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**Program Structures & Algorithms**

**Fall 2021**

**Assignment No. 5**

* **Task (List down the tasks performed in the Assignment)**

Your task is to implement a parallel sorting algorithm such that each partition of the array is sorted in parallel. You will consider two different schemes for deciding whether to sort in parallel.

1. A cutoff (defaults to, say, 1000) which you will update according to the first argument in the command line when running.
2. Recursion depth or the number of available threads.
3. An appropriate combination of these.

* **Relationship Conclusion:**

1. When the array size is 2,000,000 and thread number is 4. A cutoff of 640000 makes the best performance of parallel sorting.
2. When thread number is 8, it makes the best performance.
3. **Cut-off / Array Size = 0.4** makes the best performance for parallel sorting.

* **Evidence to support the conclusion:**

1. **Output (Snapshot of Code output in the terminal)**

**Text

Description automatically generated**

**A picture containing application

Description automatically generatedText

Description automatically generatedA screenshot of a computer

Description automatically generated with medium confidenceA picture containing application

Description automatically generated**

**Graphical user interface

Description automatically generated**

**Graphical user interface

Description automatically generated with medium confidenceGraphical user interface, text

Description automatically generated**

1. **Graphical Representation (Observations from experiments should be tabulated and analyzed by plotting graphs (usually in excel) to arrive on the relationship conclusion)**

**Cut-off / Array Size = 0.4** makes the best performance for parallel sorting.

* **Unit tests result:(Snapshot of successful unit test run)**

Text

Description automatically generated with medium confidence