

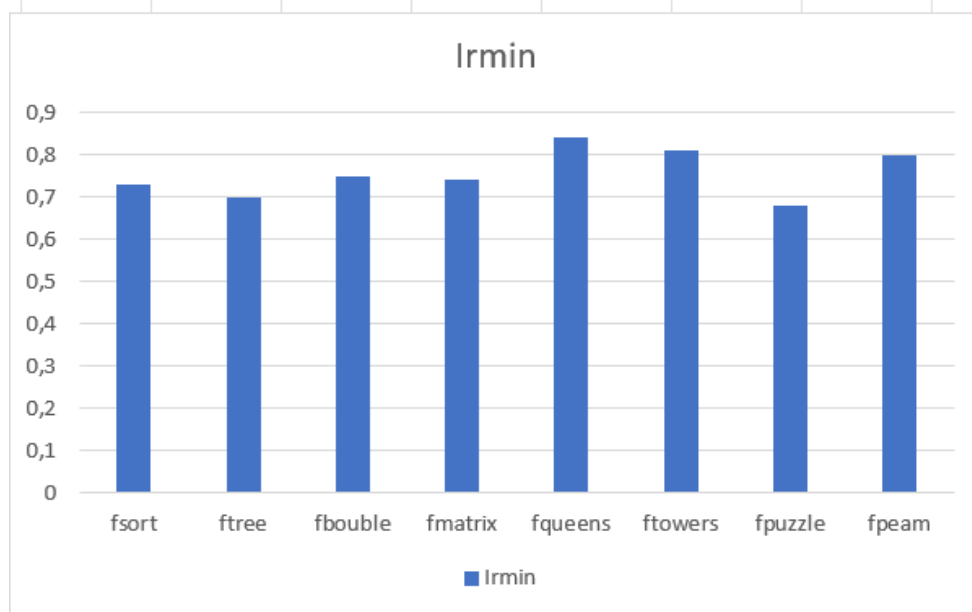
## Simulari Simularea si Optimizarea Arhitecturilor de Calcul

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Semigrupa 244/1

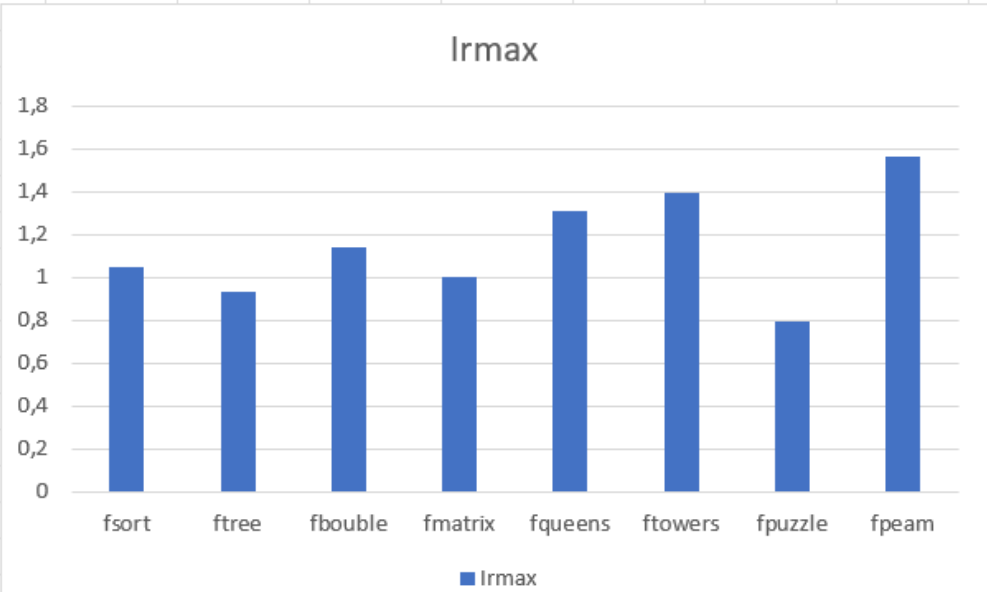
Coordonatori: Stoisor Melisa  
Prof. dr. ing. Florea Adrian

### Laborator 1:

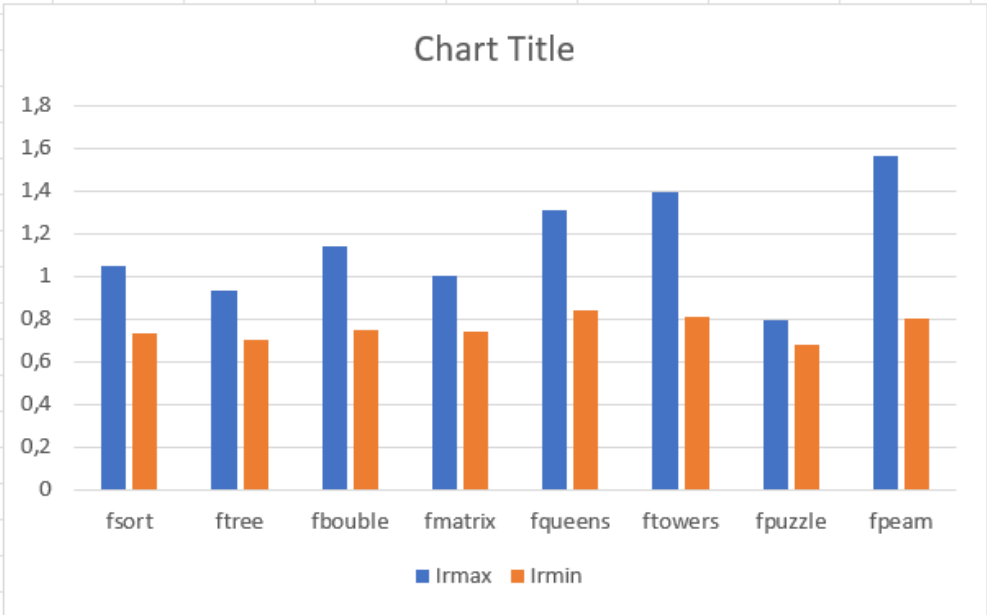
	fsort	ftree	fbouble	fmatrix	fqueens	ftowers	fpuzzle	fpeam
Irmin	0,73	0,7	0,75	0,74	0,84	0,81	0,68	0,8



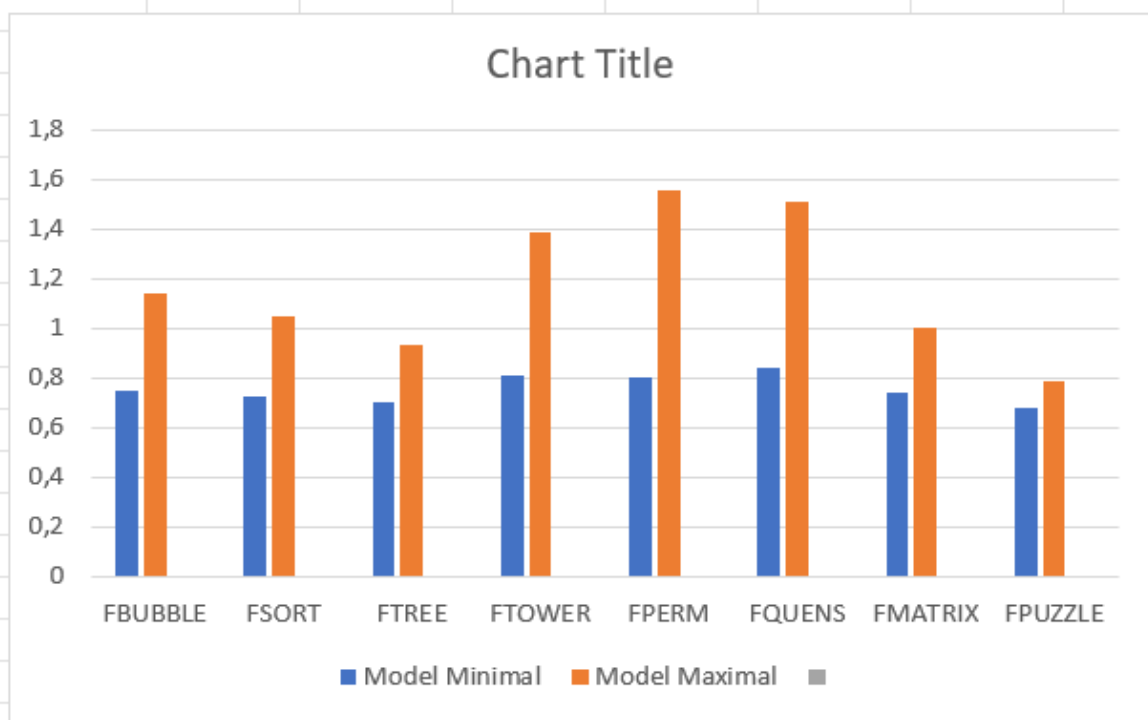
	fsort	ftree	fbouble	fmatrix	fqueens	flowers	fpuzzle	fpeam
lrmx	1,05	0,93	1,14	1	1,31	1,39	0,79	1,56



	fsort	ftree	fbouble	fmatrix	fqueens	flowers	fpuzzle	fpeam
lrmx	1,05	0,93	1,14	1	1,31	1,39	0,79	1,56
lrmn	0,73	0,7	0,75	0,74	0,84	0,81	0,68	0,8



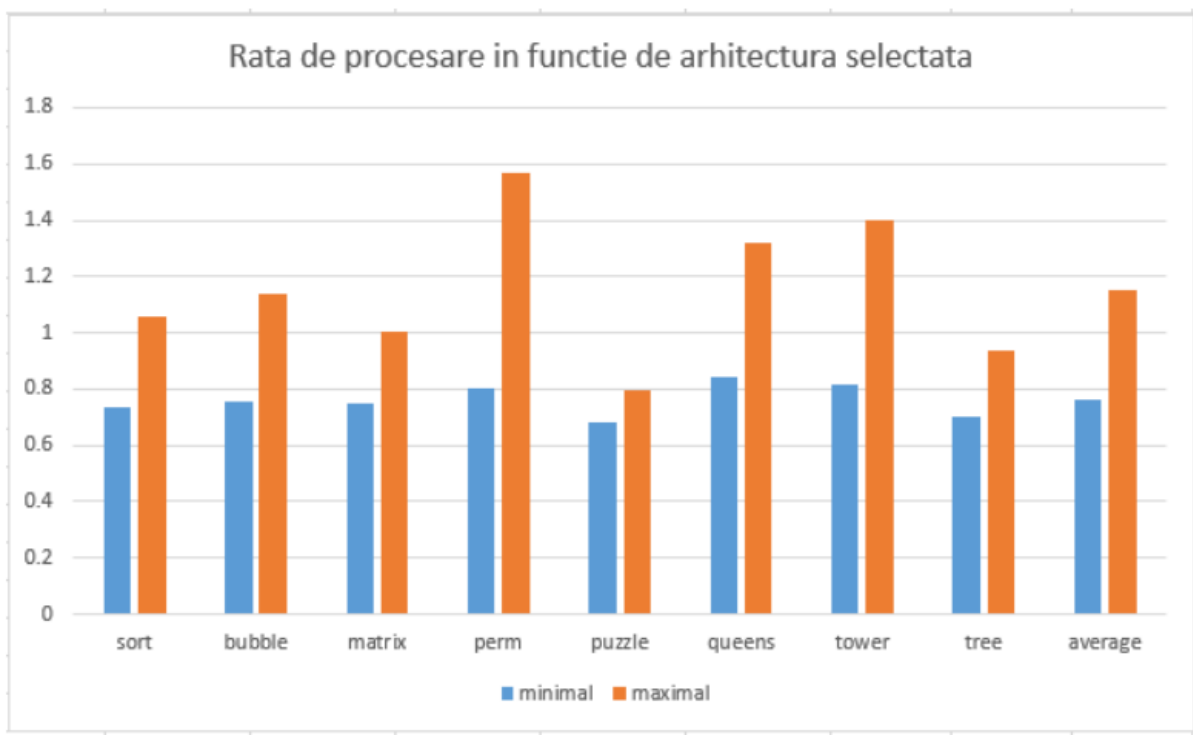
	Model Min	Model Maximal	
FBUBBL	0,75	1,14	
FSORT	0,73	1,05	
FTREE	0,7	0,93	
FTOWER	0,81	1,39	
FPERM	0,8	1,56	
FQUENS	0,84	1,51	
FMATRIX	0,74	1	
FPUZZLE	0,68	0,79	



## Laborator 2:

IR	sort	bubble	matrix	perm	puzzle	queens	tower	tree	average
minimal	0.73585214	0.75749276	0.74785223	0.80177966	0.68256503	0.84256156	0.81353028	0.70168199	0.760414
maximal	1.05715291	1.14058348	1.00413237	1.56557817	0.79888458	1.31866587	1.39933028	0.93383398	1.15227

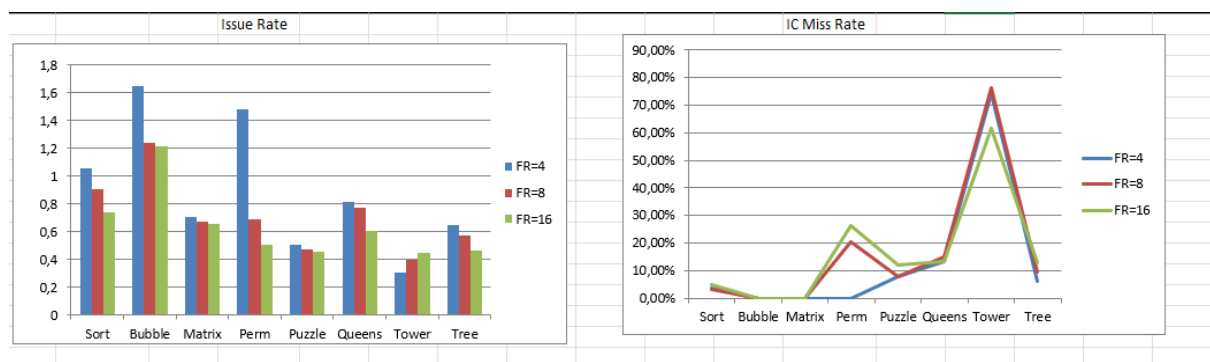
Column1	Cicli	Instructiu
sort min	97983	72101
sort max	68203	72101
bubble min	271996	206035
bubble max	180640	206035
matrix min	309973	231814
matrix max	230860	231814
perm min	443567	355643
perm max	227164	355643
puzzle min	10000001	6825651
puzzle max	8614302	6881833
queens min	244991	206420
queens max	156537	206420
tower min	308715	251149
tower max	179478	251149
tree min	193877	136040
tree max	145679	136040



1. Modelul maximal este mai eficient decat cel minimal deoarece se executa mai multe instructiuni intr-un ciclu, fapt rezultat din media calculata pe toate cele 8 benchmarkuri. 2. Modelul minimal are IR subunitar, astfel fiind necesari mai multi ciclii pentru a executa o instructiune. 3. Modelul maximal are IR supraunitar in majoritatea cazurilor (exceptie fac simularile pentru benchmarkurile puzzle si tree ), ceea ce inseamna ca se executa mai mult de o instructiune pe un ciclu.

### Laborator 3:

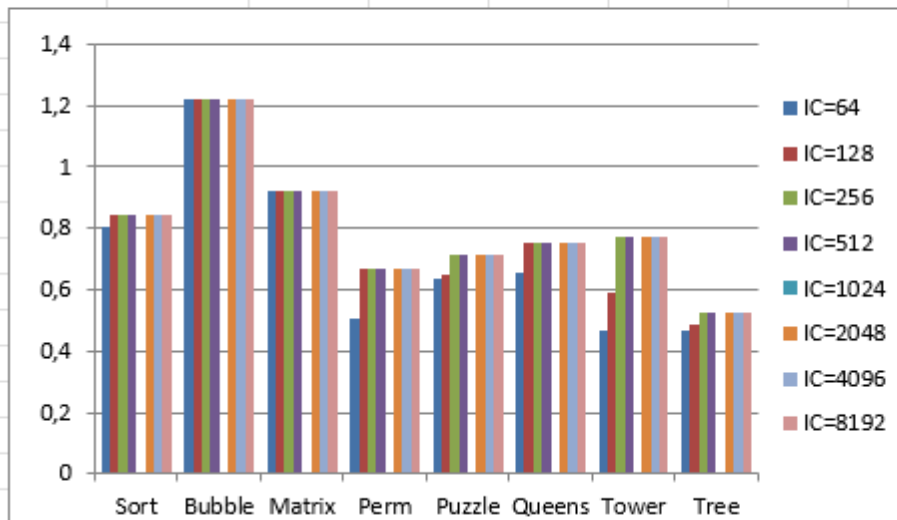
Exercitiu 1								
FR=4								
	Sort	Bubble	Matrix	Perm	Puzzle	Queens	Tower	Tree
Issue Rate	1,058	1,648	0,705	1,483	0,505	0,818	0,308	0,651
IC Miss Rate	3,50%	0,05%	0,05%	0,03%	7,79%	13,30%	74,04%	6,06%
FR=8								
	Sort	Bubble	Matrix	Perm	Puzzle	Queens	Tower	Tree
Issue Rate	0,904	1,242	0,678	0,692	0,474	0,777	0,401	0,578
IC Miss Rate	3,09%	0,04%	0,05%	20,38%	7,94%	14,82%	76,46%	9,52%
FR=16								
	Sort	Bubble	Matrix	Perm	Puzzle	Queens	Tower	Tree
Issue Rate	0,737	1,218	0,654	0,505	0,455	0,608	0,45	0,462
IC Miss Rate	4,70%	0,05%	0,06%	26,13%	12,00%	13,20%	61,70%	12,94%



Pe masura ce creste FR(Fetch Rate) observam ca Issue Rate scade si creste IC Miss Rate deoarece se schimba din ce in ce mai multe instructiuni pe un ciclu.

Exercitiu 2								
SIZE_IC=64								
	Sort	Bubble	Matrix	Perm	Puzzle	Queens	Tower	Tree
Issue Rate	0,802	1,219	0,923	0,505	0,636	0,654	0,465	0,468
IC Miss Rate	4,70%	0,05%	0,06%	26,13%	12,00%	13,20%	61,70%	12,94%
SIZE_IC=128								
	Sort	Bubble	Matrix	Perm	Puzzle	Queens	Tower	Tree
Issue Rate	0,845	1,219	0,924	0,67	0,647	0,751	0,589	0,485
IC Miss Rate	0,12%	0,04%	0,05%	0,01%	10,24%	0,16%	29,35%	8,65%
SIZE_IC=256								
	Sort	Bubble	Matrix	Perm	Puzzle	Queens	Tower	Tree
Issue Rate	0,845	1,219	0,924	0,67	0,712	0,752	0,775	0,522
IC Miss Rate	0,11%	0,04%	0,04%	0,01%	0,04%	0,04%	0,05%	0,06%
SIZE_IC=512								
	Sort	Bubble	Matrix	Perm	Puzzle	Queens	Tower	Tree
Issue Rate	0,845	1,219	0,924	0,67	0,712	0,752	0,775	0,522
IC Miss Rate	0,11%	0,04%	0,04%	0,01%	0,04%	0,04%	0,05%	0,06%

SIZE_IC=2048								
	Sort	Bubble	Matrix	Perm	Puzzle	Queens	Tower	Tree
Issue Rate	0,845	1,219	0,924	0,67	0,712	0,752	0,775	0,522
IC Miss Ra	0,11%	0,04%	0,04%	0,01%	0,03%	0,04%	0,05%	0,06%
SIZE_IC=4096								
	Sort	Bubble	Matrix	Perm	Puzzle	Queens	Tower	Tree
Issue Rate	0,845	1,219	0,924	0,67	0,712	0,752	0,775	0,522
IC Miss Ra	0,11%	0,04%	0,04%	0,01%	0,03%	0,04%	0,05%	0,06%
SIZE_IC=8192								
	Sort	Bubble	Matrix	Perm	Puzzle	Queens	Tower	Tree
Issue Rate	0,845	1,219	0,924	0,67	0,712	0,752	0,775	0,522
IC Miss Ra	0,11%	0,04%	0,04%	0,01%	0,03%	0,04%	0,05%	0,06%



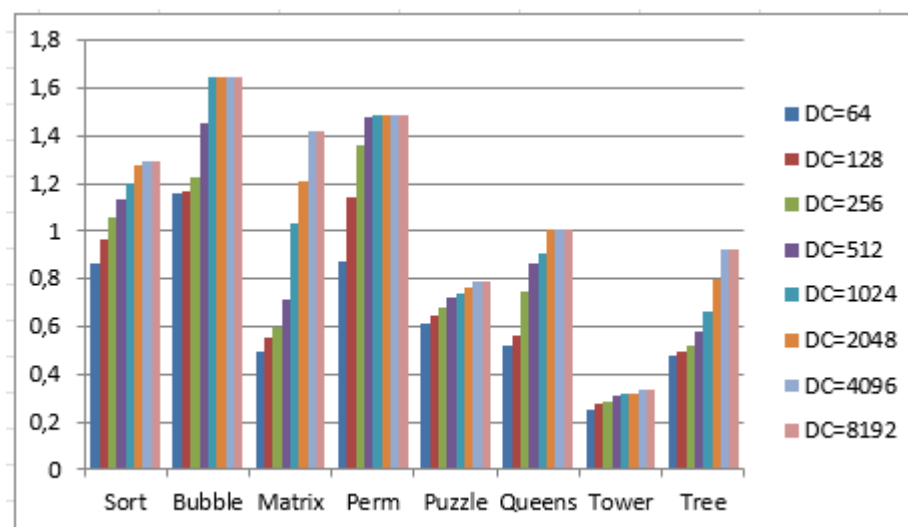
Atunci cand Size\_IC este suficient de mare valoarea lui IR nu se mai modifica ,iar IC Miss Rate scade deoarece Size\_IC este suficient de mare sa contina nr de instr cerut.

Exercitiu 3								
SIZE_DC=64								
	Sort	Bubble	Matrix	Perm	Puzzle	Queens	Tower	Tree
Issue Rate	0,864	1,158	0,492	0,869	0,614	0,519	0,252	0,477
IC Miss Rate	3,50%	0,05%	0,05%	0,03%	7,79%	13,30%	74,04%	6,06%
SIZE_DC=128								
	Sort	Bubble	Matrix	Perm	Puzzle	Queens	Tower	Tree
Issue Rate	0,962	1,171	0,556	1,139	0,65	0,562	0,273	0,494
IC Miss Rate	3,50%	0,05%	0,05%	0,03%	7,79%	13,30%	74,04%	6,06%
SIZE_DC=256								
	Sort	Bubble	Matrix	Perm	Puzzle	Queens	Tower	Tree
Issue Rate	1,056	1,222	0,599	1,359	0,682	0,743	0,286	0,523
IC Miss Rate	3,50%	0,05%	0,05%	0,03%	7,79%	13,30%	74,04%	6,06%

SIZE_DC=512								
	Sort	Bubble	Matrix	Perm	Puzzle	Queens	Tower	Tree
Issue Rate	1,13	1,456	0,717	1,477	0,719	0,864	0,309	0,575
IC Miss Rate	3,50%	0,05%	0,05%	0,03%	7,79%	13,30%	74,04%	6,06%
SIZE_DC=1024								
	Sort	Bubble	Matrix	Perm	Puzzle	Queens	Tower	Tree
Issue Rate	1,197	1,648	1,03	1,484	0,741	0,904	0,315	0,664
IC Miss Rate	3,50%	0,05%	0,05%	0,03%	7,79%	13,30%	74,04%	6,06%
SIZE_DC=1024								
	Sort	Bubble	Matrix	Perm	Puzzle	Queens	Tower	Tree
Issue Rate	1,274	1,649	1,212	1,484	0,765	1,009	0,315	0,8
IC Miss Rate	3,50%	0,05%	0,05%	0,03%	7,79%	13,30%	74,04%	6,06%



SIZE_DC=2048									
	Sort	Bubble	Matrix	Perm	Puzzle	Queens	Tower	Tree	
Issue Rate	1,274	1,649	1,212	1,484	0,765	1,009	0,315	0,8	
IC Miss Rate	3,50%	0,05%	0,05%	0,03%	7,79%	13,30%	74,04%	6,06%	
SIZE_DC=4096									
	Sort	Bubble	Matrix	Perm	Puzzle	Queens	Tower	Tree	
Issue Rate	1,291	1,649	1,416	1,484	0,791	1,009	0,334	0,923	
IC Miss Rate	3,50%	0,05%	0,05%	0,03%	7,79%	13,30%	74,04%	6,06%	
SIZE_DC=8192									
	Sort	Bubble	Matrix	Perm	Puzzle	Queens	Tower	Tree	
Issue Rate	1,297	1,649	1,416	1,484	0,791	1,009	0,334	0,923	
IC Miss Rate	3,50%	0,05%	0,05%	0,03%	7,79%	13,30%	74,04%	6,06%	

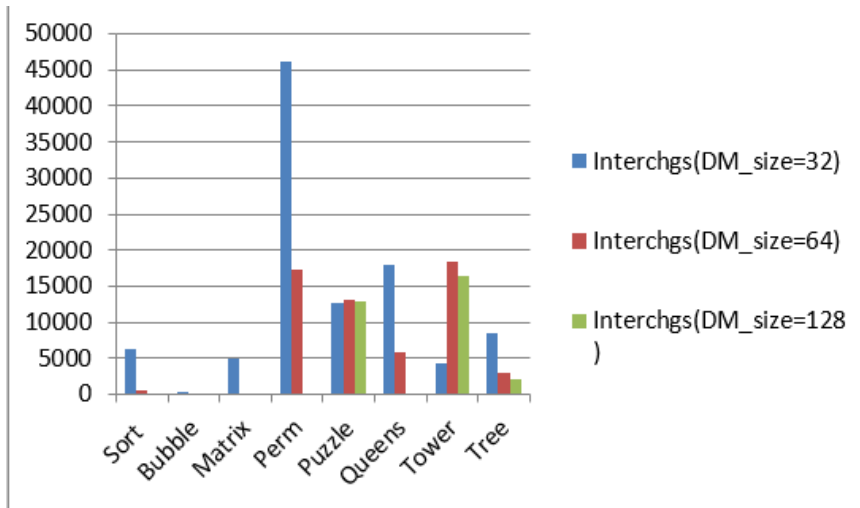


La acest exercitiu am observat ca Issue Rate este crescator de la SIZE\_DC=64 pana la SIZE\_DC=8192 , iar DC Miss Rate este descrescator de la SIZE\_DC=64 pana la SIZE\_DC=8192

#### Laborator 4:

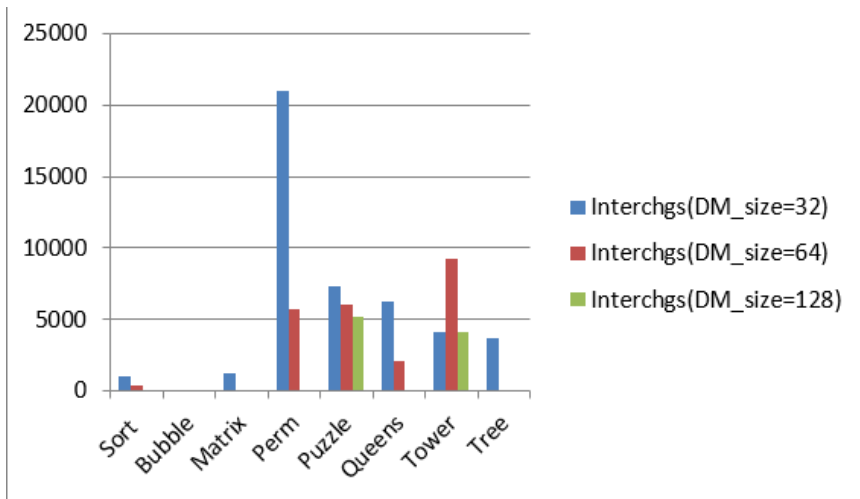
### 2. a) Victim cache simplu

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



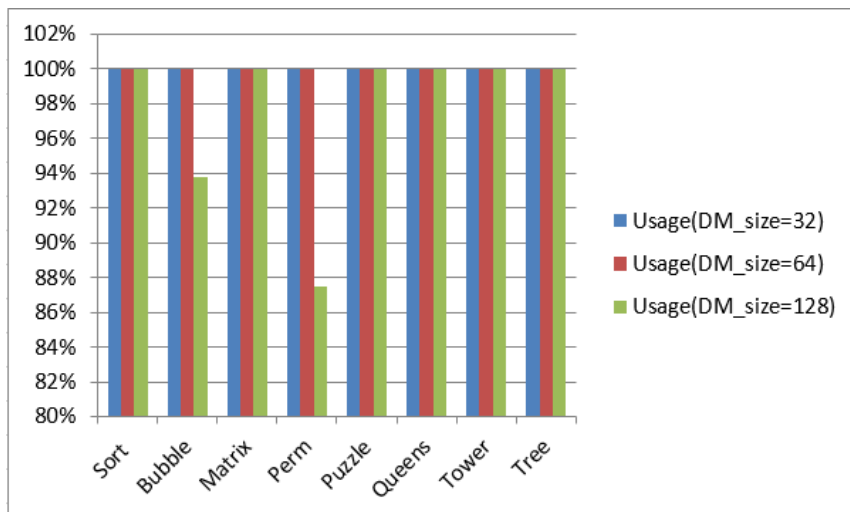
### 2. b) Selective victim cache

	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



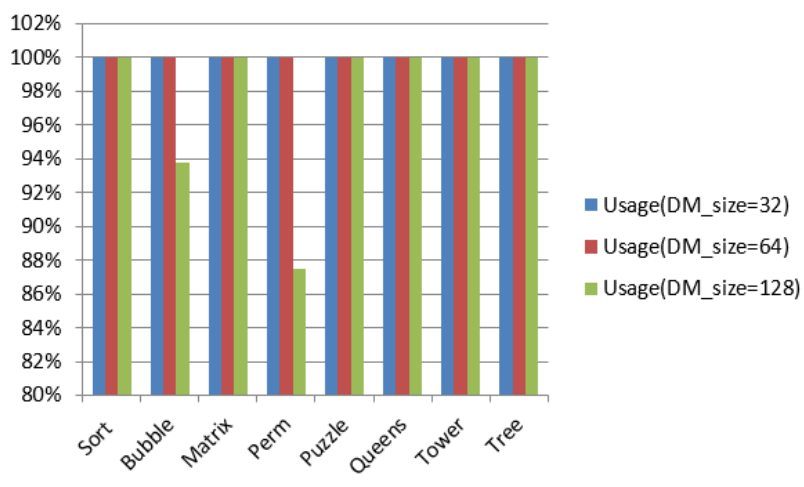
### 3. a) Fara victim cache

	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%



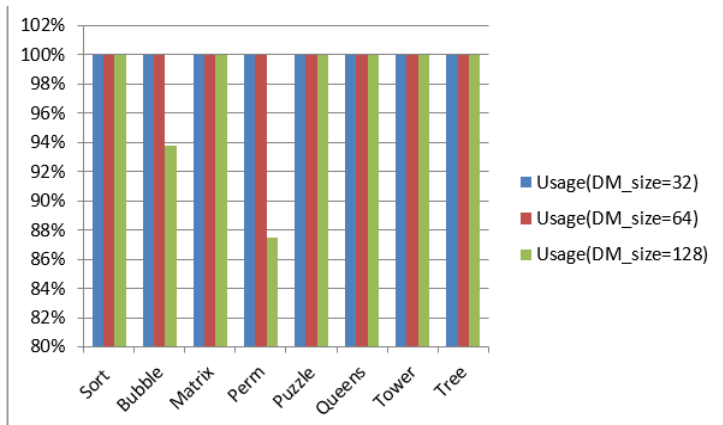
### 3. b) Cu victim cache simplu

	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%



### 3. c) Cu selective victim cache

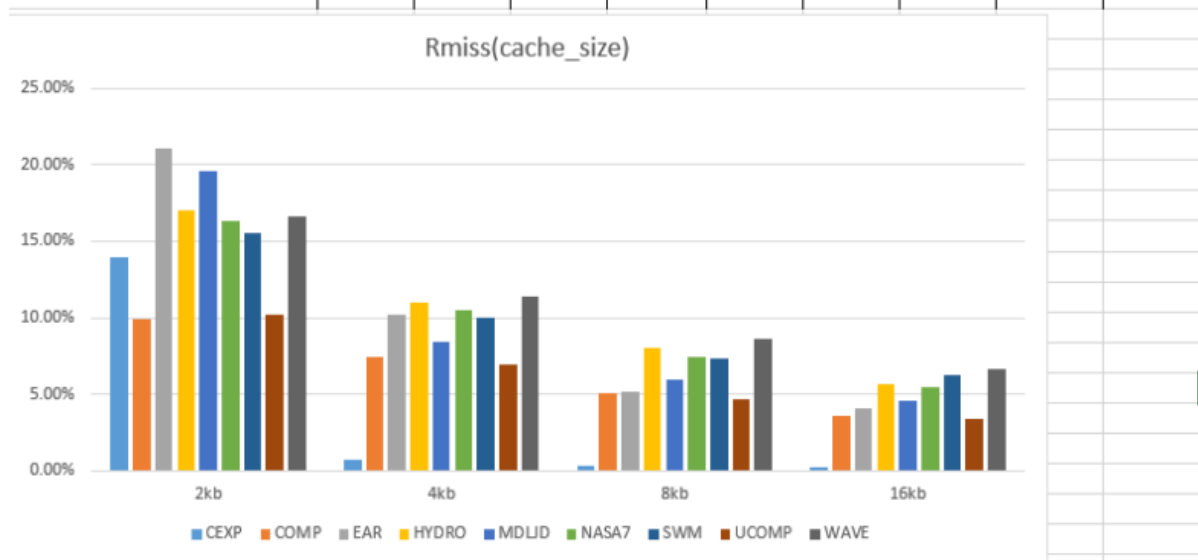
	Sort	Bubble	Matrix	Perm	Puzzle	Queens	Tower	Tree
Usage(DM_size=32)	100%	100%	100%	100%	100%	100%	100%	100%
Usage(DM_size=64)	100%	100%	100%	100%	100%	100%	100%	100%
Usage(DM_size=128)	100%	93,75%	100%	87,50%	100%	100%	100%	100%



Aceleasi rezultate la Simple Victim si Selective Cache Pentru DM\_size 32 si 64 cache ul este folosit in totalitate ,iar pentru DM\_size 128 pentru benchmarck-urile bubble si perm avem o rata mai scazuta de utilizare.

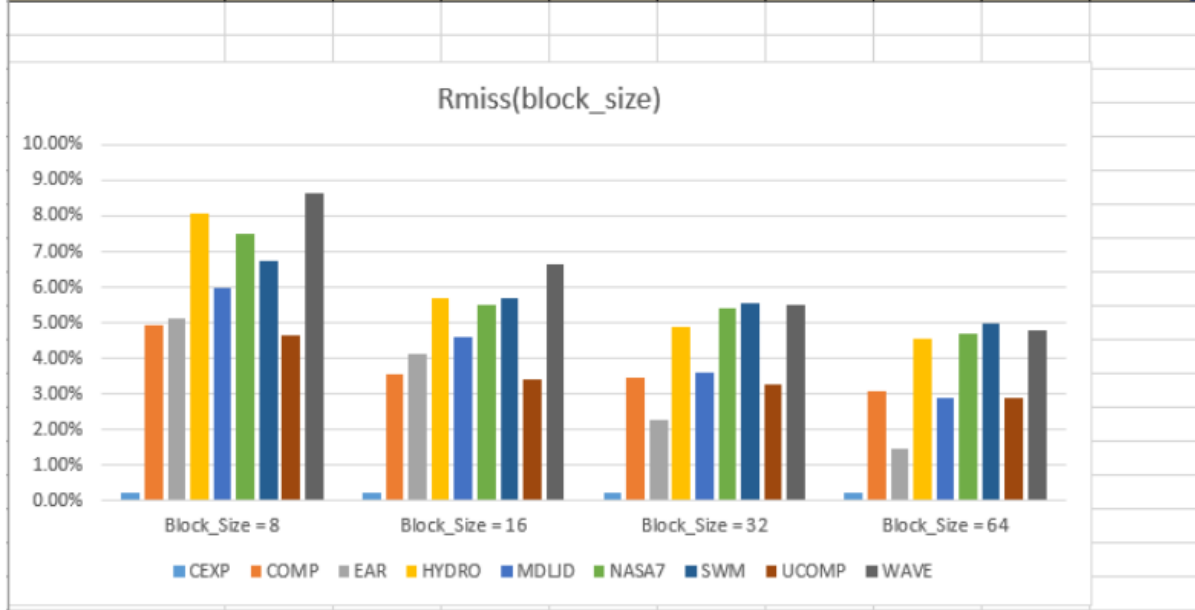
## Laborator 5:

Miss Rate	CEXP	COMP	EAR	HYDRO	MDLJD	NASA7	SWM	UCOMP	WAVE
2kb	14.05%	9.94%	21.04%	16.97%	19.57%	16.28%	15.54%	10.25%	16.60%
4kb	0.70%	7.45%	10.21%	11.00%	8.47%	10.57%	10%	6.99%	11.41%
8kb	0.258%	5.03%	5.16%	8.04%	5.94%	7.49%	7.38%	4.65%	8.64%
16kb	0.220%	3.57%	4.11%	5.69%	4.60%	5.50%	6.22%	3.40%	6.62%

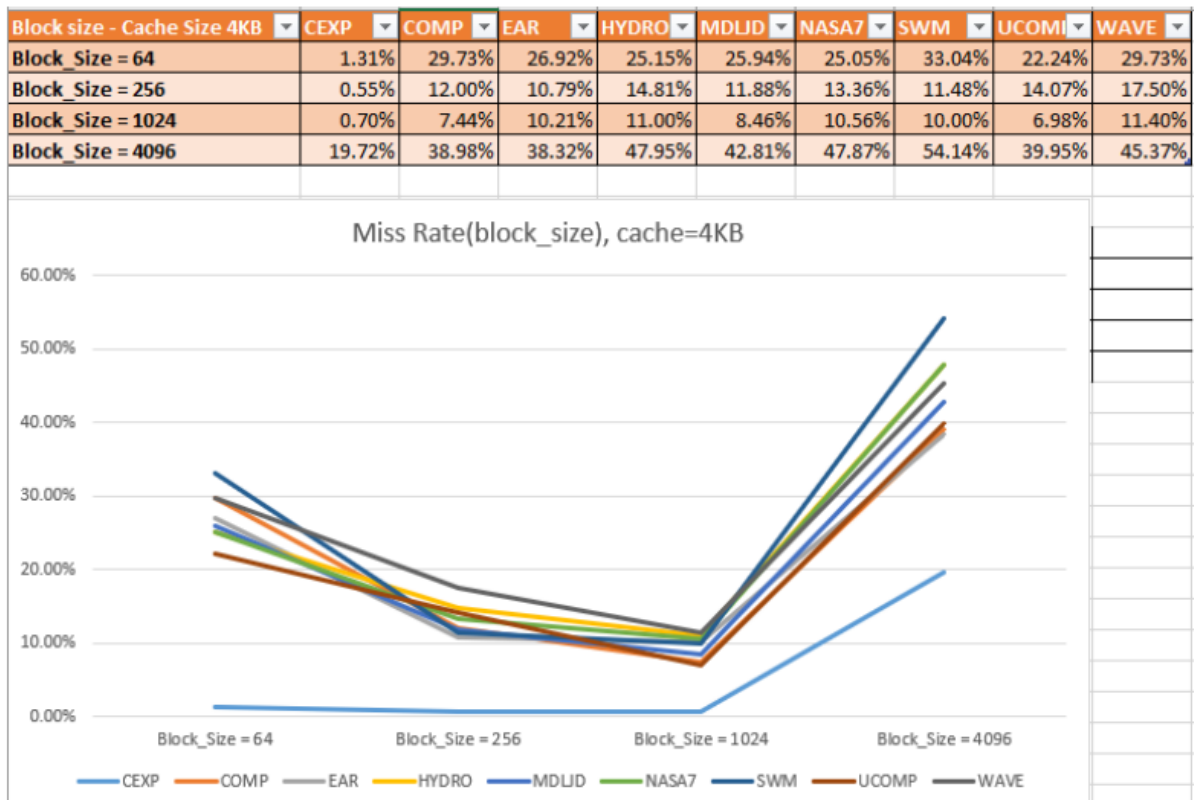


Miss rate scade odata cu cresterea cache-ului.

Block size	CEXP	COMP	EAR	HYDRO	MDLJD	NASA7	SWM	UCOMI	WAVE
Block_Size = 8	0.24%	4.95%	5.14%	8.09%	5.96%	7.49%	6.72%	4.64%	8.63%
Block_Size = 16	0.21%	3.56%	4.10%	5.68%	4.59%	5.49%	5.71%	3.40%	6.63%
Block_Size = 32	0.21%	3.44%	2.26%	4.88%	3.61%	5.39%	5.57%	3.25%	5.48%
Block_Size = 64	0.21%	3.05%	1.46%	4.56%	2.86%	4.69%	4.96%	2.89%	4.78%



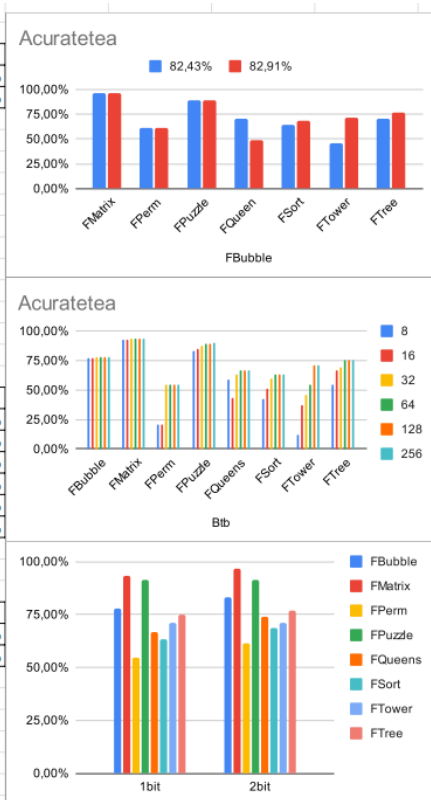
Miss Rate scade odata cu cresterea Block Size



**CEXP Miss Rate**

Access Pattern	4kb	8kb	16kb	32kb
Direct	~17.5%	~8.5%	~8.2%	~8.0%
2-way	~4.0%	~0.2%	~0.2%	~0.2%
4-way	~17.5%	~3.8%	~0.2%	~0.2%
8-way	~0.2%	~0.2%	~0.2%	~0.2%
fully asoc	~0.5%	~0.2%	~0.2%	~0.2%

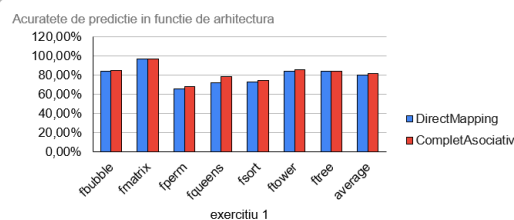
## Laborator 6:

[illegible]

Pentru cel mapat : atunci cand creste nr de linii in BTB avem si o precizie mai buna

Pentru ex c) : pentru 2 biti de predicție avem o precizie mai bună

## Laborator 7:

[illegible]

Din acest exercitiu deduce faptul ca obtinem rezultate mai bune pe complet asociativ

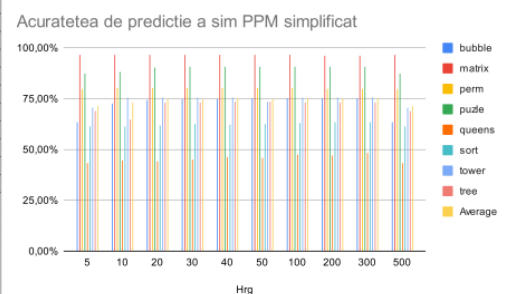
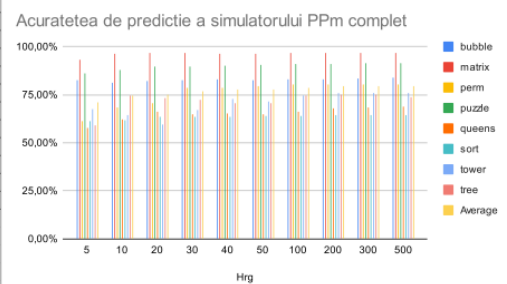




Exercițiu 1										
Hrg	bubble	matrix	perm	puzzle	queens	sort	tower	tree	Average	
5	82,62%	93,39%	61,32%	86,31%	57,74%	61,27%	67,48%	59,06%	71,15%	
10	81,21%	96,33%	68,30%	88,05%	62,03%	61,87%	64,59%	74,39%	74,60%	
20	81,98%	96,57%	70,73%	89,59%	66,35%	63,58%	59,51%	73,27%	75,20%	
30	82,54%	96,57%	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%	

Exercițiu 2										
Hrg	bubble	matrix	perm	puzzle	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%	



Pentru primul grafic : Cele mai mari valori au fost obtinute la fmatrix, dupa care la fpuzzle.  
Ca medie, cele mai mari valori se afla la HRG = 500

## Laborator 9:

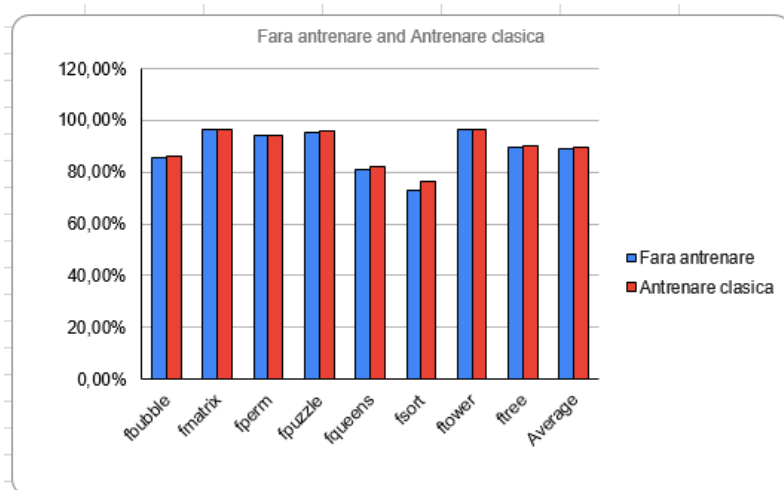
EXERCITIUL 1										
Hidden layer	HRG	fbubble	fmatrix	fperm	fpuzzle	fqueens	fsort	ftower	ftree	Average
15	2	85,57%	96,71%	95,71%	95,41%	81,08%	74,05%	97,29%	82,29%	88,51%
	4	85,71%	96,71%	95,81%	95,48%	80,97%	73,93%	97,59%	89,45%	89,46%
	6	85,83%	96,71%	97,11%	95,60%	81,65%	74,22%	97,24%	89,38%	89,72%
	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%

In cazul HRG = 10, hidden layer= 15,30,50, pentru sort, tower si tree timpul de simulare este unul indelungat datorita rețelei neuronale, astfel niciun rezultat nu a putut fi afisat. Pentru HRG=8, hidden layer = 15, este valabila afirmatia de mai sus Excluzand cazurile in care simularile nu au afisat niciun rezultat, pentru hidden layer = 50, HRG= 6 s-a obtinut cel mai bun rezultat.

EXERCITIU 2										
Hidden layer	15									
HRG	Learning step	fbubble	fmatrix	fperm	fpuzzle	fqueens	fsort	flower	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%

Observam ca la HRG = 5 si Learning Step = 0.75 am avut cea mai mare medie.

EXERCITIU 3										
Hidden Layer de la ex 1										
Learning Step de la ex 2										
		Acuratetea								
		fbubble	fmatrix	fperm	fpuzzle	fqueens	fsort	flower	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%



Diferenta dintre antrenarea clasica si fara antrenare este foarte mica, anumite valori fiind identice.

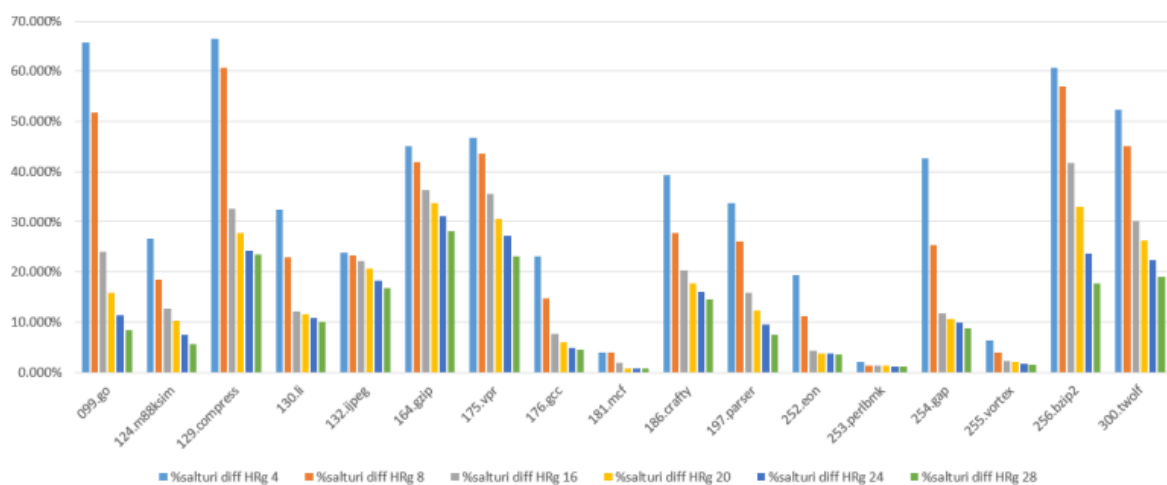
EXERCITIU 4										
HRG	Filter	fbubble	fmatrix	fperm	fpuzzle	fqueens	fsort	flower	ftree	Average
2	60%	85,46%	96,70%	89,44%	95,32%	80%	76,46%	96,78%	89,48%	88,71%
	70%	85,61%	96,70%	89,41%	95,34%	79,63%	75,98%	96,78%	89,49%	88,62%
	80%	85,77%	96,70%	88,11%	95,33%	79,51%	75,56%	96,76%	89,45%	88,40%
	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%	96,71%	94,61%	95,88%	82,71%	76,40%	96,30%	89,95%	89,90%
	80%	86,21%	96,71%	94,58%	95,93%	82,35%	76,46%	96,30%	90,08%	89,83%
	90%	85,95%	96,71%	94,43%	95,88%	82,31%	75,07%	96,32%	89,89%	89,57%
	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%

HRG 10 a obtinut cele mai bune rezultate.

## Laborator 10:

a)	099.go	124.m88k	129.comp	130.li	132.ijpeg	164.gzip	175.vpr	176.gcc	181.mcf	186.craft	197.pars	252.eon	253.perl	254.gap	255.vor	256.bzip	300.twof
%salturi diff HRg 4	65.688%	26.621%	66.501%	32.455%	23.790%	45.140%	46.827%	23.103%	3.871%	39.249%	33.728%	19.329%	2.049%	42.739%	6.440%	60.683%	52.343%
%salturi diff HRg 8	51.784%	18.475%	60.792%	22.945%	23.221%	41.881%	43.496%	14.669%	3.855%	27.674%	26.036%	11.236%	1.360%	25.411%	3.839%	56.954%	45.061%
%salturi diff HRg 16	23.965%	12.714%	32.639%	12.171%	22.232%	36.244%	35.662%	7.737%	1.906%	20.303%	15.802%	4.368%	1.235%	11.785%	2.192%	41.803%	30.205%
%salturi diff HRg 20	15.934%	10.330%	27.733%	11.504%	20.682%	33.799%	30.505%	6.064%	0.853%	17.793%	12.277%	3.777%	1.286%	10.668%	2.020%	32.913%	26.224%
%salturi diff HRg 24	11.307%	7.549%	24.312%	10.737%	18.296%	31.025%	27.134%	4.791%	0.709%	16.060%	9.577%	3.678%	1.201%	9.807%	1.638%	23.657%	22.327%
%salturi diff HRg 28	8.315%	5.562%	23.486%	10.062%	16.756%	28.172%	23.071%	4.441%	0.743%	14.599%	7.523%	3.557%	1.149%	8.821%	1.540%	17.794%	19.003%

Procentul salturilor dificil de prezis in functie de dimesniunea istoriei globale



istorie locala 4	099.go	124.m8	129.comp	130.li	132.ijpeg	164.gzip	175.vpr	176.gcc	181.mcf	186.crafty	197.parser	252.eon	253.perl	254.gap	255.vor	256.bzip2	300.twof
%salturi diff HRg 4	52.775%	15.497%	58.366%	20.157%	23.015%	40.390%	40.048%	15.142%	2.199%	29.338%	23.144%	8.827%	1.282%	19.625%	4.588%	44.742%	46.243%
%salturi diff HRg 8	36.681%	11.920%	51.370%	16.177%	22.317%	38.099%	35.846%	9.914%	2.135%	21.129%	18.618%	5.241%	1.093%	11.876%	2.253%	45.254%	41.800%
%salturi diff HRg 16	13.665%	9.933%	32.254%	10.432%	20.812%	33.105%	30.107%	5.538%	1.897%	15.267%	11.296%	2.499%	0.994%	9.107%	1.056%	32.443%	25.813%
%salturi diff HRg 20	8.889%	7.946%	27.733%	10.027%	18.995%	30.442%	26.406%	4.252%	0.832%	13.290%	8.820%	2.492%	1.058%	8.223%	0.971%	26.343%	21.651%
%salturi diff HRg 24	6.126%	5.960%	24.312%	9.227%	16.394%	27.400%	22.980%	3.373%	0.688%	11.813%	6.962%	2.455%	1.022%	7.760%	0.838%	19.727%	17.944%
%salturi diff 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%	7.034%	0.821%	15.540%	14.662%

Procentul salturilor dificil de prezis in functie de dimesniunea istoriei globale si istoriei locale 4

