Nashit Budhwani
20k-0274
BCS-4B.

OS Assignment 3

Ans 1) Hit (M/M + TLB) + Miss (2M/M + TLB)

$150 = 0.70\ (100 + TLB) + 0.30\ (200 + TLB)$

$150 = (0.70)(100) + 0.70\ TLB + (0.30)(200) + 0.30\ TLB$

$TLB = 20\ ns$.

Ans 2) $EAT = 0.75\ (25 + 100) + 0.25 \times (25 + (2+1)\ 100)$

~~$= 150\ ns$~~

$= 175\ ns$.

Ans 3) ~~0.7~~

$EAT = 0.7 \times (30 + 100) + 0.3\ (30 + (3+1)100)$

$= 220\ ns$.

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Ans 4) Demand paging:

Paging disk = 25 MS's
Page table = 1 MS
Access to the memory = 80%

EAT = (0.8 * 1 MS) + (0.18 * 2 MS) + (0.02 * (25000 MS))
= 501.2 MS.

Ans 5)

$22^{22} \times 2$
$= 2^{23}$ bytes
= 8 MB

Ans 6)

$2^n \times 4$ bytes = 16 GB
$2^n \times 4 = 16\ G$
$2^n \times 2^2 = 2^{34}$
$2^n = 2^{32}$
$n = 32$ bits.

Nashit Budhwani
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Ans7)

Number of bits in logical address = 32 bits
Page size = 4KB
Page table entry size = 4bytes.

Process size = 2^{32} = 4GB

Number of entries in the pg table
= 4GB / 4KB
= 2^{20} pages
Page table size: $2^{20} \times 4$ = 4MB.

	3	0	1	2	7	0	3	0	4	2	3	0	3	2	1	2
f_1	3	3	3	3	7	7	7	7	7	2	7	0	0	0	0	0
f_2		0	0	0	0	0'	00	0'	00	2	2	2	2	2'	2'	2
f_3			1	1	1	1	3	3	3	3	13	3	3'	3'	3	3
f_4				2	2	2	2	2	4	4	4	4	4	4	7	7
	m	m	m	m	m	h	m	h	m	m	h	m	h	h	m	h

	0	1	7	0	1
f_1	0	0	0	0	0
f_2	2	2	2	2	2
f_3	3	1	1	1	1
f_4	7	7	7	7	7
	h	m	h	h	h

Total page faults = 10 pages