Performance of the system with Cache and without Cache
Comparison Report
Co 224
Group 05

Observations

If there is a hit in the cache, system can fetch instructions without stalling the cpu
If there is miss in the cache, cpu stall for amount of time

Conclusion

During these lab sessions we can observe that a computer system with a cache is faster than a cache-less system, when there is a hit in the cache.
This can happen due to several reasons. The main reason is cache memory is faster than data memory. So cpu can access cache memory instantly.

If there is a miss in the cache some disadvantages can be seen. As an example if the dirty bit of the accessing cache block is 1 and there is a miss in the cache cpu should be stalled for 41 clock cycles. It is a huge amount of time wastage compared to the cache-less system. Because the cache-less system only waste 5 clock cycles to do this operation (This depends on the block size. When considering the same block size cache-less system waste 20 clock cycles to do this operation).

But when accessing the same cache block again and again it leads to a high hit rate in the cache. Also in the computer systems cache filled with data from the data memory depends on special locality and temporal locality. So above wastage can be simply neglected when considering execution of the real programs.
So, the final conclusion is overall performance of a system with cache is very high compared with a cache-less system.