Simularea si optimizarea arhitecturilor de calcul

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244/1

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LABORATOR 3

Cu ajutorul simulatorului *Simcache.exe* generați [VinFlor00]:

1. Rezultate urmate de grafice privind influența ratei de fetch (FR) asupra ratei de procesare IR(FR) și asupra ratei de miss în cache-ul de instrucțiuni $R_{missIC}(FR)$.

2. Studiați influența capacității cache-ului de instrucțiuni asupra ratei de procesare IR(SIZE_IC) și asupra ratei de miss la cache-ul de instrucțiuni $R_{missIC}(SIZE\_IC)$.

3. Studiați influența capacității cache-ului de date asupra ratei de procesare IR(SIZE_DC) și asupra ratei de miss la cache-ul de date $R_{missDC}(SIZE\_DC)$.

4. Determinați influența numărului maxim de instrucțiuni ce pot fi trimise simultan în execuție asupra ratei de procesare IR(IRmax).

5. Se vor genera graficele IR(BLOC_SIZE) și $R_{missDC}(BLOC\_SIZE)$ în cele două ipostaze: scriere în cache prin *write back* și scriere în cache prin *write through*.

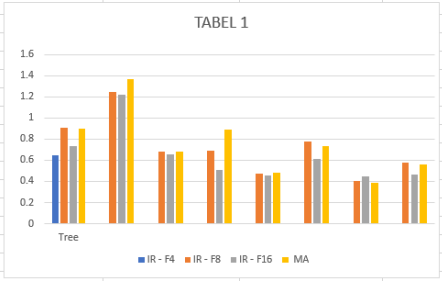
6. Se va studia comparativ realismul, prin rata de procesare, introdus prin cele două tehnici de scriere față de situația când nu se folosește nici una din aceste tehnici IR (tehnica de scriere în cache).

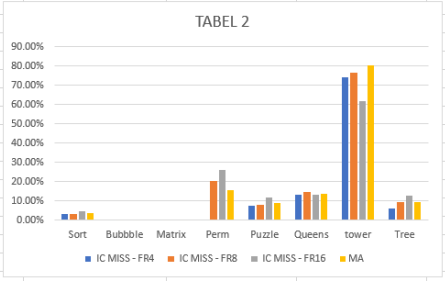
LABORATOR 3

Exercitiu 1

TABEL 1	Sort	Bubbble	Matrix	Perm	Puzzle	Queens	tower	Tree
IR - F4	1.058	1.648	0.705	1.483	0.505	0.818	0.308	0.651
IR - F8	0.904	1.242	0.678	0.692	0.474	0.777	0.401	0.578
IR - F16	0.737	1.218	0.654	0.505	0.455	0.608	0.45	0.462
MA	0.899666667	1.369333333	0.679	0.893333333	0.478	0.734333333	0.386333333	0.563666667

TABEL 2	Sort	Bubbble	Matrix	Perm	Puzzle	Queens	tower	Tree
IC MISS - FR4	3.50%	0.05%	0.05%	0.03%	7.79%	13.30%	74.04%	6.06%
IC MISS - FR8	3.09%	0.04%	0.05%	20.38%	7.94%	14.82%	76.46%	9.52%
IC MISS - FR16	4.70%	0.05%	0.06%	26.13%	12.00%	13.20%	61.70%	12.94%
MA	3.76333333333333300%	0.04666666666666700%	0.05333333333333300%	15.51333333333300%	9.24333333333300%	13.77333333333300%	80.2400%	9.50666666666700%

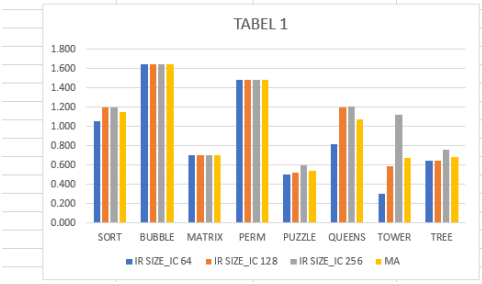


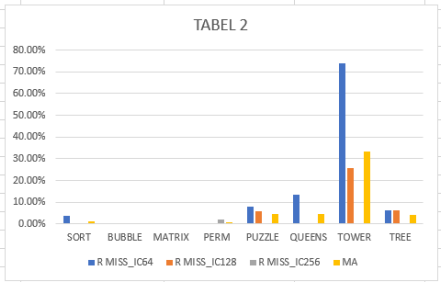


Exercitiu 2

TABEL 1	SORT	BUBBLE	MATRIX	PERM	PUZZLE	QUEENS	TOWER	TREE
IR SIZE_IC 64	1.058	1.648	0.705	1.483	0.505	0.818	0.308	0.651
IR SIZE_IC 128	1.196	1.648	0.706	1.484	0.524	1.201	0.586	0.651
IR SIZE_IC 256	1.196	1.648	0.706	1.484	0.595	1.207	1.120	0.759
MA	1.15	1.648	0.705666667	1.483666667	0.541333333	1.075333333	0.671333333	0.687

TABEL 2	SORT	BUBBLE	MATRIX	PERM	PUZZLE	QUEENS	TOWER	TREE
R MISS_IC64	3.50%	0.05%	0.05%	0.03%	7.79%	13.30%	74.04%	6.06%
R MISS_IC128	0.18%	0.05%	0.05%	0.02%	6.00%	0.20%	25.65%	6.06%
R MISS_IC256	0.17%	0.05%	0.05%	2.00%	0.05%	0.07%	0.08%	0.10%
MA	1.28333333333333%	0.0500%	0.0500%	0.68333333333333%	4.61333333333333%	4.52333333333333%	33.2566666666667%	4.07333333333333%

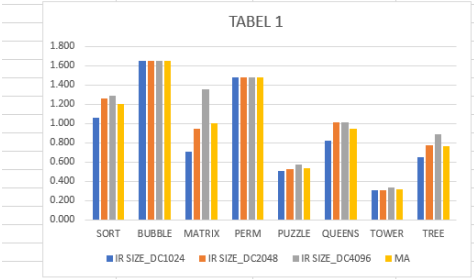


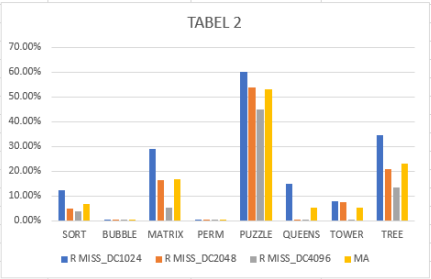


Exercitiu 3

TABEL 1	SORT	BUBBLE	MATRIX	PERM	PUZZLE	QUEENS	TOWER	TREE
IR SIZE_DC1024	1.058	1.648	0.705	1.483	0.505	0.818	0.308	0.651
IR SIZE_DC2048	1.257	1.649	0.949	1.483	0.529	1.009	0.308	0.770
IR SIZE_DC4096	1.288	1.649	1.354	1.483	0.576	1.009	0.334	0.888
MA	1.201	1.648666667	1.002666667	1.483	0.536666667	0.945333333	0.316666667	0.769666667

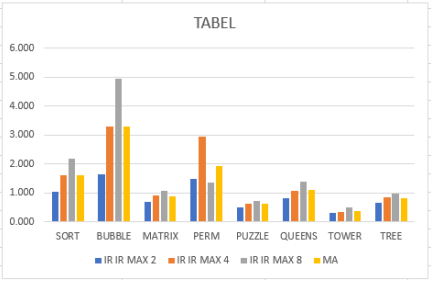
TABEL 2	SORT	BUBBLE	MATRIX	PERM	PUZZLE	QUEENS	TOWER	TREE
R MISS_DC1024	12.10%	0.36%	28.84%	0.04%	60.21%	14.75%	7.93%	34.54%
R MISS_DC2048	4.87%	0.34%	16.27%	0.03%	53.70%	0.22%	7.55%	20.69%
R MISS_DC4096	3.76%	0.34%	5.32%	0.03%	44.72%	0.22%	0.11%	13.54%
MA	6.91000000000000000%	0.34666666666666700%	16.8100%	0.033333333333333300%	52.876666666666700%	5.063333333333300%	5.1966666666666700%	22.923333333333300%





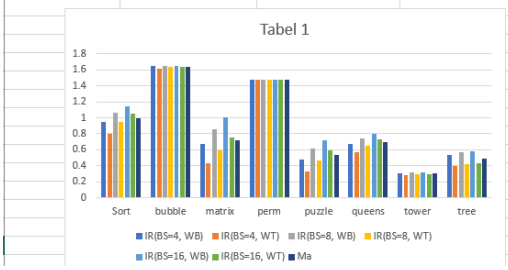
Exercitiu 4

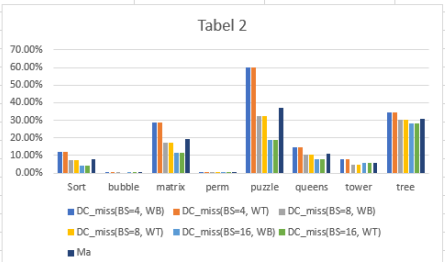
TABEL	SORT	BUBBLE	MATRIX	PERM	PUZZLE	QUEENS	TOWER	TREE
IR IR MAX 2	1.058	1.648	0.705	1.483	0.505	0.818	0.308	0.651
IR IR MAX 4	1.621	3.285	0.922	2.962	0.627	1.081	0.341	0.856
IR IR MAX 8	2.187	4.945	1.072	1.376	0.736	1.409	0.522	0.971
MA	1.622	3.292666667	0.899666667	1.940333333	0.622666667	1.102666667	0.390333333	0.826



Exercitiu 5								
TABEL 1	Sort	bubble	matrix	perm	puzzle	queens	tower	tree
IR(BS=4, WB)	0.949	1.646	0.669	1.483	0.478	0.674	0.303	0.534
IR(BS=4, WT)	0.801	1.61	0.430	1.48	0.323	0.574	0.279	0.398
IR(BS=8, WB)	1.062	1.647	0.858	1.483	0.619	0.742	0.315	0.569
IR(BS=8, WT)	0.945	1.633	0.598	1.481	0.466	0.655	0.299	0.423
IR(BS=16, WB)	1.143	1.647	1.009	1.483	0.720	0.800	0.312	0.583
IR(BS=16, WT)	1.056	1.64	0.753	1.482	0.589	0.726	0.294	0.432
Ma	0.992666667	1.637166667	0.7195	1.482	0.5325	0.695166667	0.300333333	0.489833333

TABEL 2	Sort	bubble	matrix	perm	puzzle	queens	tower	tree
DC_miss(BS=4, WB)	12.10%	0.36%	28.84%	0.04%	60.21%	14.75%	7.93%	34.54%
DC_miss(BS=4, WT)	12.10%	0.36%	28.84%	0.04%	60.21%	14.75%	7.93%	34.54%
DC_miss(BS=8, WB)	7.29%	0.19%	17.39%	0.02%	32.16%	10.68%	4.63%	30.14%
DC_miss(BS=8, WT)	7.29%		17.39%	0.02%	32.16%	10.68%	4.63%	30.14%
DC_miss(BS=16, WB)	4.46%	0.10%	11.31%	0.01%	18.81%	7.71%	5.55%	28.36%
DC_miss(BS=16, WT)	4.46%	0.10%	11.31%	0.01%	18.81%	7.71%	5.55%	28.36%
Ma	0.0795	0.002166667	0.1918	0.000233333	0.3706	0.110466667	0.060366667	0.310133333





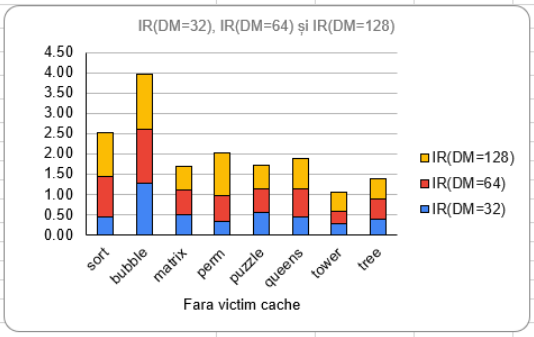
LABORATOR 4

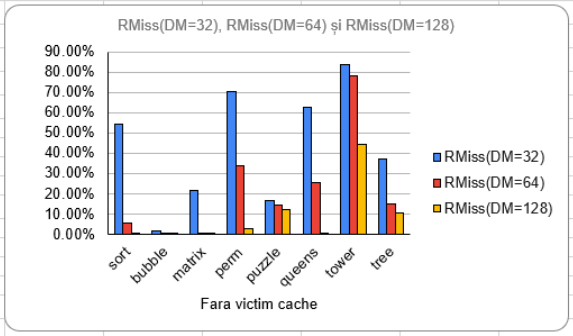
1. Rezultate urmate de grafice privind influenţa capacităţii cache-ului asupra ratei de procesare **IR(DM_size)** şi asupra ratei de miss în cache-ul de instrucţiuni $\mathbf{R_{missIC}}$**(DM_size)** în cele trei situaţii:
   a) fără victim cache.
   b) cu victim cache smplu.
   c) cu selective victim cache.
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.
3. Studiaţi influenţa capacităţii cache-ului de instrucţiuni asupra ratei de utilizare a respectivului cache **Usage(DM_size)** în situaţiile:
   a) fără victim cache.
   b) cu victim cache smplu.
   c) cu selective victim cache.

Exercitiu 1

Fara victim cache	sort	bubble	matrix	perm	puzzle	queens	tower	tree
IR(DM=32)	0.44	1.27	0.51	0.33	0.56	0.45	0.27	0.40
IR(DM=64)	1.01	1.34	0.59	0.65	0.58	0.69	0.3	0.48
IR(DM=128)	1.07	1.34	0.59	1.03	0.59	0.75	0.49	0.5

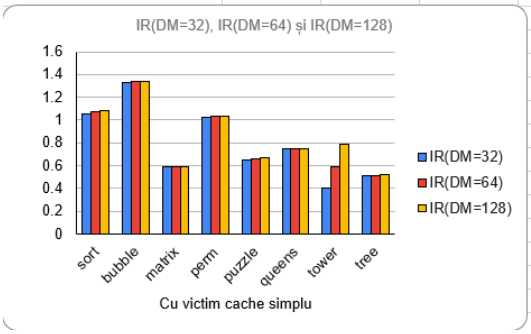
Fara victim cache	sort	bubble	matrix	perm	puzzle	queens	tower	tree
RMiss(DM=32)	54.31%	1.59%	21.57%	70.35%	16.58%	62.40%	83.41%	37.18%
RMiss(DM=64)	5.57%	0.06%	0.11%	33.86%	14.41%	25.66%	78.27%	14.99%
RMiss(DM=128)	0.27%	0.06%	0.09%	0.03	11.93%	0.39%	44.44%	10.29%

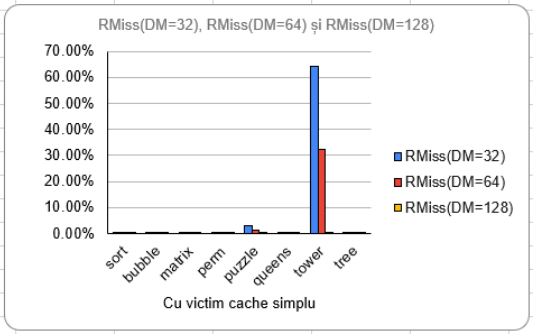




Cu victim cache simplu	sort	bubble	matrix	perm	puzzle	queens	tower	tree
IR(DM=32)	1.05	1.33	0.59	1.02	0.65	0.75	0.4	0.51
IR(DM=64)	1.07	1.34	0.59	1.03	0.66	0.75	0.59	0.51
IR(DM=128)	1.08	1.34	0.59	1.03	0.67	0.75	0.79	0.52

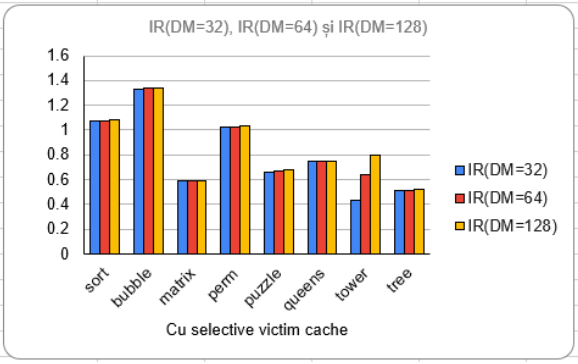
Cu victim cache simplu	sort	bubble	matrix	perm	puzzle	queens	tower	tree
RMiss(DM=32)	0.13%	0.03%	0.04%	0.02%	2.88%	0.49%	64.19%	0.06%
RMiss(DM=64)	0.13%	0.03%	0.04%	0.02%	1.36%	0.37%	32.13%	0.06%
RMiss(DM=128)	0.12%	0.03%	0.04%	0.02%	0.04%	0.05%	0.06%	0.06%





Cu selective victim cache	sort	bubble	matrix	perm	puzzle	queens	tower	tree
IR(DM=32)	1.07	1.33	0.59	1.02	0.66	0.75	0.43	0.51
IR(DM=64)	1.07	1.34	0.59	1.02	0.67	0.75	0.64	0.51
IR(DM=128)	1.08	1.34	0.59	1.03	0.68	0.75	0.80	0.52

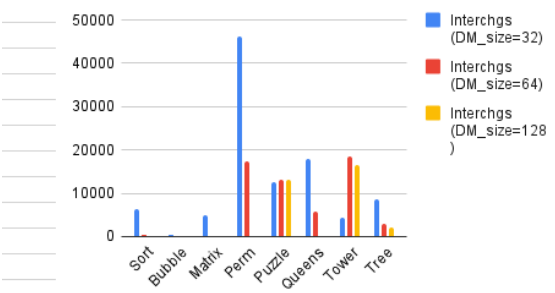
Cu selective victim cache	sort	bubble	matrix	perm	puzzle	queens	tower	tree
RMiss(DM=32)	0.14%	0.03%	0.04%	0.02%	2.62%	0.49%	60.63%	0.07%
RMiss(DM=64)	99.87%	0.03%	0.04%	0.02%	1.54%	0.33%	29.46%	0.07%
RMiss(DM=128)	0.12%	0.03%	0.04%	0.02%	0.04%	0.05%	0.06%	0.06%

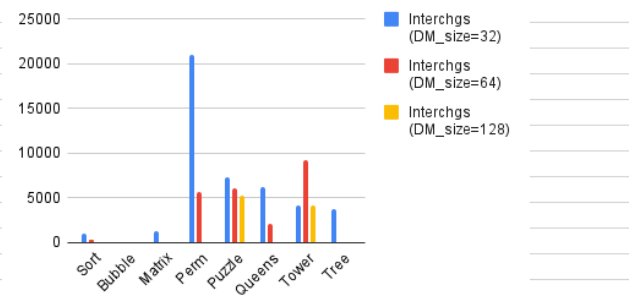


EXERCITIUL 2

Cu victim cache simplu	Sort	Bubble	Matrix	Perm	Puzzle	Queens	Tower	Tree
Interchgs(DM=32)	6241	399	5049	46135	12685	17971	4224	8477
Interchgs(DM=64)	459	2	5	17321	13197	5746	18483	2992
Interchgs(DM=128)	2	0	2	0	12992	56	16374	1996

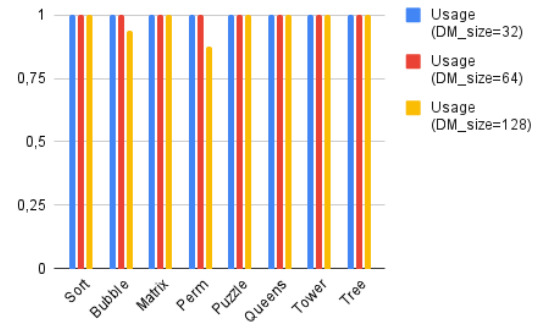
Cu selective victim cache	Sort	Bubble	Matrix	Perm	Puzzle	Queens	Tower	Tree
Interchgs(DM_size=32)	987	7	1256	21006	7307	6218	4150	3680
Interchgs(DM_size=64)	340	9	11	5682	6006	2137	9223	18
Interchgs(DM_size=128)	5	0	1	0	5162	25	4119	13



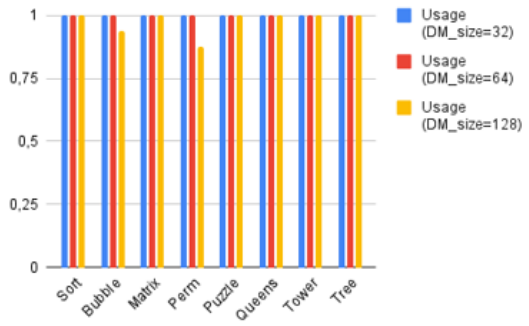


EXERCITIUL 3

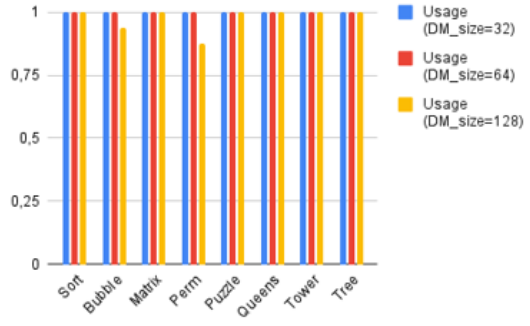
Fara victim cache	Sort	Bubble	Matrix	Perm	Puzzle	Queens	Tower	Tree
Usage(DM=32)	100%	100%	100%	100%	100%	100%	100%	100%
Usage(DM=64)	100%	100%	100%	100%	100%	100%	100%	100%
Usage(DM=128)	100%	93.75%	100%	87.50%	100%	100%	100%	100%



Cu victim cache simplu	Sort	Bubble	Matrix	Perm	Puzzle	Queens	Tower	Tree
Usage(DM_size=32)	100%	100%	100%	100%	100%	100%	100%	100%
Usage(DM_size=64)	100%	100%	100%	100%	100%	100%	100%	100%
Usage(DM_size=128)	100%	93.75%	100%	87.50%	100%	100%	100%	100%



Cu selective victim cache	Sort	Bubble	Matrix	Perm	Puzzle	Queens	Tower	Tree
Usage(DM_size=32)	100%	100%	100%	100%	100%	100%	100%	100%
Usage(DM_size=64)	100%	100%	100%	100%	100%	100%	100%	100%
Usage(DM_size=128)	100%	93.75%	100%	87.50%	100%	100%	100%	100%



LABORATOR 5

Cerinte:

1. Incidenta capacitatii cache-ului de instructiuni asupra miss rate
2. Pornind de la configurația inițială generați graficul Rmiss(BLOC_SIZE)
3. Determinati rata de miss variind dimensiunea blocului de date pentru diferite dimensiuni de cache.
4. Determinați rata de miss variind gradul de asociativitate pentru diferite dimensiuni de cache.

Exercitiu 1	CacheSize(2)	CacheSize(4)	CacheSize(8)	cacheSize(16)
CEXP	14.05%	0.7%	2.58%	0.22%
COMP	9.94%	7.45%	5.03%	3.57%
EAR	21.04%	10.21%	5.16%	4.11%
HYDRO	16.97%	11.00%	8.04%	5.69%
MDLJD	19.57%	8.47%	5.94%	4.6%
NASA7	16.28%	10.57%	7.49%	5.5%
SWM	15.54%	10.00%	7.38%	6.22%
UCOMP	10.25%	6.99%	4.65%	3.40%
WAVE	16.6%	11.41%	8.64%	6.62%

Exercitiu 2				
CEXP	Rmiss(8)	Rmiss(16)	Rmiss(32)	Rmiss(64)
COMP	4.95%	3.56%	3.44%	3.05%
EAR	5.14%	4.1%	2.26%	1.46%
HYDRO	8.09%	5.68%	4.88%	4.56%
MDLJD	5.96%	4.59%	3.61%	2.86%
NASA7	7.49%	5.49%	5.39%	4.69%
SWM	6.72%	5.71%	5.57%	4.96%
UCOMP	4.64%	3.4%	3.25%	2.89%
WAVE	8.63%	6.63%	5.48%	4.78%

Exercitiu 3				
RmissCache=4	64	256	1024	64
CEXP	1.31%	0.55%	0.7%	19.72%
COMP	29.73%	12.00%	7.44%	38.98%
EAR	26.92%	10.79%	10.21%	38.32%
HYDRO	25.15%	14.81%	11.00%	47.95%
MDLJD	25.94%	11.88%	8.46%	42.81%
NASA7	25.05%	13.36%	10.56%	47.87%
SWM	33.04%	11.48%	10.00%	54.14%
UCOMP	22.24%	14.07%	6.98%	39.95%
WAVE	29.73%	17.5%	11.4%	45.37%

Exercitiu 4				
cexp miss rate	4kb	8kb	16kb	32kb
direct	17.39%	8.76%	8.38%	8.26%
2way	4.11%	0.24%	0.22%	0.21%
4way	17.39%	3.79%	0.22%	0.21%
fully asoc	0.7%	0.24%	0.22%	0.21%

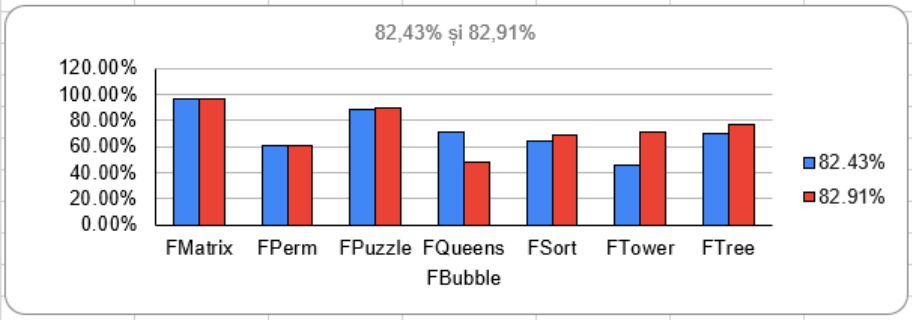
LABORATOR 6

1. Sa se reprezinte sub forma grafica functiile utilizând implicit automatul de predictie pe doi biti:
   a) Ap=f(tip_arhitectura)

   b)Ap=f(dimensiune_tabela_predictie) Sa se repete rezultatele utilizând automatul de predictie pe 1 bit definit de expresia: ABAB:2.

   c) Reprezentati Ap=f(nr_biti_automat_predictie) considerând parametrul dimensiune_tabela_predictie - valoarea optima rezultata în urma simularii efectuata la b) si arhitectura - optima de la a)

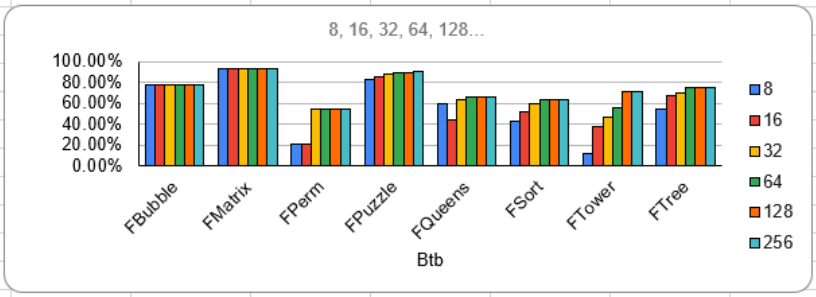
Exercitiu 1 a)	FBubble	FMatrix	FPerm	FPuzzle	FQueens	FSort	FTower	FTree
mapat	82.43%	96.59%	61.16%	88.51%	70.54%	64.17%	45.41%	70.16%
asociativ	82.91%	96.46%	61.16%	89.00%	48.29%	68.71%	70.98%	76.90%



b)

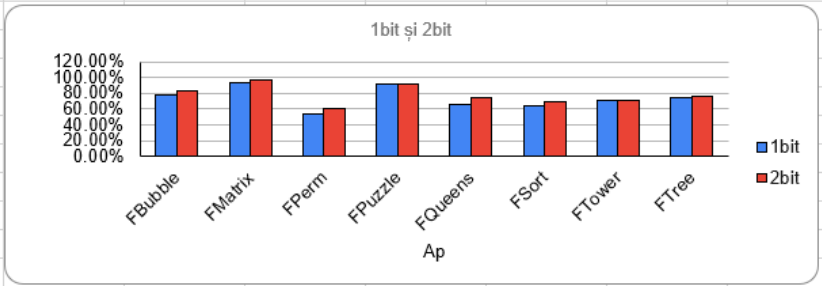
Mapat

Btb	FBubble	FMatrix	FPerm	FPuzzle	FQueens	FSort	FTower	FTree
8	76.84%	92.65%	20.96%	83.13%	58.81%	42.07%	12.25%	54.46%
16	77.08%	92.87%	20.95%	84.73%	43.41%	51.09%	37.35%	66.76%
32	77.80%	93.32%	54.44%	87.97%	63.64%	59.73%	46.11%	69.79%
64	77.80%	93.31%	54.44%	89.25%	66.49%	63.45%	55.04%	75.04%
128	77.80%	93.34%	54.42%	89.54%	66.46%	63.45%	70.93%	75%
256	77.80%	93.31%	54.44%	90%	66.49%	63.45%	70.98%	75.04%



c)

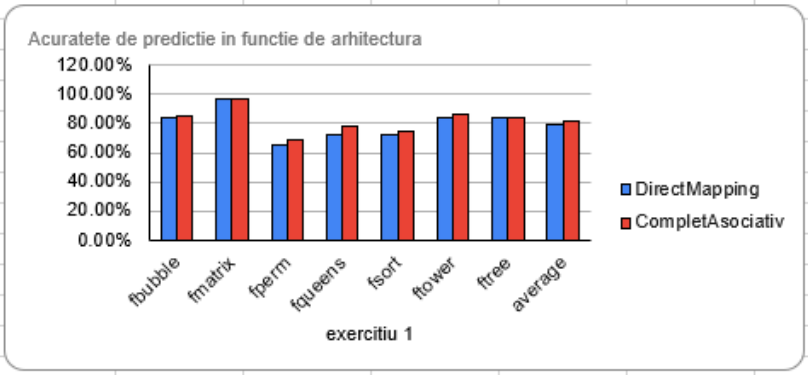
		complet	asociativ	256 Btb				
Ap	FBubble	FMatrix	FPerm	FPuzzle	FQueens	FSort	FTower	FTree
1bit	77.80%	93.32%	54.44%	91.17%	66.45%	63.46%	70.99%	75.04%
2bit	82.91%	96.59%	61.16%	91.17%	73.80%	68.73%	70.99%	76.90%



LABORATOR 7

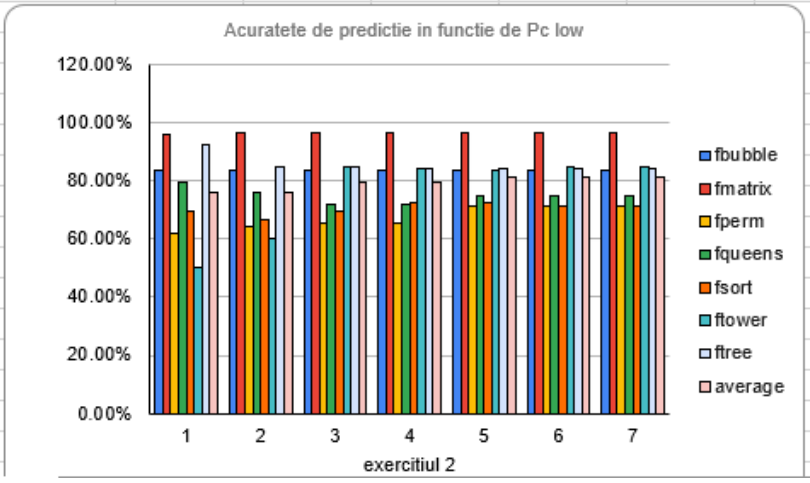
1. **Ap=f(tip_arhitectura)**
2. Analizati influenta gradului de localizare al saltului asupra acurateti de predictie: **Ap=f(i)** unde **i** = dimensiunea **PClow.**
3. Stabiliti influenta contextului în care se situeaza saltul în program: **Ap=f(HRglobal)**.
4. Reprezentati **Ap=f(nr_biti_automat_predictie)** considerând parametrii optimi (PClow, HRglobal) rezultati în urma simularii efectuate la 1), 2) si 3).

exercitiu 1	fbubble	fmatrix	fperm	fqueens	fsort	ftower	ftree	average
DirectMapping	83.86%	96.68%	65.46%	71.87%	72.64%	84.02%	84.10%	79.81%
CompletAsociativ	85.30%	96.69%	68.50%	78.38%	74.15%	85.95%	84.05%	81.86%

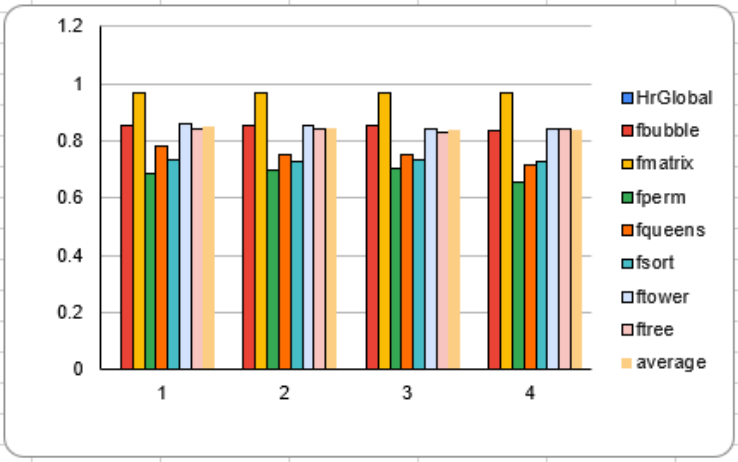


Mapat direct

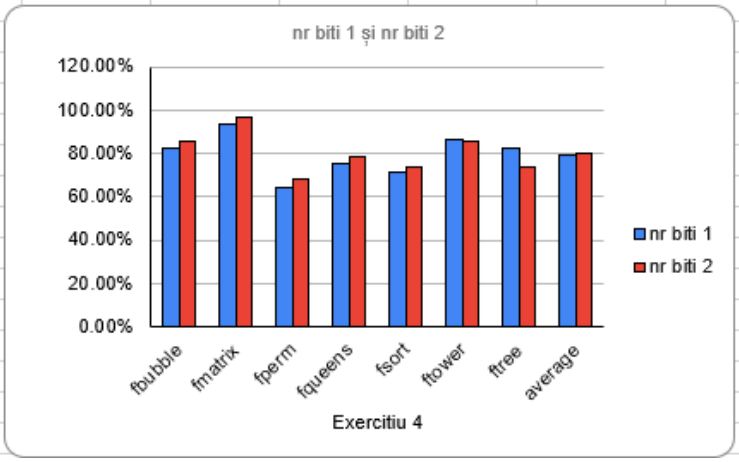
Exercitiu 2	fbubble	fmatrix	fperm	fqueens	fsort	ftower	ftree	average
32	83.71%	96.15%	62.20%	79.28%	69.58%	50.29%	92.38%	76.23%
64	83.71%	96.42%	64.54%	76.00%	66.53%	60.41%	84.81%	76.06%
128	83.71%	96.68%	65.46%	72.11%	69.74%	84.91%	84.98%	79.66%
256	83.86%	96.68%	65.46%	71.87%	72.64%	84.02%	84.10%	79.81%
512	83.86%	96.69%	71.33%	74.66%	72.71%	83.90%	84.21%	81.05%
1024	83.86%	96.69%	71.33%	74.77%	71.53%	84.94%	84.50%	81.09%
2048	83.86%	96.69%	71.33%	74.77%	71.53%	84.94%	84.50%	81.09%



Exercitiu 3								
HrGlobal	fbubble	fmatrix	fperm	fqueens	fsort	ftower	ftree	average
1b	85.29%	96.68%	68.49%	78.38%	73.66%	85.95%	84.13%	85.04%
2b	85.33%	96.68%	69.70%	75.24%	72.74%	85.27%	84.15%	84.71%
3b	85.37%	96.68%	70.36%	75.43%	73.34%	84.25%	83.26%	83.76%
4b	83.86%	96.68%	65.46%	71.86%	72.63%	84.02%	84.10%	84.06%



Exercitiu 4	fbubble	fmatrix	fperm	fqueens	fsort	ftower	ftree	average
nr biti 1	82.44%	93.41%	63.89%	74.99%	71.60%	86.48%	82.33%	79.31%
nr biti 2	85.30%	96.69%	68.50%	78.38%	73.66%	85.95%	73.66%	80.31%



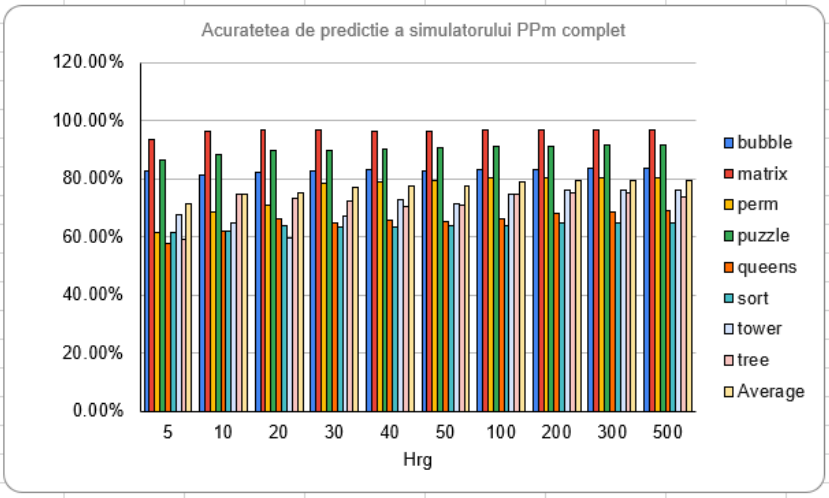
LABORATOR 8

1. Acuratetea de predictie a simulatorului PPm complet

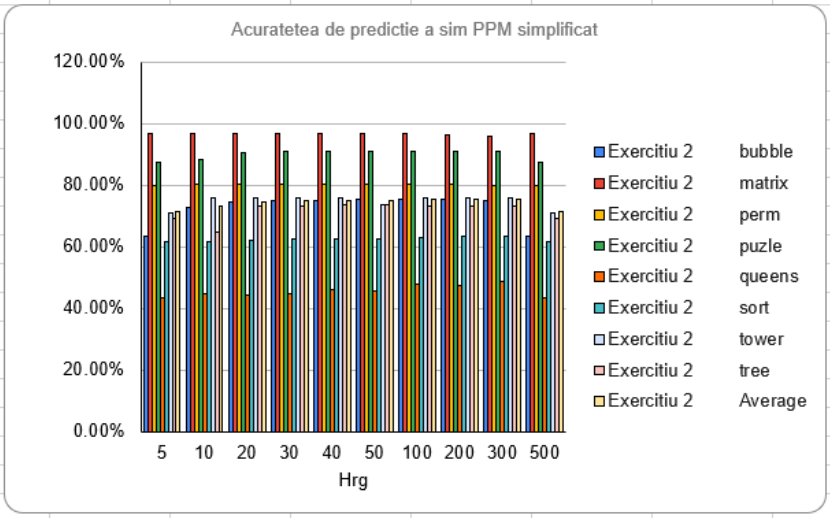
2. Acuratetea de predictie a simulatorului PPM simplificat

Exercitiu 1

Hrg	bubble	matrix	perm	puzzle	queens	sort	tower	tree	Average
5	82.62%	93.39%	61.32%	86.31%	57.74%	61.27%	67.48%	59.06%	71.15%
10	81.21%	96.33%	68.30%	88.05%	62.03%	61.87%	64.59%	74.39%	74.60%
20	81.98%	96.57%	70.73%	89.59%	66.35%	63.58%	59.51%	73.27%	75.20%
30	82.54%	96.57%	78.38%	89.67%	64.66%	63.36%	66.88%	72.21%	76.78%
40	82.95%	96.46%	78.68%	90.06%	65.45%	63.43%	72.89%	70.49%	77.55%
50	82.72%	96.45%	79.38%	90.46%	65.01%	63.75%	71.34%	70.68%	77.47%
100	83.03%	96.67%	80.17%	90.89%	66.10%	63.80%	74.74%	74.43%	78.73%
200	83.02%	96.66%	80.17%	91.15%	68.04%	64.55%	75.85%	75.01%	79.31%
300	83.53%	96.67%	80.17%	91.46%	68.44%	64.52%	75.85%	75.17%	79.48%
500	83.68%	96.67%	80.17%	91.61%	68.96%	64.55%	75.85%	73.62%	79.39%



Exercitiu 2									
Hrg	bubble	matrix	perm	puzle	queens	sort	tower	tree	Average
5	63.55%	96.68%	79.70%	87.20%	43.51%	61.59%	70.68%	69.15%	71.51%
10	72.84%	96.67%	80.14%	88.31%	44.73%	61.60%	75.85%	64.64%	73.10%
20	74.60%	96.65%	80.16%	90.51%	44.41%	61.89%	75.84%	73.28%	74.67%
30	74.94%	96.63%	80.16%	90.70%	44.84%	62.58%	75.82%	73.34%	74.88%
40	74.99%	96.60%	80.16%	90.74%	46.19%	62.33%	75.81%	73.42%	75.03%
50	75.19%	96.58%	80.15%	90.77%	45.76%	62.62%	73.40%	73.42%	74.74%
100	75.24%	96.46%	80.12%	90.88%	47.67%	63.12%	75.76%	73.33%	75.32%
200	75.15%	96.23%	80.05%	90.86%	47.23%	63.29%	75.69%	73.18%	75.21%
300	75.03%	96%	79.98%	90.84%	48.60%	63.33%	75.58%	73.03%	75.30%
500	63.55%	96.68%	79.70%	87.20%	43.51%	61.59%	70.68%	69.15%	71.51%



LABORATOR 9

1. Care este numărul optim de noduri de pe nivelul intermediar în funcţie de istoria globală KG{2,4,6,8,10} a saltului pentru fiecare din paşii de învăţare stabiliţi ({0.125, 0.5, 1.00}) şi KL=0. Funcţia de activare utilizată în cadrul simulatorului este f(x)= 1 / (1 + e^{-x}) Concluzionaţi.
2. Cu numărul de noduri de pe nivelul ascuns stabilit determinaţi pasul optim de învăţare în funcţie de istoria globală a saltului.
3. Realizaţi comparativ graficul acurateţii de predicţie în condiţiile ne-antrenări reţelei şi antrenări clasice (cu preînvăţare pe baza analizei statistice, urmată de predicţie).
4. În condiţiile determinării numărului optim de noduri de pe nivelul ascuns (N2=N1+2) determinaţi procentul optim de filtrare a statisticilor, folosit în cadrul metodei de antrenare clasică a reţelei neuronale în funcţie de istoria globală (KG{2,4,6,8,10}) a saltului. Pragul de filtrare poate lua valorile: 60%, 70%, 80%, 90%, 95%.

EXERCITIU 1

Hidden layer	HRG	fbubble	fmatrix	fperm	fpuzzle	fqueens	fsort	ftower	ftree	Average
15	2	85.57%	96.71%	95.71%	95.41%	81.08%	74.05%	97.29%	82.29%	88.51%
	4	85.71%	96.71%	95.81%	95.48%	80.97%	73.93%	97.59%	89.45%	89.46%
	6	85.83%	96.71%	97.11%	95.60%	81.65%	74.22%	97.24%	89.38%	89.72%
	8	86.08%	96.71%	96.67%	95.46%	81.13%	73.10%	96.85%	89.64%	89.46%
	10	86.09%	96.71%	95.88%	95.46%	81.29%	72.70%	96.84%	89.31%	89.29%
30	2	85.46%	96.70%	89.44%	95.32%	80.00%	76.46%	96.78%	89.48%	88.71%
	4	85.63%	96.70%	93.14%	95.69%	81.61%	76.18%	96.89%	89.73%	89.45%
	6	85.71%	96.70%	95.04%	95.79%	82.59%	76.11%	96.88%	89.70%	89.82%
	8	86.32%	96.70%	94.23%	95.86%	82.80%	76.16%	96.60%	89.90%	89.82%
	10	86.21%	96.70%	94.28%	95.86%	83.90%	76.18%	96.30%	89.09%	89.82%
50	2	85.65%	96.69%	88.65%	95.26%	79.93%	75.84%	96.76%	89.40%	88.52%
	4	85.55%	96.71%	93.13%	95.66%	81.47%	76.32%	96.93%	89.73%	89.44%
	6	85.69%	96.70%	95.02%	95.75%	82.58%	76.81%	96.82%	89.70%	89.88%
	8	86.41%	96.70%	94.35%	95.85%	82.43%	75.42%	96.62%	90.02%	89.73%
	10	86.41%	96.70%	94.16%	95.86%	82.91%	78.50%	96.53%	90.11%	90.15%

EXERCITIU 2

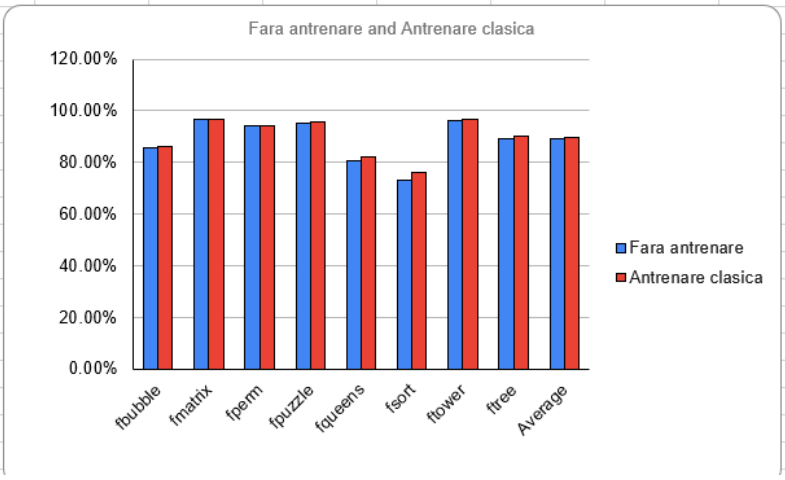
Hidden layer	15									
HRG	Learning step	fbubble	fmatrix	fperm	fpuzzle	fqueens	fsort	ftower	ftree	Average
0	0	85.23%	96.71%	90.25%	94.04%	80.37%	73.21%	96.55%	89.56%	88.24%
1	0.25	85.39%	96.71%	89.91%	95.22%	79.94%	72.35%	96.74%	89.71%	88.25%
2	0	85.68%	96.71%	88.43%	95.29%	80.45%	76.34%	96.80%	89.70%	88.68%
3	0.5	86.03%	96.71%	89.11%	95.47%	81.73%	77.55%	97.03%	89.74%	89.17%
4	1	85.88%	96.71%	92.96%	95.70%	81.42%	76.44%	97.05%	89.91%	89.51%
5	0.75	85.73%	96.71%	93.28%	95.76%	81.37%	77.50%	97.01%	89.71%	89.63%
6	1	86.27%	96.71%	95.36%	95.71%	81.33%	75.34%	95.82%	89.44%	89.50%
7	1	85.97%	96.71%	96.96%	95.51%	81.42%	74.72%	97.58%	89.67%	89.82%
8	1	86.04%	96.71%	96.76%	95.41%	81.52%	73.32%	97.06%	89.41%	89.53%
9	1.25	85.73%	96.71%	96.87%	95.61%	81.66%	73.62%	97.22%	89.63%	89.63%
10	1	86.11%	96.70%	97.02%	95.43%	82.16%	74.48%	97.66%	89.54%	89.89%

EXERCITIU 3

Hidden Layer de la ex 1

Learning Step de la ex 2

	Acuratetea								
	fbubble	fmatrix	fperm	fpuzzle	fqueens	fsort	ftower	ftree	Average
Fara antrenare	85.60%	96.69%	94.24%	95.34%	80.85%	72.99%	96.36%	89.29%	88.92%
Antrenare clasica	86.08%	96.69%	94.14%	95.74%	82.10%	76.20%	96.58%	90.05%	89.70%



EXERCITIU 4

HRG	Filter	fbubble	fmatrix	fperm	fpuzzle	fqueens	fsort	ftower	ftree	Average
2	60%	85.46%	96.70%	89.44%	95.32%	80%	76.46%	96.78%	89.48%	88.71%
	70%	85.61%	96.70%	89.41%	95.34%	79.63%	75.98%	96.78%	89.49%	88.62%
	80%	85.77%	96.70%	88.11%	95.33%	79.51%	75.56%	96.76%	89.45%	88.40%
	90%	85.61%	96.70%	88.01%	95.33%	79.86%	75.58%	96.78%	89.27%	88.39%
	95%	85.61%	96.70%	88.01%	95.30%	79.86%	75.58%	96.79%	89.25%	88.39%
4	60%	85.44%	96.71%	93.30%	95.56%	81.04%	75.46%	97.02%	89.83%	89.30%
	70%	85.39%	96.71%	93.19%	95.67%	81.05%	75.88%	97.02%	89.85%	89.35%
	80%	85.40%	96.71%	93.19%	95.71%	81.41%	75.75%	97.02%	89.88%	89.38%
	90%	85.40%	96.71%	93.19%	95.75%	81.10%	76.73%	97.02%	89.77%	89.46%
	95%	85.40%	96.71%	93.19%	95.72%	81.11%	74.89%	97.06%	89.77%	89.23%
6	60%	85.82%	96.71%	95.32%	95.81%	82.29%	77.86%	96.76%	89.66%	90.03%
	70%	85.84%	96.71%	95.32%	95.65%	82.13%	76.71%	96.76%	89.83%	89.87%
	80%	86.01%	96.71%	95.24%	95.65%	82.56%	77.04%	96.76%	89.75%	89.97%
	90%	85.59%	96.71%	95.24%	95.71%	82.11%	75.59%	96.76%	89.56%	89.66%
	95%	85.58%	96.71%	95.24%	95.69%	82.17%	75.67%	96.75%	89.58%	89.67%
8	60%	85.60%	96.71%	95.55%	95.53%	82.08%	74.62%	96.37%	89.87%	89.54%
	70%	86.60%								86.60%
	80%	86.21%	96.71%	94.58%	95.93%	82.35%	76.46%	96.30%	90.08%	89.83%
	90%									#DIV/0!
	95%	85.74%	96.70%	94.51%	95.99%	81.81%	75.33%	96.60%	90.03%	89.59%
10	60%	86.21%	96.70%	94.28%	95.86%	83.90%				91.39%
	70%	86.53%	96.70%	94.31%	96.00%	83.13%				91.33%
	80%	86.47%	96.70%	94.18%	95.92%	83.14%	76.26%	96.66%	90.08%	89.93%
	90%	85.46%	96.70%	94.72%	95.81%	82.48%				91.03%
	95%	85.53%	96.70%	94.72%	95.94%	82.65%				91.11%

LABORATOR 10

Sa se determine procentajul de salturi dificil de prezis pentru benchmark-urile SPEC2000 in urmatoarele situatii:

a) Fara istorie locala; Cu istorie globala HRg = {4, 8, 16, 20, 24, 28}
b) b) Cu istorie locala (alegeti o valoare); Cu istorie globala HRg = {4, 8, 16, 20, 24, 28}
c) Realizati o comparatie intre cele 2 grafice.

EXERCITIU 1 - a)

	099.go	124.m88ksim	129.compress	130.li	132.ijpeg	164.gzip	175.vpr	176.gcc	181.mcf	186.crafty	197.parser	252.eon	253.perlbmk	254.gap	255.vortex	256.bzip2	300.twolf
HRG 4	66%	26.62%	66.50%	32.46%	23.79%	45.14%	46.83%	23%	3.87%	39.25%	33.73%	19.33%	2.05%	42.74%	6.44%	60.68%	52.34%
HRG 8	51.78%	18.48%	60.79%	22.95%	23.22%	41.88%	43.40%	14.67%	3.86%	27.67%	26.04%	11.24%	1.36%	25.41%	3.84%	56.95%	45.06%
HRG 12	36.07%	15.10%	47.19%	17.11%	23.21%	38.91%	42.29%	10.25%	3.34%	23.25%	20.40%	6.57%	1.22%	12.77%	2.40%	50.81%	36.82%
HRG 16	23.97%	12.71%	32.64%	12.17%	22.33%	36.24%	35.66%	7.74%	1.91%	20.30%	15.80%	4.37%	1.24%	11.79%	2.19%	41.80%	30.21%
HRG 20	15.934%	10.33%	24.312%	11.50%	20.68%	33.80%	30.51%	6.06%	0.85%	17.79%	12.28%	3.78%	1.29%	10.67%	2.02%	32.91%	26.22%
HRG 24	11.307%	7.549%	24.312%	10.737%	18.296%	31.025%	27.134%	4.791%	0.709%	16.06%	9.577%	1.638%	1.201%	9.807%	1.638%	23.657%	22.33%
HRG 28	8.32%	5.56%	23.486%	10.062%	16.756%	28.172%	23.071%	4.441%	0.743%	14.599%	7.523%	3.557%	1.149%	8.821%	1.54%	17.794%	19.003%

EXERCITIU 1 - b)

	099.go	124.m88ksim	129.compress	130.li	132.ijpeg	164.gzip	175.vpr	176.gcc	181.mcf	186.crafty	197.parser	252.eon	253.perlbmk	254.gap	255.vortex	256.bzip2	300.twolf
HRG 4	52.77%	15.49%	58.36%	20.15%	23.01%	40.39%	40.04%	15.14%	2.20%	29.33%	23.14%	8.82%	1.28%	19.62%	4.58%	44.74%	46.24%
HRG 8	36.68%	11.92%	51.77%	16.17%	22.31%	38.09%	35.84%	9.91%	2.13%	21.12%	18.61%	5.24%	1.09%	11.87%	2.25%	45.25%	41.80%
HRG 12	13.67%	9.93%	32.25%	10.43%	21.73%	35.11%	32.39%	7.16%	1.95%	17.48%	14.51%	3.69%	0.98%	9.83%	1.22%	38.32%	32.90%
HRG 16	22.06%	11.92%	43.08%	13.44%	20.81%	33.11%	30.11%	5.54%	1.90%	15.27%	11.30%	2.50%	0.99%	9.11%	1.06%	32.44%	25.81%
HRG 20	8.889%	7.946%	27.733%	10.027%	18.995%	30.442%	26.406%	4.252%	0.832%	13.29%	2.49%	2.49%	1.06%	8.22%	0.97%	26.34%	20.78%
HRG 24	6.126%	5.96%	24.312%	9.227%	16.394%	27.4%	22.98%	3.373%	0.688%	11.813%	6.962%	2.455%	1.022%	7.76%	0.838%	19.727%	17.944%
HRG 28	4.398%	3.973%	23.486%	8.607%	14.473%	24.381%	19.194%	3.146%	0.721%	10.627%	5.612%	2.288%	1.017%	7.304%	0.821%	15.54%	14.662%