COA

MIDSEM PROJECT

- 21CS01003
- 21CS01005
- 21CS01034
- 21CS01041
- 21CS01072

Steps followed:

1. Make header file for declaring the variables.

```
#ifndef WARP_STATE_COUNTER
#define WARP_STATE_COUNTER

// Defining custom indexes for the counter array
enum counters { CYCLE, WARP, WAITING, ISSUED, XALU, XMEM, OTHER };

// Counter array size
#define NUM_COUNTERS (OTHER + 1)

// Declaring the counter arraywarp_state_counters[TOTAL] +=
m_next_cycle_prioritized_warps.size();
extern unsigned long long warp_state_counters[NUM_COUNTERS];

#endif
```

2. For counting the total warps, implement the below line.(or we can also multiply the total no.of cycles and no.of warps.

```
warp_state_counters[TOTAL] += m_next_cywarp_state_counters[TOTAL] +=
m_next_cycle_prioritized_warps.size();cle_prioritized_warps.size();
```

3. If the warps are done consider them in others.

```
if ((*iter) == NULL || (*iter)->done_exit()) {
      if ((*iter) == NULL)
        warp_state_counters[TOTAL]--;
      else
        warp_state_counters[OTHER]++;
      continue;
}
```

//OTHER STATE

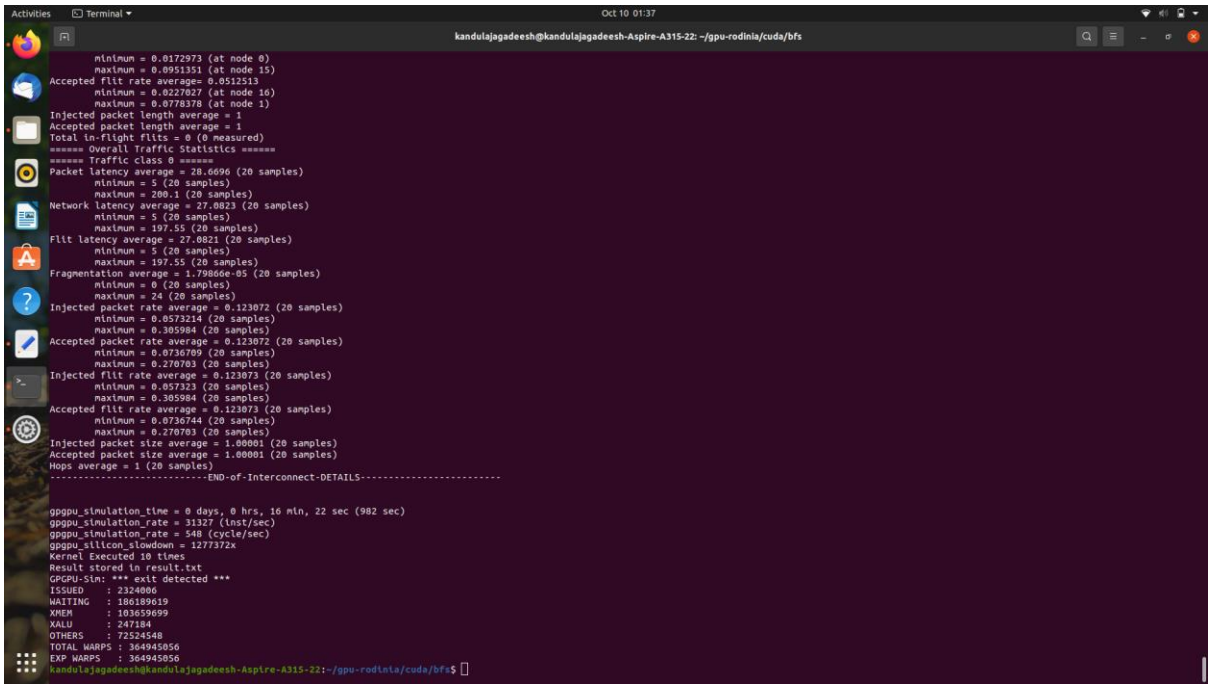
```
if (warp(warp_id).ibuffer_empty()) {
      warp_state_counters[OTHER]++;
      SCHED_DPRINTF(
          "Warp (warp_id %u, dynamic_warp_id %u) fails as ibuffer_empty\n",
          (*iter)->get_warp_id(), (*iter)->get_dynamic_warp_id());
    }

    else if (warp(warp_id).waiting()) {
```

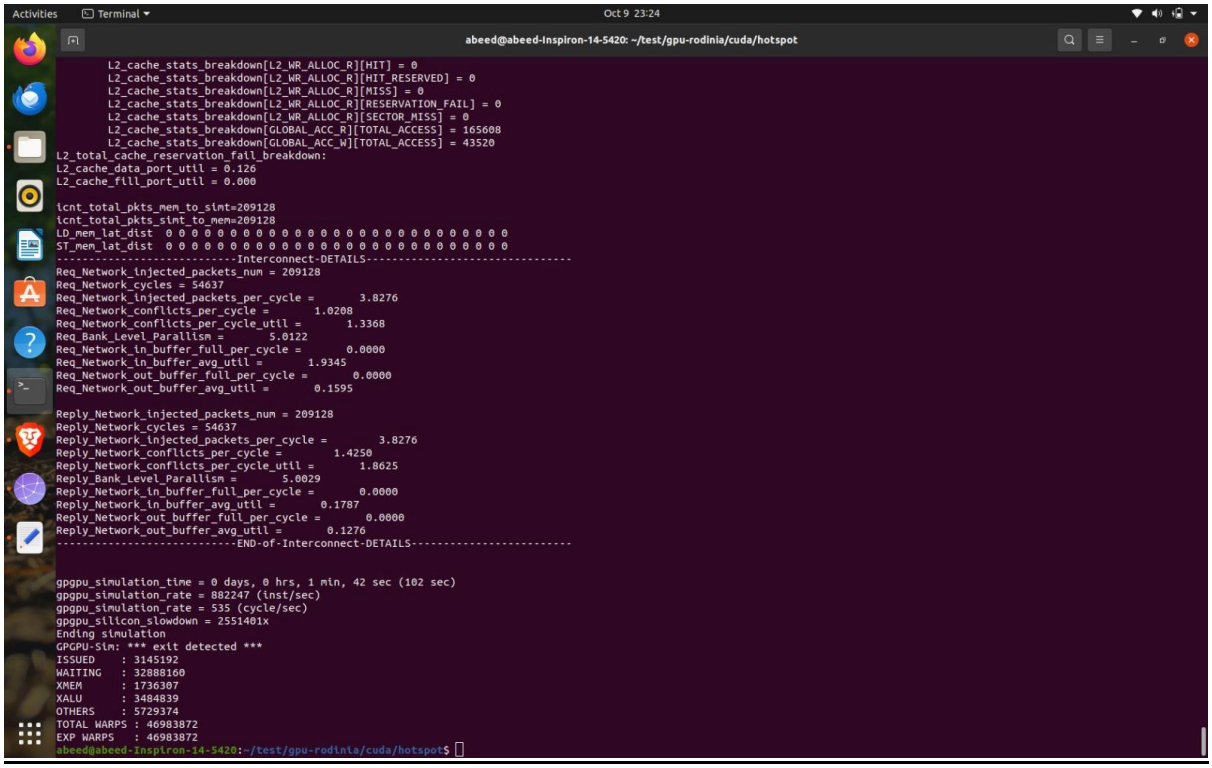
```
    warp_state_counters[OTHER]++;
    SCHED_DPRINTF(
        "Warp (warp_id %u, dynamic_warp_id %u) fails as waiting for "
        "barrier\n",
        (*iter)->get_warp_id(), (*iter)->get_dynamic_warp_id());
}
```

4. For XMEM and XALU else statements whenever necessary.
5. If there are any scoreboard collisions(no data dependencies) consider the warp in waiting state.
6. If a warp is issued the remaining warps in the m_next_cycle_priority_warps vector are checked if they are completed(if completed considered in others,if not considered in waiting).
7. Finally,print the values of counter in checkpoint file.

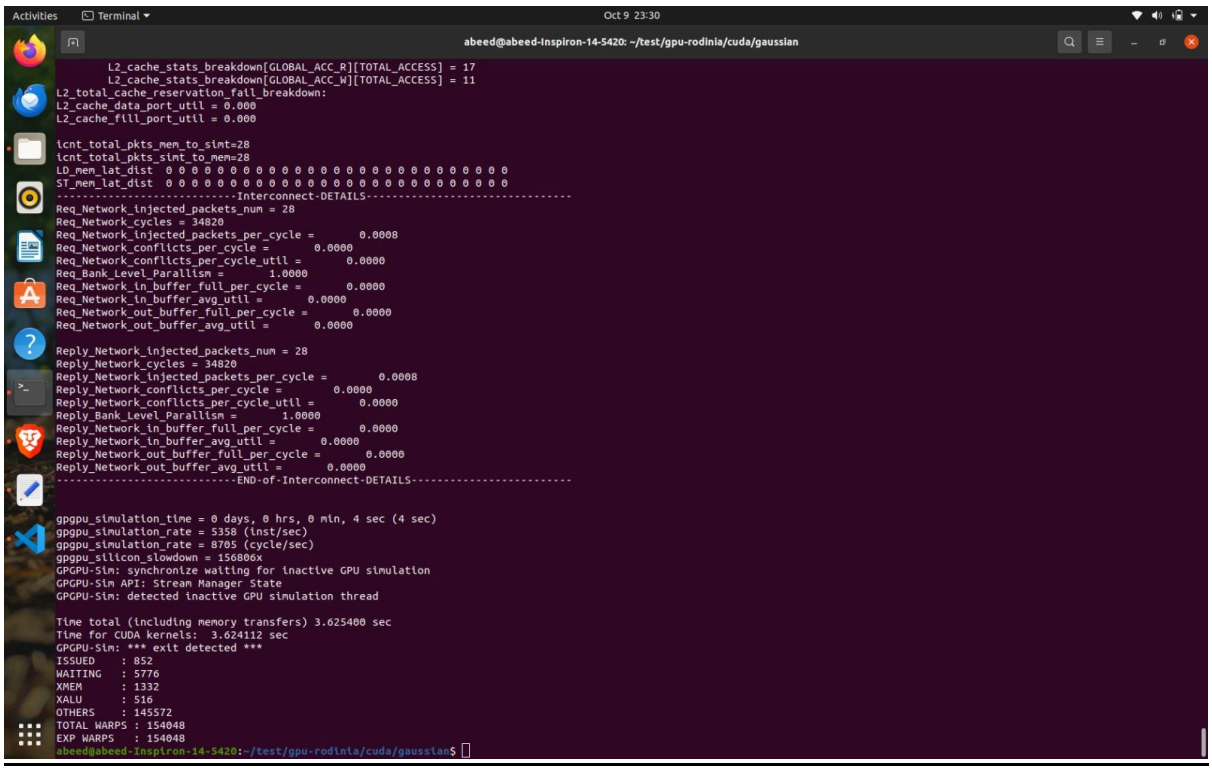
BFS benchmark:



Hotspot benchmark:



Gaussian benchmark:



Warp stats breakdown: