

Übungsblatt 5

Übungsgruppe Pentium

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Aufgabe 1)

— /3+12+3p.

a)

	Tag	Index	Blockoffset
Direkt-abgebildeter Cache	27 bits	3 bits	2 bits
4-fach mengenassoziativer Cache	29 bits	1 bits	2 bits
vollassoziativer Cache	30 bits	0 bits	2 bits

b) Direkt-abgebildeter Cache:

		H	H	H			H
	0	1	2	3	4	5	7
0	378D3F,010		378D3F,010		378D3F,010	1F2970,000	
1	1D5496,111						
2	2AA013,000						
3	000000,000						
4	378D66,110					378D66,010	
5	378DB4,011						
6	123456,000						
7	1F296E,111	1F296F,111		1F296F,111			1F296F,111

	H	H		H			H	H
	8	9	10	11	12	13	14	15
0	1F2970,000	1F2970,000	378D8D,100			1F2970,000		1F2970,000
1	1D5496,111						378D8D,100	
2	2AA013,000							
3	000000,000							
4	378DB4,011				378D66,010			
5	378DB4,011							378DB4,011
6	123456,000							
7	1F296F,111			1F296F,111				

4-fach mengenassoziativer Cache:

	H	H	H			H
	0	1	2	3	4	7
0	378D3F4,1 28AC1B1,0		378D3F4,0 378D3F4,1 28AC1B1,0		378D3F4,0 378D3F4,1 28AC1B1,0	378D665,0 1F29700,0 378D3F4,0 378D3F4,1 28AC1B1,0
1	378D8D8,0 1F296FF,1	378D8D8,0 1F296FF,1		378D8D8,0 1F296FF,1		1F296FF,1 378D8D8,0

		H		H	H	H	H	H	
	8	9	10	11	12	13	14	15	16
0	378DB47,0 378D665,0 1F29700,0 378D3F4,0	1F29700,0 378DB47,0 378D665,0 378D3F4,0	378D8D8,0 1F29700,0 378DB47,0 378D665,0		378D665,0 378D8D8,0 1F29700,0 378DB47,0	1F29700,0 378D665,0 378D8D8,0 378DB47,0		1F29700,0 378D665,0 378D8D8,0 378DB47,0	
1	1F296FF,1 378D8D8,0			1F296FF,1 378D8D8,0			378D8D8,0 1F296FF,1		378DB47,0 378D8D8,0 1F296FF,1

vollassoziativer Cache:

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
0	23AB511,01 378D3F4,00 1F296FF,00	1F296FF,11 23AB511,01 378D3F4,00 1F296FF,00	378D3F4,00 1F296FF,11 23AB511,01 1F296FF,00	1F296FF,11 378D3F4,00 23AB511,01 1F296FF,00	378D3F4,00 1F296FF,11 23AB511,01 1F296FF,00	1F29700,00 378D665,00 1F296FF,11 378D3F4,00 1F296FF,00	378D665,00 1F29700,00 378D665,00 1F296FF,11 378D3F4,00 1F296FF,00	378D665,00 1F29700,00 378D665,00 1F296FF,11 378D3F4,00 1F296FF,00	1F296FF,11 378DB47,00 1F29700,00 378D665,00 1F296FF,11 378D3F4,00 1F296FF,00	378DB47,00 1F29700,00 378D665,00 1F296FF,11 378D3F4,00 1F296FF,00	1F29700,00 378D8D8,00 1F296FF,11 378DB47,00 1F29700,00 378D665,00 1F296FF,11 378D3F4,00 1F296FF,00	378D8D8,00 1F296FF,11 378D665,00 1F29700,00 378D665,00 1F296FF,11 378D3F4,00 1F296FF,00	378D8D8,00 1F296FF,11 378D665,00 1F29700,00 378D665,00 1F296FF,11 378D3F4,00 1F296FF,00	378D8D8,00 1F296FF,11 378D665,00 1F29700,00 378D665,00 1F296FF,11 378D3F4,00 1F296FF,00	378D8D8,00 1F296FF,11 378D665,00 1F29700,00 378D665,00 1F296FF,11 378D3F4,00 1F296FF,00	378D8D8,00 1F296FF,11 378D665,00 1F29700,00 378D665,00 1F296FF,11 378D3F4,00 1F296FF,00	378D8D8,00 1F296FF,11 378D665,00 1F29700,00 378D665,00 1F296FF,11 378D3F4,00 1F296FF,00

c) Trefferraten:

	Direkt-abgebildeter Cache	4-fach mengenassoziativer Cache	Vollassoziativer Cache
\sum Treffer	8	10	9
Trefferraten	50%	62,5%	56,25%
\sum Zugriffszeit	408ns	340ns	368ns
\varnothing Zugriffszeit	25,5ns	21,25ns	23ns

Gesamtpunkte:**___ /18p.**