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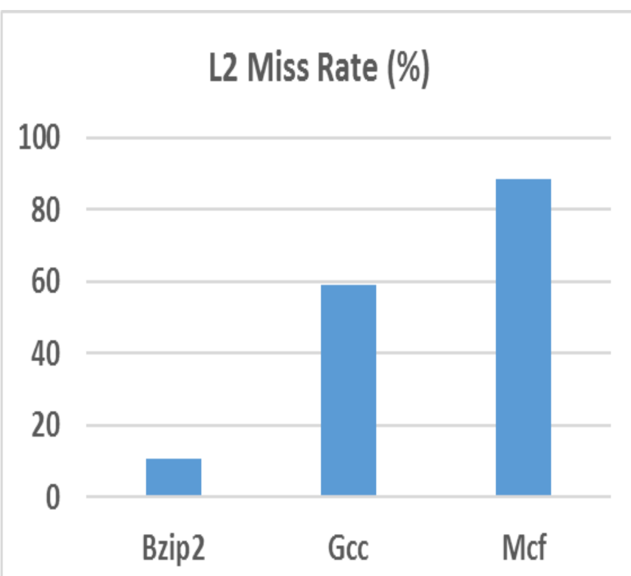
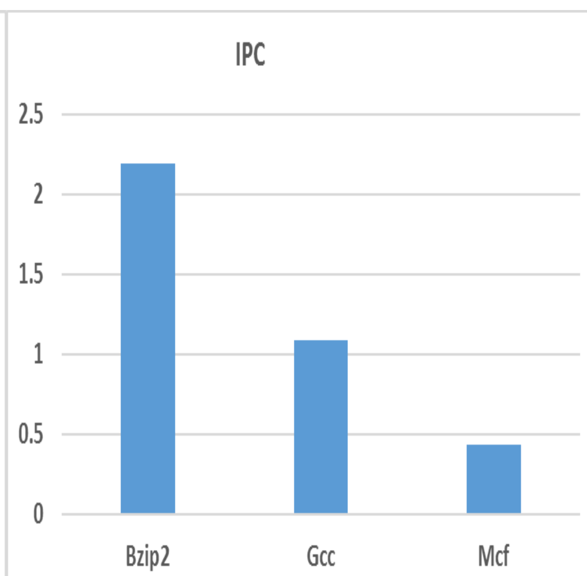
Declaration: All the code changes and simulations for the bonus assignment are done by my own but I have discussed few points regarding the concepts and code changes with my fellow classmate Saranya Govindarajan.

1) In the SHiP replacement policy, we predict the re-reference interval based on the value stored in the Signature History Counter Table, that is indexed using the signature. Each cache line requires an additional hardware overhead of an outcome bit and one signature bit. In case of a miss, we search for the block with RRPV as 3 and if we find the block we replace the block. We check the outcome of the replaced block. If the outcome of the replaced block is not true, then we decrement the SHCT[signature] value. We assign the outcome of the block as false. We assign the signature of the block to the current calculated signature. If the SHCT[signature] is 0 then we predict the distant reference, else we predict the near reference value for the RRPV counter value. In case of a hit, we make the outcome as true and increment the SHCT[signature] value.

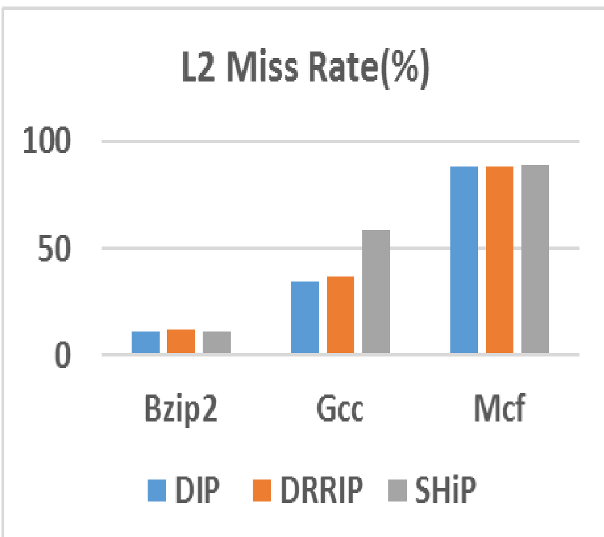
2)

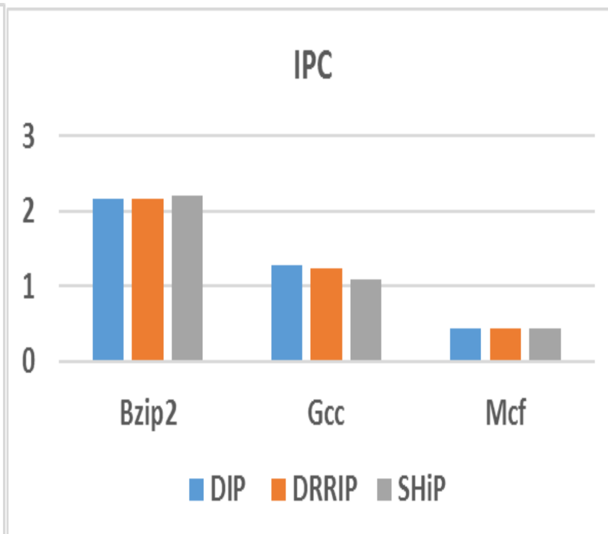
		SHiP
L2 miss rate (%)	**Bzip2**	10.79
	Gcc	58.96
	Mcf	88.72
IPC	**Bzip2**	2.1947
	Gcc	1.0929
	Mcf	0.4360





		DIP	DRRIP	SHiP
L2 miss rate (%)	**Bzip2**	11.52	11.77	10.79
	Gcc	34.25	36.56	58.96
	Mcf	88.31	88.16	88.72
IPC	**Bzip2**	2.1672	2.1666	2.1947
	Gcc	1.2694	1.2420	1.0929
	Mcf	0.4361	0.4370	0.4360





3) From the above table, we can say that SHiP does not always perform well. It depends on the size of the working set and type of the benchmark used. From the above table, in case of Bzip2 it performs better than DIP and DRRIP but in case of other benchmarks it does not perform better.