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**REGISTER NO.- 20BCE1798**

**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 Linux desktop environment with a terminal window and a text editor window.

**Terminal Window:**

```

I am THREAD:0 writing
I am THREAD:1 reading
the buffer contents are:
hi

```

**Text Editor Window:**

The text editor window displays the file `unknown.2-0.ompp.txt` which contains the source code of `reader_writers.c` and its execution results.

```

1 -----ompP General Information-----
2
3 start Date : Thu Sep 15 21:50:54 2022
4 end Date   : Thu Sep 15 21:50:54 2022
5 Duration   : 0.00 sec
6 Application Name: unknown
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 ompP Version : 0.8.99
13 ompP Build Date : Sep 14 2022 22:31:56
14 PAPI Support : not available
15
16 -----
17 -----ompP Region Overview-----
18
19 PARALLEL: 1 region:
20 * R00001 reader_writers.c (16-37)
21
22 LOCK: 1 region:
23 * R00003 LOCK (0x7ffe7fe2ddc)
24
25 -----
26 -----ompP Callgraph-----
27
28
29 Inclusive (%) Exclusive (%)
30 0.00 (100.0%) 0.00 (35.32%) [unknown: 2 threads]
31 0.00 (64.68%) 0.00 (64.68%) PARALLEL +R00001 reader_writers.c (16-37)
32
33 -----
34 -----ompP Flat Region Profile (Inclusive data)-----
35
36 * R00003 LOCK (0x7ffe7fe2ddc)
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

```

The text editor window also shows the file path `/Desktop/PDC_ib` and the current date and time `Sep 15 21:56`.

Ubuntu 22.04 [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Activities Text Editor

Sep 15 21:56

unknown.2-0.mpptxt  
-/Desktop/PDC\_lab

Save

unknown.2-0.ompp.txt

```
reader_writers.c
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 execC execC bodyT exitBarT startupT shutdownT taskT
44 0 0.00 1 0.00 0.00 0.00 0.00 0.00
45 1 0.00 1 0.00 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 Profile (incl./excl. data) -----
50
52 [*0] unknown
53 [=0] R00001 reader_writers.c (16-37) PARALLEL
54 TID execC execC bodyT/E exitBarT startupT shutdownT 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
58
59
60 -----
61 ---- omp 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 (%) + Limpar (%) + Mgmt (%)
74 R00001 0.00 0.00 (51.32) 0.00 ( 0.00) 0.00 ( 0.06) 0.00 ( 0.00) 0.00 (50.66)
75
76 Overheads wrt. whole program:
77 Total Ovhd (%) = Synch (%) + Imbal (%) + Limpar (%) + 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
```

Plain Text Tab Width: 8 Ln 16, Col 71 INS

21:56 ENG 15-09-2022 Right Ctrl