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Program Structures & Algorithms

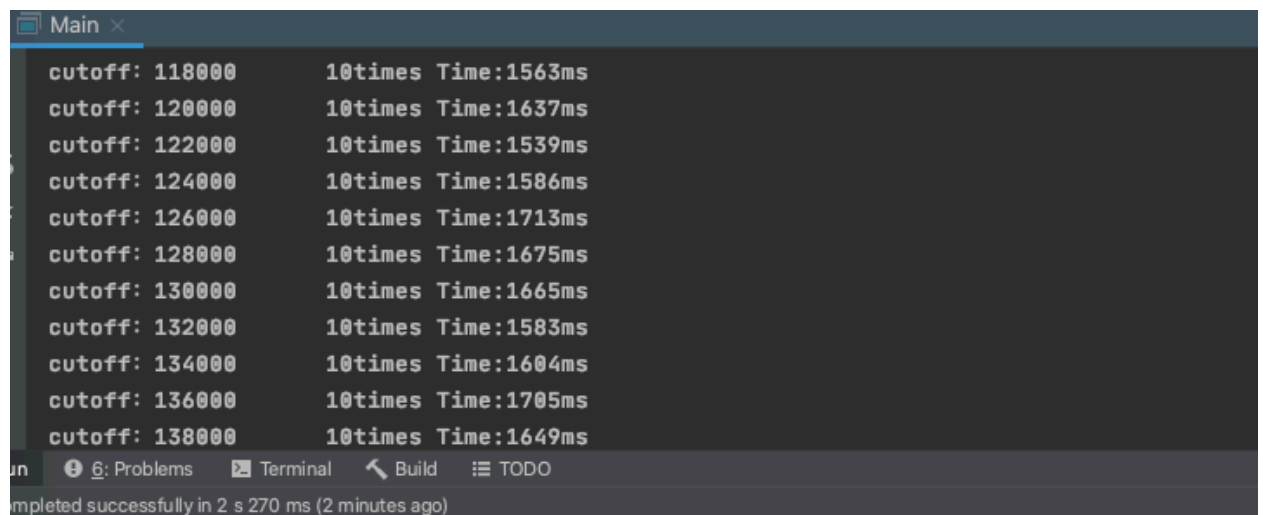
Fall 2021

Assignment No. 5

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

Parallel Sorting

- Output (Snapshot of Code output in the terminal)



A terminal window titled 'Main' displays the output of a parallel sorting program. The output consists of ten lines, each showing a cutoff value, the number of times the operation was performed (10 times), and the time taken in milliseconds. The cutoff values range from 118000 to 138000 in increments of 2000. The times are relatively stable, ranging from 1539ms to 1713ms. At the bottom of the terminal, a status bar indicates that the process was completed successfully in 2 seconds and 270 milliseconds, 2 minutes ago.

```
Main x
cutoff: 118000      10times Time:1563ms
cutoff: 120000      10times Time:1637ms
cutoff: 122000      10times Time:1539ms
cutoff: 124000      10times Time:1586ms
cutoff: 126000      10times Time:1713ms
cutoff: 128000      10times Time:1675ms
cutoff: 130000      10times Time:1665ms
cutoff: 132000      10times Time:1583ms
cutoff: 134000      10times Time:1604ms
cutoff: 136000      10times Time:1705ms
cutoff: 138000      10times Time:1649ms
un  6: Problems  Terminal  Build  TODO
Completed successfully in 2 s 270 ms (2 minutes ago)
```

Conclusion:

- 1. When the amount of data is large, parallel sorting can improve efficiency at some occasions.**
- 2. When the cutoff setting value is too small, that is, when the number of threads that need to be created is large, the sorting efficiency is reduced, and it is guessed that creating threads consumes too much resources and waste some time.**
- 3. When the thread is over 16, the result almost did not change anymore.**
- 4. Increase the amount of thread may improve the efficiency or decrease thr efficiency.**

	A	B	C	D	E	F	G
18	0.09	149.8	0.09	167.2	0.09	243.4	
19	0.095	151.5	0.095	142.4	0.095	211.4	
20	0.1	158.8	0.1	150.8	0.1	204.6	
21	0.105	154.5	0.105	183.6	0.105	187.6	
22	0.11	156.6	0.11	180.8	0.11	187.6	
23	0.115	172.4	0.115	193.7	0.115	178.9	
24	0.12	154.7	0.12	177.5	0.12	190.5	
25	0.125	159.8	0.125	146.4	0.125	174.9	
26	0.13	179.2	0.13	151.1	0.13	184.2	
27	0.135	220	0.135	145.6	0.135	195.4	
28	0.14	173.6	0.14	146.4	0.14	195.7	
29	0.145	147.4	0.145	140.6	0.145	190.1	
30	0.15	143.9	0.15	153.2	0.15	188.5	
31	0.155	148.6	0.155	187.4	0.155	209.8	
32	0.16	170.3	0.16	170	0.16	207.9	
33	0.165	147.6	0.165	141.6	0.165	214.1	
34	0.17	140.7	0.17	149.3	0.17	194.1	
35	0.175	139.4	0.175	136.2	0.175	198.9	
36	0.18	145.7	0.18	149.6	0.18	215	
37	0.185	146.4	0.185	182	0.185	197.6	
38	0.19	154.1	0.19	161.2	0.19	211.9	
39	0.195	136.1	0.195	135.1	0.195	208.2	
40	0.2	145.4	0.2	135.4	0.2	181.6	
41	0.205	151.6	0.205	157.3	0.205	182.6	
42	0.21	155.2	0.21	144.2	0.21	194.4	
43	0.215	204.2	0.215	174.7	0.215	191.1	
44	0.22	230.2	0.22	178.4	0.22	191.2	
45	0.225	217.1	0.225	141.1	0.225	179.4	
46	0.23	156.9	0.23	140.4	0.23	179.2	
47	0.235	149.4	0.235	142.8	0.235	186.7	
48	0.24	157.3	0.24	148.5	0.24	196	
49	0.245	185.5	0.245	176.5	0.245	185	
50	0.25	152.1	0.25	140.8	0.25	196.6	
51		165.132		161.552		197.8	
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