rmehitang@Ralphs-PC:/mnt/c/Users/ralph/Desktop/cosc/cosc-320/project1-spring$ ./project1 points100.dat

Welcome to Ralph Mehitangs Project 1

For output of matrix subroutines enter a for least linear regression enter b: b

|1.979419 |

|4.786141 |

finished at Wed Mar 27 17:55:19 2019

elapsed time: 0.0012646s

rmehitang@Ralphs-PC:/mnt/c/Users/ralph/Desktop/cosc/cosc-320/project1-spring$ ./project1 points100.dat

Welcome to Ralph Mehitangs Project 1

For output of matrix subroutines enter a for least linear regression enter b: a

input the dimensions of the matrix you want

Rows

1

Cols

1

created matrix

here is your original matrix

|33.000000 |

transposed matrix

|33.000000 |

------------------------------------

Matrix Addition Functionality

|66.000000 |

finished at Wed Mar 27 17:55:25 2019

elapsed time: 1.5e-06s

------------------------------------

Matrix Subtraction Functionality

|0.000000 |

finished at Wed Mar 27 17:55:25 2019

elapsed time: 2.5e-06s

------------------------------------

Matrix Multiplication Functionality

|1089.000000 |

finished at Wed Mar 27 17:55:25 2019

elapsed time: 1.6e-06s

------------------------------------

Matrix Inversion Functionality

original matrix

|1089.000000 |

inverse matrix

|0.000918 |

Identity matrix

|1.000000 |

finished at Wed Mar 27 17:55:25 2019

elapsed time: 1.6e-06s

rmehitang@Ralphs-PC:/mnt/c/Users/ralph/Desktop/cosc/cosc-320/project1-spring$ ./project1 points100.dat

Welcome to Ralph Mehitangs Project 1

For output of matrix subroutines enter a for least linear regression enter b: a

input the dimensions of the matrix you want

Rows

2

Cols

2

created matrix

here is your original matrix

|33.000000 36.000000 |

|27.000000 15.000000 |

transposed matrix

|33.000000 27.000000 |

|36.000000 15.000000 |

------------------------------------

Matrix Addition Functionality

|66.000000 63.000000 |

|63.000000 30.000000 |

finished at Wed Mar 27 17:55:29 2019

elapsed time: 3.1e-06s

------------------------------------

Matrix Subtraction Functionality

|0.000000 -9.000000 |

|9.000000 0.000000 |

finished at Wed Mar 27 17:55:29 2019

elapsed time: 4.7e-06s

------------------------------------

Matrix Multiplication Functionality

|1818.000000 1593.000000 |

|1593.000000 1521.000000 |

finished at Wed Mar 27 17:55:29 2019

elapsed time: 3.1e-06s

------------------------------------

Matrix Inversion Functionality

original matrix

|1818.000000 1593.000000 |

|1593.000000 1521.000000 |

inverse matrix

|0.006685 -0.007001 |

|-0.007001 0.007990 |

Identity matrix

|1.000000 0.000000 |

|0.000000 1.000000 |

finished at Wed Mar 27 17:55:29 2019

elapsed time: 5.7e-06s

rmehitang@Ralphs-PC:/mnt/c/Users/ralph/Desktop/cosc/cosc-320/project1-spring$ ./project1 points100.dat

Welcome to Ralph Mehitangs Project 1

For output of matrix subroutines enter a for least linear regression enter b: a

input the dimensions of the matrix you want

Rows

3

Cols

3

created matrix

here is your original matrix

|33.000000 36.000000 27.000000 |

|15.000000 43.000000 35.000000 |

|36.000000 42.000000 49.000000 |

transposed matrix

|33.000000 15.000000 36.000000 |

|36.000000 43.000000 42.000000 |

|27.000000 35.000000 49.000000 |

------------------------------------

Matrix Addition Functionality

|66.000000 51.000000 63.000000 |

|51.000000 86.000000 77.000000 |

|63.000000 77.000000 98.000000 |

finished at Wed Mar 27 17:55:36 2019

elapsed time: 8.2e-06s

------------------------------------

Matrix Subtraction Functionality

|0.000000 -21.000000 9.000000 |

|21.000000 0.000000 7.000000 |

|-9.000000 -7.000000 0.000000 |

finished at Wed Mar 27 17:55:37 2019

elapsed time: 4.6e-06s

------------------------------------

Matrix Multiplication Functionality

|2610.000000 3345.000000 3180.000000 |

|3345.000000 4909.000000 4535.000000 |

|3180.000000 4535.000000 4355.000000 |

finished at Wed Mar 27 17:55:37 2019

elapsed time: 5.1e-06s

------------------------------------

Matrix Inversion Functionality

original matrix

|2610.000000 3345.000000 3180.000000 |

|3345.000000 4909.000000 4535.000000 |

|3180.000000 4535.000000 4355.000000 |

inverse matrix

|0.003547 -0.000638 -0.001925 |

|-0.000638 0.005475 -0.005235 |

|-0.001925 -0.005235 0.007087 |

Identity matrix

|1.000000 0.000000 -0.000000 |

|0.000000 1.000000 -0.000000 |

|-0.000000 0.000000 1.000000 |

finished at Wed Mar 27 17:55:37 2019

elapsed time: 5.03e-05s

rmehitang@Ralphs-PC:/mnt/c/Users/ralph/Desktop/cosc/cosc-320/project1-spring$ ./project1 points100.dat

Welcome to Ralph Mehitangs Project 1

For output of matrix subroutines enter a for least linear regression enter b: a

input the dimensions of the matrix you want

Rows

4

Cols

4

created matrix

here is your original matrix

|33.000000 36.000000 27.000000 15.000000 |

|43.000000 35.000000 36.000000 42.000000 |

|49.000000 21.000000 12.000000 27.000000 |

|40.000000 9.000000 13.000000 26.000000 |

transposed matrix

|33.000000 43.000000 49.000000 40.000000 |

|36.000000 35.000000 21.000000 9.000000 |

|27.000000 36.000000 12.000000 13.000000 |

|15.000000 42.000000 27.000000 26.000000 |

------------------------------------

Matrix Addition Functionality

|66.000000 79.000000 76.000000 55.000000 |

|79.000000 70.000000 57.000000 51.000000 |

|76.000000 57.000000 24.000000 40.000000 |

|55.000000 51.000000 40.000000 52.000000 |

finished at Wed Mar 27 17:55:42 2019

elapsed time: 4.1e-06s

------------------------------------

Matrix Subtraction Functionality

|0.000000 7.000000 22.000000 25.000000 |

|-7.000000 0.000000 -15.000000 -33.000000 |

|-22.000000 15.000000 0.000000 -14.000000 |

|-25.000000 33.000000 14.000000 0.000000 |

finished at Wed Mar 27 17:55:42 2019

elapsed time: 5.1e-06s

------------------------------------

Matrix Multiplication Functionality

|6939.000000 4082.000000 3547.000000 4664.000000 |

|4082.000000 3043.000000 2601.000000 2811.000000 |

|3547.000000 2601.000000 2338.000000 2579.000000 |

|4664.000000 2811.000000 2579.000000 3394.000000 |

finished at Wed Mar 27 17:55:42 2019

elapsed time: 2.73e-05s

------------------------------------

Matrix Inversion Functionality

original matrix

|6939.000000 4082.000000 3547.000000 4664.000000 |

|4082.000000 3043.000000 2601.000000 2811.000000 |

|3547.000000 2601.000000 2338.000000 2579.000000 |

|4664.000000 2811.000000 2579.000000 3394.000000 |

inverse matrix

|0.004864 -0.007317 0.008956 -0.007430 |

|-0.007317 0.017987 -0.022052 0.011915 |

|0.008956 -0.022052 0.029680 -0.016596 |

|-0.007430 0.011915 -0.016596 0.013248 |

Identity matrix

|1.000000 -0.000000 0.000000 0.000000 |

|0.000000 1.000000 0.000000 0.000000 |

|-0.000000 0.000000 1.000000 0.000000 |

|0.000000 -0.000000 0.000000 1.000000 |

finished at Wed Mar 27 17:55:42 2019

elapsed time: 1.54e-05s

rmehitang@Ralphs-PC:/mnt/c/Users/ralph/Desktop/cosc/cosc-320/project1-spring$ ./project1 points100.dat

Welcome to Ralph Mehitangs Project 1

For output of matrix subroutines enter a for least linear regression enter b: a

input the dimensions of the matrix you want

Rows

5

Cols

5

created matrix

here is your original matrix

|33.000000 36.000000 27.000000 15.000000 43.000000 |

|35.000000 36.000000 42.000000 49.000000 21.000000 |

|12.000000 27.000000 40.000000 9.000000 13.000000 |

|26.000000 40.000000 26.000000 22.000000 36.000000 |

|11.000000 18.000000 17.000000 29.000000 32.000000 |

transposed matrix

|33.000000 35.000000 12.000000 26.000000 11.000000 |

|36.000000 36.000000 27.000000 40.000000 18.000000 |

|27.000000 42.000000 40.000000 26.000000 17.000000 |

|15.000000 49.000000 9.000000 22.000000 29.000000 |

|43.000000 21.000000 13.000000 36.000000 32.000000 |

------------------------------------

Matrix Addition Functionality

|66.000000 71.000000 39.000000 41.000000 54.000000 |

|71.000000 72.000000 69.000000 89.000000 39.000000 |

|39.000000 69.000000 80.000000 35.000000 30.000000 |

|41.000000 89.000000 35.000000 44.000000 65.000000 |

|54.000000 39.000000 30.000000 65.000000 64.000000 |

finished at Wed Mar 27 17:55:48 2019

elapsed time: 3.1e-06s

------------------------------------

Matrix Subtraction Functionality

|0.000000 -1.000000 -15.000000 11.000000 -32.000000 |

|1.000000 0.000000 -15.000000 -9.000000 -3.000000 |

|15.000000 15.000000 0.000000 17.000000 4.000000 |

|-11.000000 9.000000 -17.000000 0.000000 -7.000000 |

|32.000000 3.000000 -4.000000 7.000000 0.000000 |

finished at Wed Mar 27 17:55:48 2019

elapsed time: 4.6e-06s

------------------------------------

Matrix Multiplication Functionality

|3255.000000 4010.000000 3704.000000 3209.000000 3598.000000 |

|4010.000000 5245.000000 4910.000000 3949.000000 4671.000000 |

|3704.000000 4910.000000 5058.000000 3888.000000 4043.000000 |

|3209.000000 3949.000000 3888.000000 4032.000000 3511.000000 |

|3598.000000 4671.000000 4043.000000 3511.000000 4779.000000 |

finished at Wed Mar 27 17:55:48 2019

elapsed time: 6.2e-06s

------------------------------------

Matrix Inversion Functionality

original matrix

|3255.000000 4010.000000 3704.000000 3209.000000 3598.000000 |

|4010.000000 5245.000000 4910.000000 3949.000000 4671.000000 |

|3704.000000 4910.000000 5058.000000 3888.000000 4043.000000 |

|3209.000000 3949.000000 3888.000000 4032.000000 3511.000000 |

|3598.000000 4671.000000 4043.000000 3511.000000 4779.000000 |

inverse matrix

|0.007415 -0.006965 0.002036 -0.001693 0.000746 |

|-0.006965 0.014995 -0.006958 0.001768 -0.004824 |

|0.002036 -0.006958 0.004517 -0.001168 0.002306 |

|-0.001693 0.001768 -0.001168 0.001456 -0.000535 |

|0.000746 -0.004824 0.002306 -0.000535 0.002805 |

Identity matrix

|1.000000 0.000000 -0.000000 0.000000 -0.000000 |

|-0.000000 1.000000 -0.000000 0.000000 -0.000000 |

|0.000000 -0.000000 1.000000 -0.000000 0.000000 |

|0.000000 -0.000000 0.000000 1.000000 0.000000 |

|0.000000 -0.000000 0.000000 0.000000 1.000000 |

finished at Wed Mar 27 17:55:48 2019

elapsed time: 0.0001778s

rmehitang@Ralphs-PC:/mnt/c/Users/ralph/Desktop/cosc/cosc-320/project1-spring$ ./project1 points100.dat

Welcome to Ralph Mehitangs Project 1

For output of matrix subroutines enter a for least linear regression enter b: a

input the dimensions of the matrix you want

Rows

6

Cols

6

created matrix

here is your original matrix

|33.000000 36.000000 27.000000 15.000000 43.000000 35.000000 |

|36.000000 42.000000 49.000000 21.000000 12.000000 27.000000 |

|40.000000 9.000000 13.000000 26.000000 40.000000 26.000000 |

|22.000000 36.000000 11.000000 18.000000 17.000000 29.000000 |

|32.000000 30.000000 12.000000 23.000000 17.000000 35.000000 |

|29.000000 2.000000 22.000000 8.000000 19.000000 17.000000 |

transposed matrix

|33.000000 36.000000 40.000000 22.000000 32.000000 29.000000 |

|36.000000 42.000000 9.000000 36.000000 30.000000 2.000000 |

|27.000000 49.000000 13.000000 11.000000 12.000000 22.000000 |

|15.000000 21.000000 26.000000 18.000000 23.000000 8.000000 |

|43.000000 12.000000 40.000000 17.000000 17.000000 19.000000 |

|35.000000 27.000000 26.000000 29.000000 35.000000 17.000000 |

------------------------------------

Matrix Addition Functionality

|66.000000 72.000000 67.000000 37.000000 75.000000 64.000000 |

|72.000000 84.000000 58.000000 57.000000 42.000000 29.000000 |

|67.000000 58.000000 26.000000 37.000000 52.000000 48.000000 |

|37.000000 57.000000 37.000000 36.000000 40.000000 37.000000 |

|75.000000 42.000000 52.000000 40.000000 34.000000 54.000000 |

|64.000000 29.000000 48.000000 37.000000 54.000000 34.000000 |

finished at Wed Mar 27 17:55:54 2019

elapsed time: 6.2e-06s

------------------------------------

Matrix Subtraction Functionality

|0.000000 0.000000 13.000000 7.000000 -11.000000 -6.000000 |

|0.000000 0.000000 -40.000000 15.000000 18.000000 -25.000000 |

|-13.000000 40.000000 0.000000 -15.000000 -28.000000 -4.000000 |

|-7.000000 -15.000000 15.000000 0.000000 6.000000 -21.000000 |

|11.000000 -18.000000 28.000000 -6.000000 0.000000 -16.000000 |

|6.000000 25.000000 4.000000 21.000000 16.000000 0.000000 |

finished at Wed Mar 27 17:55:54 2019

elapsed time: 6.7e-06s

------------------------------------

Matrix Multiplication Functionality

|6334.000000 4870.000000 4439.000000 3655.000000 4920.000000 5418.000000 |

|4870.000000 5341.000000 3947.000000 3010.000000 3572.000000 4756.000000 |

|4439.000000 3947.000000 4048.000000 2422.000000 3078.000000 3719.000000 |

|3655.000000 3010.000000 2422.000000 2259.000000 2786.000000 3231.000000 |

|4920.000000 3572.000000 3078.000000 2786.000000 4532.000000 4280.000000 |

|5418.000000 4756.000000 3719.000000 3231.000000 4280.000000 4985.000000 |

finished at Wed Mar 27 17:55:54 2019

elapsed time: 6.7e-06s

------------------------------------

Matrix Inversion Functionality

original matrix

|6334.000000 4870.000000 4439.000000 3655.000000 4920.000000 5418.000000 |

|4870.000000 5341.000000 3947.000000 3010.000000 3572.000000 4756.000000 |

|4439.000000 3947.000000 4048.000000 2422.000000 3078.000000 3719.000000 |

|3655.000000 3010.000000 2422.000000 2259.000000 2786.000000 3231.000000 |

|4920.000000 3572.000000 3078.000000 2786.000000 4532.000000 4280.000000 |

|5418.000000 4756.000000 3719.000000 3231.000000 4280.000000 4985.000000 |

inverse matrix

|0.965904 0.494877 -0.456192 -0.585780 -0.060078 -0.750357 |

|0.494877 0.256159 -0.234425 -0.299028 -0.029331 -0.388367 |

|-0.456192 -0.234425 0.216439 0.276306 0.028095 0.354793 |

|-0.585780 -0.299028 0.276306 0.361787 0.036948 0.449605 |

|-0.060078 -0.029331 0.028095 0.036948 0.005723 0.043458 |

|-0.750357 -0.388367 0.354793 0.449605 0.043458 0.592850 |

Identity matrix

|1.000000 0.000000 -0.000000 -0.000000 -0.000000 -0.000000 |

|0.000000 1.000000 -0.000000 -0.000000 -0.000000 -0.000000 |

|0.000000 0.000000 1.000000 -0.000000 -0.000000 -0.000000 |

|0.000000 0.000000 -0.000000 1.000000 -0.000000 -0.000000 |

|-0.000000 0.000000 0.000000 0.000000 1.000000 -0.000000 |

|0.000000 0.000000 -0.000000 0.000000 0.000000 1.000000 |

finished at Wed Mar 27 17:55:54 2019

elapsed time: 0.0001408s

rmehitang@Ralphs-PC:/mnt/c/Users/ralph/Desktop/cosc/cosc-320/project1-spring$ ./project1 points100.dat

Welcome to Ralph Mehitangs Project 1

For output of matrix subroutines enter a for least linear regression enter b: a

input the dimensions of the matrix you want

Rows

7

Cols

7

created matrix

here is your original matrix

|33.000000 36.000000 27.000000 15.000000 43.000000 35.000000 36.000000 |

|42.000000 49.000000 21.000000 12.000000 27.000000 40.000000 9.000000 |

|13.000000 26.000000 40.000000 26.000000 22.000000 36.000000 11.000000 |

|18.000000 17.000000 29.000000 32.000000 30.000000 12.000000 23.000000 |

|17.000000 35.000000 29.000000 2.000000 22.000000 8.000000 19.000000 |

|17.000000 43.000000 6.000000 11.000000 42.000000 29.000000 23.000000 |

|21.000000 19.000000 34.000000 37.000000 48.000000 24.000000 15.000000 |

transposed matrix

|33.000000 42.000000 13.000000 18.000000 17.000000 17.000000 21.000000 |

|36.000000 49.000000 26.000000 17.000000 35.000000 43.000000 19.000000 |

|27.000000 21.000000 40.000000 29.000000 29.000000 6.000000 34.000000 |

|15.000000 12.000000 26.000000 32.000000 2.000000 11.000000 37.000000 |

|43.000000 27.000000 22.000000 30.000000 22.000000 42.000000 48.000000 |

|35.000000 40.000000 36.000000 12.000000 8.000000 29.000000 24.000000 |

|36.000000 9.000000 11.000000 23.000000 19.000000 23.000000 15.000000 |

------------------------------------

Matrix Addition Functionality

|66.000000 78.000000 40.000000 33.000000 60.000000 52.000000 57.000000 |

|78.000000 98.000000 47.000000 29.000000 62.000000 83.000000 28.000000 |

|40.000000 47.000000 80.000000 55.000000 51.000000 42.000000 45.000000 |

|33.000000 29.000000 55.000000 64.000000 32.000000 23.000000 60.000000 |

|60.000000 62.000000 51.000000 32.000000 44.000000 50.000000 67.000000 |

|52.000000 83.000000 42.000000 23.000000 50.000000 58.000000 47.000000 |

|57.000000 28.000000 45.000000 60.000000 67.000000 47.000000 30.000000 |

finished at Wed Mar 27 17:56:11 2019

elapsed time: 3.95e-05s

------------------------------------

Matrix Subtraction Functionality

|0.000000 6.000000 -14.000000 3.000000 -26.000000 -18.000000 -15.000000 |

|-6.000000 0.000000 5.000000 5.000000 8.000000 3.000000 10.000000 |

|14.000000 -5.000000 0.000000 3.000000 7.000000 -30.000000 23.000000 |

|-3.000000 -5.000000 -3.000000 0.000000 -28.000000 -1.000000 14.000000 |

|26.000000 -8.000000 -7.000000 28.000000 0.000000 34.000000 29.000000 |

|18.000000 -3.000000 30.000000 1.000000 -34.000000 0.000000 1.000000 |

|15.000000 -10.000000 -23.000000 -14.000000 -29.000000 -1.000000 0.000000 |

finished at Wed Mar 27 17:56:11 2019

elapsed time: 4.6e-06s

------------------------------------

Matrix Multiplication Functionality

|4365.000000 5615.000000 4124.000000 2911.000000 5475.000000 4652.000000 3152.000000 |

|5615.000000 8097.000000 5453.000000 3594.000000 7441.000000 6343.000000 4353.000000 |

|4124.000000 5453.000000 5644.000000 4007.000000 6000.000000 4795.000000 3467.000000 |

|2911.000000 3594.000000 4007.000000 3563.000000 4783.000000 3548.000000 2516.000000 |

|5475.000000 7441.000000 6000.000000 4783.000000 8514.000000 6283.000000 4827.000000 |

|4652.000000 6343.000000 4795.000000 3548.000000 6283.000000 5746.000000 3471.000000 |

|3152.000000 4353.000000 3467.000000 2516.000000 4827.000000 3471.000000 3142.000000 |

finished at Wed Mar 27 17:56:12 2019

elapsed time: 8.2e-06s

------------------------------------

Matrix Inversion Functionality

original matrix

|4365.000000 5615.000000 4124.000000 2911.000000 5475.000000 4652.000000 3152.000000 |

|5615.000000 8097.000000 5453.000000 3594.000000 7441.000000 6343.000000 4353.000000 |

|4124.000000 5453.000000 5644.000000 4007.000000 6000.000000 4795.000000 3467.000000 |

|2911.000000 3594.000000 4007.000000 3563.000000 4783.000000 3548.000000 2516.000000 |

|5475.000000 7441.000000 6000.000000 4783.000000 8514.000000 6283.000000 4827.000000 |

|4652.000000 6343.000000 4795.000000 3548.000000 6283.000000 5746.000000 3471.000000 |

|3152.000000 4353.000000 3467.000000 2516.000000 4827.000000 3471.000000 3142.000000 |

inverse matrix

|0.002776 -0.001198 -0.000061 -0.000264 0.000001 -0.000602 -0.000184 |

|-0.001198 0.003207 -0.001200 0.002901 -0.001966 -0.001424 0.000353 |

|-0.000061 -0.001200 0.002021 -0.002531 0.001527 0.000238 -0.001089 |

|-0.000264 0.002901 -0.002531 0.005291 -0.003680 -0.001187 0.001765 |

|0.000001 -0.001966 0.001527 -0.003680 0.004245 0.000175 -0.002731 |

|-0.000602 -0.001424 0.000238 -0.001187 0.000175 0.002304 0.000450 |

|-0.000184 0.000353 -0.001089 0.001765 -0.002731 0.000450 0.003501 |

Identity matrix

|1.000000 -0.000000 0.000000 0.000000 -0.000000 0.000000 0.000000 |

|-0.000000 1.000000 0.000000 -0.000000 -0.000000 0.000000 0.000000 |

|-0.000000 -0.000000 1.000000 -0.000000 -0.000000 0.000000 0.000000 |

|0.000000 -0.000000 -0.000000 1.000000 -0.000000 0.000000 0.000000 |

|0.000000 -0.000000 0.000000 0.000000 1.000000 0.000000 0.000000 |

|-0.000000 0.000000 0.000000 0.000000 -0.000000 1.000000 -0.000000 |

|0.000000 0.000000 -0.000000 0.000000 -0.000000 0.000000 1.000000 |

finished at Wed Mar 27 17:56:12 2019

elapsed time: 0.0001635s

rmehitang@Ralphs-PC:/mnt/c/Users/ralph/Desktop/cosc/cosc-320/project1-spring$ ./project1 points100.dat

Welcome to Ralph Mehitangs Project 1

For output of matrix subroutines enter a for least linear regression enter b: a

input the dimensions of the matrix you want

Rows

8

Cols

8

created matrix

here is your original matrix

|33.000000 36.000000 27.000000 15.000000 43.000000 35.000000 36.000000 42.000000 |

|49.000000 21.000000 12.000000 27.000000 40.000000 9.000000 13.000000 26.000000 |

|40.000000 26.000000 22.000000 36.000000 11.000000 18.000000 17.000000 29.000000 |

|32.000000 30.000000 12.000000 23.000000 17.000000 35.000000 29.000000 2.000000 |

|22.000000 8.000000 19.000000 17.000000 43.000000 6.000000 11.000000 42.000000 |

|29.000000 23.000000 21.000000 19.000000 34.000000 37.000000 48.000000 24.000000 |

|15.000000 20.000000 13.000000 26.000000 41.000000 30.000000 6.000000 23.000000 |

|12.000000 20.000000 46.000000 31.000000 5.000000 25.000000 34.000000 27.000000 |

transposed matrix

|33.000000 49.000000 40.000000 32.000000 22.000000 29.000000 15.000000 12.000000 |

|36.000000 21.000000 26.000000 30.000000 8.000000 23.000000 20.000000 20.000000 |

|27.000000 12.000000 22.000000 12.000000 19.000000 21.000000 13.000000 46.000000 |

|15.000000 27.000000 36.000000 23.000000 17.000000 19.000000 26.000000 31.000000 |

|43.000000 40.000000 11.000000 17.000000 43.000000 34.000000 41.000000 5.000000 |

|35.000000 9.000000 18.000000 35.000000 6.000000 37.000000 30.000000 25.000000 |

|36.000000 13.000000 17.000000 29.000000 11.000000 48.000000 6.000000 34.000000 |

|42.000000 26.000000 29.000000 2.000000 42.000000 24.000000 23.000000 27.000000 |

------------------------------------

Matrix Addition Functionality

|66.000000 85.000000 67.000000 47.000000 65.000000 64.000000 51.000000 54.000000 |

|85.000000 42.000000 38.000000 57.000000 48.000000 32.000000 33.000000 46.000000 |

|67.000000 38.000000 44.000000 48.000000 30.000000 39.000000 30.000000 75.000000 |

|47.000000 57.000000 48.000000 46.000000 34.000000 54.000000 55.000000 33.000000 |

|65.000000 48.000000 30.000000 34.000000 86.000000 40.000000 52.000000 47.000000 |

|64.000000 32.000000 39.000000 54.000000 40.000000 74.000000 78.000000 49.000000 |

|51.000000 33.000000 30.000000 55.000000 52.000000 78.000000 12.000000 57.000000 |

|54.000000 46.000000 75.000000 33.000000 47.000000 49.000000 57.000000 54.000000 |

finished at Wed Mar 27 17:56:23 2019

elapsed time: 9.8e-06s

------------------------------------

Matrix Subtraction Functionality

|0.000000 13.000000 13.000000 17.000000 -21.000000 -6.000000 -21.000000 -30.000000 |

|-13.000000 0.000000 14.000000 3.000000 -32.000000 14.000000 7.000000 -6.000000 |

|-13.000000 -14.000000 0.000000 -24.000000 8.000000 3.000000 -4.000000 17.000000 |

|-17.000000 -3.000000 24.000000 0.000000 0.000000 -16.000000 -3.000000 29.000000 |

|21.000000 32.000000 -8.000000 0.000000 0.000000 28.000000 30.000000 -37.000000 |

|6.000000 -14.000000 -3.000000 16.000000 -28.000000 0.000000 -18.000000 1.000000 |

|21.000000 -7.000000 4.000000 3.000000 -30.000000 18.000000 0.000000 11.000000 |

|30.000000 6.000000 -17.000000 -29.000000 37.000000 -1.000000 -11.000000 0.000000 |

finished at Wed Mar 27 17:56:23 2019

elapsed time: 7.2e-06s

------------------------------------

Matrix Multiplication Functionality

|7808.000000 5600.000000 4517.000000 5681.000000 6970.000000 5391.000000 5565.000000 6173.000000 |

|5600.000000 4706.000000 3971.000000 4446.000000 5230.000000 4966.000000 4873.000000 4760.000000 |

|4517.000000 3971.000000 4588.000000 4283.000000 4381.000000 4300.000000 4709.000000 4951.000000 |

|5681.000000 4446.000000 4283.000000 5066.000000 5110.000000 4581.000000 4479.000000 5027.000000 |

|6970.000000 5230.000000 4381.000000 5110.000000 8570.000000 5529.000000 5269.000000 6899.000000 |

|5391.000000 4966.000000 4300.000000 4581.000000 5529.000000 5785.000000 5570.000000 4801.000000 |

|5565.000000 4873.000000 4709.000000 4479.000000 5269.000000 5570.000000 6212.000000 5071.000000 |

|6173.000000 4760.000000 4951.000000 5027.000000 6899.000000 4801.000000 5071.000000 6883.000000 |

finished at Wed Mar 27 17:56:23 2019

elapsed time: 7.2e-06s

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Matrix Inversion Functionality

original matrix

|7808.000000 5600.000000 4517.000000 5681.000000 6970.000000 5391.000000 5565.000000 6173.000000 |

|5600.000000 4706.000000 3971.000000 4446.000000 5230.000000 4966.000000 4873.000000 4760.000000 |

|4517.000000 3971.000000 4588.000000 4283.000000 4381.000000 4300.000000 4709.000000 4951.000000 |

|5681.000000 4446.000000 4283.000000 5066.000000 5110.000000 4581.000000 4479.000000 5027.000000 |

|6970.000000 5230.000000 4381.000000 5110.000000 8570.000000 5529.000000 5269.000000 6899.000000 |

|5391.000000 4966.000000 4300.000000 4581.000000 5529.000000 5785.000000 5570.000000 4801.000000 |

|5565.000000 4873.000000 4709.000000 4479.000000 5269.000000 5570.000000 6212.000000 5071.000000 |

|6173.000000 4760.000000 4951.000000 5027.000000 6899.000000 4801.000000 5071.000000 6883.000000 |

inverse matrix

|4.136222 -5.263631 3.323231 -3.482860 -1.021465 5.094887 -3.235105 -0.062653 |

|-5.263631 6.703548 -4.226590 4.430141 1.300781 -6.486572 4.115984 0.077702 |

|3.323231 -4.226590 2.676419 -2.800438 -0.817828 4.091117 -2.600936 -0.055034 |

|-3.482860 4.430141 -2.800438 2.934988 0.859514 -4.289631 2.725082 0.053588 |

|-1.021465 1.300781 -0.817828 0.859514 0.254444 -1.259998 0.798696 0.012455 |

|5.094887 -6.486572 4.091117 -4.289631 -1.259998 6.280052 -3.985815 -0.074318 |

|-3.235105 4.115984 -2.600936 2.725082 0.798696 -3.985815 2.532387 0.049459 |

|-0.062653 0.077702 -0.055034 0.053588 0.012455 -0.074318 0.049459 0.005963 |

Identity matrix

|1.000000 0.000000 0.000000 -0.000000 0.000000 -0.000000 -0.000000 -0.000000 |

|0.000000 1.000000 0.000000 -0.000000 0.000000 0.000000 -0.000000 -0.000000 |

|0.000000 -0.000000 1.000000 -0.000000 0.000000 0.000000 -0.000000 -0.000000 |

|0.000000 -0.000000 0.000000 1.000000 0.000000 0.000000 -0.000000 -0.000000 |

|-0.000000 0.000000 -0.000000 0.000000 1.000000 -0.000000 0.000000 -0.000000 |

|0.000000 0.000000 -0.000000 0.000000 0.000000 1.000000 0.000000 0.000000 |

|0.000000 -0.000000 0.000000 -0.000000 -0.000000 0.000000 1.000000 -0.000000 |

|0.000000 -0.000000 0.000000 -0.000000 -0.000000 0.000000 -0.000000 1.000000 |

finished at Wed Mar 27 17:56:23 2019

elapsed time: 5.34e-05s