Fig 2.2

<<Abstract>>
Binner

commSize int
commRank int

Binner()
sendTo(const int rank,void * const keys,void * const vals,const int keySize,const int valSize)
sendTo(const int rank,void * const keys,void * const vals,int * const keySizes,int * const valSizes,const int numKeys,const int numVals)
init()
finalize()
run()
finish()
getFinalDataSize(int & keySize, int & valSize)
getFinalDataSize(int & keySize, int & valSize, int & numKeys, int & numVals)
getFinalData(void * keyStorage, void * valStorage)
getFinalData(void * keyStorage, void * valStorage, int * keySizes, int * valSizes)

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Chunk

Chunk()
finishLoading()
updateQueuePosition(const int newPosition)
getMemoryRequirementsOnGPU()
stageAsync(void * const gpuStorage, cudacpp::Stream * const memcpyStream)
finalizeAsync()

<<interface>>
MapReduceJob

binner Binner*
combiner Combiner*
mapper Mapper*
partitioner Partitioner*
partialReducer PartialReducer*
sorter Sorter*
reducer Reducer*
commRank int
commSize int
deviceNum int

setDevice()
map()
sort()
reduce()
collectTimings()
MapReduceJob(int & argc, char **& argv)
addInput(Chunk * chunk)
execute()
get*
set*

FixedSizeBinner

addDataLock oscpp::Mutex
needsToBeSent std::list<FixedSizeBinnerIOData * >
pendingIO std::list<FixedSizeBinnerIOData * >
innerLoopDone
copySendData
zeroCount int
zeroReqs std::vector<MPI_Request>
singleKeySize
singleValSize
finalKeys
finalVals
finalKeySize
finalValSize
finalKeySpace
finalValSpace

pollUnsent()
pollPending()
pollSends()
poll(int & finishedWorkers,bool * const workerDone,bool * const recvingCount,int * const
counts,int ** keyRecv,int ** valRecv,MPI_Request * recvReqs)
grow(const int size, const int finalSize, int & finalSpace, char *& finals)
FixedSizeBinner(const int pSingleKeySize, const int pSingleValSize, const bool pCopySendData =
false)
sendTo(const int rank,void * const keys,void * const vals,const int keySize,const int valSize)
init()
finalize()
run()
finish()
getFinalDataSize(int & keySize, int & valSize)
getFinalDataSize(int & keySize, int & valSize, int & numKeys, int & numVals)
getFinalData(void * keyStorage, void * valStorage)
getFinalData(void * keyStorage, void * valStorage, int * keySizes, int * valSizes)

FixedSizeChunk

fileName
elemSize
numElems
maxReadSize
loaded
whenToReadAhead
reader oscpp::AsyncFileReader *
readReqs vector<oscpp::AsyncIORequest * >
data

loadData(const bool async)
waitForLoad()
FixedSizeChunk(const std::string & pFileName,const int pElemSize,const int pNumElems,const int
pMaxReadSize = MAX_READ_SIZE,const int readAheadPos = QUEUE_AHEAD_POSITION)
finishLoading()
updateQueuePosition(const int newPosition)
getMemoryRequirementsOnGPU()
stageAsync(void * const gpuStorage, cudacpp::Stream * const memcpyStream)
finalizeAsync()
getElementCount()
getData()

PreloadedFixedSizedChunk

data
elemSize
numElems
userData

PreLoadedFixedSizeChunk(void * const pData,const int pElemSize,const int pNumElems)
finishLoading()
updateQueuePosition(const int newPosition)
getMemoryRequirementsOnGPU()
stageAsync(void * const gpuStorage, cudacpp::Stream * const memcpyStream)
finalizeAsync()
setUserData(void * const pUserData)
getElementCount()
getData()
getUserData()

UserSpecifiedChunk

-memberName

-memberName

finalizeAsync()

-memberName

-memberName