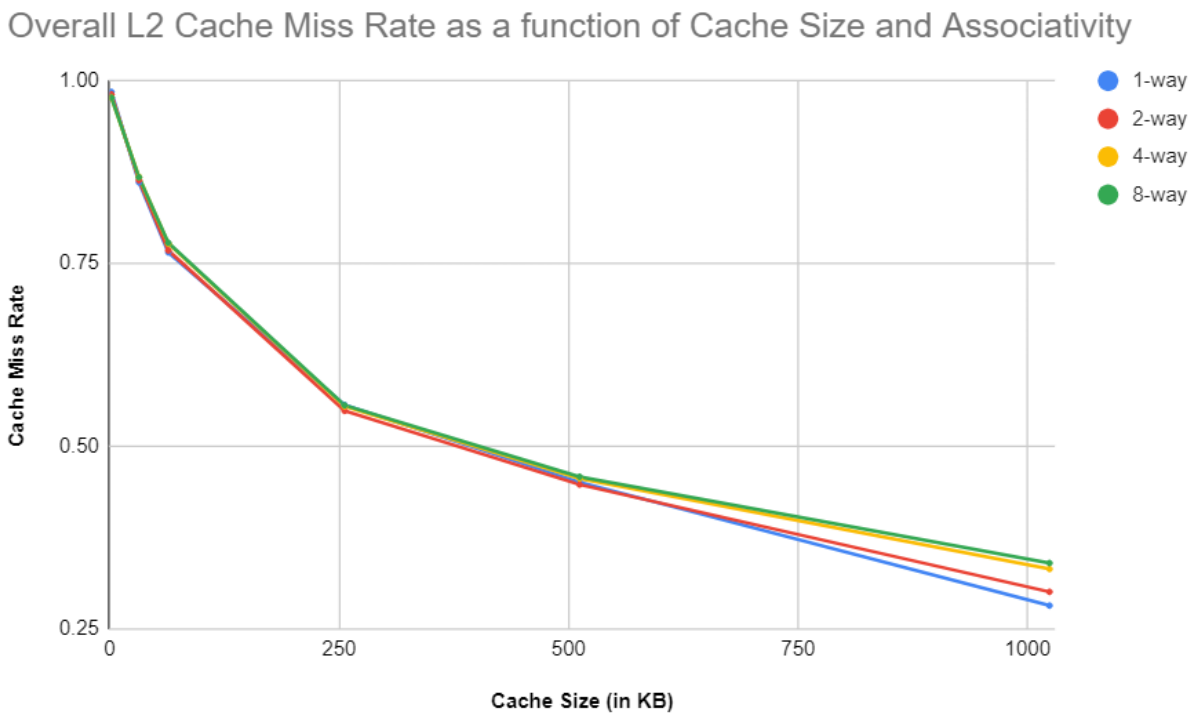
CA Assignment - 1

Part 2b)

The following values were found by changing cache size and associativity:

	Associativity			
Cache Size	1	2	4	8
2	0.984812	0.98152	0.976918	0.977016
32	0.861136	0.863957	0.868424	0.868167
64	0.765223	0.76783	0.777229	0.77841
256	0.556508	0.548418	0.554495	0.556006
512	0.450847	0.447628	0.455865	0.458288
1024	0.281975	0.300755	0.332091	0.340175

The following plot was obtained after plotting the above values in the chart.



Part 2c) The following observations can be made from the above plot:

1. **Effect of Cache Size**
   As Cache size increases, a significant decrease in overall cache miss rate is observed. This is simply because larger cache size allows more addresses to be cached and thus there is a higher chance of retrieving the address from the cache.

2. **Effect of Associativity:**
   In associative caches, there are sets which are a fixed number of locations in which a given address may be stored. The number of locations in each set is the associative of the cache.
   a. A cache with a higher associativity will have lower miss rates for small size caches. This is because each set now has more ‘blocks’ so there is a less chance of conflict between two addresses. This effect can be more visibly seen when the cache size is smaller.
   b. For larger cache sizes, it can be seen that an increase in associativity increases miss rate. This is due to the fact that more addresses get mapped to the same set which increases conflict misses.

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2020325