Assignment 1 Report

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Part A:

Sample Result:

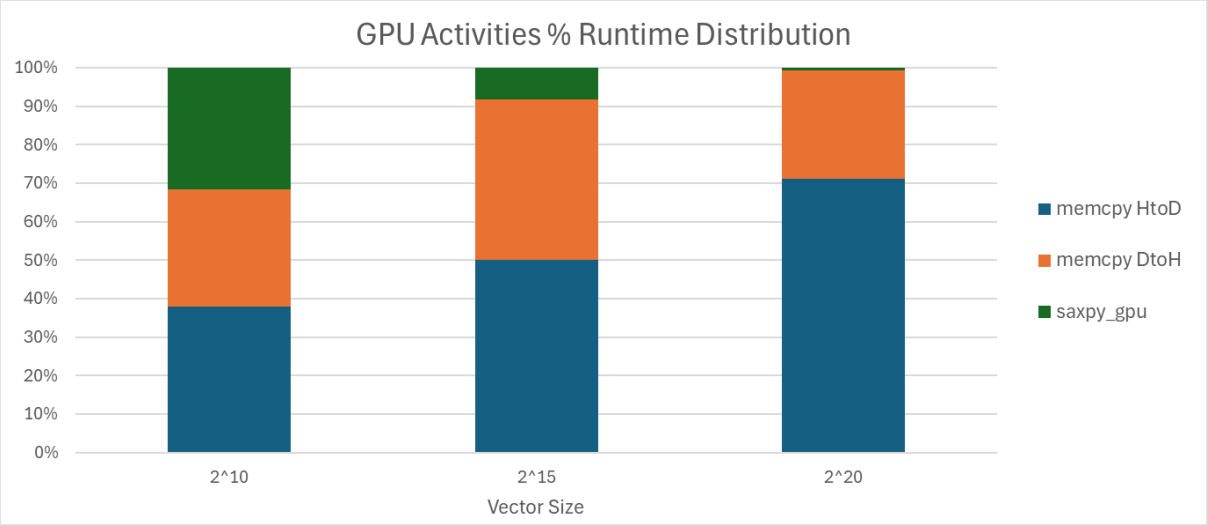
Vector Size = 2^15

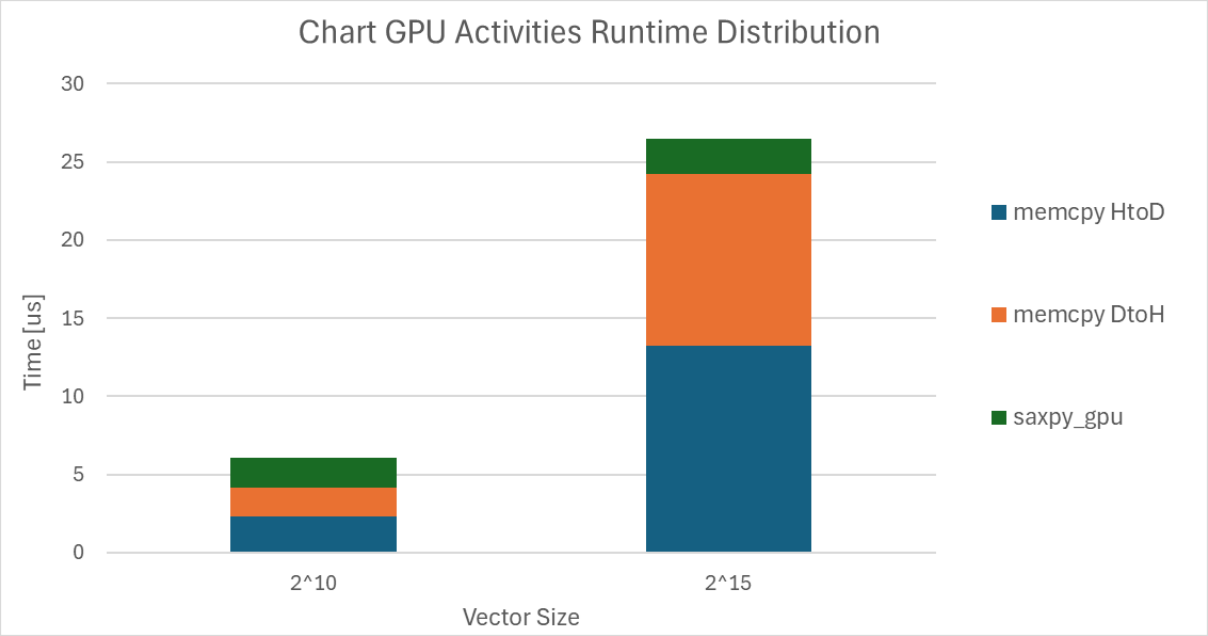
```
Adding vectors :
scale = 1.103875
x = { 2.1304, 4.6147, 0.5014, 0.7105, 0.8863,  ... }
y = { 0.9808, 0.4364, 0.7591, 1.0393, 0.2333,  ... }

After SAXPY, y = { 3.3325, 5.5304, 1.3126, 1.8237, 1.2116,  ... }
Found 0 / 32768 errors
```

GPU Activities:

Vector Size	memcpy HtoD [in us]	memcpy DtoH [in us]	saxpy_gpu [in us]
2^10	2.304	1.856	1.92
2^15	13.231	11.008	2.208
2^20	1538.7	608.03	16.736

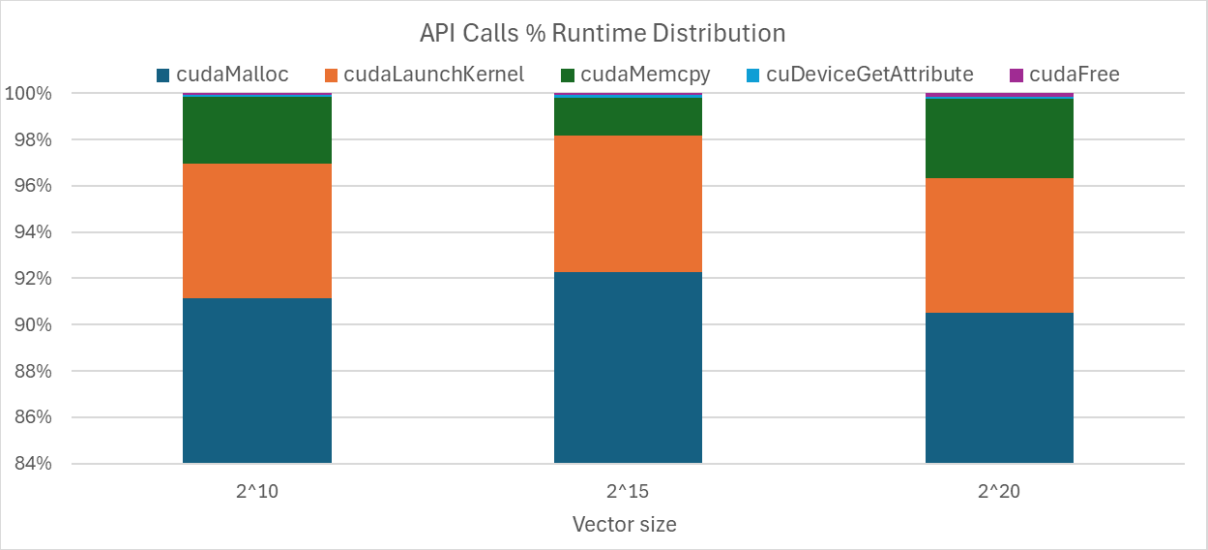


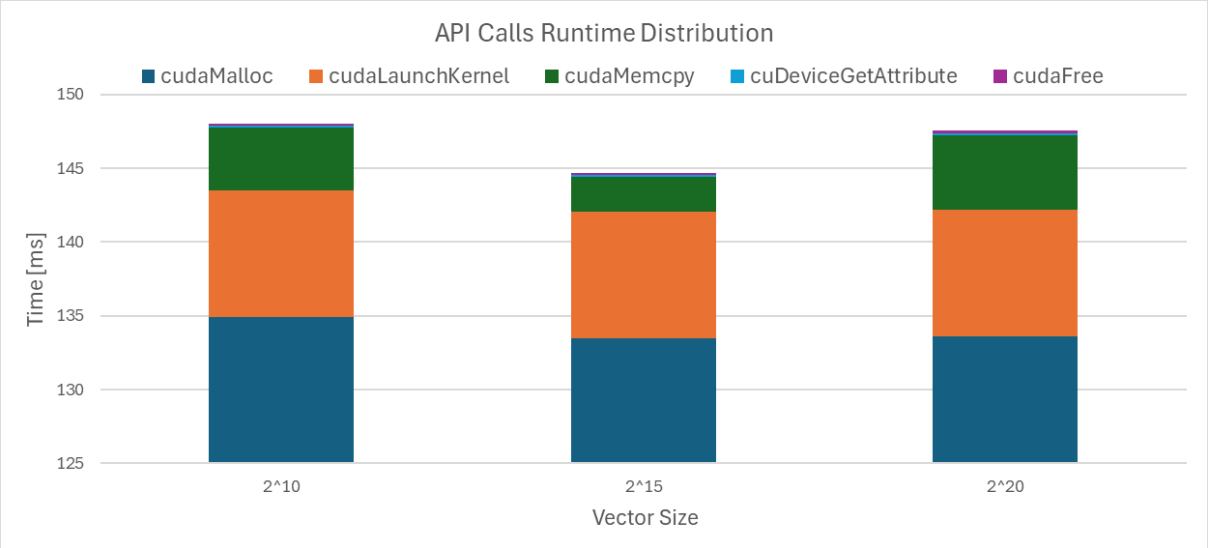


Runtime bar chart not shown for vector size 2^20 since the runtime of that is too large that it would make the other two bars insignificant.

API Calls:

Vector Size	**cudaMalloc [ms]**	**cudaLaunchKernel [ms]**	**cudaMemcpy [ms]**	**cuDeviceGetAttribute [ms]**	**cudaFree [ms]**
2^10	134.94	8.5888	4.226	0.1469	0.11863
2^15	133.49	8.5492	2.3687	0.14305	0.12494
2^20	133.61	8.5761	5.0456	0.1316	0.21428





Part B:

Sample output:

For thread count of 1024 and 1e6 samples per thread

```
Estimated Pi = 3.14159
It took 0.172255 seconds.
```

Varying Generated thread count:

This did not affect the accuracy of pi estimated.

Varying sample points:

Results for 1e6 and 1e4 did not vary much, however for 100 samples, the accuracy started decreasing slightly. For 100 samples, the third decimal was now incorrect occasionally while for the other two, it was accurate for 3 decimals.