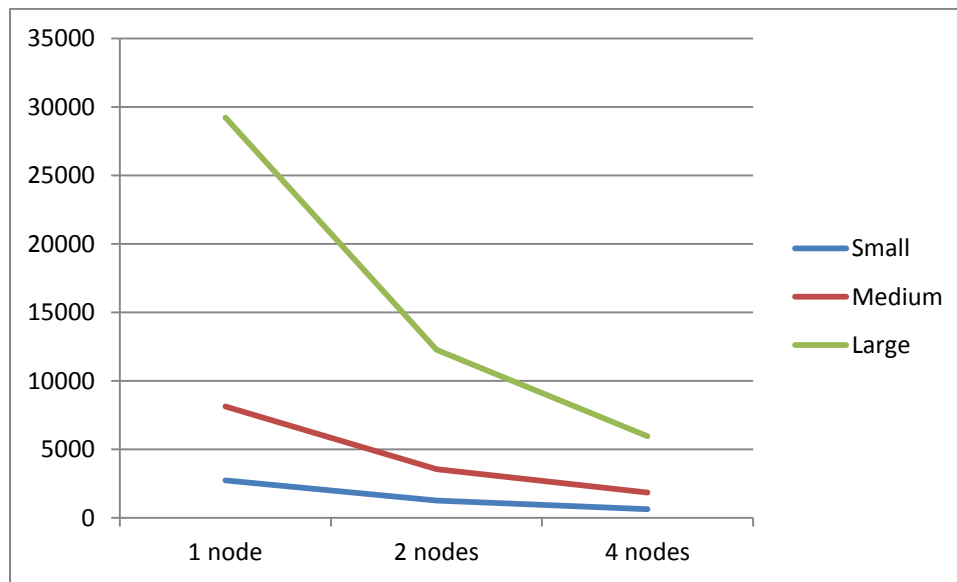


**CSE 587**  
**Data Intensive Computing**  
**Homework 1**

**Volatility of stocks in NASDAQ**

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## Speed-up Graph for Execution times:



Execution times in seconds\*:

Problem Size	1 node	2 nodes	4 nodes
Small	2729	1271	631
Medium	8137	3562	1860
Large	29224	12275	5950

For small dataset, the execution time for one node (12 cores) takes around 45 minutes, which decreases to less than half its value (21 minutes) when run on 2 nodes (~200% betterment). The program completes its execution the fastest on 4 nodes taking a little more than 10 minutes (~400% faster than single node execution). Execution times are in the ratio 4.2: 2: 1.

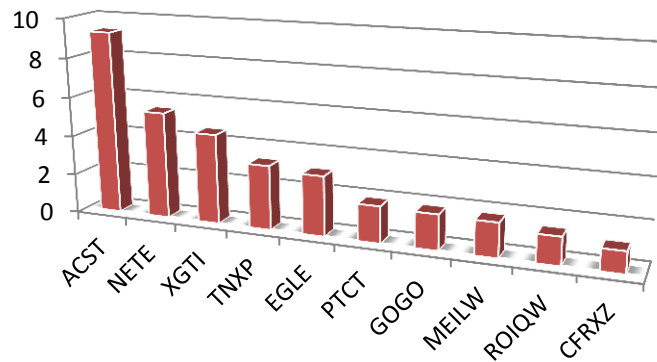
For considerably larger dataset, the difference in execution time is clearer and sharp. For one node, the execution takes more than 2 hours, which decreases to half its value (1 hour) when run on 2 nodes. The program completes its execution the fastest on 4 nodes taking a little over 30 minutes. The execution times for 1, 2, and 4 nodes are in the ratio 4.5: 2: 1.

For huge datasets, execution times for 1, 2, and 4 nodes can be extrapolated to be in a similar ratio of 5: 2: 1.

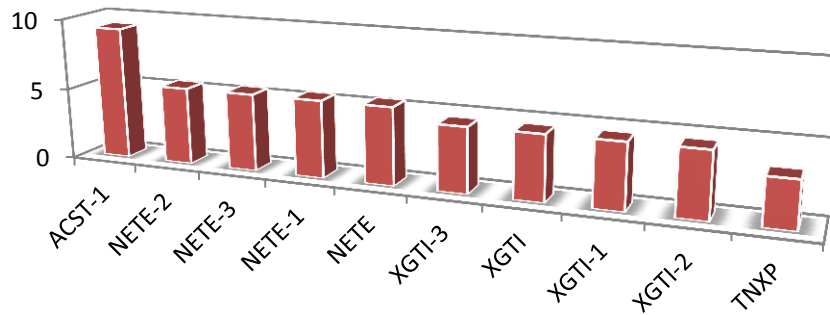
\* Some execution times are predicted extrapolations from the previous data considering the ratio of execution times for smaller datasets.

## Stocks with maximum volatility indices

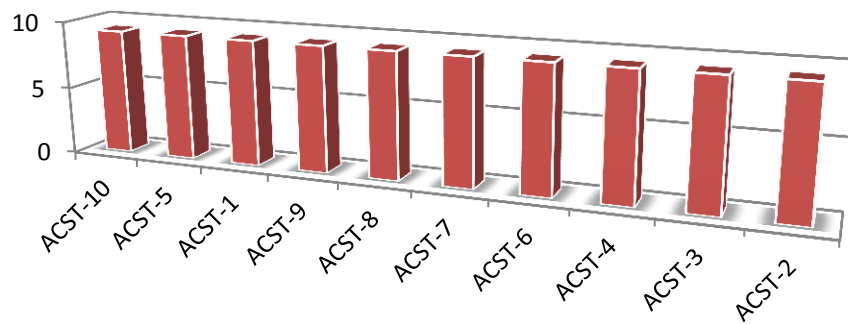
**Small dataset**



**Medium dataset**



**Large dataset**



## Top 10 Stocks with max Volatility Index

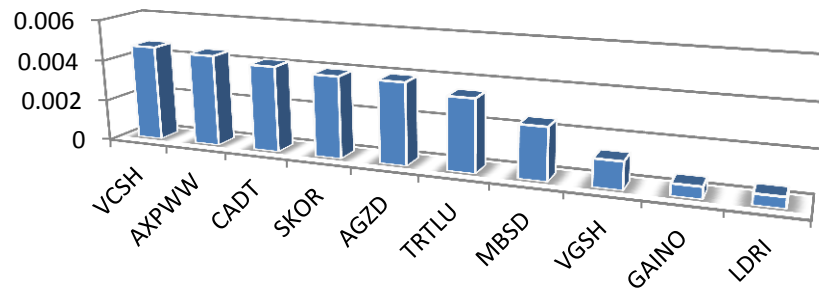
Small dataset		Medium dataset		Large dataset	
ACST	9.271589762	ACST-1	9.271589762	ACST-10	9.271589762
NETE	5.396253962	NETE-2	5.396253962	ACST-5	9.271589762
XGTI	4.542344311	NETE-3	5.396253962	ACST-1	9.271589762
TNXP	3.248332197	NETE-1	5.396253962	ACST-9	9.271589762
EGLE	3.022206538	NETE	5.396253962	ACST-8	9.271589762
PTCT	1.846253702	XGTI-3	4.542344311	ACST-7	9.271589762
GOGO	1.779342175	XGTI	4.542344311	ACST-6	9.271589762
MEILW	1.718813407	XGTI-1	4.542344311	ACST-4	9.271589762
ROIQW	1.396532084	XGTI-2	4.542344311	ACST-3	9.271589762
CFRXZ	1.079268245	TNXP	3.248332197	ACST-2	9.271589762

## Top 10 Stocks with min Volatility Index

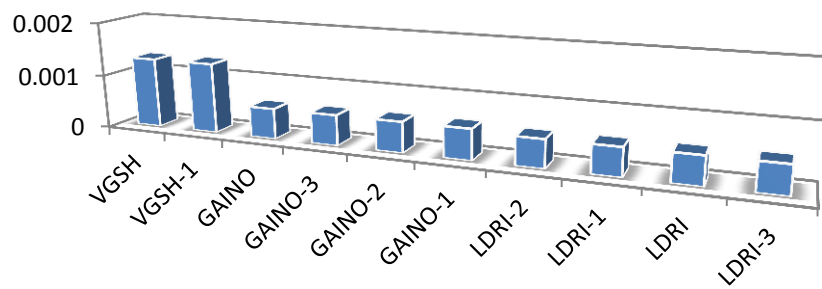
Small dataset		Medium dataset		Large dataset	
VCSH	0.00463776	VGSH	0.001301491	LDRI-9	5.15E-04
AXPWW	0.004438837	VGSH-1	0.001301491	LDRI-8	5.15E-04
CADT	0.004156636	GAINO	5.65E-04	LDRI-7	5.15E-04
SKOR	0.00394874	GAINO-3	5.65E-04	LDRI-6	5.15E-04
AGZD	0.003938594	GAINO-2	5.65E-04	LDRI-5	5.15E-04
TRTLU	0.003478105	GAINO-1	5.65E-04	LDRI-4	5.15E-04
MBSD	0.002500046	LDRI-2	5.15E-04	LDRI-3	5.15E-04
VGSH	0.001301491	LDRI-1	5.15E-04	LDRI-2	5.15E-04
GAINO	5.65E-04	LDRI	5.15E-04	LDRI-10	5.15E-04
LDRI	5.15E-04	LDRI-3	5.15E-04	LDRI-1	5.15E-04

## Stocks with minimum volatility indices

**Small dataset**



**Medium dataset**



**Large dataset**

