Files:

* *writer.c* is the writer to write *n* # of integers to the data file *myfile*
* *reader.c* is the reader to read *n* # of integers from the data file *myfile*
* *runrun* is the shell script to run the writer/reader with certain # of iterations

Compile:

*cc -o reader reader.c*

*cc -o writer writer.c*

Usage:

*./writer -n #*

*./reader -n #*

where # is the number of integers to write/read by the writer/reader

Notes:

* Use the option *-n #* to specify the # of integers for writer/reader and *n* should be the same for writer/reader.
* The writer will *flock* the data file *myfile* and release the lock later after 2 writes of *n* integers.
* The reader will re-try opening the data file *myfile* when encountering open error or an unexpected file size.
* The reader will read *n* # of integers from the data file *myfile* for *n* times.
* When the reader encounters verification errors, it will re-read the data file for at most 20 times to see if consistent data is read.
* The reader will compare the sentinel values of the block (the initial integer and the ending integer) to see if the block has consistent data.
* The writer/reader test programs are work in progress and still need to be tidied up/fine tuned.

*runrun*:

* Modify *count* to specify the *n* option to the writer and reader
* Modify *iteration* to specify the # of times to run the writer/reader

Preliminary test runs:

* Configuration:
  + 10 iterations
  + *n* used:

1. 1024 integers (4,096 bytes)
2. 4096 integers (16,384 byte)
3. 10240 integers (40,960 bytes)
4. 20480 integers (81,920 bytes)
5. 51200 integers (204,800 bytes)
6. 102400 integers (409,600 bytes)
7. 1024000 integers (4,096,000 bytes)

* Excel sheet 1: result from *jam*
  + Consistent data can be obtained within 20 re-tries
  + The # of re-tries increases as *n* gets bigger
  + For larger *n* reads, there are reads that fail to get consistent data even with 20 re-tries
  + For (g) i.e. *n* = 1024000 integers, consistent data CANNOT be obtained with 20 re-tries for all iterations.
* Excel sheet 2: result from *ostrich*
  + For *n* from (a) to (f), consistent data can be obtained with 1 re-try
  + For (g) i.e. *n* = 1024000 integers, the # of 1 re-try is higher than results for (a) to (f)
* Excel sheet 3: result from *duck*
  + For *n* from (a) to (f), consistent data can be obtained on the first read without any re-try
  + For (g) i.e. *n* = 1024000 integers, consistent data can be obtained within 2 re-tries
* Excel sheet 4: result from *freedom*
  + Consistent data can be obtained on the first read WITHOUT any re-try for all test runs.
* Excel sheet 5: result from running the writer/reader tests from *ostrich* in the directory */mnt/hdf5*, which is nfs mounted from *jam*.
  + Consistent data can be obtained with 1 re-try, but the # of 1 re-tries is greater than that of ostrich (see excel sheet 2)
  + For (g) i.e. *n* = 1024000 integers—I encountered some problems in the test runs that need more investigation later