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Course No: CS 224

Lab No: 6

Preliminary Work Report

1-

No	Cache Size KB	N-way cache	Word Size In Bits	Block Size (no. of words)	No. of sets	Tag size in bits	Index Size (set no.) in bits	Word Block offset size in bits	Byte Offset Size in bits	Block Replacement policy needed
1	128	1	32	4	8192	15	13	2	2	No
2	128	4	32	16	512	19	9	4	2	Yes
3	128	Full	32	16	1	26	0	4	2	Yes
4	256	2	64	8	2048	15	11	3	3	Yes
5	256	4	64	32	256	16	8	5	3	Yes
6	256	Full	16	16	1	27	0	4	1	Yes

2-

Memory Address Accessed(hex)	Set No.	Hit (Yes/No)
00 00 20 24	0	No
00 00 20 42	0	No
00 00 20 68	1	No
00 00 20 04	0	No
00 00 20 0C	1	No
00 00 20 4C	1	No

3-

Memory Address Accessed(hex)	Set No.	Hit (Yes/No)
00 00 00 2C	1	No
00 00 00 48	1	No
00 00 00 44	0	No
00 00 00 0C	1	No
00 00 00 04	0	No
00 00 00 0C	1	Yes

4-

a)

D (1-bit)	Tag – (24-bit)	Set (1 bit)	Block Offset (5-bit)	Byte Offset (1-bit)

b)

D (1-bit)	Tag – (24-bit)	Data (16-bit)

32 of this for each block

Size of a Block in terms of number of bits: 41 x 32 = 1312

c)

- Size of a set in bits: 8 block/set x 1312 = 10496
- Total SRAM size in bits: 10496 x 2 sets = 20992

d)

If you use random replacement, the calculation will be like this:

Tag – (24-bit)	Data (16-bit)

32 of this for each block, 40 x 32 = 1280 bits for each block, 1280 x 8 = 10240

Total SRAM Size in bits: 10240 x 2 = 20480

It is smaller – 512 bits