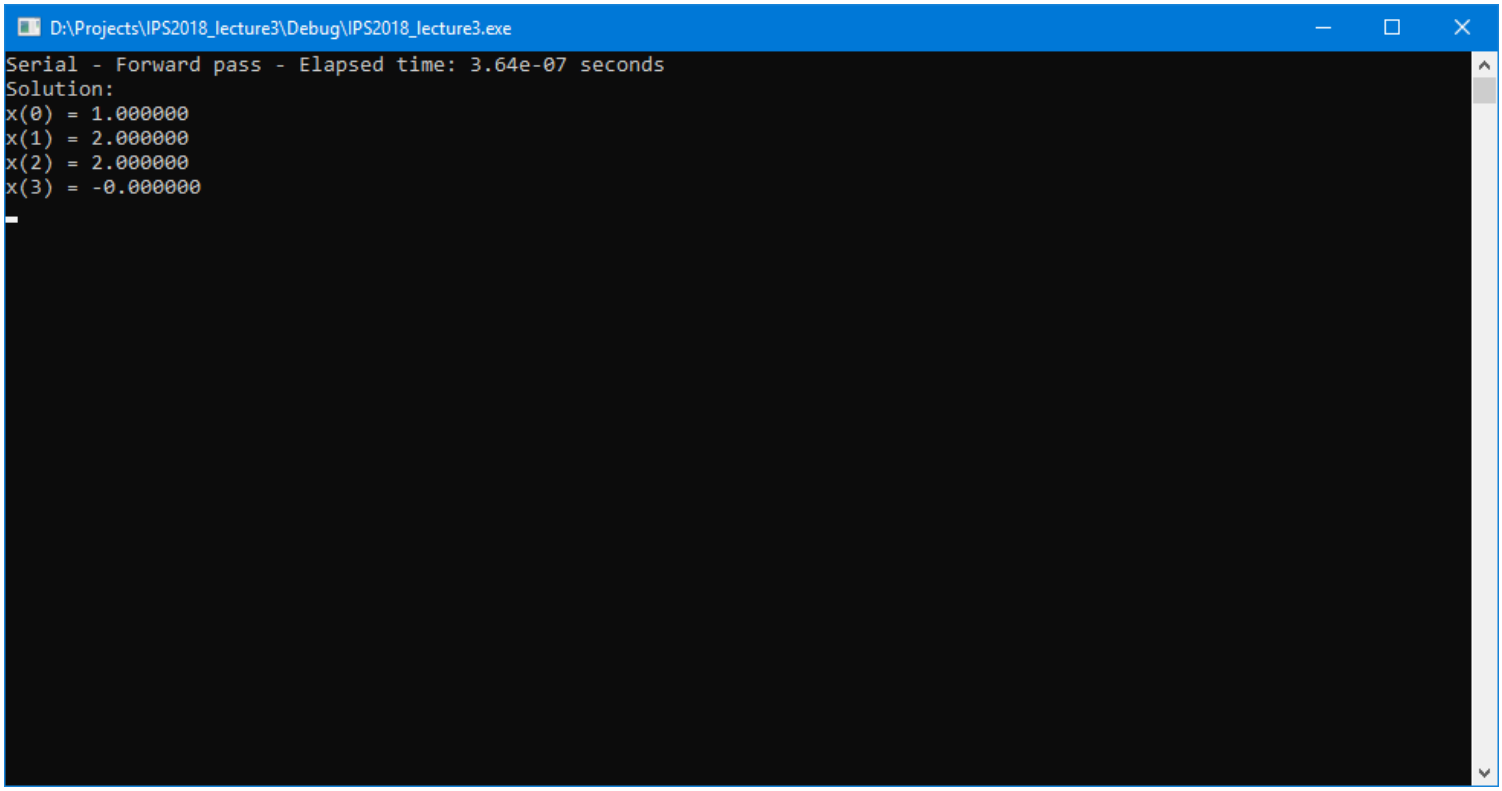
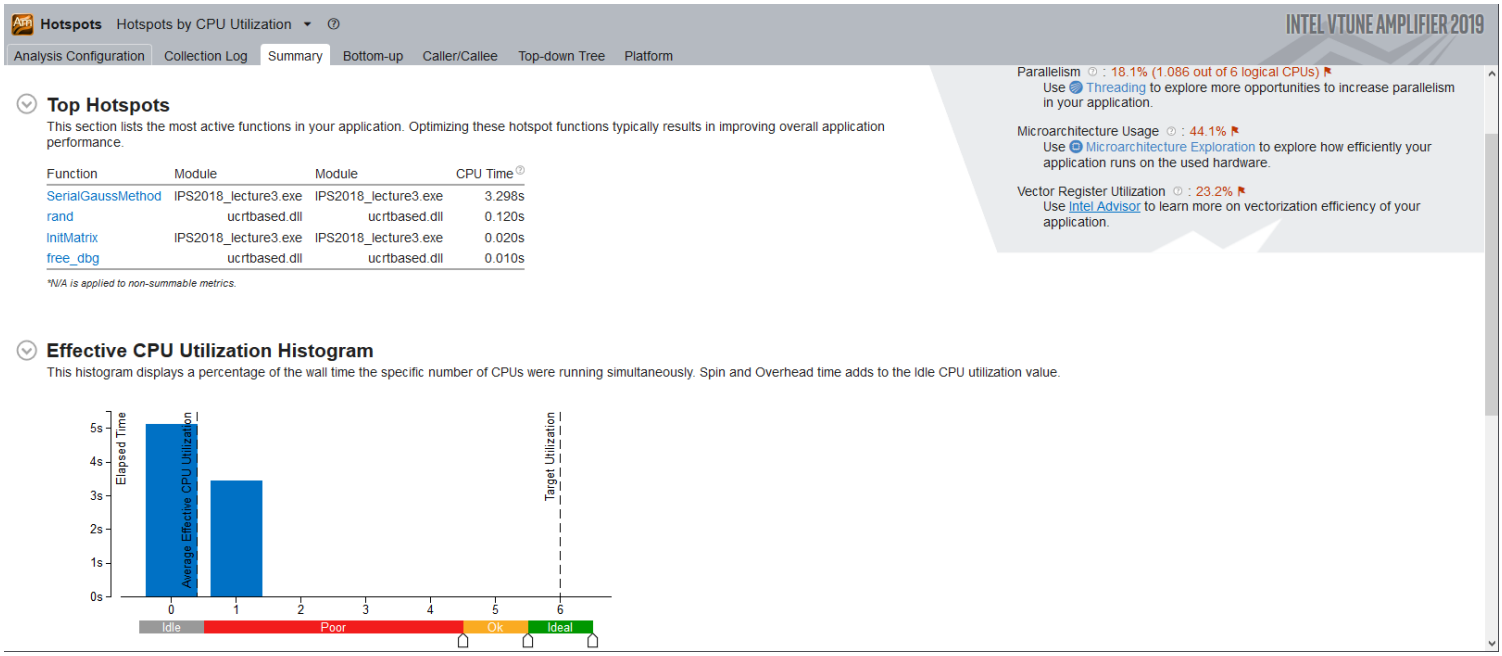
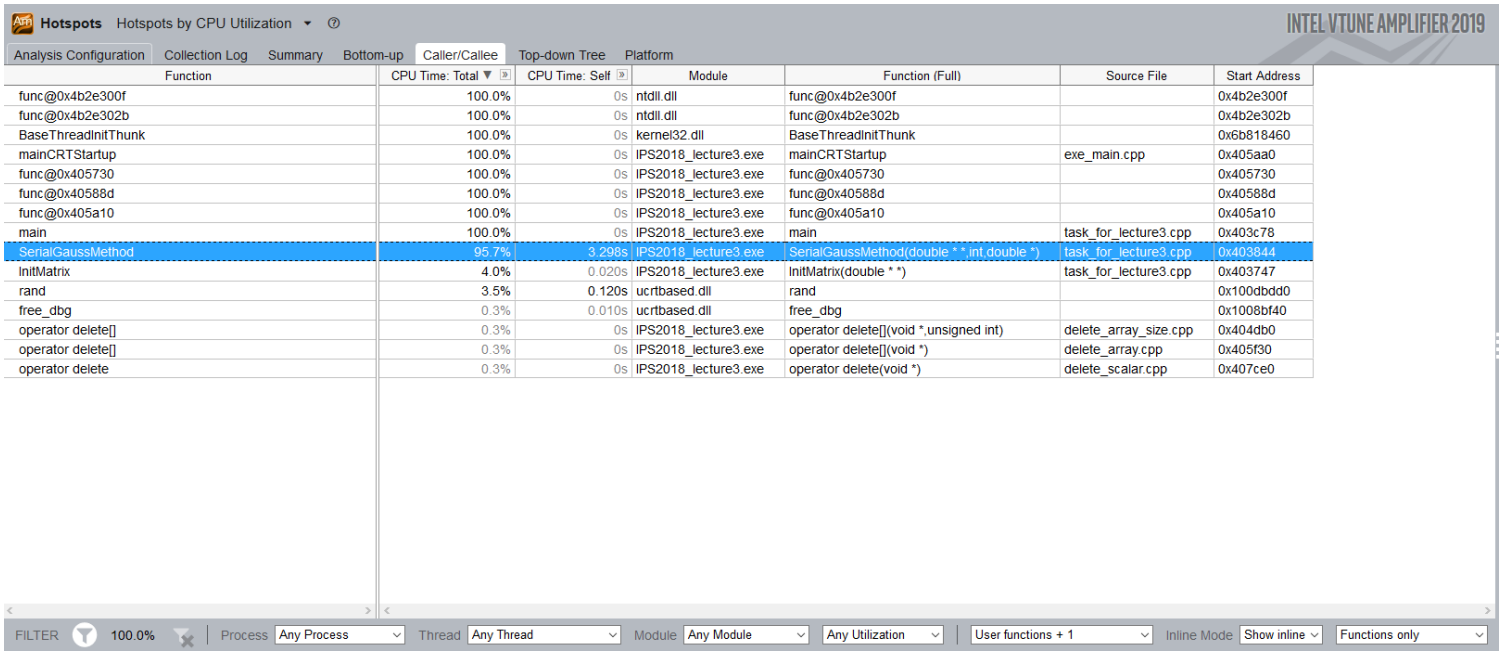

D:\Projects\IPS2018_lecture3\Debug\IPS2018_lecture3.exe
Serial - Forward pass - Elapsed time: 3.64e-07 seconds
Solution:
x(0) = 1.000000
x(1) = 2.000000
x(2) = 2.000000
x(3) = -0.000000


Hotspots
Hotspots by CPU Utilization
INTEL VTUNE AMPLIFIER 2019
Analysis Configuration
Collection Log
Summary
Bottom-up
Caller/Callee
Top-down Tree
Platform
Parallelism : 18.1% (1.086 out of 6 logical CPUs)
Use Threading to explore more opportunities to increase parallelism in your application.
Microarchitecture Usage : 44.1%
Use Microarchitecture Exploration to explore how efficiently your application runs on the used hardware.
Vector Register Utilization : 23.2%
Use Intel Advisor to learn more on vectorization efficiency of your application.
Top Hotspots
This section lists the most active functions in your application. Optimizing these hotspot functions typically results in improving overall application performance.
Function Module Module CPU Time
SerialGaussMethod IPS2018_lecture3.exe IPS2018_lecture3.exe 3.298s
rand ucrtbased.dll ucrtbased.dll 0.120s
InitMatrix IPS2018_lecture3.exe IPS2018_lecture3.exe 0.020s
free_dbg ucrtbased.dll ucrtbased.dll 0.010s
*N/A is applied to non-summable metrics.
Effective CPU Utilization Histogram
This histogram displays a percentage of the wall time the specific number of CPUs were running simultaneously. Spin and Overhead time adds to the Idle CPU utilization value.
Elapsed Time
Average Effective CPU Utilization
Target Utilization
5s
4s
3s
2s
1s
0s
0 1 2 3 4 5 6
Idle
Poor
Ok
Ideal


Hotspots
Hotspots by CPU Utilization
INTEL VTUNE AMPLIFIER 2019
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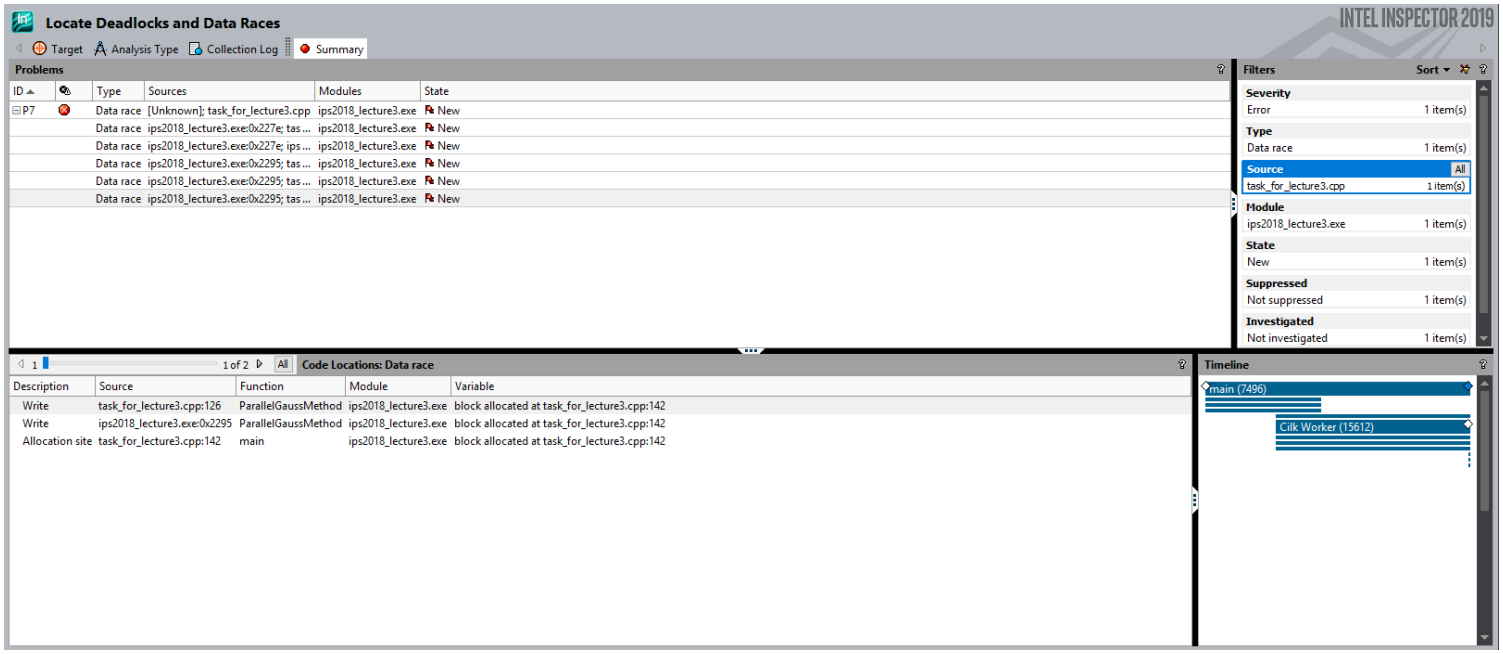
Function CPU Time: Total CPU Time: Self Module Function (Full) Source File Start Address
func@0x4b2e300f 100.0% 0s ntdll.dll func@0x4b2e300f 0x4b2e300f
func@0x4b2e302b 100.0% 0s ntdll.dll func@0x4b2e302b 0x4b2e302b
BaseThreadInitThunk 100.0% 0s kernel32.dll BaseThreadInitThunk 0x6b818460
mainCRTStartup 100.0% 0s IPS2018_lecture3.exe mainCRTStartup exe_main.cpp 0x405aa0
func@0x405730 100.0% 0s IPS2018_lecture3.exe func@0x405730 0x405730
func@0x40588d 100.0% 0s IPS2018_lecture3.exe func@0x40588d 0x40588d
func@0x405a10 100.0% 0s IPS2018_lecture3.exe func@0x405a10 0x405a10
main 100.0% 0s IPS2018_lecture3.exe main task_for_lecture3.cpp 0x403c78
SerialGaussMethod 95.7% 3.298s IPS2018_lecture3.exe SerialGaussMethod(double * * int double *) task_for_lecture3.cpp 0x403844
InitMatrix 4.0% 0.020s IPS2018_lecture3.exe InitMatrix(double * *) task_for_lecture3.cpp 0x403747
rand 3.5% 0.120s ucrtbased.dll rand 0x100dbdd0
free_dbg 0.3% 0.010s ucrtbased.dll free_dbg 0x1008bf40
operator delete[] 0.3% 0s IPS2018_lecture3.exe operator delete[](void *,unsigned int) delete_array_size.cpp 0x404db0
operator delete[] 0.3% 0s IPS2018_lecture3.exe operator delete[](void *) delete_array.cpp 0x405f30
operator delete 0.3% 0s IPS2018_lecture3.exe operator delete(void *) delete_scalar.cpp 0x407ce0
FILTER 100.0%
Process Any Process
Thread Any Thread
Module Any Module
Any Utilization
User functions + 1
Inline Mode Show inline
Functions only

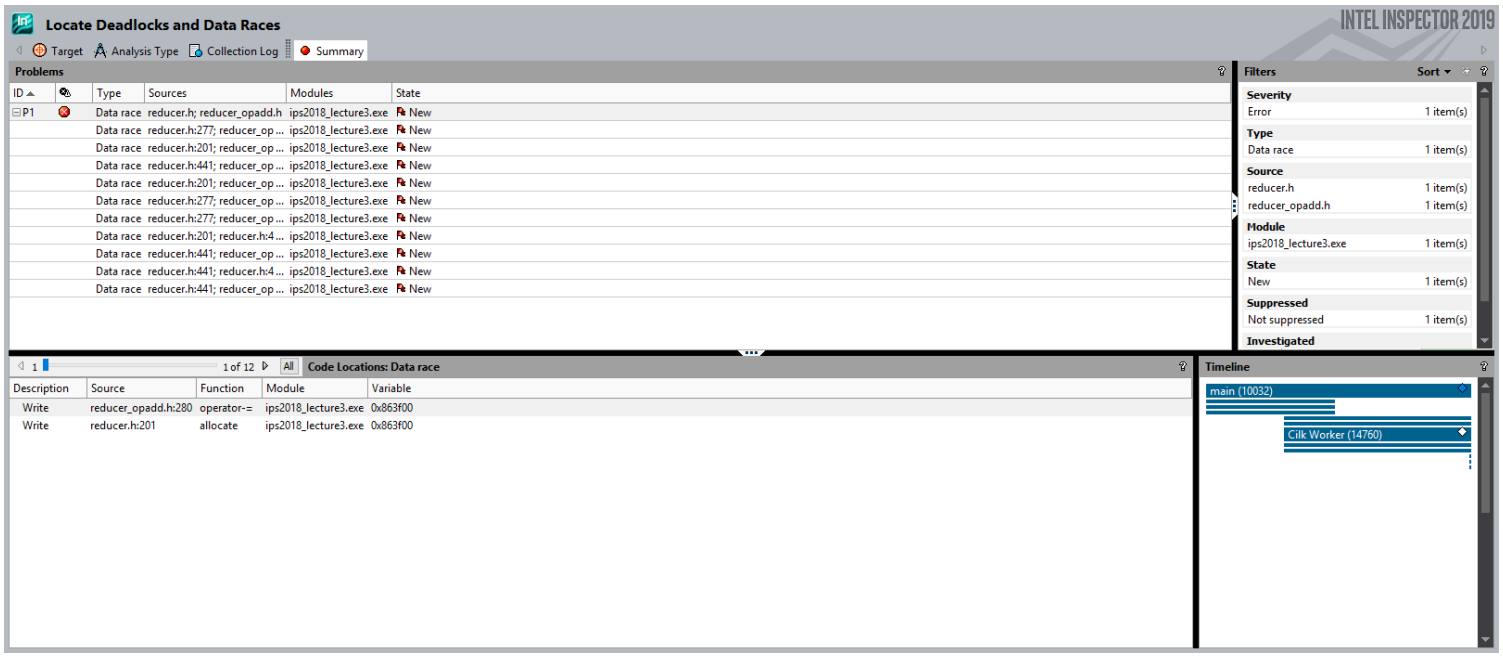


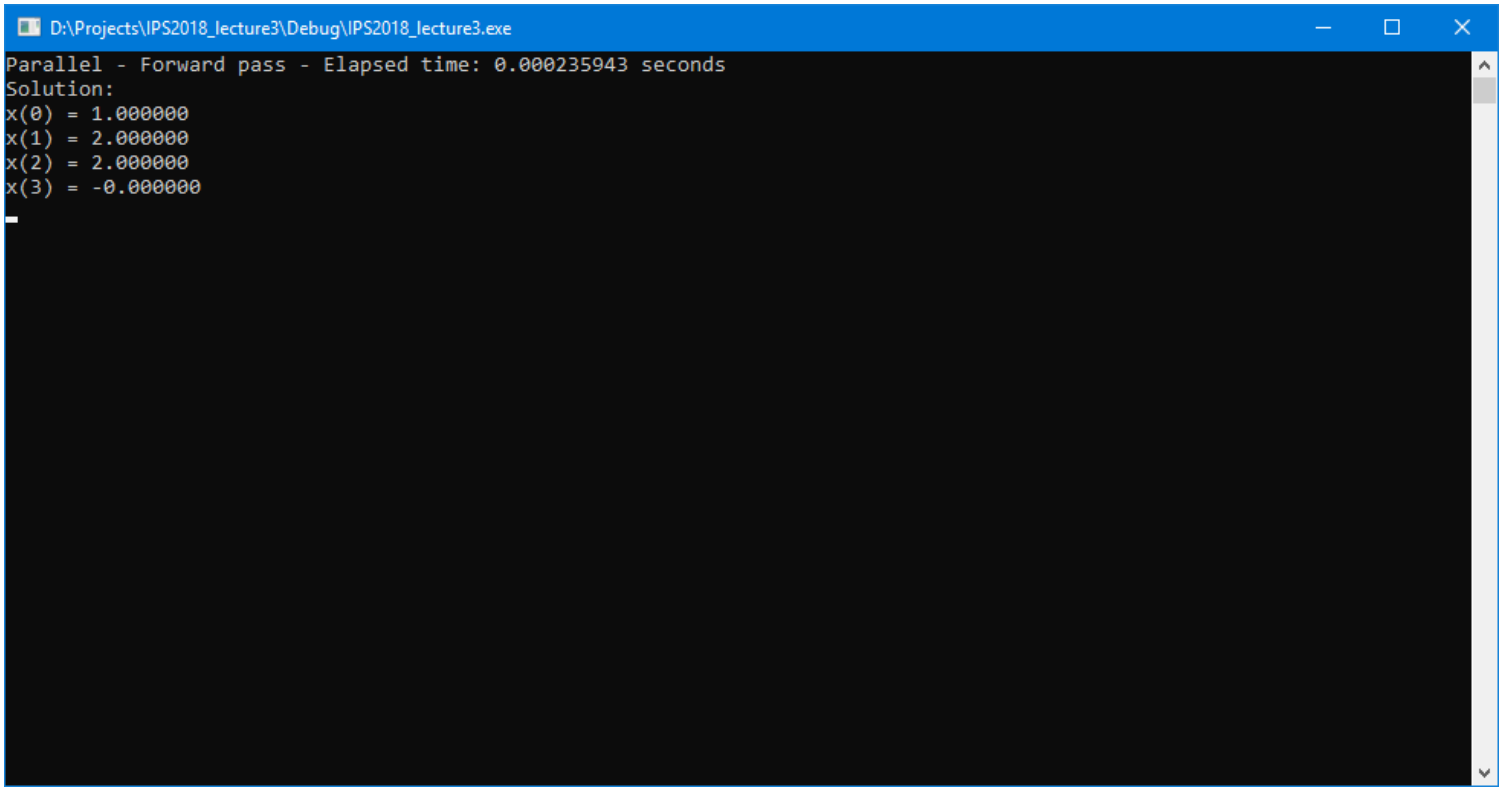
Гонка за данными на 126 строчке

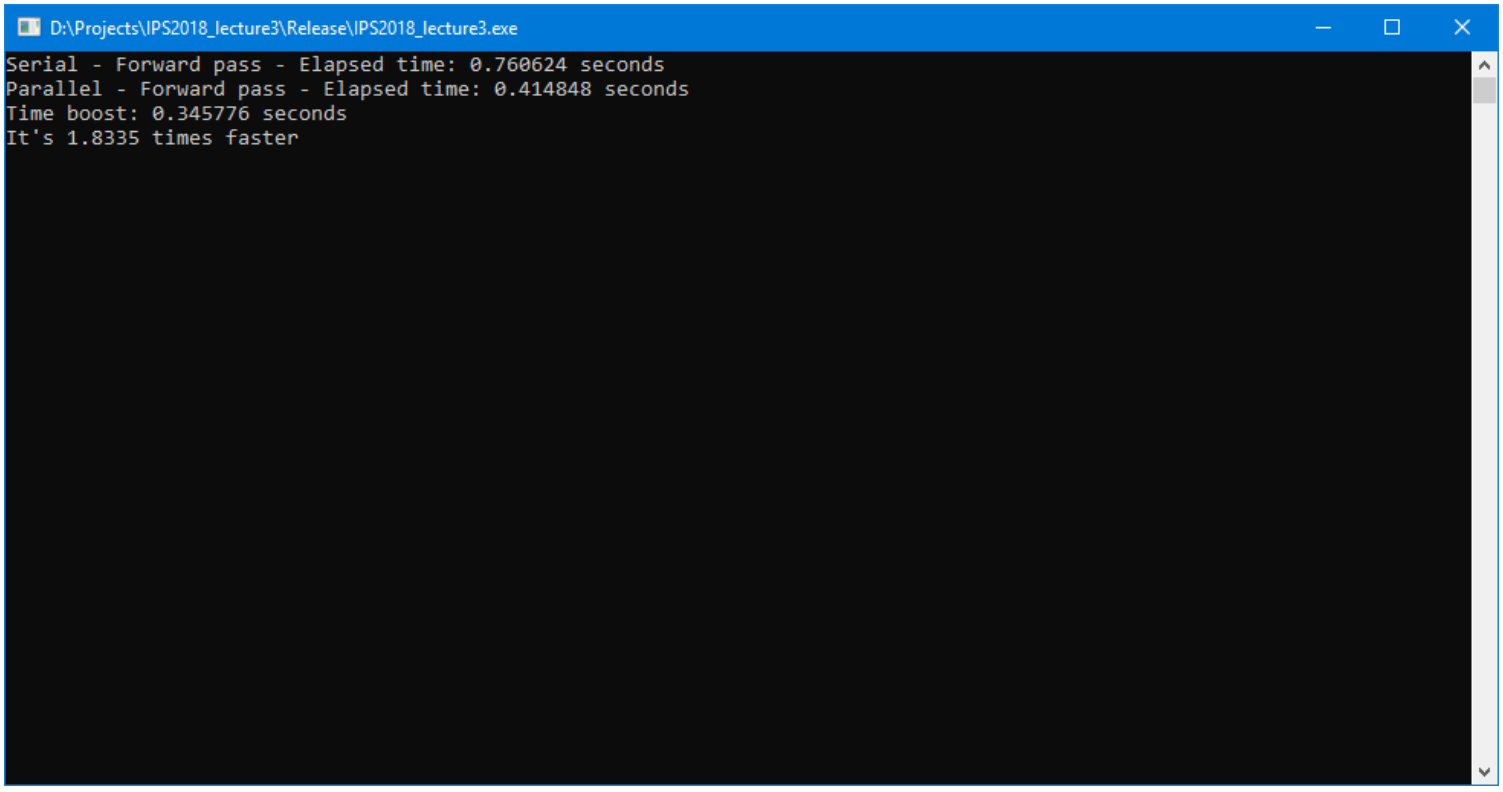
```
124         //
125         cilk_for (int j = k + 1; j < rows; ++j)
126         {
127             result[k] -= matrix[k][j] * result[j];
128         }
129
130         result[k] /= matrix[k][k];
131     }
```

Исправим на

```
120     for (k = rows - 2; k >= 0; --k)
121     {
122         cilk::reducer_opadd<double> add_reducer(matrix[k][rows]);
123         cilk_for (int j = k + 1; j < rows; ++j)
124         {
125             *add_reducer -= matrix[k][j] * result[j];
126         }
127         result[k] = add_reducer->get_value() / matrix[k][k];
128     }
```




D:\Projects\IPS2018_lecture3\Debug\IPS2018_lecture3.exe
Parallel - Forward pass - Elapsed time: 0.000235943 seconds
Solution:
x(0) = 1.000000
x(1) = 2.000000
x(2) = 2.000000
x(3) = -0.000000


D:\Projects\IPS2018_lecture3\Release\IPS2018_lecture3.exe
Serial - Forward pass - Elapsed time: 0.760624 seconds
Parallel - Forward pass - Elapsed time: 0.414848 seconds
Time boost: 0.345776 seconds
It's 1.8335 times faster