

Weekly Meeting

August 2 2017

C++ wrapper for python

- Have gotten the library to work successfully in python – with all of the packing capabilities and error handling in place
- I need to make a few (somewhat) minor changes to the code for it to work in python
 - `std::vector<STATUSCODE> statuscode` → `std::vector<int> statuscode`
 - Python does not like a enum as a vector type. This make no difference
 - `unixtime` is of type `time_t` in CDMS DAQ. Python does not accept this variable time
 - Still need to figure out how to handle this variable
 - clamp functions – the formula used in python `((1<<size) - 1)` does not work in python because it extends past 32 bits. I had to rewrite this so it doesn't extend past 32 bits.
 - Previously input to packing functions were `&emptybuffer` (reference to pointer), in order to iterate the pointer through. Python does not like this, so I will change to `*emptybuffer`
 - I asked Ben, and he said he was fine with making this change.
 - Pointer can still be iterated by user with `get_eventsize(...)`

New Task

- Create a data format for DMC specific data
- Similar to that of the DAQ data format

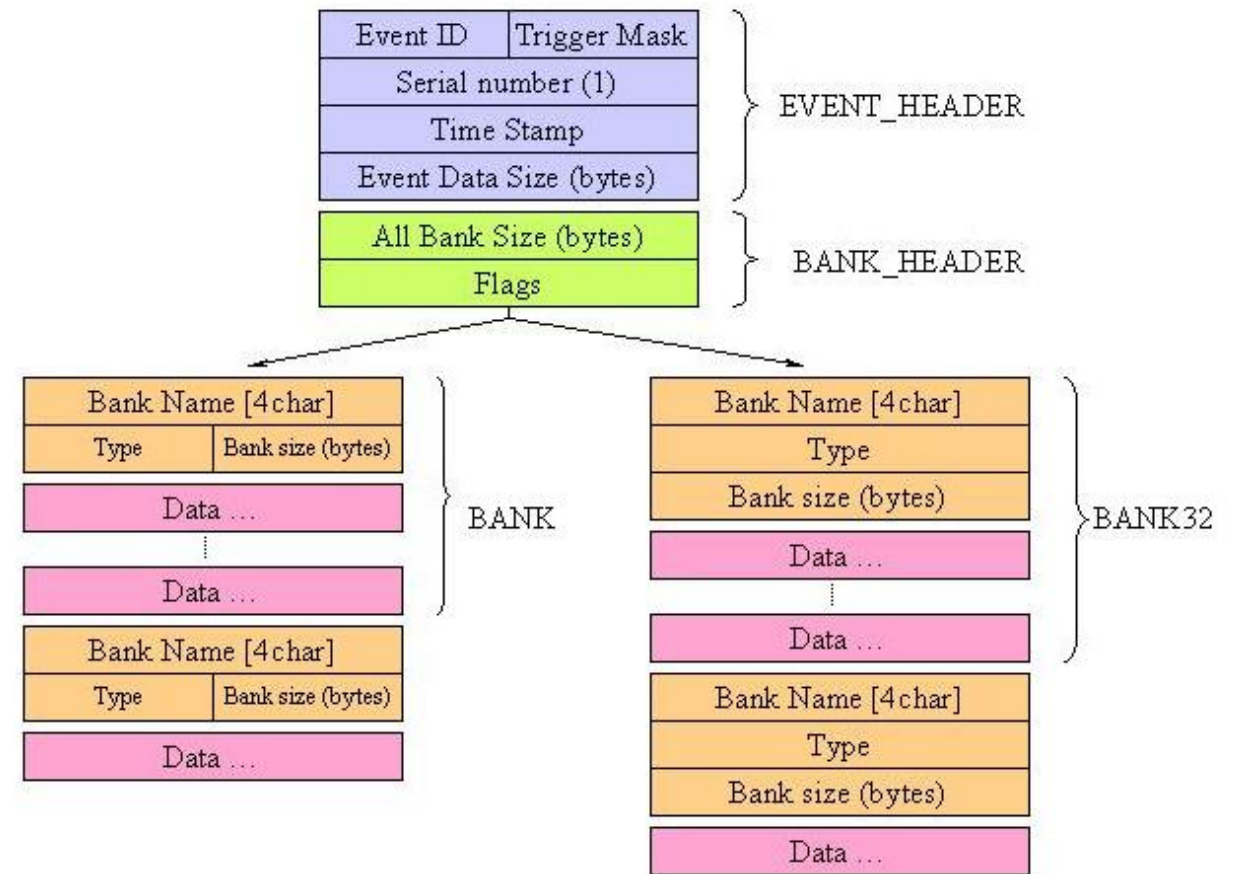
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DATA FORMAT VERSION 1: Created: 05. Feb. '16, Last updated: 30. Jun. '16

bits	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0		
x N triggers	0x9		format version=1																		total n triggers read													
	0x5		event size in bytes																															
	trigger ID																																	
	trigger type																																	
	global timestamp low																																	
	global timestamp high																																	
	0x7		n primitives in event																															
	length of entry (=0x6 block) in bytes																																	
	x N prims	0x6																trig status				pileup				detector id				index				
		UT at which rt was issued																																
																time fraction rt was run (100nsec/count)																		
		time of trigger in sec														time rt was run in sec																		
		mask pairs														time fraction of trigger (100nsec/count)																		
		trigger word														peak amplitude																		
		0x3		n detectors in event																														
		0x2		detector type																		detector id				index								
	x N dets	DCRC1 serial number							DCRC1 version							DCRC0 serial number							DCRC0 version											
		0x4		readout status														series time in sec																
																series time fraction (100nsec/count)																		
		0x0		n channels to follow																														
		x N channels	0x1		pre-trigger offset (22 bits)																		ch num				ch type							
			n pre-pulse samples																															
			n on-pulse samples																															
			n post-pulse samples																															
			sampling rate high in kHz														sampling rate low in kHz																	
			samp1														samp0																	
			samp3														samp2																	
																	:																	
	sampN														sampN-1																			
	0x8		total n preceding triggers																															

New Task

- Create a data format for DMC specific data
- Similar to that of the DAQ data format
- This data will go into one of these banks



New Task

- Need to look at root files and/or CSV files to see what data is stored
 - Not sure where CSV files are outputted or where they are used
- To start I am assuming the same data will be stored in MIDAS banks

Outcome from DMC meeting

- DMC group is not too upset by the prospect of a MIDAS dependency
- Linking to MIDAS repository better than copy and pasting code
- Looming question: where does this code exist?
 - In python code, take data as it exists in python
 - After python code, use CVS files as input, and outputs MIDAS banks
 - Creates separation of DMC from IO Libraries
 - File storage problem?

At TRIUMF next week

- Spend a significant time with Ben
- I want to look into the MIDAS IO repository
 - How can we use it
 - What is the functionality
 - Is it a standalone repository? Do we need to rest of MIDAS?
- Will be close to MIDAS group

Collaboration Meeting

- Amy suggested I give a talk about IO Library
- I have emailed Tali Figueroa, but haven't gotten a reply