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(11)
(24)

2001 10 26
10 - 0298552
2001 06 01

(21) 10 - 1997 - 0040738
(22) 1997 08 25

(65) 1999 - 0017723
(43) 1999 03 15

(73)

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(72)

2 279 - 2

(74)

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(54)

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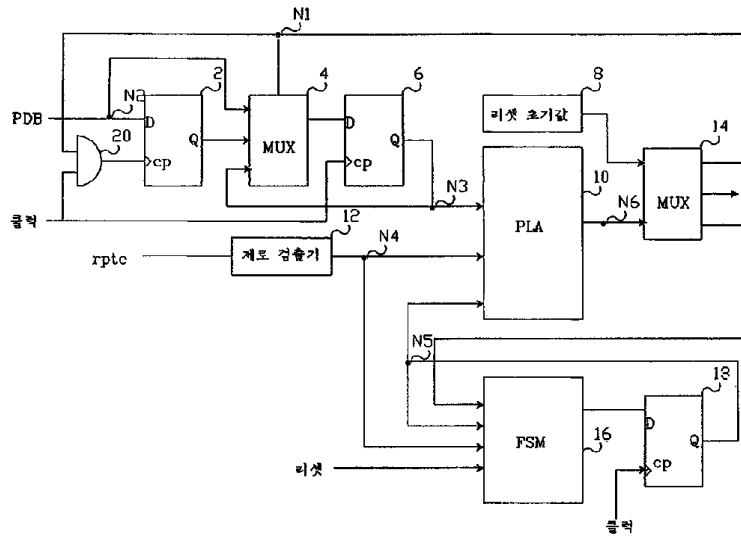
1 ;

(FSM) ; (PLA) ; (PLA) (PLA)

1 ; 1 1

2 ; 2

2 . , ROM (PLA) FSM



1	(DSP)				
2	(DSP)	4	1	STO	2
T1					S
3	(DSP)				
4	(DSP)	4			
5	(DSP)	4			
6	(DSP)	4			
7					
8				(FSM)	

< >

2,6,18 : D / 4,14 :

8 : 10 : (PLA)

12 : 16 : (FSM)

10 : 100 :

DSP (101,102) (601,602)
 (200), (300) (400) (10),
 (500), (700), (100,600)

DSP (/ ,)
) 가 .

(102) (100) (Immediate Operand)
 (200), (300), (400), (500), (700)

(601) (300) (400) (10), (500)
 (600)

(300) 32 (ALU ; 304) (Accumulator ; 305) 2
 (Boolean Operation)

(300) () 2 (304) ,
 (304) (304) (304) (304)
 (Prescaling) (301) , (304) (305) , (305)
 (304)

(300) 1 (600) (601) ,
 (Immediate Operand) (100) (102)

(300) 2 (30) ZAIR / (308)

(301) (Scaling Shifter) (102)
 0~16 - (601) 16 bit
 32 bit (304) (304)
 (301) (Least Significant Bits ; LSBs) " 0"
 (Most Significant Bits ; MSBs) ST1 (SXM) " 0"

(305) (304) (304) 1 (N1)
 2 (305) 32 bit (31~16 bits) (15~
 0 bits) (306) (600) (0~31 bits) (306)

(400) (301) (Temporary Register ; 401) , (4
 01) (402) , (402) (403)

(401) (402) 16 bit (400)
 (601) , MAC/MACD
 (102) (100) , MPYK 가

(402) 16 x 16 bit , 16 x 16 bits 2
 (403) (403) 32 bit SPH/SPL

(404) (403) (402)
 (304)

(200) (jump) (Interrupt Vector ; 202)
 (Load) (205) , (205) (205)
 (205) (205) 8 (206)

06) (205) (100) (101) (2
 가 (Stack Pointer) 가 가

502) (500) (501) , (501) (AR ;
 (AR ; 502) (504) (DMA : 505)
 (ARAU ; 503) ,

(600) (602) , (101,102)
 (601,602) (On - Chip Data Memory ; 600)
 (100) (10), (500)
 16 bit 64K (Word) 32K
 가 96K

(100) 64K (,
 ADD 010h), (Add *+), (Immed
 iate Addressing)

(1 page=128 Word) , 9 bit (504) (600) 512
 가 (601) (102)
 (" DMA" ; 505)
 7 bit 가 , (602) 9 bit
 (504) 7 bit DMA(505) 16 bit

(600) , 16 bit (501) 16 bit (AR ; 502)가
 . 8 (502) (ARO~AR7 ; 502)가 (600) (ARAU ; 503)

(305), (502) (403), (ARP ; 501) (601) (600),
 (502) (600) (503) (602) (601)
 (600) (10)

(502) (503) (600)가

(, ADD *), AR(ARP)+1 AR(ARP)(, ADD *+),
 AR(ARP) - 1 AR(ARP)(, ADD * -), AR(ARP) ARO(, ADD *O+), AR(ARP) ARO(ARP)
 (, ADD *O -), AR(ARP)+rc(ARO) AR(ARP)(, ADD *BRO+), AR(ARP) - rc(ARP) AR(A
 RP)(, ADD *BRO -) rc(ARO) (rc) (Propagation) 가
 ARO (+, -) - (bit reversed addressing mode)

(503) (600)

BANZ (502)

(503) (Move)

(100) BLKD (600) BLKP (RPT,RPTK)

(Move) DMOV (On - Chip RAM)
 (Next higher location)

(600)
 Convolution)

Z⁻¹

(Table Read/Write ; TBLR/TBLW) (100) (600) , A
 가 , TBLR (100) (600)

TBLW

(100)

(100)

(Large Dynamic Range)

(Normalization Instruction) (305)

(Left - shift)

601) (300) (400) (10) (102) (
 it 16 bit (301), 32 bit (304), 16 x 16 bit (402), 16 x 16 b
 (402) (403), (403)
 (404) , 32 bit (304) (305) , (305)
 (306)

(301) (306,404) (Numerical Scaling),
 (bit extraction), (Extended - Precision Arithmetic),

4 PM(405) (403) 1 4

[1]

PM	동작
00	시프트 안함
01	1 bit 레프트 시프트
10	4 bit 레프트 시프트
11	6 bit 레프트 시프트

4 PM(405) (Fractional Arithmetic) (Fractional Product) (Right Shift) 128 (SX
 / 가 . 4 PM(405) (M ; 303)

(205), (206), (RS), (202,203,204), (800) 가

(205) (On - Chip or Off - Chip) (100) (101) (100) (102) (700) (IR) (Load) (IR)가 (205) (Fetch) (700)

us) (700) 4 (B
 가

oken) 1~4 (Active) 2 4 (Branch) (Br (Cycle)

[2]

사이클 명령	1	2	3	4	5	6
1	명령어 펫치	디코드	오퍼랜드 펫치	실행		
2		명령어 펫치	디코드	오퍼랜드 펫치	실행	
3			명령어 펫치	디코드	오퍼랜드 펫치	실행
4				명령어 펫치	디코드	오퍼랜드 펫치

(RS) (Non - maskable External Interru
pt) (205) " 0(zero)" 10
(low)
0(Location0)

가 PC=0
00h, STO=OE00h, ST1=0770h, GREG=00h,
RPTC=00h, IFR=00h, PRD=0FFFFh, IMR=00h, TIM=0FFFFh,

```

, DSP (700) (Read Only Memory ; " ROM" )

,

,

,

;

1 ;
(PLA) ;

(FSM) ; (PLA)

1 ; 1 ; 2 ; 2 ;
(PLA) 2 ; 2

, 7 8

7

7 (PDB) (
" AND " ) 가 1 / (2) , 1 / (2)
(PDB) 1 /
(2) 1 (4) ,
1 (6)
(Program Logic Array ; " PLA" ) , PLA(10) (Prev
ious state) (rptc) (rptezero) (Finite State Ma
chine ; " FSM" )

1 (4) 2 / (6) , (reset)
(Reset initial value) PLA(10)
2 (14) , (rptc) (rptc) " 0"
(rptc) PLA(10) FSM(16) (12) , PLA(10)
3 / (18)

1 3 / (2,6,18) D /

```

PLA(10) 132 , , (Immediate Operand) 11

FSM(16) PLA(10) 5 (N5) (Previous state), (rptzero)

(12) (rptc) (Repeatable Instruction) (high) rptzer

o PLA(10)

3 / (18) (Pipeline) PLA(10)

" PDB" (, (Reset) (100) (102) (N+1)

가 , 가 (Active) (Reset) 가 (Active) 2 (14) (Reset initial value ; 8) 1 (N1) AND (20) 1 (4) (Processing Unit) FSM(16) , AND (20)

/ (2) " 0" , PDB 2 (N2) 1 (4) 1 , 1

10) 1 (4) 2 / (6) , 3 (N3) PLA((N4) rptc " 0" (12) 4 , FSM(16) 1 (S1 ; FSM) PLA(10) .) 2 5 (N5) PLA(10) 3

PLA(10) 1 3 6 (N6) 2 (14) 2

(Reset) , 2 (14) 2 PLA(10)

, (rptc)가 (" 0")가 (rp tc)+1 (PDB) 가 (rptc)가 (" 0")가

, 1 / (2) (PDB) . 1 / (2) AND (20) , AND (20) (" 0") 1 / (2) (" 0") , AND (20) 1 / (2) 2 (N2) (PDB)

1 (N1) , AND PLA(10) 2 (14) 가
 1 / (2) (20) AND (20)
 (rptc)가 (" 0")가 3 (N3) PLA(10)
 (4) , 2 / (6) 3 (N3) 1
 (rptc)가 (" 0")가
 (rptc)가 (" 0") PLA(10)
 가 2 (14) 1 (N1) 1
 (4) , 1 (4) 1 / (2) 3
 (N3) PLA(10) (Pipeline)
 (Non - repeatable Instruction) , (rptc)가 " 0" ,
 (PDB) 2 (N2) PLA(10)
 8 FSM
 8 , " T" PLA(10) 2 (14) (Type)
 , " S" 5 (N5) PLA(10) (State) " R"
 4 (N4) (rptczero)
 가 1 (S1) 가 1 (S1) , (Type)
 (rptczero)

ROM FSM

가

(57)

1.

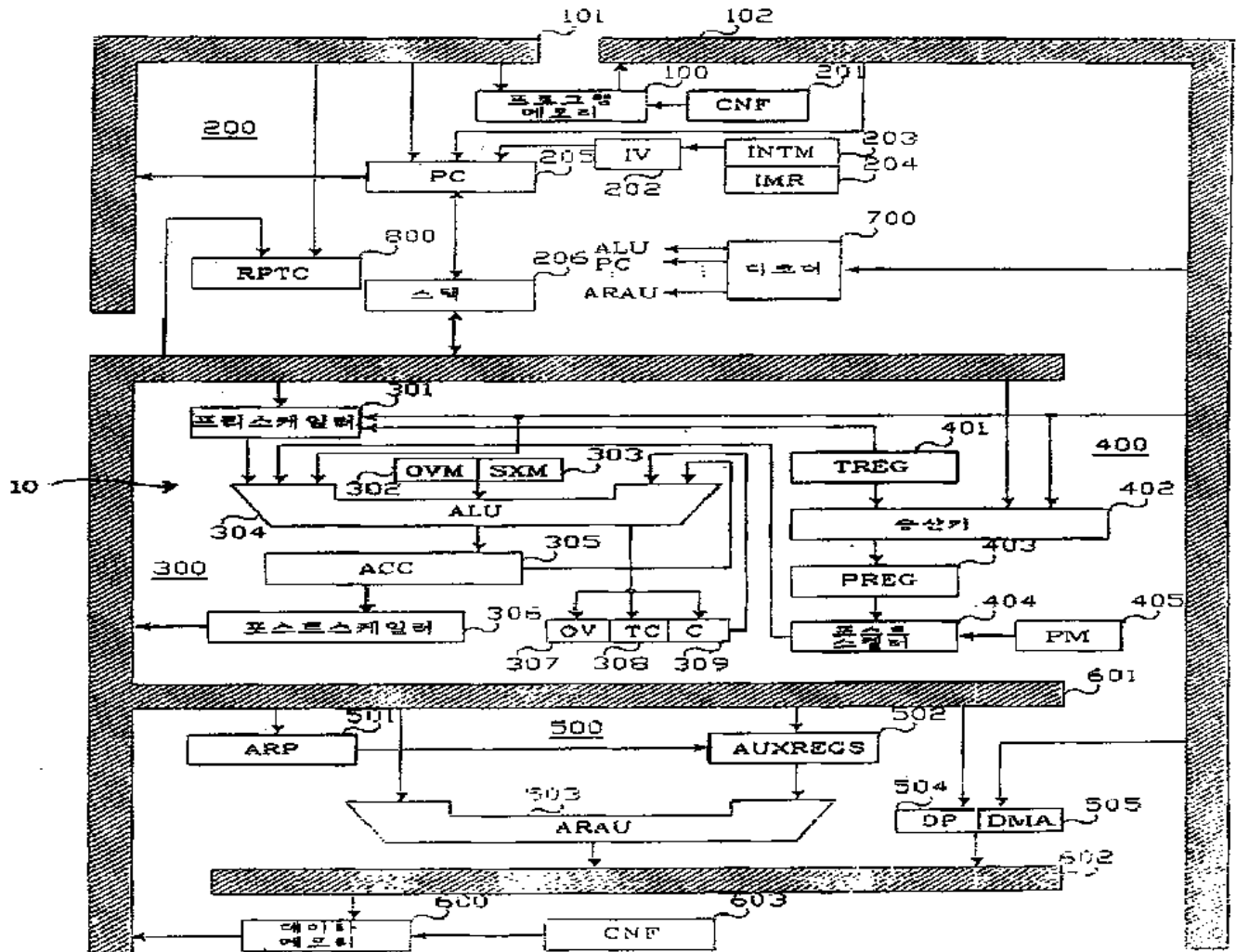
;
 (PLA) ; 1 (PLA) ; (FSM) ;
 (PLA) ; 1 ; 1
 ; 2 1 (PLA) 2 2

2.

1 , (PLA) (FSM) 가
3.

1 , 2 1

1



2

제 1상대 레지스터 (ST0)

15 13 12 11 10 9 8 0

ARP	OV	OVM	1	INTM	DP
-----	----	-----	---	------	----

제 2상대 레지스터 (ST1)

15 13 12 11 10 9 8 7 6 5 4 3 2 1 0

ARB	CNF0	TC	SXM	C	1	CNF1	HM	FSM	XF	FO	TXM	PM
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인터럽트 마스크 레지스터 (IMR)

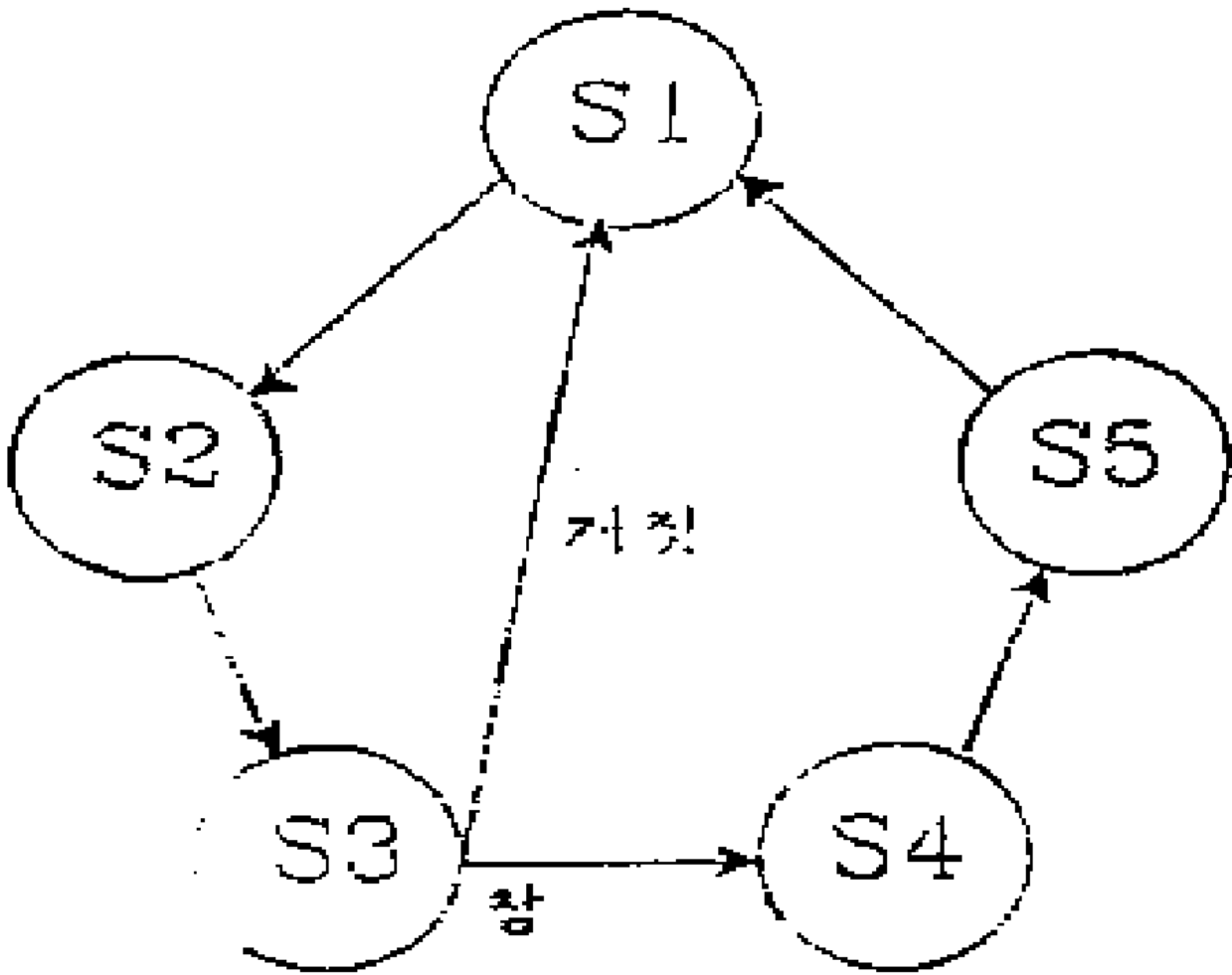
15 6 5 4 3 2 1 0

Reserved	XINT	RINT	TINT	INT2	INT1	INT0
----------	------	------	------	------	------	------

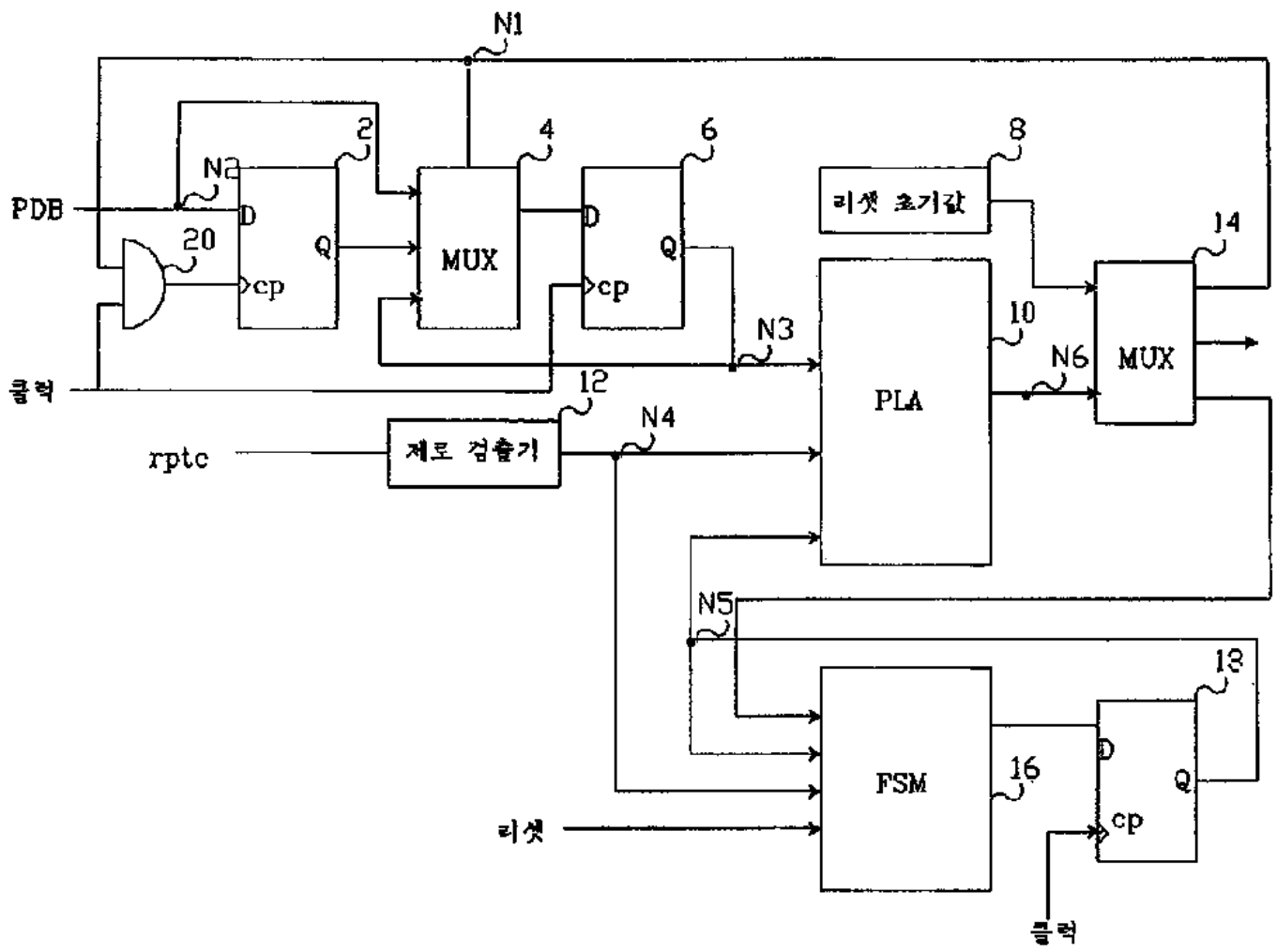
IF(ADD)	D(ADD)	OF(ADD)	EX(ADD)	NEW				
				ACC				
	IF(CB)	D(CB)	OF(CB)	EX(CB)				
		IF(1k)	D(CB)	OF(CB)	EX(CB)			
			IF(SACL)	D(CB)	OF(CB)	EX(CB)		
				IF(SACL)	D(CB)	OF(CB)	EX(CB)	
				참 →	IF(MAR)	D(CB)	OF(CB)	EX(CB)
				분기조건				
				pcctrl ↔				
				데이터비스로부터				
				프로그램카운터 로드	(INST 1k)	(INST 1k)	(INST 1k)	

IF(ADD)	D(ADD)	OF(ADD)	EX(ADD)	NEW ACC				
	IF(CB)	D(CB)	OF(CB)	EX(CB)				
		IF(k)	D(CB)	OF(CB)	EX(CB)			
			IF (SACL)	D(CB)	OF(CB)	EX(CB)		
				IF(SACL)	D(SACL)	OF(SACL)	EX(SACL)	
				거짓 →	IF(MAR)	D(MAR)	OF(MAR)	EX (MAR)
				분기조건				
				pcctrl → 프로그램카운터 정상상태 증가	IF (NEXT INST)	D (NEXT INST)	OF (NEXT INST)	

6



7



8

