**DGEMM Matrix Multiplication**

**Copy zip file from email to test directory, unzip it.**

abc@djy:~/craydgemm$ unzip craydgemm.zip

Archive: craydgemm.zip

inflating: craydgemm/MatMulCompilePrep.sh

inflating: craydgemm/Matrix\_Multiplication\_GPU\_DOUBLE\_GIOPS\_PINNED\_TWO.cu

extracting: craydgemm/mmdblgpu00.loop.sh

extracting: craydgemm/mmdblgpu01.loop.sh

extracting: craydgemm/mmdblgpu02.loop.sh

extracting: craydgemm/mmdblgpu03.loop.sh

extracting: craydgemm/mmdblgpu04.loop.sh

extracting: craydgemm/mmdblgpu05.loop.sh

extracting: craydgemm/mmdblgpu06.loop.sh

extracting: craydgemm/mmdblgpu07.loop.sh

inflating: craydgemm/rocmsmi.bw.sh

inflating: craydgemm/rocmsmi.sh

inflating: craydgemm/test4.sh

inflating: craydgemm/test8.sh

abc@djy:~/craydgemm$

**Use chmod to mark MatMulCompilePrep.sh executable, it will hipify, compile, then execute mmdblgpugiops 10 times varying the matrix size from 1,000 doubles to 10,000 doubles as a warm up. This script also marks the \*.sh files executable.**

abc@djy:~/craydgemm$ cd craydgemm

abc@djy:~/craydgemm/craydgemm$ chmod +x ./MatMulCompilePrep.sh

abc@djy:~/craydgemm/craydgemm$ ./MatMulCompilePrep.sh

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MULTIPLYING TWO SQUARE MATRICES OF SIZE 1000 FLOATS

------ Matrix Dimensions ------

dims a,b = 1000 , 1000

info: allocate host mem ( 22.89 MB)

info: device mem ( 22.89 MB)

Filling in 2D arrays a and b

Filling Complete

------- CUDA Parameters -------

NUM\_THREADS( 16, 16, 0)

blks( 63, 63, 0)

TOTAL DBLOPS 2000000000.000000

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Calling CPU Matrix Multiply

CPU took 0.000000 seconds as computed by gettimeofday() function

CPU Matrix multiplication completed. Time to launch GPU kernel.

GPU took 0.371508 seconds as computed by CudaEvent function

GPU-GDBLOPS/second 5.383459

Experiment Done.

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MULTIPLYING TWO SQUARE MATRICES OF SIZE 2000 FLOATS

**There are eight scripts provided for exercising eight gpus (0, 1, 2, 3, 4, 5, 6, 7), each looks like the following with a matrix size of 25000 doubles.**

abc@djy:~/craydgemm/craydgemm$ cat mmdblgpu00.loop.sh

export HIP\_VISIBLE\_DEVICES=0

while true

do

date

./mmdblgpugiops 25000

done

abc@djy:~/craydgemm/craydgemm$

**Start an eight GPU stress test by executing ./test8**

abc@djy:~/craydgemm/craydgemm$ ./test8.sh

Wed Sep 25 07:37:43 PDT 2019

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Wed Sep 25 07:37:43 PDT 2019

abc@djy:~/craydgemm/craydgemm$

Wed Sep 25 07:37:43 PDT 2019

Wed Sep 25 07:37:43 PDT 2019

Wed Sep 25 07:37:43 PDT 2019

Wed Sep 25 07:37:43 PDT 2019

Wed Sep 25 07:37:43 PDT 2019

------ Matrix Dimensions ------

dims a,b = 25000 , 25000

info: allocate host mem (14305.11 MB)

------ Matrix Dimensions ------

dims a,b = 25000 , 25000

info: allocate host mem (14305.11 MB)

------ Matrix Dimensions ------

dims a,b = 25000 , 25000

info: allocate host mem (14305.11 MB)

------ Matrix Dimensions ------

dims a,b = 25000 , 25000

info: allocate host mem (14305.11 MB)

------ Matrix Dimensions ------

dims a,b = 25000 , 25000

info: allocate host mem (14305.11 MB)

------ Matrix Dimensions ------

dims a,b = 25000 , 25000

info: allocate host mem (14305.11 MB)

------ Matrix Dimensions ------

dims a,b = 25000 , 25000

info: allocate host mem (14305.11 MB)

------ Matrix Dimensions ------

dims a,b = 25000 , 25000

info: allocate host mem (14305.11 MB)

**Start a rocmsmi.sh loop in another window to view GPU activity**

abc@djy:~/craydgemm/craydgemm$ ./rocmsmi.sh

Wed Sep 25 07:37:25 PDT 2019

========================ROCm System Management Interface========================

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GPU Temp AvgPwr SCLK MCLK Fan Perf PwrCap VRAM% GPU%

1 41.0c N/A 1606Mhz 1000Mhz 0.0% auto 225.0W 88% 100%

2 41.0c N/A 1606Mhz 1000Mhz 16.86% auto 225.0W 88% 100%

3 38.0c N/A 1725Mhz 1000Mhz 5.88% auto 225.0W 88% 100%

4 38.0c N/A 1725Mhz 1000Mhz 11.76% auto 225.0W 88% 100%

5 41.0c N/A 1725Mhz 1000Mhz 4.71% auto 225.0W 88% 100%

6 42.0c N/A 1725Mhz 1000Mhz 0.0% auto 225.0W 88% 100%

7 37.0c N/A 1606Mhz 1000Mhz 17.65% auto 225.0W 88% 100%

8 42.0c N/A 1606Mhz 1000Mhz 18.82% auto 225.0W 88% 100%

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==============================End of ROCm SMI Log ==============================

**Use kill -9 -1 to kill the MatMul processes and all the tasks you can for your userid. This will also kill any terminal sessions for your userid.**