تکلیف معماری کامپیوتر سری ۲

پرهام الوانی ۹ اسفند ۱۳۹۳

فهرست مطالب

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۱ مساله ۱

operand memory no with Instruction:

$$= 1 \circ + (1 - \circ / 1) * (7 \circ \circ + (1 - \circ / 1) * 7 \Delta \circ)$$

$$= 1 \circ + \circ / 1 * (7 \circ \circ + \circ / \circ 1 * f \Delta \circ)$$

$$= 1 \circ + 7 \circ + \circ / f \Delta$$

$$= \mathtt{T} \circ / \mathtt{F} \Delta n s$$

operand memory one with Instruction:

$$= r \circ / f \Delta + r \circ + (1 - \circ / \Lambda \Delta) * (r \circ \circ + (1 - \circ / f f) * f \Delta \circ)$$

$$= \text{res}(\text{rd} + \text{res} + \text{ell}) * (\text{res} + \text{fla})$$

$$= \text{res}/\text{fd} + \text{res} + \text{res} + \text{e}/\text{fvd}$$

$$= \lambda \circ / \Delta + \circ / 2 V \Delta$$

$$= \lambda 1/17 \Delta ns$$

operand memory two with Instruction:

$$= r \circ / f \Delta + r * (r \circ + r \circ + \circ / F V \Delta)$$

$$= r \circ / f \Delta + 1 \circ \circ + 1 / r \Delta$$

$$=$$
 $170/\Lambda ns$

AMAT finally and:

$$= \text{\texttt{T}} \circ / \text{\texttt{F}} \Delta * \circ / \Delta + \text{\texttt{A}} 1 / 1 \text{\texttt{T}} \Delta * \circ / \text{\texttt{T}} \Delta + 1 \text{\texttt{T}} \circ / \text{\texttt{A}} * \circ / 1 \Delta$$

$$= 10/77 + 71/797 + 19/87$$

$$=$$
 97/777 ns

۲ مساله ۲

$\circ \rightarrow$	0000000
$r \iota o$	00010101
au au o	00010111
$\texttt{TD} \to$	00100011
$YF\to$	01001100
ightarrow	0000000 \
${\it FF} ightarrow$	01000010
${\bf \wedge} \circ \rightarrow $	01010000
$\Delta extsf{f} o$	00110110
au ho ightarrow	00100100
au $ au$ $ au$	00011000
au au o	00010111
$V \Delta \to$	01001011
au ightarrow	00000010

# r	# r	#1	address
hit	hit	miss	0
hit	hit	miss	71
hit	hit	hit	74
hit	hit	miss	٣۵
hit	hit	miss	49
hit	hit	hit	١
hit	hit	hit	99
hit	hit	miss	٨٠
hit	hit	miss	٥۴
hit	hit	hit	45
hit	hit	hit	74
hit	hit	hit	74
hit	hit	hit	٧۵
hit	hit	hit	٢

rate miss =
$$= \frac{9}{19 * 7} = \frac{1}{9}$$

٣ مساله ٣

بله با افزایش k همواره مقدار ratio hit افزایش میابد. این موضوع را میتوان اینگونه توصیف کرد که با افزایش k رعایت همجواری های زمانی بیشتر میشود که این موضوع در کنار رعایت همجواری مکانی در blocking باعث افزایش ratio hit میشود.

۴ مساله ۴

						1
					#1	address
					miss	0
					hit	١
					miss	۱۵
					hit	14
					hit	14
					hit	۱۵
					miss	18
					hit	٢
					miss	74
					miss	77
Tog ¥	Тос 🕶	Тос	Tog	coto	hit	18
Tag-۴	Tag-۳			sets	hit	14
١	٣	۲	0	0	hit	١
_	٣	٢	١)	hit	71
					hit	77
					hit	74
					hit	77
					miss	10
					hit	١٨
					hit	۱۵
					hit	١
					hit	0
					hit	14
					miss	۲۸
					hit	۲۵

$${\rm rate\ miss} = \\ = \frac{1 \, \Lambda}{7 \, \Delta} = Y Y$$

		# \	address
		miss	0
		hit	١
		miss	۱۵
		hit	14
		hit	14
		hit	۱۵
		miss	18
Tog A	sets	hit	٢
Tag-1		miss	74
0	•	miss	77
_)	hit	18
0	۲ س	hit	14
0	۴ ۵ ۶	hit	١
0	\ \	hit	۲١
0	۵	hit	77
0		hit	74
0	4	hit	77
		miss	10
		hit	١٨
		hit	۱۵
		hit	١
		hit	0
		hit	14
		miss	7.1
		hit	۲۵
		· ·	

$${\rm rate\ miss} = \\ = \frac{1 \, \Lambda}{7 \, \Delta} = Y Y$$

miss hit \ miss \lambda \lambda \ hit \lambda \forall \ hit \lambda \forall \ hit \lambda \forall \ hit \lambda \forall \ miss \forall \forall \ miss \forall \forall \ miss \forall \forall \ hit \lambda \forall \ hit \forall \forall \ hit \forall \forall \ hit \forall \forall \ hit \lambda \forall \forall \forall \ hit \lambda \forall \forall \forall \forall \forall \ hit \lambda \forall \fo	#1	address
miss 10 hit 14 hit 15 hit 15 hit 17 hit 17 hit 17 hit 17 hit 10 hit 10 hit 14 hit 15 hit 16 hit 16 hit 17 hit 10 hit 10 hit 10 hit 11 hit 12 hit 14 hit 15 hit 16 hit 17 miss 10 hit 10 hit 10 hit 10 hit 17 miss 10 hit 10 hit 17 hit 17	miss	0
hit 14 hit 14 hit 14 hit 15 hit 17 hit 17 hit 17 miss 10 hit 14 hit 16 hit 16 hit 17 hit 17 miss 10 hit 10 hit 16 hit 17 miss 10 hit 10 hit 11 hit 15 hit 17 miss 10 hit 10 hit 11 hit 12 hit 14 hit 15 hit 17 miss 17 hit 17 hi	hit	١
hit 14 hit 10 miss 17 miss 17 hit 17 hit 17 miss 10 hit 10 hit 16 hit 16 hit 17 miss 10 hit 10 hit 17 miss 10 hit 10 hit 10 hit 17 miss 17 hit	miss	۱۵
hit 10 miss 15 miss 7 miss 7 miss 7 hit 15 hit 15 hit 17 hit 77 hit 77 miss 10 hit 10 hit 11 hit 17 miss 10 hit 17 hit 17 miss 10 hit 17 hit 17 miss 10 hit 17 hit 17 miss 10 hit 11 hit 11 hit 11 hit 15 hit 17	hit	14
miss r rr miss r rr hit rr hit rr hit rr miss r r miss r r rr hit rr miss r r r hit r r miss r r r r hit r r r hit r r r r r r r r r r r r r r r r r r r	hit	14
miss rmiss rv hit rr hit rr hit rr miss r hit rr miss r hit rr hit rr hit rr miss r hit rr hit rr hit rr miss r hit rr hi	hit	۱۵
miss YY miss YY hit Start	miss	18
miss	miss	٢
hit 19 hit 19 hit 19 hit 1 miss 71 hit 77 hit 77 hit 77 miss 10 miss 1A hit 10 hit 1 hit 0 hit 1 hit 1 hit 7 miss 7A	miss	74
hit 14 hit 1 miss 71 hit 77 hit 77 hit 77 miss 10 hit 10 hit 10 hit 1 hit 0 hit 14 miss 7A	miss	77
hit N miss YN hit YY hit YY miss No miss NA hit NA hit N hit	hit	18
miss	hit	14
hit YY hit YY hit YY miss \\ miss \\ hit \\ Karana \ Karana \\ Kara	hit	١
hit YY hit YY miss \\ \cdot \\ miss \\ \lambda \\ hit \\ \lambda \\ hit \\ \cdot \\ hit \\ hit \\ hit \\ hit \\ hit \\ hit \\ \cdot \\ hit	miss	71
hit YY miss \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	hit	77
miss \ \cdot \cd	hit	74
miss \lambda	hit	77
hit \\ hit \\ hit \\ hit \\ miss \\ \tau \\ \	miss	1 0
hit \\hit \\o \\hit \\n \n \forall \fo	miss	١٨
hit ohit NF miss YA	hit	۱۵
hit NF miss TA	hit	١
miss XA	hit	0
ll l	hit	14
miss ۲۵	miss	71
	miss	70

rate miss =
$$= \frac{1f}{f\Delta} = \Delta F$$

#١	address
miss	o
hit	١
miss	۱۵
hit	14
hit	14
hit	۱۵
miss	18
miss	٢
miss	۲۳
miss	77
hit	18
hit	14
hit	١
miss	۲١
hit	77
hit	۲۳
hit	77
miss	1 0
miss	١٨
hit	۱۵
hit	١
hit	0
hit	14
miss	۲۸
miss	70

rate miss =
$$= \frac{1f}{f\Delta} = \Delta F$$

All result produced by TCache