IPC Programming Assignment 1

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Running the program for all files in the directory: /class/cse5441/

1. **time ./amr_csr_serial 0.1 0.1 < /class/cse5441/testgrid_1**

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   Dissipation converged in 52 iterations,
   with max DSV = 118.918450 and min DSV = 107.278672
   Affect rate = 0.100000 , epsilon = 0.100000
   elapsed convergence loop time(clock) : 0
   elapsed convergence loop time(time) : 0
   elapsed convergence loop time (chrono): 17.000000

   ****

   real 0m0.011s
   user 0m0.001s
   sys 0m0.000s

2. **time ./amr_csr_serial 0.1 0.1 < /class/cse5441/testgrid_2**

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   Dissipation converged in 245 iterations,
   with max DSV = 55.835885 and min DSV = 50.266851
   Affect rate = 0.100000 , epsilon = 0.100000
   elapsed convergence loop time(clock) : 0
   elapsed convergence loop time(time) : 0
   elapsed convergence loop time (chrono): 384.000000

   ****

   real 0m0.014s
   user 0m0.001s
   sys 0m0.000s

3. **time ./amr_csr_serial 0.1 0.1 < /class/cse5441/testgrid_50_78**

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   Dissipation converged in 1508 iterations,
   with max DSV = 23.369508 and min DSV = 21.035843
   Affect rate = 0.100000 , epsilon = 0.100000
   elapsed convergence loop time(clock) : 0
   elapsed convergence loop time(time) : 0
   elapsed convergence loop time (chrono): 3735.000000

   ****

real 0m0.014s
user 0m0.003s
sys 0m0.002s

4. **time ./amr_csr_serial 0.1 0.1 < /class/cse5441/testgrid_50_201**

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**********************************************************************
Dissipation converged in 2286 iterations,
with max DSV = 4.788754 and min DSV = 4.309887
Affect rate = 0.100000 , epsilon = 0.100000
elapsed convergence loop time(clock) : 10000
elapsed convergence loop time(time) : 0
elapsed convergence loop time (chrono): 15856.000000
**********************************************************************

real 0m0.027s
user 0m0.016s
sys 0m0.001s
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5. **time ./amr_csr_serial 0.1 0.1 < /class/cse5441/testgrid_200_1166**

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**********************************************************************
Dissipation converged in 14458 iterations,
with max DSV = 0.812728 and min DSV = 0.731459
Affect rate = 0.100000 , epsilon = 0.100000
elapsed convergence loop time(clock) : 650000
elapsed convergence loop time(time) : 1
elapsed convergence loop time (chrono): 657926.000000
**********************************************************************

real 0m0.728s
user 0m0.607s
sys 0m0.064s
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6. **time ./amr_csr_serial 0.1 0.1 < /class/cse5441/testgrid_400_1636**

```
**********************************************************************
Dissipation converged in 22280 iterations,
with max DSV = 1.181786 and min DSV = 1.063610
Affect rate = 0.100000 , epsilon = 0.100000
elapsed convergence loop time(clock) : 1520000
elapsed convergence loop time(time) : 1
elapsed convergence loop time (chrono): 1530923.000000
**********************************************************************
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real 0m1.584s
user 0m1.397s
sys 0m0.161s

7. **time ./amr_csr_serial 0.1 0.1 < /class/cse5441/testgrid_400_12206**

****
Dissipation converged in 75197 iterations,
with max DSV = 0.086671 and min DSV = 0.078004
Affect rate = 0.100000 , epsilon = 0.100000
elapsed convergence loop time(clock) : 37270000
elapsed convergence loop time(time) : 37
elapsed convergence loop time (chrono): 37288225.0
****

real 0m51.424s
user 0m46.013s
sys 0m5.296s

Test grid	**Max DSV**	**Min DSV**	**Clock**	**time**	**Chrono**	**Iterations**
testgrid_1	118.9184	107.27867	0	0	17.0	52
testgrid_2	55.83588	50.266851	0	0	384.0	245
testgrid_50_78	23.36950	21.035843	0	0	3735.0	1508
testgrid_50_201	4.788754	4.309887	10000	0	15856.0	2286
testgrid_200_1166	0.812728	0.731459	650000	1	657926.0	14458
testgrid_400_1636	1.181786	1.063610	1520000	1	1530923.0	22280
testgrid_400_12206	0.086671	0.078004	37270000	37	37288225.0	75197

Below is the table for grid testgrid_400_12206 for different values of affect rate and epsilon:

Testgrid_400_12206 for different values of affect rate and epsilon
We see that for epsilon = 0.03 and affect rate = 0.03 the application successfully converges for the "testgrid_400_12206" test data file, while running for approximately 3 - 6 minutes.

Epsilon	Affect rate	Max DSV	Min DSV	Clock	Time	Chrono	Iteration
0.1	0.1	0.086671	0.078004	37270000	37	37288225.0	75197
0.08	0.08	0.086019	0.079137	50060000	50	50115013.000000	101983
0.06	0.06	0.085452	0.080325	74440000	74	74487320.000000	151825
0.04	0.04	0.085141	0.081735	136850000	137	136921935.00000	278494
0.03	**0.03**	**0.084946**	**0.082397**	**213830000**	**214**	**213941931.000000**	**434142**
0.02	0.02	0.084637	0.082944	388830000	389	388985983.000000	794818