

3. Parallel Point Jacobi Iterations:

Verification for $I = 4$ with $TH = 1, 2$ and 3 . The result is independent of number of threads used.

Threads	T(0.25,0.25,0.25)	T(0.5,0.5,0.5)	T(0.75,0.75,0.75)	Iterations
1	0.0269607420937688	0.0514704690260046	0.0269607420937688	38
2	0.0269607420937688	0.0514704690260046	0.0269607420937688	38
3	0.0269607420937688	0.0514704690260046	0.0269607420937688	38

For $I = 32$

Threads	T(0.25,0.25,0.25)	T(0.5,0.5,0.5)	T(0.75,0.75,0.75)	Iterations
1	0.0299596039279548	0.0561177853013142	0.0299596039279548	1803
2	0.0299596039279548	0.0561177853013142	0.0299596039279548	1803
3	0.0299596039279548	0.0561177853013142	0.0299596039279548	1803
4	0.0299596039279548	0.0561177853013142	0.0299596039279548	1803
5	0.0299596039279548	0.0561177853013142	0.0299596039279548	1803
6	0.0299596039279548	0.0561177853013142	0.0299596039279548	1803
7	0.0299596039279548	0.0561177853013142	0.0299596039279548	1803
8	0.0299596039279548	0.0561177853013142	0.0299596039279548	1803

$I = 64$

Threads	T(0.25,0.25,0.25)	T(0.5,0.5,0.5)	T(0.75,0.75,0.75)	Iterations
1	0.0299896979129977	0.0561453739235151	0.0299896979129977	6066
2	0.0299896979129977	0.0561453739235151	0.0299896979129977	6066
3	0.0299896979129977	0.0561453739235151	0.0299896979129977	6066
4	0.0299896979129977	0.0561453739235151	0.0299896979129977	6066
5	0.0299896979129977	0.0561453739235151	0.0299896979129977	6066
6	0.0299896979129977	0.0561453739235151	0.0299896979129977	6066
7	0.0299896979129977	0.0561453739235151	0.0299896979129977	6066
8	0.0299896979129977	0.0561453739235151	0.0299896979129977	6066

$I = 128$

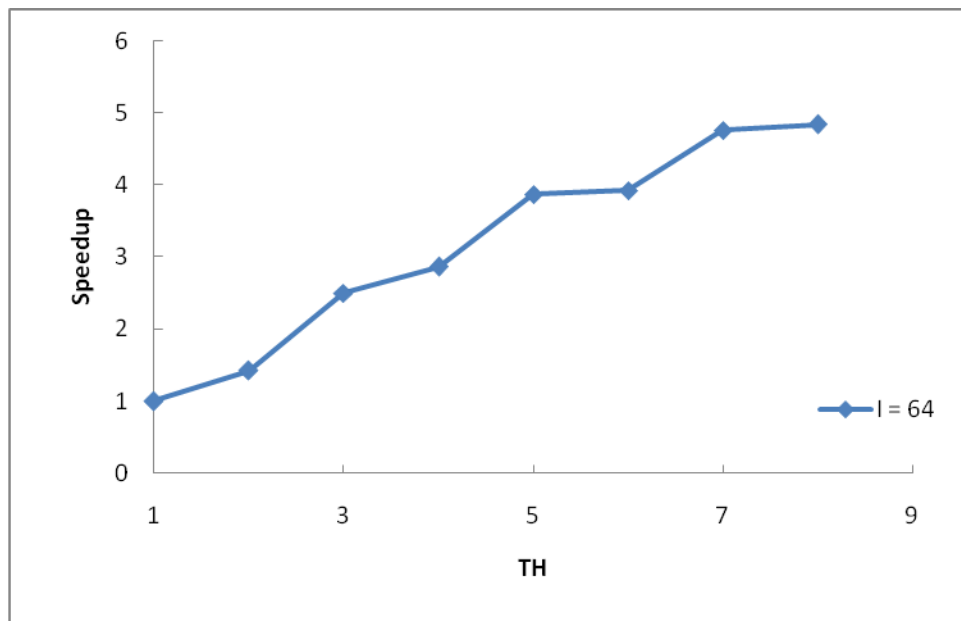
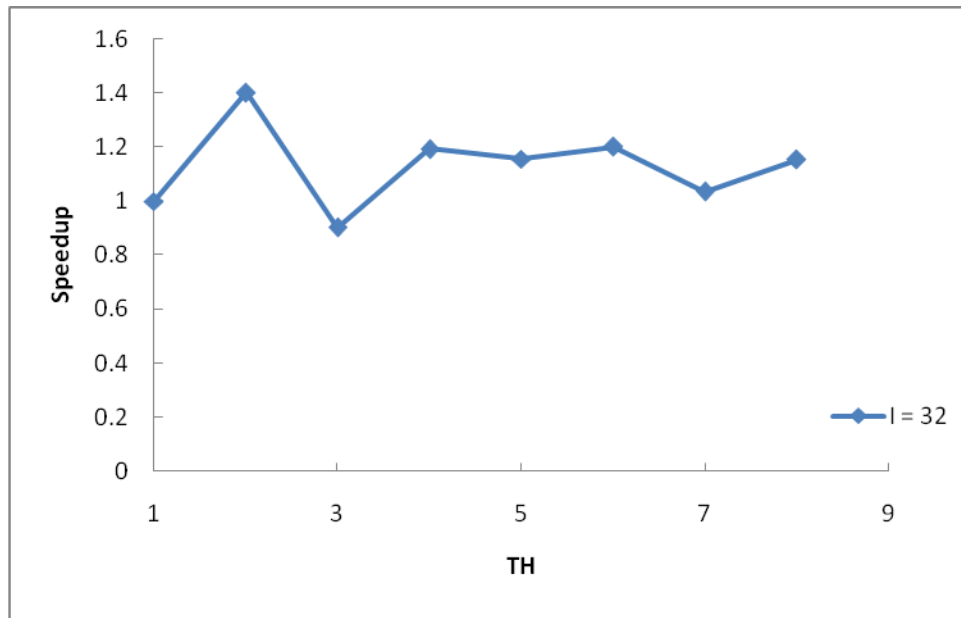
Threads	T(0.25,0.25,0.25)	T(0.5,0.5,0.5)	T(0.75,0.75,0.75)	Iterations
1	0.0299510704470613	0.0560216667579809	0.0299510704470613	19675
2	0.0299510704470613	0.0560216667579809	0.0299510704470613	19675
3	0.0299510704470613	0.0560216667579809	0.0299510704470613	19675
4	0.0299510704470613	0.0560216667579809	0.0299510704470613	19675
5	0.0299510704470613	0.0560216667579809	0.0299510704470613	19675
6	0.0299510704470613	0.0560216667579809	0.0299510704470613	19675
7	0.0299510704470613	0.0560216667579809	0.0299510704470613	19675
8	0.0299510704470613	0.0560216667579809	0.0299510704470613	19675

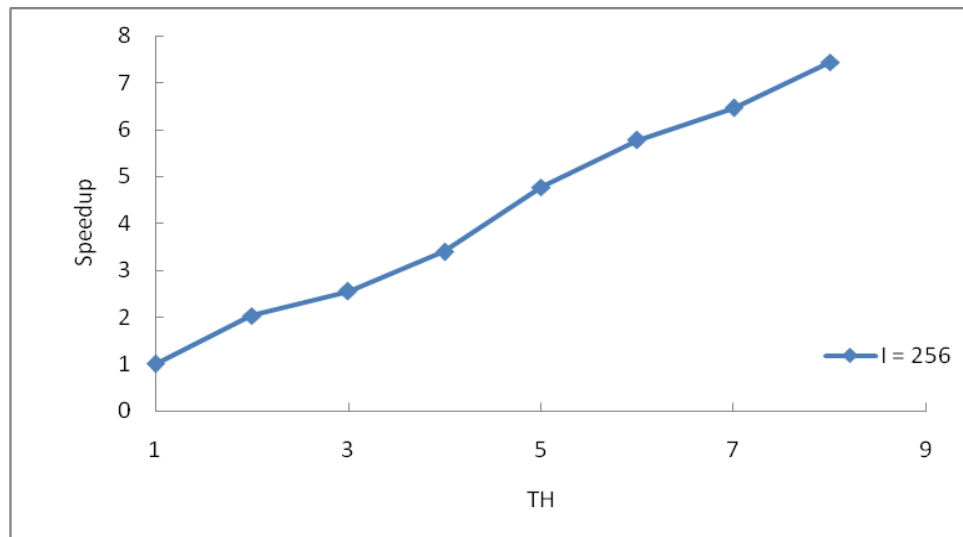
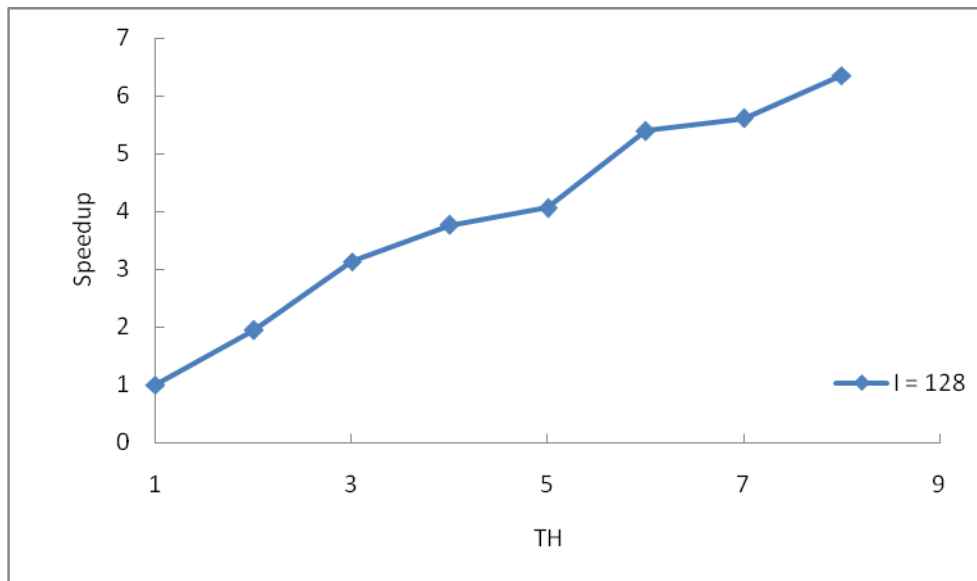
$I = 256$

Threads	T(0.25,0.25,0.25)	T(0.5,0.5,0.5)	T(0.75,0.75,0.75)	Iterations
1	0.0297590264198006	0.0554748689077155	0.0297590264198006	60424
2	0.0297590264198006	0.0554748689077155	0.0297590264198006	60424
3	0.0297590264198006	0.0554748689077155	0.0297590264198006	60424
4	0.0297590264198006	0.0554748689077155	0.0297590264198006	60424

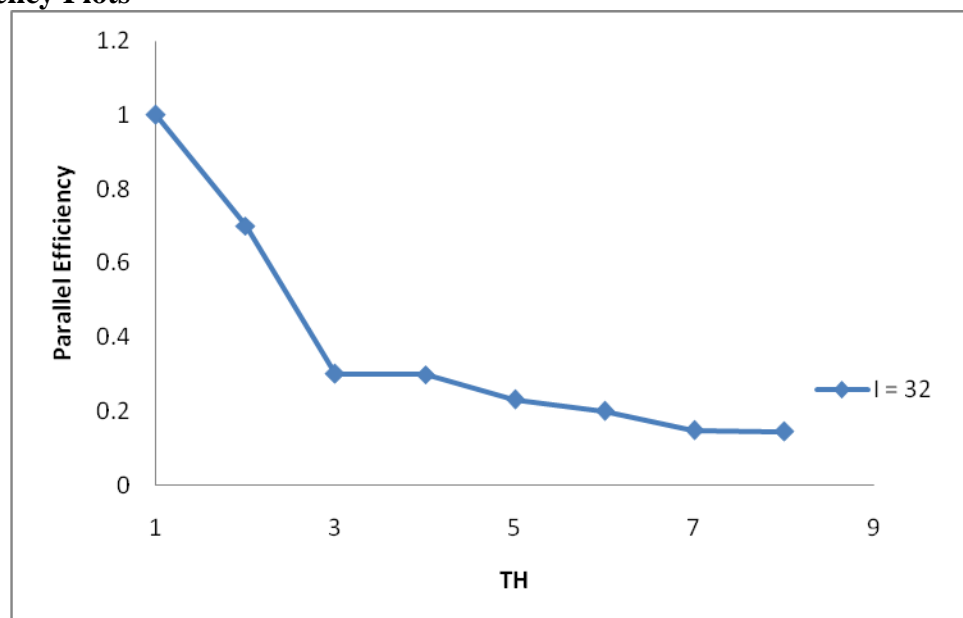
5	0.0297590264198006	0.0554748689077155	0.0297590264198006	60424
6	0.0297590264198006	0.0554748689077155	0.0297590264198006	60424
7	0.0297590264198006	0.0554748689077155	0.0297590264198006	60424
8	0.0297590264198006	0.0554748689077155	0.0297590264198006	60424

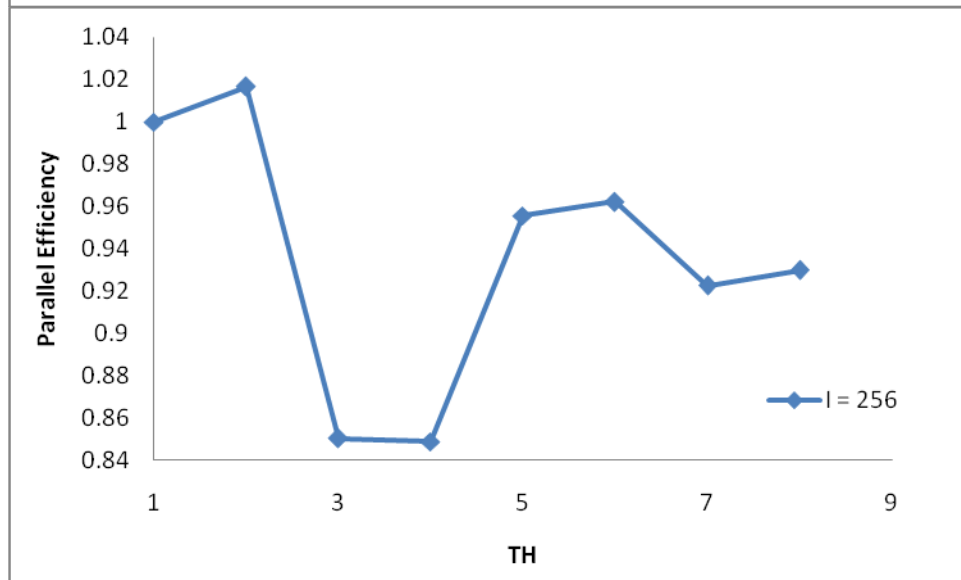
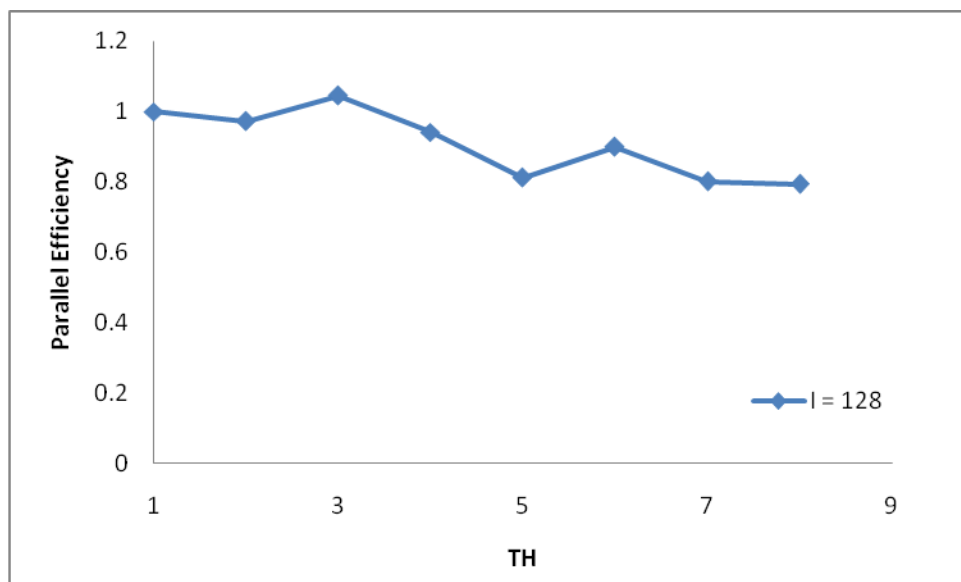
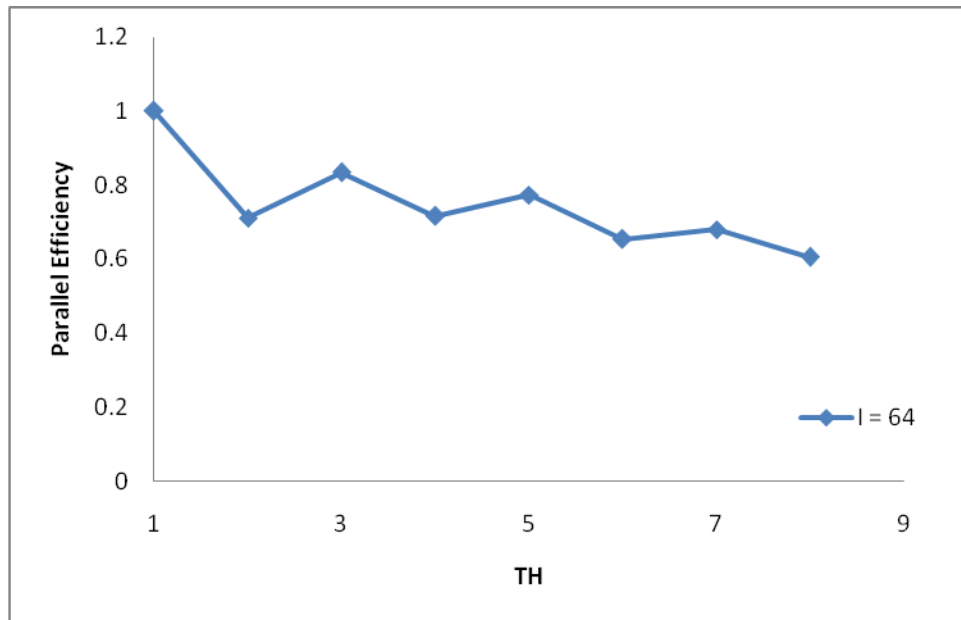
d) Parallel Speedup Plots





e) Parallel Efficiency Plots





4). Verification of code at $I = 4$ for SOR. It was verified that number of iterations and solution is independent of number of threads.

Threads	T(0.25,0.25,0.25)	T(0.5,0.5,0.5)	T(0.75,0.75,0.75)	Iterations
1	0.0269607832248164	0.0514705811215527	0.0269607832248164	11
2	0.0269607832248164	0.0514705811215527	0.0269607832248164	11
3	0.0269607832248164	0.0514705811215527	0.0269607832248164	11

For $I = 32$

Threads	T(0.25,0.25,0.25)	T(0.5,0.5,0.5)	T(0.75,0.75,0.75)	Iterations
1	0.0299636019381092	0.0561291010256719	0.0299636019381092	78
2	0.0299636019381092	0.0561291010256719	0.0299636019381092	78
3	0.0299636019381092	0.0561291010256719	0.0299636019381092	78
4	0.0299636019381092	0.0561291010256719	0.0299636019381092	78
5	0.0299636019381092	0.0561291010256719	0.0299636019381092	78
6	0.0299636019381092	0.0561291010256719	0.0299636019381092	78
7	0.0299636019381092	0.0561291010256719	0.0299636019381092	78
8	0.0299636019381092	0.0561291010256719	0.0299636019381092	78

$I = 64$

Threads	T(0.25,0.25,0.25)	T(0.5,0.5,0.5)	T(0.75,0.75,0.75)	Iterations
1	0.0300059727671677	0.0561913996340284	0.0300059727671676	148
2	0.0300059727671677	0.0561913996340284	0.0300059727671676	148
3	0.0300059727671677	0.0561913996340284	0.0300059727671676	148
4	0.0300059727671677	0.0561913996340284	0.0300059727671676	148
5	0.0300059727671677	0.0561913996340284	0.0300059727671676	148
6	0.0300059727671677	0.0561913996340284	0.0300059727671676	148
7	0.0300059727671677	0.0561913996340284	0.0300059727671676	148
8	0.0300059727671677	0.0561913996340284	0.0300059727671676	148

$I = 128$

Threads	T(0.25,0.25,0.25)	T(0.5,0.5,0.5)	T(0.75,0.75,0.75)	Iterations
1	0.0300164173729534	0.0562064359647195	0.0300164173729534	279
2	0.0300164173729534	0.0562064359647195	0.0300164173729534	279
3	0.0300164173729534	0.0562064359647195	0.0300164173729534	279
4	0.0300164173729534	0.0562064359647195	0.0300164173729534	279
5	0.0300164173729534	0.0562064359647195	0.0300164173729534	279
6	0.0300164173729534	0.0562064359647195	0.0300164173729534	279
7	0.0300164173729534	0.0562064359647195	0.0300164173729534	279
8	0.0300164173729534	0.0562064359647195	0.0300164173729534	279

$I = 256$

Threads	T(0.25,0.25,0.25)	T(0.5,0.5,0.5)	T(0.75,0.75,0.75)	Iterations
1	0.0300185629290271	0.0562089648228179	0.0300185629290271	522
2	0.0300185629290271	0.0562089648228179	0.0300185629290271	522
3	0.0300185629290271	0.0562089648228179	0.0300185629290271	522
4	0.0300185629290271	0.0562089648228179	0.0300185629290271	522
5	0.0300185629290271	0.0562089648228179	0.0300185629290271	522
6	0.0300185629290271	0.0562089648228179	0.0300185629290271	522
7	0.0300185629290271	0.0562089648228179	0.0300185629290271	522
8	0.0300185629290271	0.0562089648228179	0.0300185629290271	522

4d) Parallel Speedup and Efficiency –

