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COURSE CODE – CSE4001

COURSE NAME – PARALLEL & DISTRIBUTED COMPUTING

SLOT – L9+L10

Lab – 7

Profiling

Code for Reader Writers Problem –

```
#include<stdio.h>

#include<omp.h>

#include<string.h> int
main(int argc, char *argv[])
{
    char buf1[100];
    strcpy(buf1,"hi");      int i;
    omp_set_num_threads(2);
    omp_lock_t writelock;
    omp_init_lock(&writelock);

    #pragma omp parallel
    {
        int tid=omp_get_thread_num();
        if(tid==0)
        {
            printf("I am THREAD:%d writing\n",omp_get_thread_num());
            omp_set_lock(&writelock);          strcat(buf1,"writing to the buffer\n");
            omp_unset_lock(&writelock);
        }
    }
}
```

```

        if(tid==1)
        {

            omp_set_lock(&writelock);

            printf("\nI am THREAD:%d reading",omp_get_thread_num());

            printf("\nthe buffer contents are:\n %s\n",buf1);

            omp_unset_lock(&writelock);

        }

    }

    return 0;

}

```

Output –

```

I am THREAD:0 writing

I am THREAD:1 reading
the buffer contents are:
hi

```

Output of unknown.2-0.ompp.txt file –

The screenshot shows a terminal window titled 'unknown.2-0.ompp.txt' with the following output:

```

1 -----
2 ---- omp General Information -----
3 ----
4 Start Date      : Thu Sep 15 21:50:54 2022
5 End Date        : Thu Sep 15 21:50:54 2022
6 Duration        : 0.00 sec
7 Application Name : unknown
8 Type of Report   : final
9 User Time        : 0.00 sec
10 System Time     : 0.00 sec
11 Max Threads     : 2
12 omp Version     : 0.8.99
13 omp Build Date  : Sep 14 2022 22:31:56
14 PAPI Support    : not available
15
16 -----
17 ---- omp Region Overview -----
18 ----
19 PARALLEL: 1 region:
20 * R00001 reader_writers.c (16-37)
21
22 LOCK: 1 region:
23 * R00003 LOCK (0x7ffe7ef2ddc)
24
25 -----
26 ---- omp Callgraph -----
27 ----
28
29 Inclusive (%) Exclusive (%) [unknown: 2 threads]
30 0.00 (100.0%) 0.00 (35.32%)
31 0.00 (64.68%) 0.00 (64.68%) PARALLEL --R00001 reader_writers.c (16-37)
32
33 -----
34 ---- omp Flat Region Profile (Inclusive data) -----
35 ----
36 R00003 LOCK (0x7ffe7ef2ddc)
37 TID      execT      execC      bodyT      enterT      exitT
38 0         0.00        1         0.00        0.00        0.00
39 1         0.00        1         0.00        0.00        0.00
40 SUM      0.00        2         0.00        0.00        0.00
41
42 R00001 reader_writers.c (16-37) PARALLEL
43 TID      execT      execC      bodyT      exitBarT    startupT    shutdownT    taskT

```

```

39 1 0.00 1 0.00 0.00 0.00
40 SUM 0.00 2 0.00 0.00 0.00
41
42 R00001 reader_writers.c (16-37) PARALLEL
43 TID execT execC bodyT exitBarT startUpT shutdwnT taskT
44 0 0.00 1 0.00 0.00 0.00 0.00
45 1 0.00 1 0.00 0.00 0.00 0.00
46 SUM 0.00 2 0.00 0.00 0.00 0.00 0.00
47
48 -----
49 ---- ompP Callgraph Region Profiles (incl./excl. data) -----
50 -----
51
52 [*00] unknown
53 [-01] R00001 reader_writers.c (16-37) PARALLEL
54 TID execT execC bodyT/I bodyT/E exitBarT startUpT shutdwnT taskT
55 0 0.00 1 0.00 0.00 0.00 0.00 0.00
56 1 0.00 1 0.00 0.00 0.00 0.00 0.00
57 SUM 0.00 2 0.00 0.00 0.00 0.00 0.00 0.00
58
59
60 -----
61 ---- ompP Overhead Analysis Report -----
62 -----
63 Total runtime (wallclock) : 0.00 sec [2 threads]
64 Number of parallel regions : 1
65 Parallel coverage : 0.00 sec (64.26%)
66
67 Parallel regions sorted by wallclock time:
68 Type Location Wallclock (%)
69 R00001 PARALLEL reader_writers.c (16-37) 0.00 (64.26)
70 SUM 0.00 (64.26)
71
72 Overheads wrt. each individual parallel region:
73 Total Ovhd (%) = Synch (%) + Imbal (%) + Linpar (%) + Mgmt (%)
74 R00001 0.00 0.00 (51.32) 0.00 ( 0.00) 0.00 ( 0.66) 0.00 ( 0.00) 0.00 (50.66)
75
76 Overheads wrt. whole program:
77 Total Ovhd (%) = Synch (%) + Imbal (%) + Linpar (%) + Mgmt (%)
78 R00001 0.00 0.00 (32.98) 0.00 ( 0.00) 0.00 ( 0.43) 0.00 ( 0.00) 0.00 (32.55)
79 SUM 0.00 0.00 (32.98) 0.00 ( 0.00) 0.00 ( 0.43) 0.00 ( 0.00) 0.00 (32.55)
80
81
```