

Block 0	Tag Contents	Cache Contents (represented by address)
	0xE0	1110
	0xE1	
	0xE2	
	0xE3	

Block 1	Tag Contents	Cache Contents (represented by address)
	0x14	0001
	0x15	
	0x16	
	0x17	

Block 2	Tag Contents	Cache Contents (represented by address)
	0xB8	1011
	0xB9	
	0xBA	
	0xBB	

Block 3	Tag Contents	Cache Contents (represented by address)
	0x6C	0110
	0x6D	
	0x6E	
	0x6F	

- a) What is the hit ratio for the entire memory reference sequence given above, assuming we count the first four accesses as misses?
- b) What memory blocks will be in the cache after the last address has been accessed?

Ans.

$$\therefore \text{hit ratio} = \frac{4}{14} \times 100\% = 28.5\%$$

Hit or Miss

Address

B0 | 00 1110 0101 1111  
 B1 | 01 0001 1001  
 B2 | 10 1011 1010  
 B3 | 11 0110 0100 0100

0x6E 1110 0101 M  
 0x14 0001 1001 M  
 0x15 0001 1001 M  
 0xE0 1110 0101 M  
 0x4E 1010 0101 M  
 0x4F 1010 0101 H  
 0x50 1010 0101 M  
 0x91 1001 0101 M  
 0xA8 1010 0101 M  
 0xA9 1010 0101 H  
 0xAB 1010 0101 H  
 0xAD 1010 0101 M  
 0x93 1001 0101 H  
 0x94 1010 0101 M

4	0001
5	
6	
7	

C	0110
D	
E	
F	

B <sub>0</sub>	00	<del>110</del>	<del>0101</del>	1001
B <sub>1</sub>	01	<del>0001</del>		1001
B <sub>2</sub>	10	<del>1011</del>		1010
B <sub>3</sub>	11	<del>0110</del>	<del>0100</del>	01010

- 0XB9
- 0X17
- 0XE0
- 0X4E
- 0X4F
- 0X50
- 0X91
- 0XA8
- 0XAg
- 0XAB
- 0XAD
- 0X93
- 0X94
- :

sequence given above, assuming

st address has been accessed?

B<sub>0</sub> 0X90, 0X91, 0X92, 0X93.

B<sub>1</sub> 0X94, 0X95, 0X96, 0X97

B<sub>2</sub> 0XAB, 0XA9, 0XAA, 0XAB

B<sub>3</sub> 0XAC, 0XD, 0XAE, 0XAF

HDMI

Found



$B_0$  | 00 ~~100~~ ~~101~~ ~~100~~ ~~101~~ 100  
 $B_1$  | 01 ~~010~~ ~~011~~ ~~010~~ ~~011~~ 001  
 $B_2$  | 10  
 $B_3$  | 11

$B_0$

$B_1$

0X80

0X2B

0X2C

0X6D

0X86

0X29

0X A5

0X 82

0X A7

0X68

0X80

0X2B

00101100 M

01101011 M

10000110 M

00101001 M.

10100101 M

10000010 M

10100111 M

01101000 M

10000000 M

00101011 M



the

I

0X2C

0X6D

0X86

0X29

0XAS

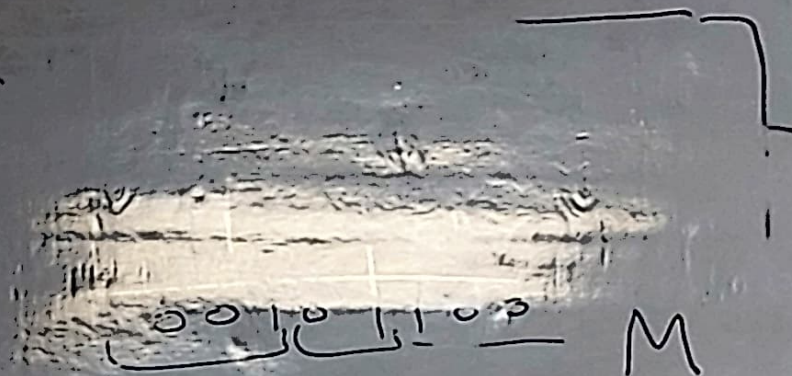
0X82

0XA7

0X68

0X80

0X2B



00101100 M

01101011 M

10001011 M

00101001 M.

10101011 M

10001010 M

10101011 M

01101000 M

10001000 M

00101011 M

B<sub>0</sub> = CD, 80, 64, B3, 8D, 81, A7, DB  
B<sub>1</sub> = 18

13C, 9D, 1F, 2F, 78, 44, 1B :

② fully associative

tag	offset
5	3

B <sub>0</sub>	<div>00101 10100 10000</div>
B <sub>1</sub>	<div>01101 10000 00101</div>
B <sub>2</sub>	<div>10000 10100</div>
B <sub>3</sub>	<div>00101 01101</div>

B<sub>0</sub> = 0X80  
B<sub>1</sub> = 0X2B  
B<sub>2</sub> = 0XA7  
B<sub>3</sub> = 0X68

2-way :-

tag	set	offset
u	1	3

0	<div>B<sub>0</sub> 1000 B<sub>1</sub> 1010</div>
1	<div>B<sub>0</sub> 0010 B<sub>1</sub> 0110</div>

$$\text{Hit ratio} = \left(\frac{6}{10} \times 100\right)\% = 60\%$$

0X2C

0X6D

0X86

0X29

0XA5

0X82

0XA7

0X68

0X80

0X2B

0010 1100 M

0110 1011 M

1000 0110 M

0010 1001 H

1010 0101 M

1000 0010 H

1010 0111 H

0110 1000 H

1000 0100 H

0010 1011 H