ME766 HW3

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1. Results -

Time taken for N=100 - 0.078464 ms
Time taken for N=1000 - 21.762 ms
Time taken for N=10000 - 11785.6 ms

GPU used -

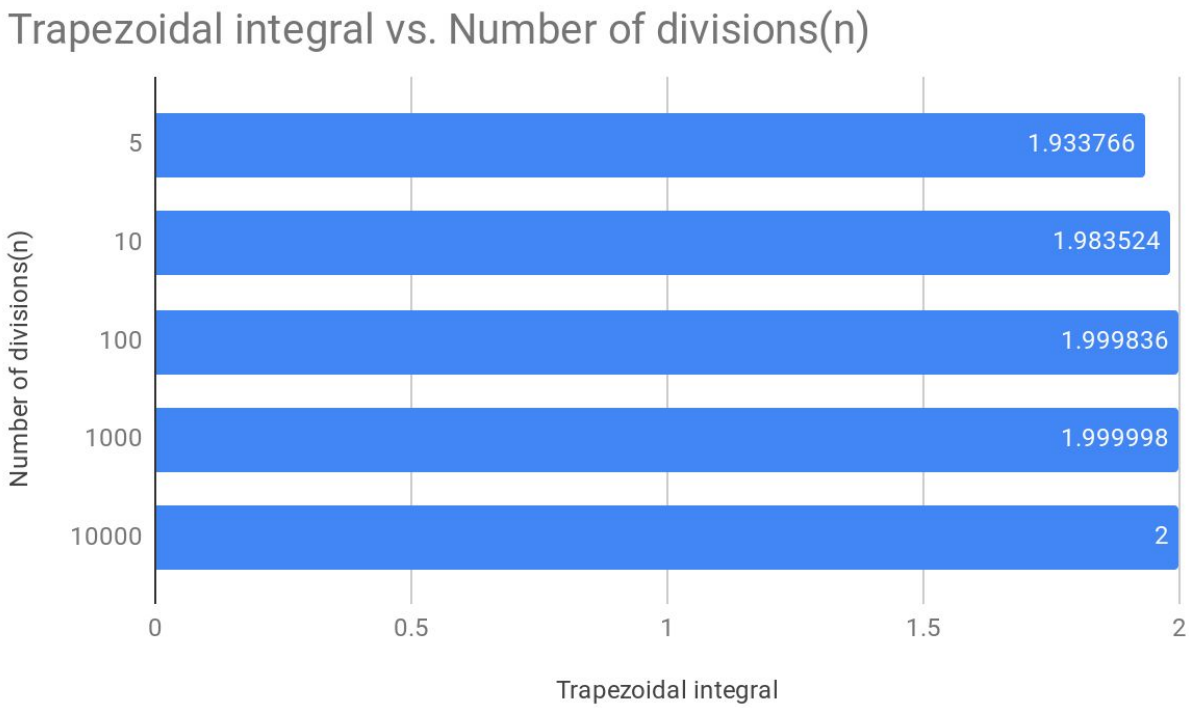
description: VGA compatible controller
product: NVIDIA Corporation
vendor: NVIDIA Corporation
physical id: 0
bus info: pci@0000:01:00.0
version: a1
width: 64 bits
clock: 33MHz
capabilities: pm msi pciexpress vga_controller bus_master cap_list rom
configuration: driver=nvidia latency=0
resources: irq:142 memory:de000000-deffffff memory:c0000000-cfffffff memory:d0000000-d1ffffff ioport:e000(size=128) memory:c0000-dffff

2. a) trap_cuda executable has been provided. The respective code is in trap_cuda.cu

   b) mont_cuda executable has been provided. The respective code is in mont_cuda.cu

3. **a) We compute the integral using trapezoidal method for 5 different divisions. The results are as shown below -**

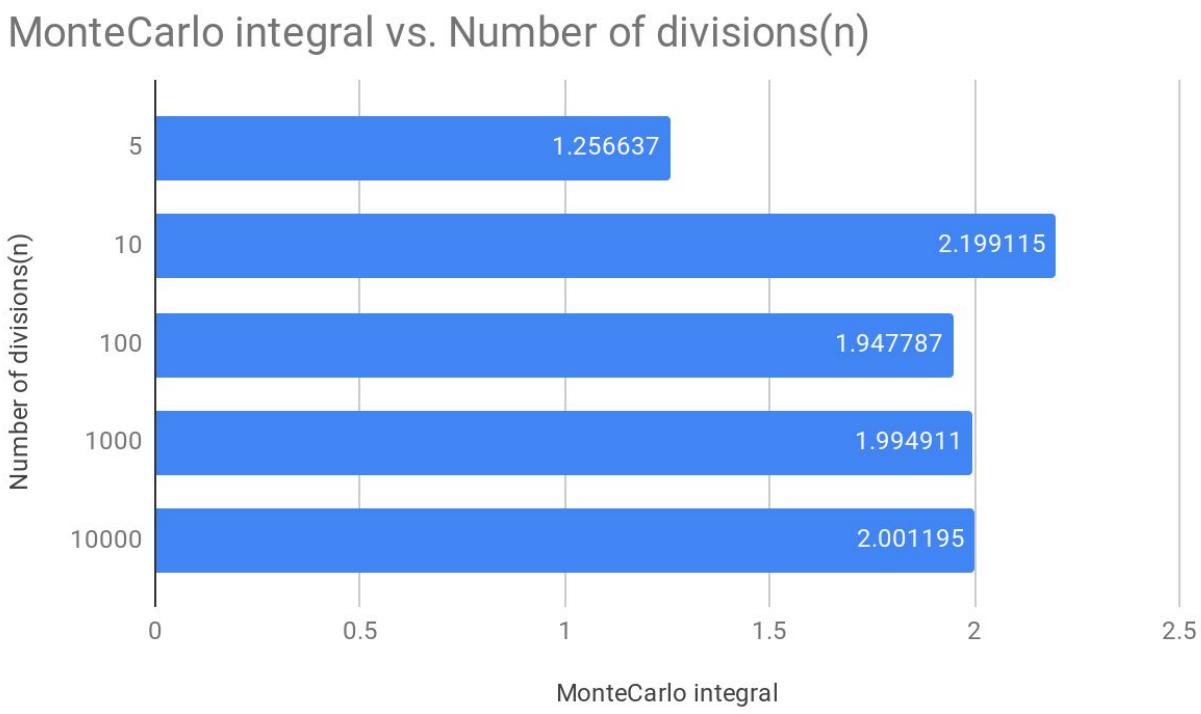
Number of divisions(n)	Trapezoidal integral	Analytical Value	Percentage Error
5	1.933766	2	-3.3117
10	1.983524	2	-0.8238
100	1.999836	2	-0.0082
1000	1.999998	2	-0.0001
10000	2	2	0



The results obtained are according to expectations. The trapezoidal integral approaches the analytical value 2 from left hand side and the percentage error is decreasing with increasing value of n.

b) We compute the integral using Monte Carlo method for 5 different number of points. The results are as shown below -

Number of points(n)	MonteCarlo integral	Analytical Value	Percentage Error
5	1.256637	2	-37.16815
10	2.199115	2	9.95575
100	1.947787	2	-2.61065
1000	1.994911	2	-0.25445
10000	2.001195	2	0.05975



The results obtained are according to expectations. The Monte Carlo integral oscillates about the analytical value 2 with increasing n but the absolute value of percentage error keeps on decreasing with increasing n.

4. **Average Time taken by trap_cuda for n=10000 divisions - 0.050368 ms**

Average Time taken by mont_cuda for n = 10000 points - 3.740672 ms