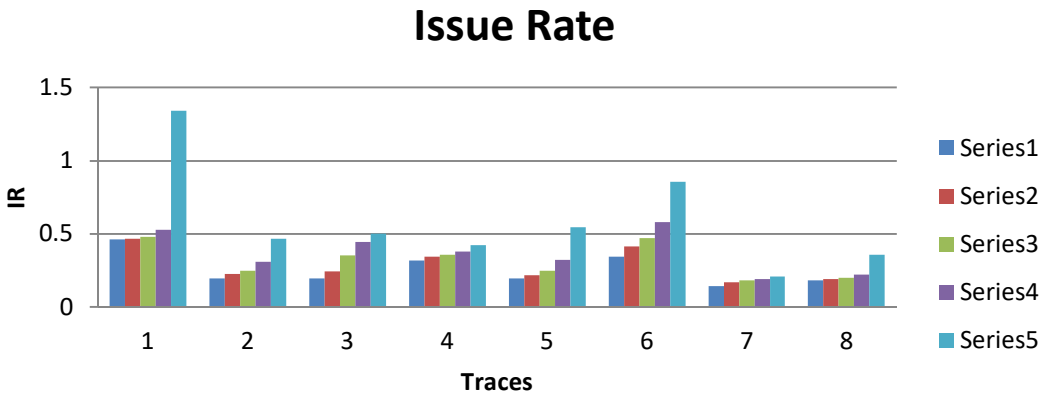
1. Rezultate urmate de grafice privind influenţa capacităţii cache-ului asupra ratei de procesare IR(DM_size) şi asupra ratei de miss în cache-ul de instrucţiuni RmissIC(DM_size) în cele trei solutii:

a) fără victim cache.
b) cu victim cache smplu.
c) cu selective victim cache.

a)

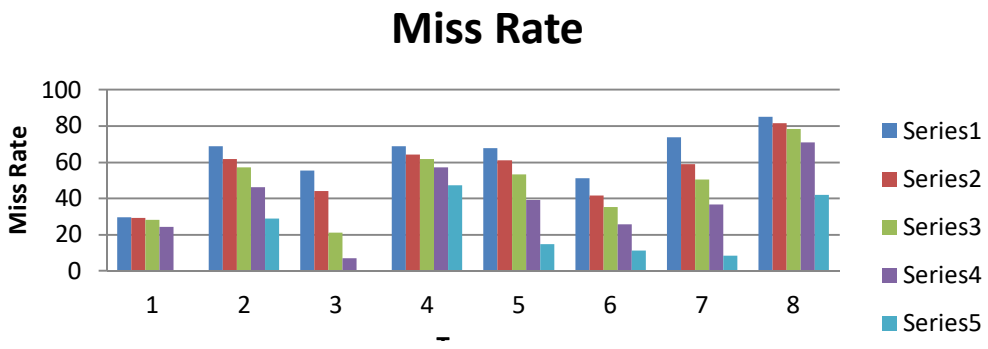
ISSUE RATE

	Bubble	Matrix	Perm	Puzzle	Queens	Sort	Tower	Tree
FR_size =32	0.4612	0.1955	0.1915	0.3179	0.1921	0.3428	0.1422	0.1786
FR_size =64	0.4658	0.2235	0.2396	0.3408	0.2159	0.4112	0.1693	0.1871
FR_size =128	0.4774	0.2448	0.3511	0.3543	0.2455	0.4708	0.1806	0.1975
FR_size =256	0.5281	0.3092	0.4429	0.3787	0.3219	0.5786	0.1903	0.2215
FR_size =1024	1.3385	0.4654	0.499	0.4208	0.5446	0.8542	0.208	0.3566



MISS RATE

	bubble	Matrix	Perm	Puzzle	Queens	Sort	Tower	Tree
FR_size =32	29.36	68.8	55.39	68.7	67.69	51	73.67	84.81
FR_size =64	28.97	61.77	43.85	64.2	60.86	41.46	58.89	81.51
FR_size =128	28.03	57.15	21.01	61.52	53.16	34.91	50.12	78.21
FR_size =256	24.29	45.87	6.72	57.08	38.97	25.59	36.39	70.91
FR_size =1024	0.19	28.72	0.02	47.13	14.72	11.17	8.2	41.97

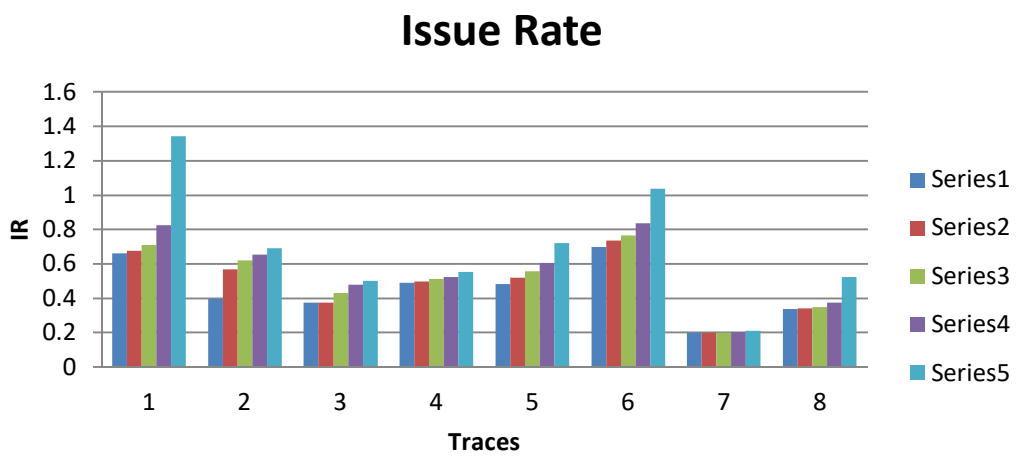


Traces

b)

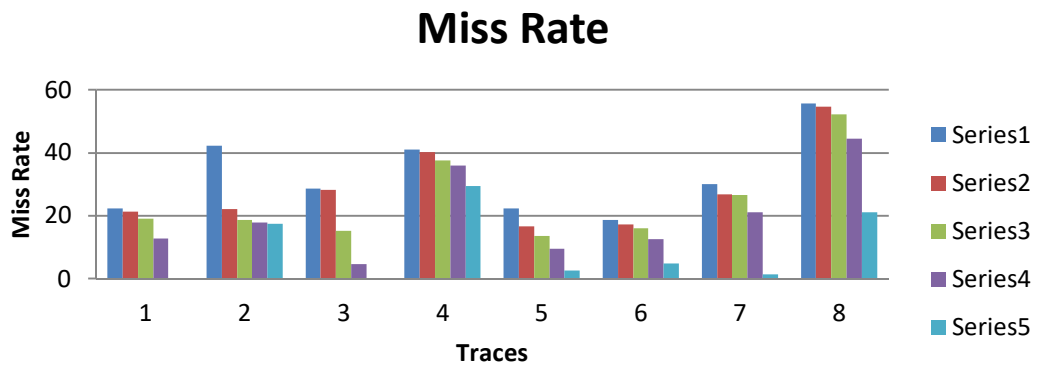
ISSUE RATE

	Bubble	Matrix	Perm	Puzzle	Queens	Sort	Tower	Tree
FR_size =32	0.6613	0.3936	0.3731	0.4877	0.4792	0.6978	0.1969	0.3348
FR_size =64	0.6738	0.5671	0.3748	0.4945	0.5181	0.7338	0.1978	0.338
FR_size =128	0.707	0.6177	0.4307	0.5097	0.5543	0.7636	0.1963	0.3471
FR_size =256	0.8246	0.6529	0.4768	0.5209	0.6046	0.8357	0.2006	0.374
FR_size =1024	1.3395	0.6907	0.4991	0.5519	0.7208	1.0357	0.2106	0.5233



MISS RATE

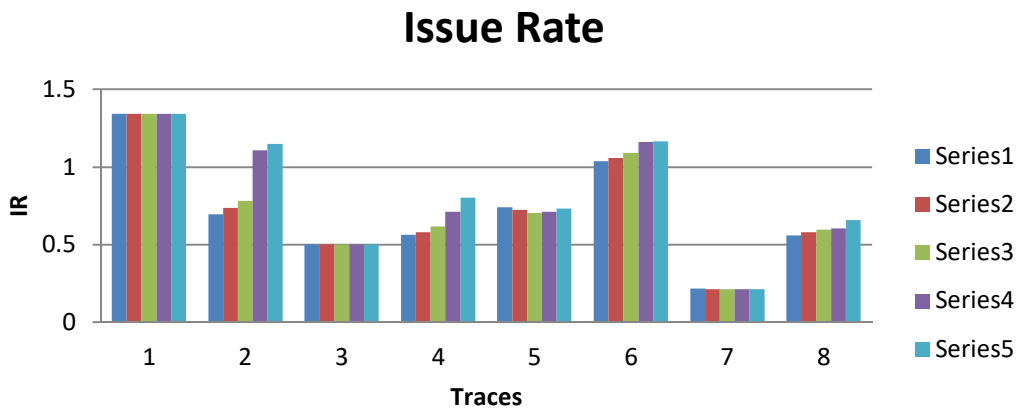
	Bubble	Matrix	Perm	Puzzle	Queens	Sort	Tower	Tree
FR_size =32	22.16	42.12	28.49	40.91	22.15	18.6	29.92	55.56
FR_size =64	21.25	22.07	28.14	40.1	16.55	17.24	26.74	54.64
FR_size =128	19	18.53	15.05	37.55	13.54	15.87	26.47	52.03
FR_size =256	12.68	17.67	4.57	35.93	9.37	12.4	20.97	44.39
FR_size =1024	0	17.42	0	29.3	2.4	4.71	1.3	21.09



c)

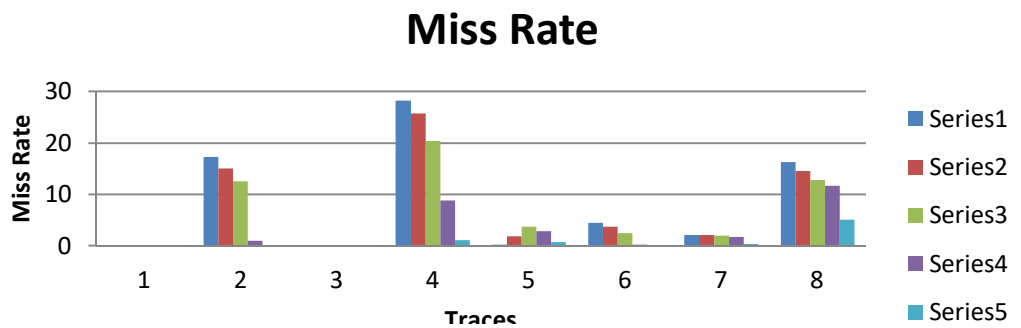
ISSUE RATE

	Bubble	Matrix	Perm	Puzzle	Queens	Sort	Tower	Tree
FR_size =32	1.3394	0.6949	0.4991	0.5606	0.7368	1.0372	0.217	0.5586
FR_size =64	1.3394	0.7329	0.4991	0.5766	0.7205	1.0577	0.2107	0.5767
FR_size =128	1.3394	0.7801	0.4991	0.6131	0.7007	1.0907	0.2107	0.5929
FR_size =256	1.3394	1.1072	0.4991	0.71	0.7105	1.1594	0.2107	0.6027
FR_size =1024	1.3394	1.1458	0.4991	0.8009	0.7324	1.1632	0.2108	0.6546



MISS RATE

	Bubble	Matrix	Perm	Puzzle	Queens	Sort	Tower	Tree
FR_size =32	0	17.2	0	28.17	0.18	4.4	2.05	16.23
FR_size =64	0	14.96	0	25.68	1.76	3.61	2.04	14.45
FR_size =128	0	12.49	0	20.32	3.62	2.45	1.93	12.69
FR_size =256	0	0.95	0	8.78	2.79	0.18	1.69	11.67
FR_size =1024	0	0	0	1.02	0.66	0	0.31	5.02



Traces

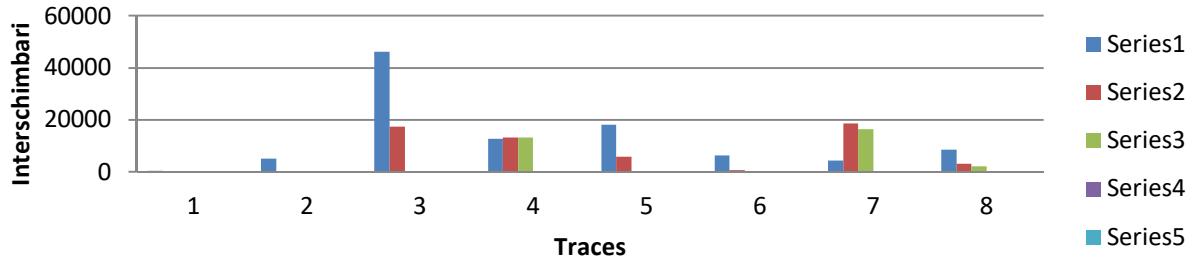
2. Determinaţi în ce măsură selective victim cache-ul reduce numărul de interschimbări dintre cache-ul principal şi cel victimă Interchgs(DM_size) în situaţiile:

a) cu victim cache smplu.

b) cu selective victim cache.

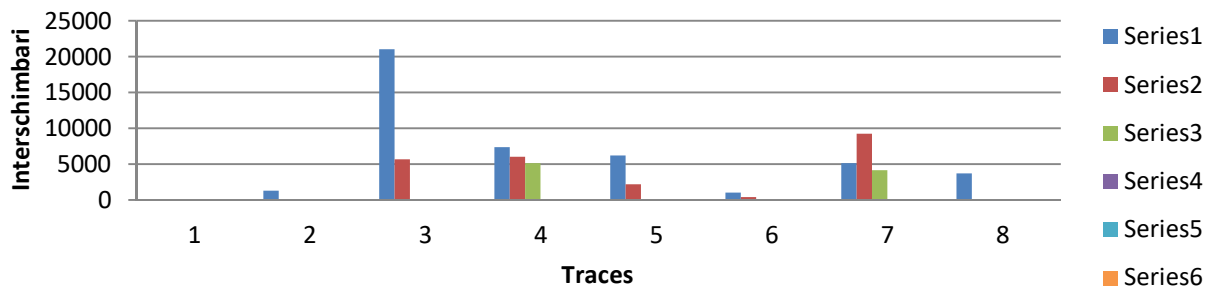
a)

	Bubble	Matrix	Perm	Puzzle	Queens	Sort	Tower	Tree
DM_size=32	399	5049	46135	12685	17971	6241	4224	8477
DM_size=64	2	5	17321	13197	5746	459	18483	2992
DM_size=128	0	2	0	12992	56	2	16374	1996
DM_size=256	0	0	0	4	0	0	0	0
DM_size=512	0	0	0	5	0	0	0	0
DM_size=1024	0	0	0	0	0	0	0	0



b)

	Bubble	Matrix	Perm	Puzzle	Queens	Sort	Tower	Tree
DM_size=32	7	1256	21006	7307	6218	987	5156	3680
DM_size=64	9	11	5682	6006	2137	340	9222	18
DM_size=128	0	2	0	5126	25	5	4119	13
DM_size=256	0	0	0	30	0	0	0	0
DM_size=512	0	0	0	6	0	0	0	0
DM_size=1024	0	0	0	0	0	0	0	0

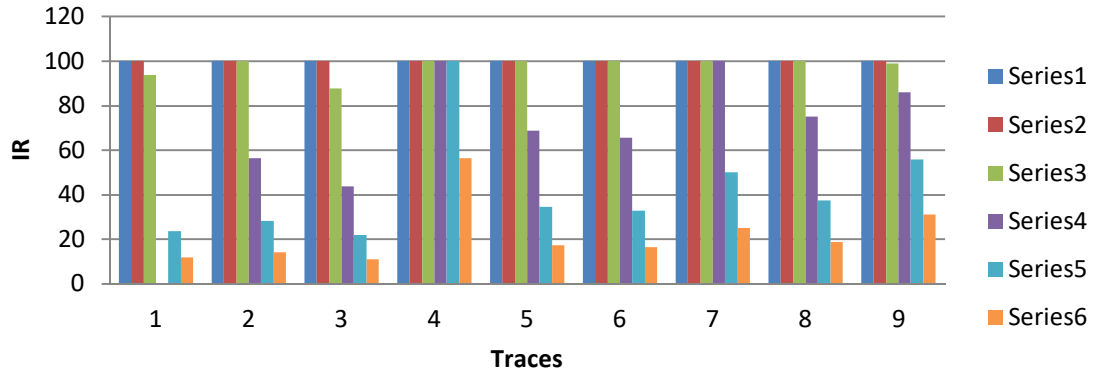


3. Studiaţi influenţa capacităţii cache-ului de instrucţiuni asupra ratei de utilizare a resp. cache Usage(DM_size) în situaţiile:

a) fără victim cache.
b) cu victim cache smplu.
c) cu selective victim cache.

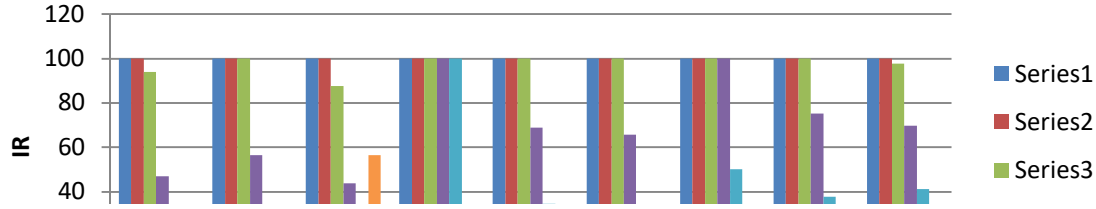
a)

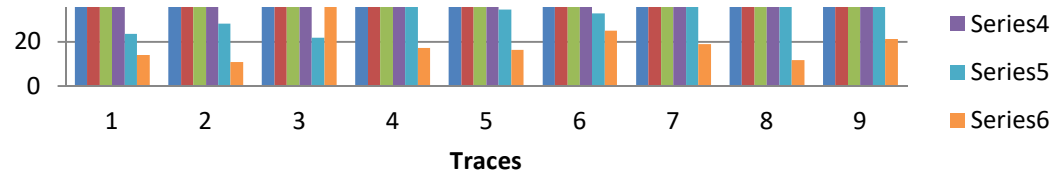
	Bubble	Matrix	Perm	Puzzle	Queens	Sort	Tower	Tree	Media
32	100	100	100	100	100	100	100	100	100
64	100	100	100	100	100	100	100	100	100
128	93.75	100	87.5	100	100	100	100	100	98.8281
256	46,88	56.25	43.75	100	68.75	65.63	100	75	86.042
512	23.44	28.3	21.88	100	34.38	32.81	50	37.5	55.846
1024	11.72	14.06	10.94	56.25	17.19	16.41	25	18.75	31.1644



b)

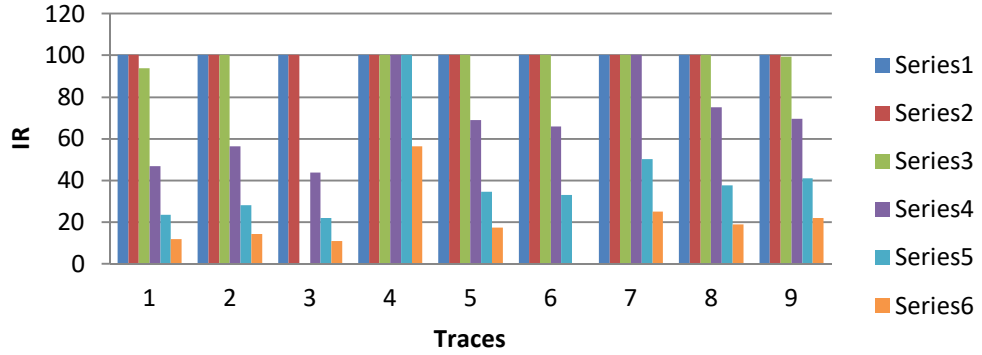
	Bubble	Matrix	Perm	Puzzle	Queens	Sort	Tower	Tree	Media
32	100	100	100	100	100	100	100	100	100
64	100	100	100	100	100	100	100	100	100
128	93.75	100	87.5	100	100	100	100	100	97.6563
256	46.88	56.25	43.75	100	68.75	65.63	100	75	69.5325
512	23.44	28.13	21.88	100	34.38	32.81	50	37.5	41.0175
1024	14.01	10.94	56.25	17.19	16.41	25	18.75	11.72	21.2838





c)

	Bubble	Matrix	Perm	Puzzle	Queens	Sort	Tower	Tree	Media
32	100	100	100	100	100	100	100	100	100
64	100	100	100	100	100	100	100	100	100
128	93.75	100	87,5	100	100	100	100	100	99.1071
256	46.88	56.25	43.75	100	68.75	65.63	100	75	69.5325
512	23.44	28.13	21.88	100	34.38	32.81	50	37.5	41.0175
1024	11.72	14.06	10.94	56.25	17.19	16,41	25	18.75	21.9871



Gradul de utilizare al cache-ului e de asteptat sa scada cu cresterea capacitatii, astfel mai multe blocuri necesare ar incapea in cache - insa imbunatatirea cu VC sau SVC nu aduce nicio imbunatarire legata de gradul de utilizare

4.Determinaţi influenţa dimensiunii victim cache-ului de instrucţiuni asupra ratei de procesare IR(Victim_size) şi asupra ratei de miss în cache-ul de instrucţiuni RmissIC(Victim_size) în cele doua solutii:

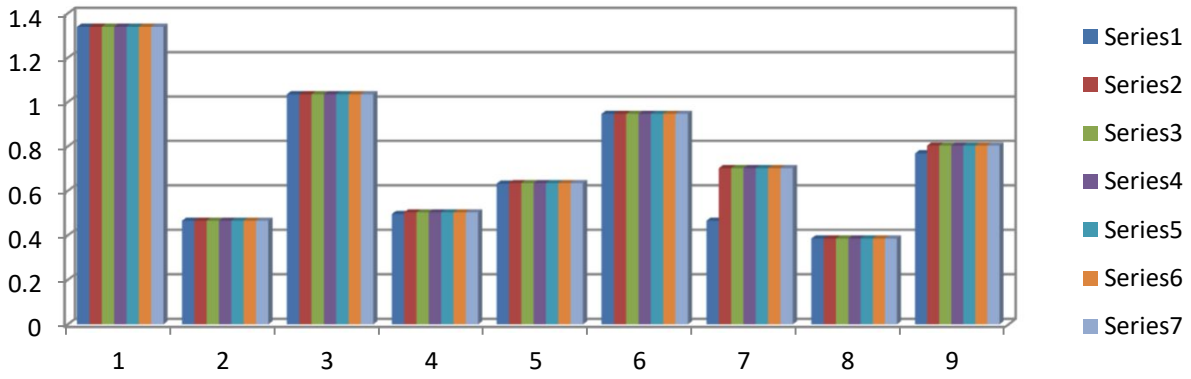
a) cu victim cache smplu.

b) cu selective victim cache.

a)

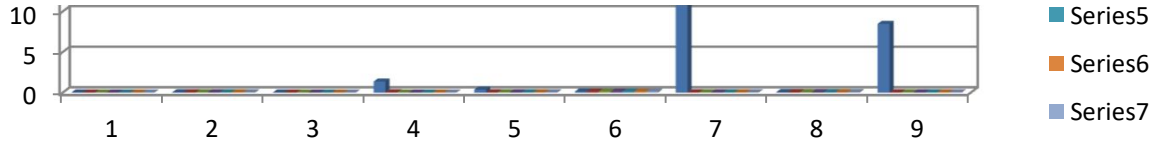
Victim_si ze IR (IPC)

	Bubble	Matrix	Perm	Puzzle	Queens	Sort	Tower	Tree	Media
8	1.3396	0.4655	1.0352	0.4955	0.6324	0.9467	0.4656	0.3857	0.7686
32	1.3396	0.4655	1.0352	0.503	0.6346	0.9467	0.7016	0.3857	0.8037
64	1.3396	0.4655	1.0352	0.503	0.6346	0.9467	0.7016	0.3857	0.8037
128	1.3396	0.4655	1.0352	0.503	0.6346	0.9467	0.7016	0.3857	0.8037
256	1.3396	0.4655	1.0352	0.503	0.6346	0.9467	0.7016	0.3857	0.8037
512	1.3396	0.4655	1.0352	0.503	0.6346	0.9467	0.7016	0.3857	0.8037
1024	1.3396	0.4655	1.0352	0.503	0.6346	0.9467	0.7016	0.3857	0.8037



Victim_sizRmissIC (%)

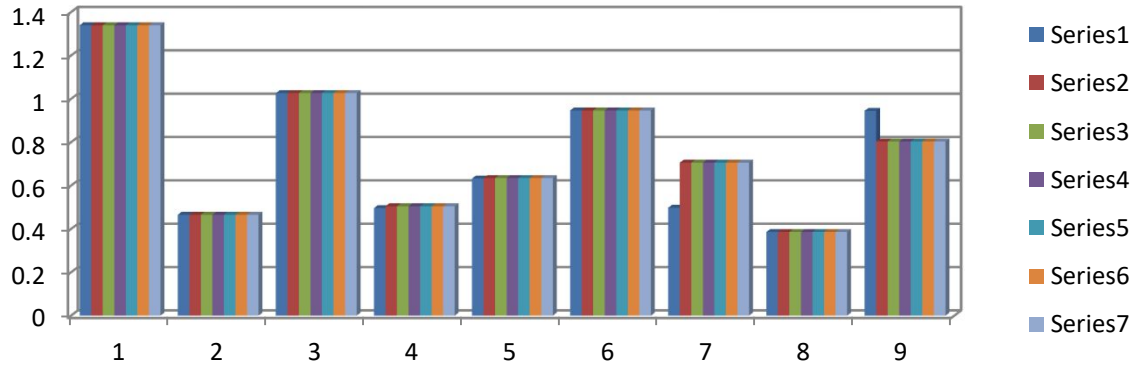
	Bubble	Matrix	Perm	Puzzle	Queens	Sort	Tower	Tree	Media
8	0.03	0.04	0.02	1.36	0.37	0.14	32.13	0.06	8.47
32	0.03	0.04	0.02	0.04	0.05	0.12	0.05	0.06	0.05
64	0.03	0.04	0.02	0.03	0.05	0.12	0.05	0.06	0.05
128	0.03	0.04	0.02	0.03	0.05	0.12	0.05	0.06	0.05
256	0.03	0.04	0.02	0.03	0.05	0.12	0.05	0.06	0.05
512	0.03	0.04	0.02	0.03	0.05	0.12	0.05	0.06	0.05
1024	0.03	0.04	0.02	0.03	0.05	0.12	0.05	0.06	0.05



b)

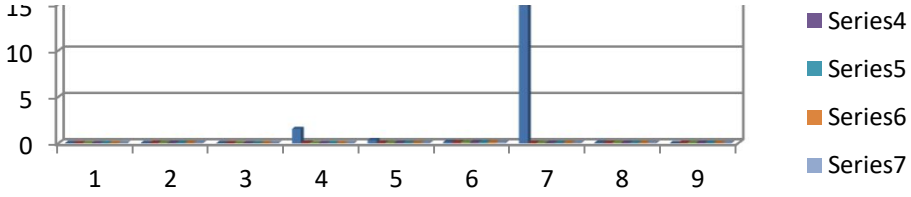
Victim_size IR (IPC)

	Bubble	Matrix	Perm	Puzzle	Queens	Sort	Tower	Tree	Media
8	1.3396	0.4655	1.0267	0.4962	0.6327	0.9467	0.4979	0.3858	0.9446
32	1.3396	0.4655	1.0267	0.5044	0.6346	0.9467	0.7058	0.3858	0.8033
64	1.3396	0.4655	1.0267	0.5044	0.6346	0.9467	0.7058	0.3858	0.8033
128	1.3396	0.4655	1.0267	0.5044	0.6346	0.9467	0.7058	0.3858	0.8033
256	1.3396	0.4655	1.0267	0.5044	0.6346	0.9467	0.7058	0.3858	0.8033
512	1.3396	0.4655	1.0267	0.5044	0.6346	0.9467	0.7058	0.3858	0.8033
1024	1.3396	0.4655	1.0267	0.5044	0.6346	0.9467	0.7058	0.3858	0.8033



Victim_sizRmissIC (%)

	Bubble	Matrix	Perm	Puzzle	Queens	Sort	Tower	Tree	Media
8	0.03	0.03	0.02	1.54	0.33	0.14	29.46	0.07	8.474.51
32	0.03	0.04	0.02	0.04	0.05	0.12	0.05	0.06	0.05
64	0.03	0.04	0.02	0.03	0.05	0.12	0.05	0.06	0.05
128	0.03	0.04	0.02	0.03	0.05	0.12	0.05	0.06	0.05
256	0.03	0.04	0.02	0.03	0.05	0.12	0.05	0.06	0.05
512	0.03	0.04	0.02	0.03	0.05	0.12	0.05	0.06	0.05
1024	0.03	0.04	0.02	0.03	0.05	0.12	0.05	0.06	0.05


15
10
5
0
1
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3
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5
6
7
8
9
Series4
Series5
Series6
Series7

5.Studiaţi variaţia numărului de interschimbări produse între cache-ul principal şi victim cache în cazul creşterii capacităţii celui din urmă, în ipostazele:

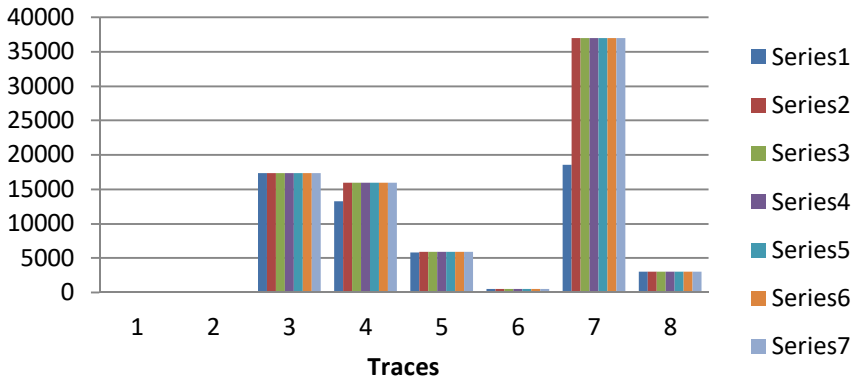
a) cu victim cache smplu.

b) cu selective victim cache.

a)

Victim_size Interchanges

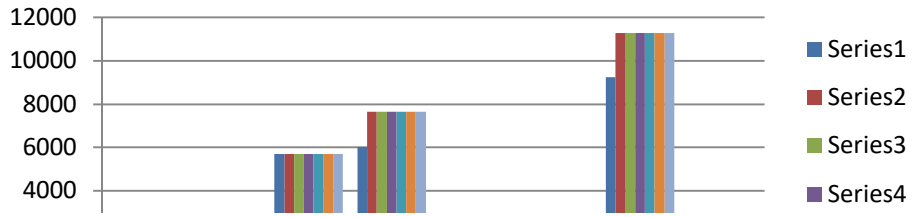
	Bubble	Matrix	Perm	Puzzle	Queens	Sort	Tower	Tree
8	2	5	17321	13197	5746	459	18483	2992
32	2	5	17321	15923	5874	461	36907	2993
64	2	5	17321	15925	5874	461	36907	2993
128	2	5	17321	15925	5874	461	36907	2993
256	2	5	17321	15925	5874	461	36907	2993
512	2	5	17321	15925	5874	461	36907	2993
1024	2	5	17321	15925	5874	461	36907	2993

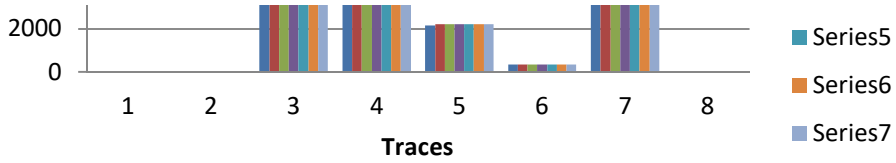


b)

Victim_size Interchanges

	Bubble	Matrix	Perm	Puzzle	Queens	Sort	Tower	Tree
8	9	11	5682	6006	2137	340	9222	18
32	9	11	5682	7625	2209	340	11278	19
64	9	11	5682	7625	2209	340	11278	19
128	9	11	5682	7625	2209	340	11278	19
256	9	11	5682	7625	2209	340	11278	19
512	9	11	5682	7625	2209	340	11278	19
1024	9	11	5682	7625	2209	340	11278	19




2000
0
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4
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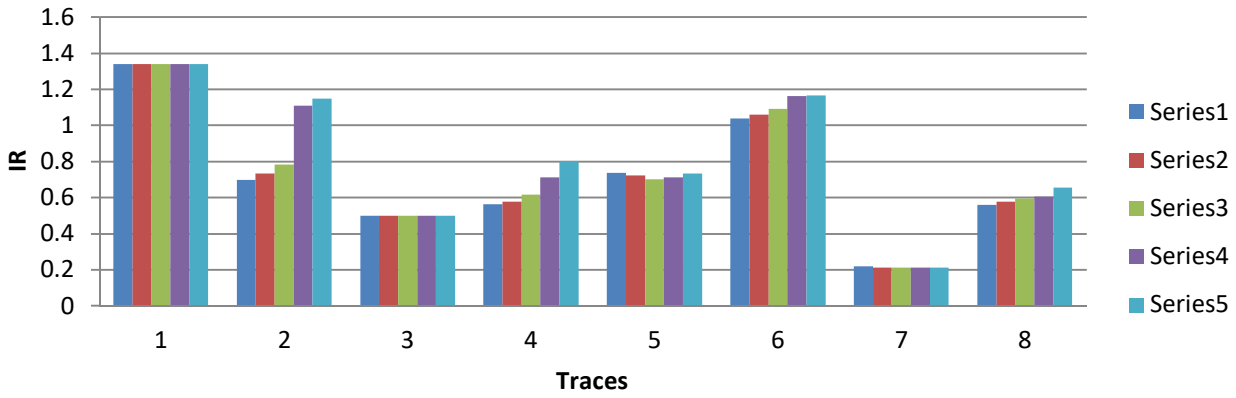
8
Traces
Series5
Series6
Series7

6.Pentru configuraţia optimă găsită determinaţi ce algoritm de înlocuire este mai bun în Victim Cache: LRU, Random sau FIFO.

ISSUE RATE

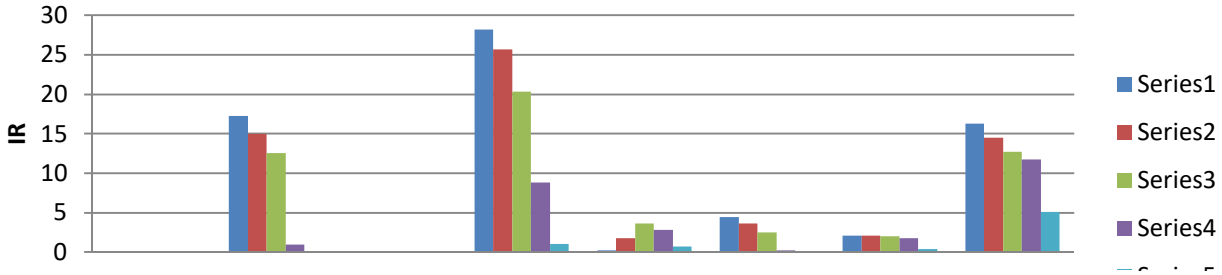
	Bubble	Matrix	Perm	Puzzle	Queens	Sort	Tower	Tree
FR_size =32	1.3394	0.6949	0.4991	0.5606	0.7368	1.0372	0.217	0.5586
FR_size =64	1.3394	0.7329	0.4991	0.5766	0.7205	1.0577	0.2107	0.5767
FR_size =128	1.3394	0.7801	0.4991	0.6131	0.7007	1.0907	0.2107	0.5929
FR_size =256	1.3394	1.1072	0.4991	0.71	0.7105	1.1594	0.2107	0.6027
FR_size =1024	1.3394	1.1458	0.4991	0.8009	0.7324	1.1632	0.2108	0.6546

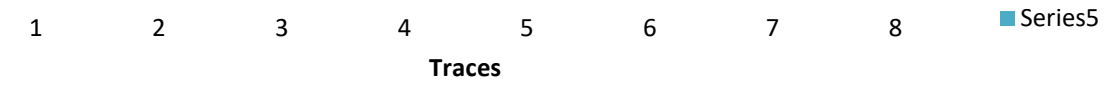


In cazul algoritmului de inlocuire LRU issue rate(IR) va creste pe masura ce FR creste.

MISS RATE LRU

	Bubble	Matrix	Perm	Puzzle	Queens	Sort	Tower	Tree
FR_size =32	0	17.2	0	28.17	0.18	4.4	2.05	16.23
FR_size =64	0	14.96	0	25.68	1.76	3.61	2.04	14.45
FR_size =128	0	12.49	0	20.32	3.62	2.45	1.93	12.69
FR_size =256	0	0.95	0	8.78	2.79	0.18	1.69	11.67
FR_size =1024	0	0	0	1.02	0.66	0	0.31	5.02

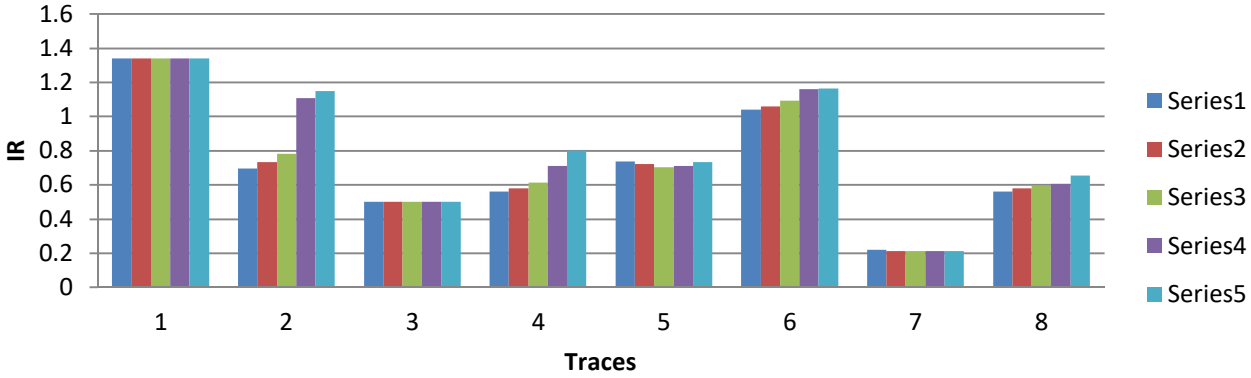




In cazul algoritmului LRU, rata de miss va creste daca Fr este mic.

ISSUE RATE

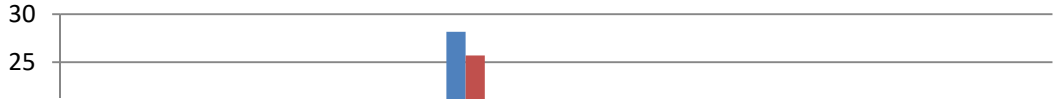
	Bubble	Matrix	Perm	Puzzle	Queens	Sort	Tower	Tree
FR_size =32	1.3396	0.6949	0.4991	0.5606	0.7368	1.0372	0.217	0.5586
FR_size =64	1.3394	0.7329	0.4991	0.5766	0.7205	1.0577	0.2107	0.5767
FR_size =128	1.3394	0.7801	0.4991	0.6131	0.7007	1.0907	0.2107	0.5929
FR_size =256	1.3394	1.1072	0.4991	0.71	0.7105	1.1594	0.2107	0.6027
FR_size =1024	1.3394	1.1458	0.4991	0.8009	0.7324	1.1632	0.2108	0.6546

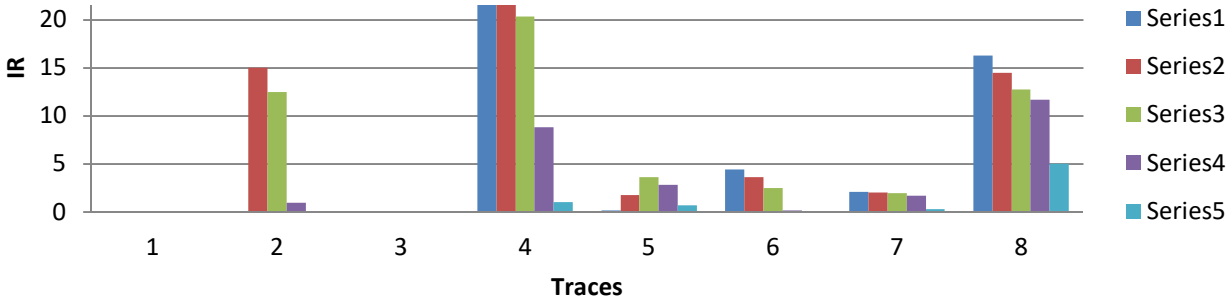


In cazul Random, issue rate(IR) va creste pe masura ce FR creste.

MISS RATE

	Bubble	Matrix	Perm	Puzzle	Queens	Sort	Tower	Tree
FR_size =32	0	0.11	0	28.17	0.18	4.4	2.05	16.23
FR_size =64	0	14.96	0	25.68	1.76	3.61	2.04	14.45
FR_size =128	0	12.49	0	20.32	3.62	2.45	1.93	12.69
FR_size =256	0	0.95	0	8.78	2.79	0.18	1.69	11.67
FR_size =1024	0	0	0	1.02	0.66	0	0.31	5.02





In cazul algoritmului Random, rata de miss va creste daca Fr este mic.