Project #4

Name: Yinchao Zhu
E-mail: zhuyin@oregonstate.edu

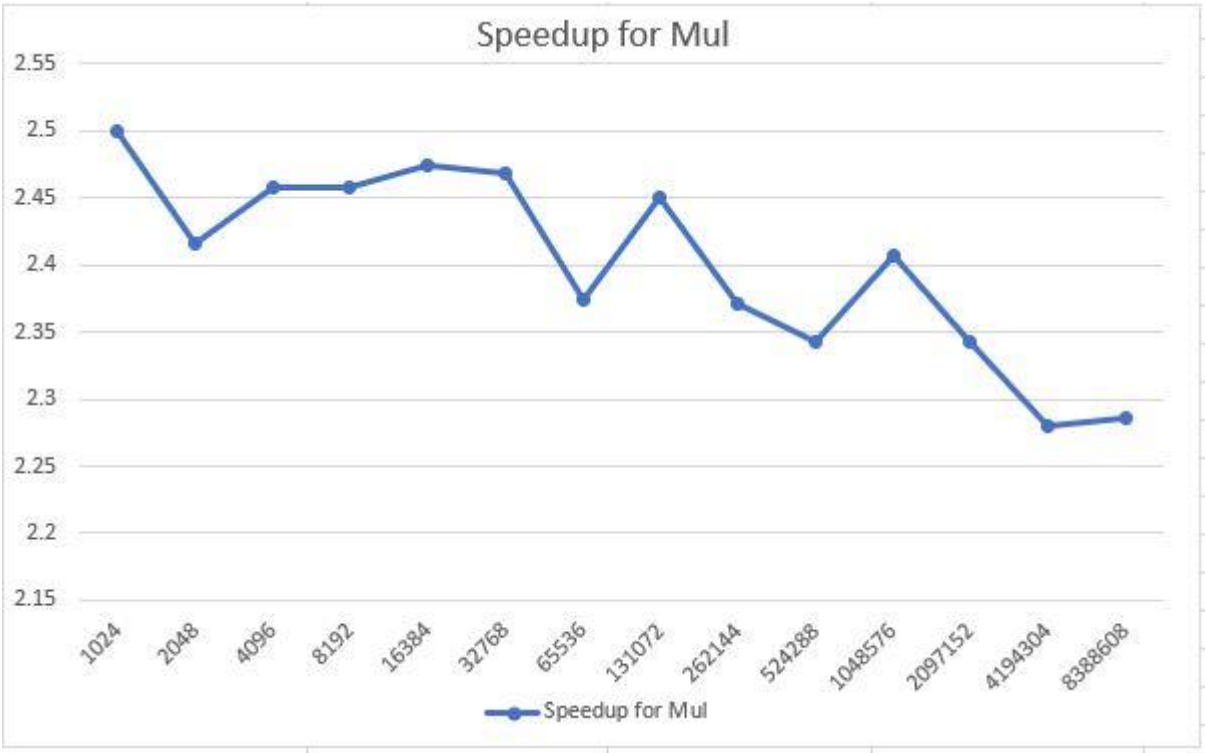
1. The machine

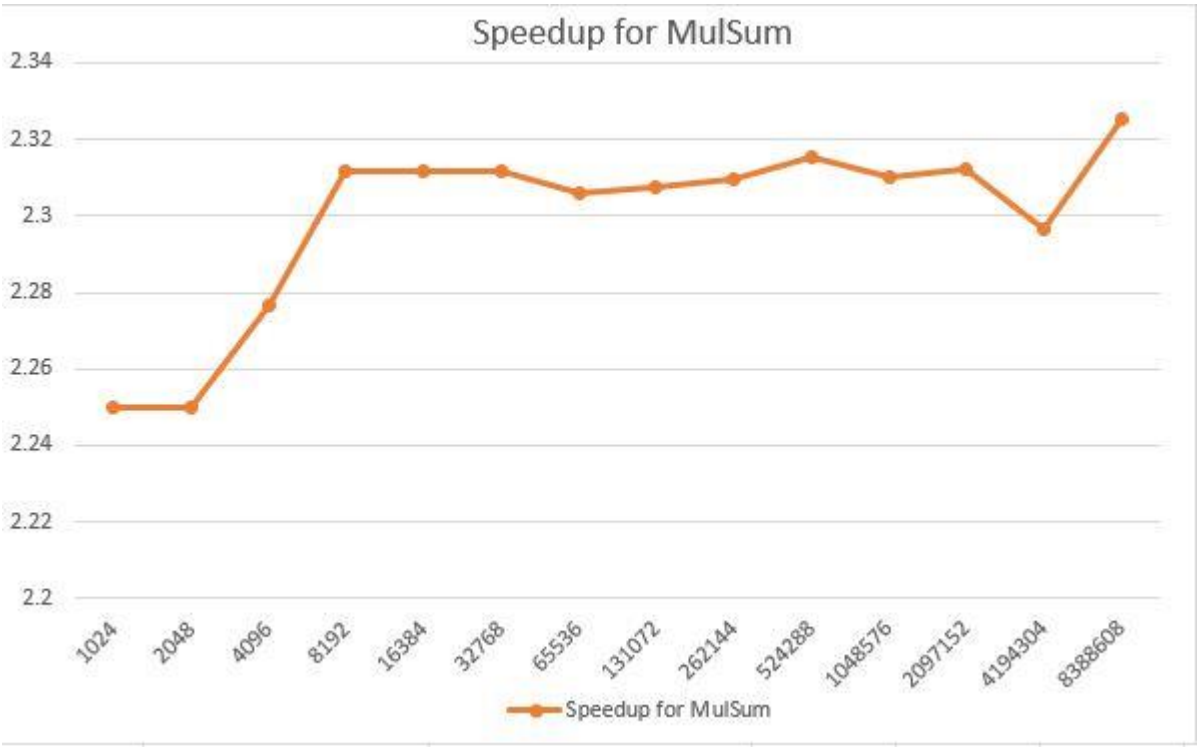
I run my own computer with a CPU Ryzen7 3700X

2. The table

Array_size	SimdMul	Non-SimdMul	SimdMulSum	Non-SimdMulSum	Speedup for Mul	Speedup for MulSum
1024	1706.669193	682.667263	853.333303	379.259437	2.500002	2.249999
2048	1706.666606	706.206835	853.333303	379.25931	2.416667	2.25
4096	1706.6679	694.237353	871.489471	382.803752	2.458335	2.276596
8192	1706.667253	694.237353	880.860227	381.023256	2.458334	2.311828
16384	1724.631656	697.191523	880.860227	381.023256	2.473684	2.311828
32768	1724.631656	698.678057	880.860227	381.023256	2.468421	2.311828
65536	1693.436692	713.122964	898.984907	389.863178	2.374677	2.305898
131072	1749.959924	714.288834	905.193368	392.313677	2.449933	2.30732
262144	1681.488141	709.072222	895.300548	387.672287	2.371392	2.309426
524288	1673.437595	714.191527	900.993298	389.168646	2.343122	2.315174
1048576	1704.724431	708.018906	896.06563	387.930448	2.407739	2.309862
2097152	1649.352734	704.214909	897.254097	388.023757	2.342116	2.312369
4194304	1586.587986	695.792041	887.02633	386.212282	2.280262	2.296733
8388608	1574.37934	688.657675	881.202584	378.974836	2.286157	2.325227

3. The graphs





4. **What patterns are you seeing in the speedups?**
   I think these speedup are seems to be like the same, all are range from 2.25-2.5. Not significantly changed.

5. **Are they consistent across a variety of array sizes?**
   Yes, though there are slightly differences when we have different array size, but they are pretty close.

6. **Why or why not, do you think?**
   I think that the speedup should be a constant as from our course slides have a similar trend. However, my data seems smaller than we seen on class like about 4.0. I guess maybe there are the 8M is a little bit small, I tried to use 100M for test and get a speedup about 3.1.