Course: ECEC-T480

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Project 1 Report

1. Testing Result

sample.workload

		bank2	bank4	bank8	bank16
DRAM	Exe time	150055192	115936976	96151062	84648590
	Avg latency	249.7879943	770.1532593	458.0702823	276.6407173
	Bank Conflict	2465082	1824722	1503277	1343856
PCM	Exe time	246183163	179056215	136282231	110038953
	Avg latency	707.4927373	707.2105713	32.5428543	677.1214603
	Bank Conflict	2465082	1824722	1503277	1343856
FR-FCFS	Exe time	107571409	53875843	27121072	13834286
	Avg latency	638.1937873	849.7324223	427.5790413	217.7569733
	Bank Conflict	2463880	1818043	1484434	1299907

508.namd_r.trace.processed

		bank2	bank4	bank8	bank16
DRAM	Exe time	4360781	3010056	2129959	1537676
	Avg latency	2263.389404	1562.285889	1105.487427	798.1071783
	Bank Conflict	61169	31511	16705	8790
PCM	Exe time	4688337	3234580	2287303	1649824
	Avg latency	2433.403076	1678.820068	1187.153198	856.3175663
	Bank Conflict	61169	31511	16705	8790
FR-FCFS	Exe time	3268988	1636859	822163	424244
	Avg latency	1696.636719	849.4284063	426.2506413	219.5056303
	Bank Conflict	61156	31511	16700	8694

511.povray_r.trace.processed

		bank2	bank4	bank8	bank16
DRAM	Exe time	5155978	3337734	2287521	1604836
	Avg latency	2093.9375	1355.464233	928.9234013	651.6024783
	Bank Conflict	65552	29731	15138	8046
PCM	Exe time	5542870	3585930	2455557	1720832
	Avg latency	2251.0623	1456.258301	997.1607063	698.7000733

	Bank Conflict	65552	29731	15138	8046
FR-FCFS	Exe time	4195751	2119665	1093645	575098
	Avg latency	1703.6855	860.4969483	443.5674443	233.0462493
	Bank Conflict	65807	29716	15090	7966

523.xalancbmk_r.trace.processed

		bank2	bank4	bank8	bank16
DRAM	Exe time	15347640	10139267	6954365	4922438
	Avg latency	2121.193359	1401.32373	961.1508183	680.3165283
	Bank Conflict	186509	91497	45478	23104
PCM	Exe time	16500432	10894575	7466213	5279078
	Avg latency	2280.520996	1505.713379	1031.892822	729.6070563
	Bank Conflict	186509	91497	45478	23104
FR-FCFS	Exe time	12278354	6153882	3120533	1649244
	Avg latency	1696.970581	850.4413453	430.9826353	227.3502963
	Bank Conflict	186780	91457	45473	23053

541.leela_r.trace.processed

		bank2	bank4	bank8	bank16
DRAM	Exe time	2994942	2442964	2314151	2302138
	Avg latency	2893.341309	2360.123535	42634	2224.000244
	Bank Conflict	55745	45013	2235.612061	42483
PCM	Exe time	3220274	2625860	2487143	2474214
	Avg latency	3111.031494	2536.820068	2402.735352	2390.238037
	Bank Conflict	55745	45013	42634	42483
FR-FCFS	Exe time	1755202	880718	442508	304720
	Avg latency	1695.47644	850.5254523	426.3184513	293.9380493
	Bank Conflict	55744	44852	42563	39457

544.nab_r.trace.processed

		bank2	bank4	bank8	bank16
DRAM	Exe time	12114986	8677916	6450154	4939351
	Avg latency	2090.506348	1497.385864	1112.997437	852.3013923
	Bank Conflict	144628	88604	60334	44873
PCM	Exe time	13024750	9326124	6927730	5301547
	Avg latency	2247.491699	1609.235352	1195.405273	914.7999273
	Bank Conflict	144628	88604	60334	44873
FR-FCFS	Exe time	9835954	4922589	2471255	1281652
	Avg latency	1697.113525	849.2402343	426.0264893	220.5799263
	Bank Conflict	144602	88514	60188	43932

Discussion

Does an FR-FCFS scheduler always out-perform an FCFS scheduler?

The FR-FCFS is utilizing the out of order execution technics and significantly optimizing the performance on execution time by reducing the access latency. This can be verified by 508,511, 521,541,544 workloads.