**BookSim Simulation Parameters**

* Following are the set of Parameters which were used to realize the 2D-Torus topology on BookSim.
* There is a configuration file that has major parameters like topology, Routing Function, Flow Control, traffic and injection rate.
* The rest of the parameters are taken from a file known as booksim\_config.cpp that contains all the default configurable parameters in network
* Request-response protocol is implemented via Virtual channels
* Though BookSim has feature of link\_failures, but that is still under experimentation
* Single Cycle Implementation is performed by
  + setting routing delay to 0
  + speculative = 1 ( overlaps the VC allocation and switch allocation)
  + setting switch traversal delay to 0

1. subnets : sub-networks = 1
2. topology : Torus(k = 4,n=2,c =1)
3. routing\_function : dim\_order(Introduce XY Routing under the subset of DOR)
4. use\_noc\_latency = 1 , total run-time increase with increase in its value(Not considered for simulation results,)
5. x= 4(Routers in X direction),y = 4(Router in Y direction) ,xr=1(Nodes per Router),xy=1
6. link\_failures = 0
7. in\_ports = 5 ,out\_ports: 5
8. router : input\_queued (we employ Input-queued Virtual channel router)
9. internal speedup: speed up at switch level = 1 for our purpose
10. Output buffer size: -1 (setting it to any other value doesn’t change the results) \*\*
11. speculative = 1(overlapping VC and Switch allocation)
12. num\_vcs = 2
13. vc\_buf\_size = 4
14. buf\_size= -1(Will set vc\_buf\_size as string “vc\_buf\_size”)
15. buffer\_policy= private ( each VC has a private buffer)
16. speculative = 1 (for overlapping the VC alloc and switch alloc stages)
17. wait\_for\_tail\_credit = 1 (Atomic VC Allocation,as we don't have lanes in BookSim we are keeping it high)
18. vc\_busy\_when\_full = 1 //Mark VCs as in use when they have no credit available
19. hold\_switch\_for\_packet = 1//hold the same switch config for the entire packet.
20. routing delay = 0//single cycle router
21. vc\_alloc\_delay=1//single cycle router
22. sw\_alloc\_delay = 1//single cycle router
23. st\_prepare\_delay = 0//single cycle router
24. st\_final\_delay = 0//single cycle router
25. sw\_allocator: islip
26. arb\_type : round\_robin
27. Traffic : Uniform with no class Priority
28. latency\_threshold = 500(can be increased or decreased). Latency above this threshold is considered unstable and simulation is stopped
29. classes = 2 (2 traffic classes in our implementation)