CS 575

Project #4

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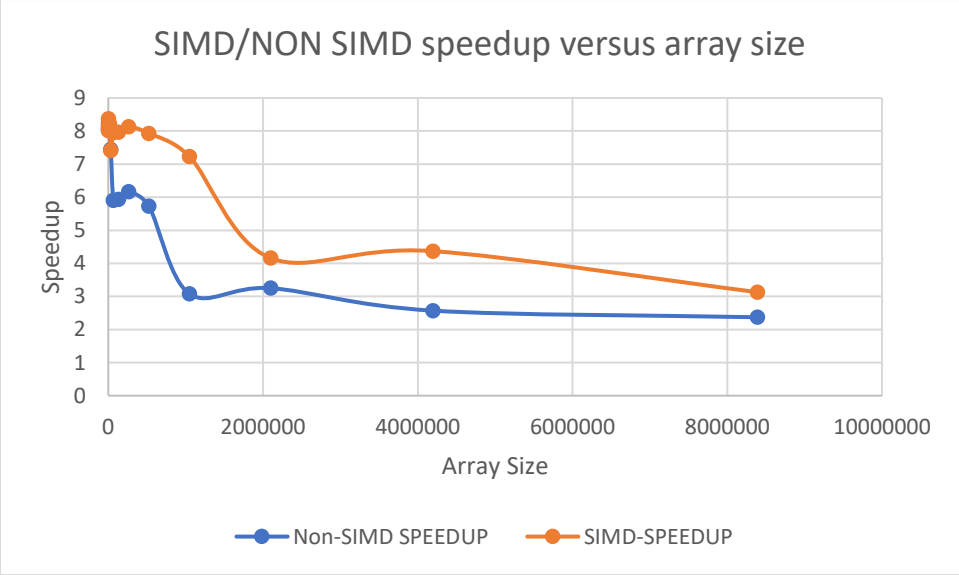
1. **What machine you ran this on?**

   Flip(flip.engr.oregonstate.edu)

2. **Show the table of performances for each array size and the corresponding speedups.**

ARRAYSIZE	SIMD MM/s	Non-SIMD MM/s	Non-SIMD SPEEDUP	Non-SIMD ADDMULTS	SIMD-ADDMULTS	SIMD-SPEEDUP
1024	220.94	1818.88	8.23	223.52	1790.74	8.01
2048	167.25	1342.1	8.02	172.59	1406.47	8.15
4096	221.07	1788.91	8.09	225.23	1885.55	8.37
8192	221.18	1793.66	8.11	225.82	1849.67	8.19
16384	221.33	1771.8	8.01	225.92	1858.56	8.23
32768	124.06	923.63	7.44	135.74	1005.48	7.41
65536	221.1	1304.18	5.9	225.75	1797.16	7.96
131072	220.12	1306	5.93	225.77	1798.79	7.97
262144	215.7	1331.42	6.17	222.28	1807.33	8.13
524288	218.61	1253.45	5.73	224.4	1779.96	7.93
1048576	212.54	654.93	3.08	221.84	1603.31	7.23
2097152	213.77	695.33	3.25	219.53	913.12	4.16
4194304	213.19	548.19	2.57	218.82	957.07	4.37
8388608	213.52	506.84	2.37	219.4	685.8	3.13

3. **Show the graph of SIMD/non-SIMD speedup versus array size (either one graph with two curves, or two graphs each with one curve)**



4. **What patterns are you seeing in the speedups?**

   For both Non-SIMD & SIMD, we can see the speedup peaks at 8.23 & 8.1 respectively when the array size is small. When the array size increases a sudden drop in performance is observed. The Non-SIMD speedup drops comparatively faster to 5.9 than the SIMD speedup at 4.16.

5. **Are they consistent across a variety of array sizes?**

   No, they are not consistent because we can see as the number of array size crosses 32768(as seen in the table), the non-SIMD speedup drops faster than the SIMD speedup.

   Hence, it is not consistent.

6. **Why or why not, do you think?**

   When the array size is small, SIMD peaks out at 8.1, but due to the array size increase, possibility of cache missing also increases. Hence as a result of which the speedup decreases.