1. The structure of your program

<https://github.com/MiroslavaRo/PDS_Assignment/blob/master/PDS_Part_A/Program.cs>

1. Evaluation of the tasks according to the following criteria:

* **Is this problem able to be parallelized?**

*Task 01:*

*Task 02:*

* **How would the problem be partitioned?**

*Task 01:*

Array can be divided by number of threads to consists of sub-arrays, where the biggest element of the previous sub-array is lower than the smallest element of the next sub-array. That way sub-arrays will be sorted in ascending order and then can be merged without changes.

*Task 02:*

Array can divided ПОСЛІДОВНО and НА РІВНІ ЧАСТИНИ (де це можливо, парні кількість тредів) by number of threads.

* **Are communications needed?**

Task 01:

Threads do not enter space of the same data to sort it and do not exchange data -> No

Task 02:

Threads do not exchange data -> No

* **Are there any data dependencies?**
* **Are there synchronization needs?**

Task 01:

No

Task 01:

Yes

* **Will load balancing be a concern?**

Task 01:

No, because sub-arrays are separated [..]

Task02:

No, порядок не важливий

1. The test results.

\*For 100.000 elements | Time in millisecond

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tasks** | **Threads** | | | | |
| **1 (no)** | **2** | **3** | **4** | **6** |
| *Task 01* | 16\_800 | 55\_900 | 28\_500 | 19\_000 | 14\_100 |
| *Task 02* | 40 | 70 | 70 | 105 | 150 |





