

Documentation

Size of the matrix: 3x5; Approach: 1; Way: 1; Number of tasks: 5; Time taken: 7434 microseconds

```
151 }
152
153 int main()
154 {
155     int nr_rows_result_matrix;
156     int nr_columns_result_matrix;
157
158     vector<vector<int>> matrix1, matrix2;
159
160     nr_rows_result_matrix = 3;
161     nr_columns_result_matrix = 5;
162     matrix1 = {
163         {1, 2, 3, 4},
164         {5, 6, 7, 8},
165         {9, 10, 11, 12}
166     };
167     matrix2 = {
168         {12, 10, 5, 9, 4},
169         {6, 7, 2, 10, 5},
170         {9, 2, 10, 4, 3},
171         {15, 3, 4, 1, 10}
172     };
173
174     /*matrix1 = generateRandomMatrix(10, 40);
175     matrix2 = generateRandomMatrix(40, 50);
176     nr_rows_result_matrix = 10;
177     nr_columns_result_matrix = 50;*/
178 }
```

Microsoft Visual Studio Debug Console Output:

```
Approach 1: create thread for each task.
Approach 2: use a thread pool.
Approach:1

Number of tasks:5

Way 1: row after row.
Way 2: column after column.
Way 3: every k-th element.
1
Result matrix:
ROW 0:111 42 55 45 63
ROW 1:279 130 139 141 151
ROW 2:447 218 223 237 239

Time taken for Approach 1, Way 1: 7434 microseconds
Time taken for Approach 1, Way 1: 0 seconds
D:\Facultate\Programare paralela si distribuita\Lab3\Lab3\x64\Debug\Lab3.exe (process 18068) exited with code
Press any key to close this window . . .
```

Size of the matrix: 3x5; Approach: 2
Way:1
Number of tasks: 5
Time taken: 5283 microseconds

```
151 }
152
153 int main()
154 {
155     int nr_rows_result_matrix;
156     int nr_columns_result_matrix;
157
158     vector<vector<int>> matrix1, matrix2;
159
160     nr_rows_result_matrix = 3;
161     nr_columns_result_matrix = 5;
162     matrix1 = {
163         {1, 2, 3, 4},
164         {5, 6, 7, 8},
165         {9, 10, 11, 12}
166     };
167     matrix2 = {
168         {12, 10, 5, 9, 4},
169         {6, 7, 2, 10, 5},
170         {9, 2, 10, 4, 3},
171         {15, 3, 4, 1, 10}
172     };
173
174     /*matrix1 = generateRandomMatrix(10, 40);
175     matrix2 = generateRandomMatrix(40, 50);
176     nr_rows_result_matrix = 10;
177     nr_columns_result_matrix = 50;*/
178 }
```

Microsoft Visual Studio Debug Console Output:

```
Number of tasks:5

Way 1: row after row.
Way 2: column after column.
Way 3: every k-th element.
1
At the beginning:
Result matrix:
ROW 0:0 0 0 0 0
ROW 1:0 0 0 0 0
ROW 2:0 0 0 0 0

Time taken for Approach 2, Way 1: 5283 microseconds
Time taken for Approach 2, Way 1: 0 seconds
At the end:
Result matrix:
ROW 0:111 42 55 45 63
ROW 1:279 130 139 141 151
ROW 2:447 218 223 237 239

D:\Facultate\Programare paralela si distribuita\Lab3\Lab3\x64\Debug\Lab3.exe (process 9492) exited with code 0.
Press any key to close this window . . .
```

Size of the matrix: 10x50; Approach: 1; Way: 2; Number of tasks: 10; Time taken: 141132 microseconds

```
Lab3.cpp
160 //nr_rows_result_matrix = 3;
161 nr_columns_result_matrix = 5;
162 matrix1 = {
163     {1, 2, 3, 4},
164     {5, 6, 7, 8},
165     {9, 10, 11, 12}
166 };
167 matrix2 = {
168     {12, 10, 5, 9, 4},
169     {6, 7, 2, 10, 5},
170     {9, 2, 10, 4, 3},
171     {15, 3, 4, 1, 10}
172 };
173
174 matrix1 = generateRandomMatrix(10, 40);
175 matrix2 = generateRandomMatrix(40, 50);
176 nr_rows_result_matrix = 10;
177 nr_columns_result_matrix = 50;
178
179
180
181 int approach, number_of_tasks, way;
182 std::cout << "Approach 1: create thread for" << endl;
183 std::cin >> approach;
184 std::cout << "Number of tasks:" << endl;
185 std::cin >> number_of_tasks;
186 std::cout << "Way 1: row after row.\nWay 2: column after column." << endl;
187 std::cin >> way;
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Size of the matrix: 10x500; Approach: 1; Way: 2; Number of tasks: 10; Time taken: 3 seconds

```
Lab3.cpp
160 //nr_rows_result_matrix = 3;
161 //nr_columns_result_matrix = 5;
162 matrix1 = {
163     {1, 2, 3, 4},
164     {5, 6, 7, 8},
165     {9, 10, 11, 12}
166 };
167
168 matrix2 = {
169     {12, 10, 5, 9, 4},
170     {6, 7, 2, 10, 5},
171     {9, 2, 18, 4, 3},
172     {15, 3, 4, 1, 10}
173 };
174
175 matrix1 = generateRandomMatrix(10, 40);
176 matrix2 = generateRandomMatrix(40, 500);
177
178 nr_rows_result_matrix = 10;
179 nr_columns_result_matrix = 500;
180
181
182 int approach, number_of_tasks, way;
183 std::cout << "Approach 1: create thread for a"
184 std::cin >> approach;
185 std::cout << "NNumber of tasks:"
186 std::cin >> number_of_tasks;
187 std::cout << "NWay 1: row after row.NWay 2:"
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Size of the matrix: 100x500; Approach: 1; Way: 3; Number of tasks: 20; Time taken: 49 seconds

```
154 int nr_rows_result_matrix;
155 int nr_cols_result_matrix;
156 int nr_tasks;
157 int nr_ways;
158 int nr_approaches;
159 int nr_tasks_per_way;
160 int nr_tasks_per_approach;
161 int nr_tasks_per_way_per_approach;
162 int nr_tasks_per_way_per_approach_per_task;
163 int nr_tasks_per_way_per_approach_per_task_per_way;
164 int nr_tasks_per_way_per_approach_per_task_per_way_per_approach;
165 int nr_tasks_per_way_per_approach_per_task_per_way_per_approach_per_task;
166 int nr_tasks_per_way_per_approach_per_task_per_way_per_approach_per_task_per_way;
167 int nr_tasks_per_way_per_approach_per_task_per_way_per_approach_per_task_per_way_per_approach;
168 int nr_tasks_per_way_per_approach_per_task_per_way_per_approach_per_task_per_way_per_approach_per_task;
169 int nr_tasks_per_way_per_approach_per_task_per_way_per_approach_per_task_per_way_per_approach_per_task_per_way;
170 int nr_tasks_per_way_per_approach_per_task_per_way_per_approach_per_task_per_way_per_approach_per_task_per_way_per_approach;
171 int nr_tasks_per_way_per_approach_per_task_per_way_per_approach_per_task_per_way_per_approach_per_task_per_way_per_approach_per_task;
172 int nr_tasks_per_way_per_approach_per_task_per_way_per_approach_per_task_per_way_per_approach_per_task_per_way_per_approach_per_task_per_way;
173 int nr_tasks_per_way_per_approach_per_task_per_way_per_approach_per_task_per_way_per_approach_per_task_per_way_per_approach_per_task_per_way_per_approach;
174 int nr_tasks_per_way_per_approach_per_task_per_way_per_approach_per_task_per_way_per_approach_per_task_per_way_per_approach_per_task_per_way_per_approach_per_task;
175 int nr_tasks_per_way_per_approach_per_task_per_way_per_approach_per_task_per_way_per_approach_per_task_per_way_per_approach_per_task_per_way_per_approach_per_task_per_way;
176 int nr_tasks_per_way_per_approach_per_task_per_way_per_approach_per_task_per_way_per_approach_per_task_per_way_per_approach_per_task_per_way_per_approach_per_task_per_way_per_approach;
177 int nr_tasks_per_way_per_approach_per_task_per_way_per_approach_per_task_per_way_per_approach_per_task_per_way_per_approach_per_task_per_way_per_approach_per_task_per_way_per_approach_per_task;
178 int nr_tasks_per_way_per_approach_per_task_per_way_per_approach_per_task_per_way_per_approach_per_task_per_way_per_approach_per_task_per_way_per_approach_per_task_per_way_per_approach_per_task_per_way;
179 int nr_tasks_per_way_per_approach_per_task_per_way_per_approach_per_task_per_way_per_approach_per_task_per_way_per_approach_per_task_per_way_per_approach_per_task_per_way_per_approach_per_task_per_way_per_approach;
180 int nr_tasks_per_way_per_approach_per_task_per_way_per_approach_per_task_per_way_per_approach_per_task_per_way_per_approach_per_task_per_way_per_approach_per_task_per_way_per_approach_per_task_per_way_per_approach_per_task;
181 int nr_tasks_per_way_per_approach_per_task_per_way_per_approach_per_task_per_way_per_approach_per_task_per_way_per_approach_per_task_per_way_per_approach_per_task_per_way_per_approach_per_task_per_way_per_approach_per_task_per_way;
182 int nr_tasks_per_way_per_approach_per_task_per_way_per_approach_per_task_per_way_per_approach_per_task_per_way_per_approach_per_task_per_way_per_approach_per_task_per_way_per_approach_per_task_per_way_per_approach_per_task_per_way_per_approach;
183 int nr_tasks_per_way_per_approach_per_task_per_way_per_approach_per_task_per_way_per_approach_per_task_per_way_per_approach_per_task_per_way_per_approach_per_task_per_way_per_approach_per_task_per_way_per_approach_per_task_per_way_per_approach_per_task;
184 int nr_tasks_per_way_per_approach_per_task_per_way_per_approach_per_task_per_way_per_approach_per_task_per_way_per_approach_per_task_per_way_per_approach_per_task_per_way_per_approach_per_task_per_way_per_approach_per_task_per_way_per_approach_per_task_per_way;
185 int nr_tasks_per_way_per_approach_per_task_per_way_per_approach_per_task_per_way_per_approach_per_task_per_way_per_approach_per_task_per_way_per_approach_per_task_per_way_per_approach_per_task_per_way_per_approach_per_task_per_way_per_approach_per_task_per_way_per_approach;
186 int nr_tasks_per_way_per_approach_per_task_per_way_per_approach_per_task_per_way_per_approach_per_task_per_way_per_approach_per_task_per_way_per_approach_per_task_per_way_per_approach_per_task_per_way_per_approach_per_task_per_way_per_approach_per_task_per_way_per_approach_per_task;
187 int nr_tasks_per_way_per_approach_per_task_per_way_per_approach_per_task_per_way_per_approach_per_task_per_way_per_approach_per_task_per_way_per_approach_per_task_per_way_per_approach_per_task_per_way_per_approach_per_task_per_way_per_approach_per_task_per_way_per_approach_per_task_per_way;

Time taken for Approach 1, Way 3: 46340507 microseconds
Time taken for Approach 1, Way 3: 46 seconds

D:\Facultate\Programare paralela si distribuita\Lab3\Lab3\x64\Debug\Lab3.exe (process 13092) exited with code 0.
Press any key to close this window . . .
```