Sheet 05

# PS Parallel Programming

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## 1 Flush Directives

The effect of missing flush directives is observed.

### 1.1 Source Code

```
#include <omp.h>
#include <stdio.h>

int main() {

    int data;
    int flag = 0;

    #pragma omp parallel num_threads(2)
    {

      if (omp_get_thread_num() == 0) {

          data = 42;

          flag = 1;

      } else if(omp_get_thread_num() == 1) {

          int flag_val = 0;
```

```
21
22              while (flag_val < 1) {
23
24                 flag_val = flag;
25
26              }
27
28              printf("flag=%d data=%d\n", flag, data);
29
30          }
31
32      }
33
34      return 0;
35  }
```

The program spawns two threads. Thread 0 does some work (setting the value of the variable data) before setting a flag. Thread 1 should print the values of the flag and the variable after the other thread has finished his work.

## 1.2 Experiment Method

The measurement was done on the LCC3 cluster by calling

salloc –exclusive –tasks-per-node=1 –cpus-per-task=1 srun –pty bash .

The following scripts are involved in the measurement process.

### 1.2.1 Main Script

```
1  #!/bin/bash
2  # Usage: ./main.sh
3  MEASUREMENT_RESULTS=measurements
4  PROCESSED_RESULTS=results
5  make
6  for i in {0..999}
7  do
8          ./ex1
9  done
10 make clean
```

### 1.3 Experiment Results

The program neither terminates nor prints any output.