you can use the free HDFView tool available here:
http://www.hdfgroup.org/hdf-java-html/hdfview/

I hope that this is useful and I would welcome comments, improvements, bugfixes etc!

cheers,
Mark Bates
