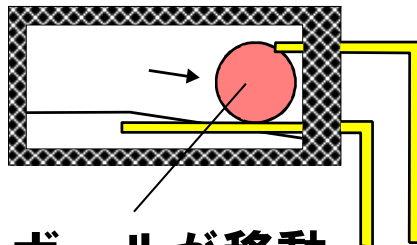
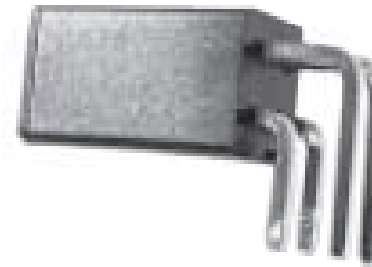


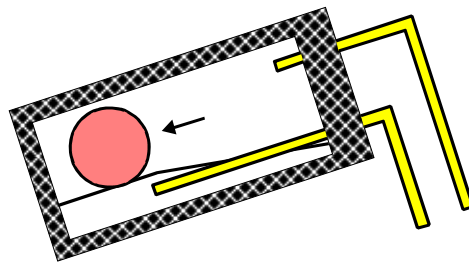
振動スイッチを活用

振動（傾き）を検出

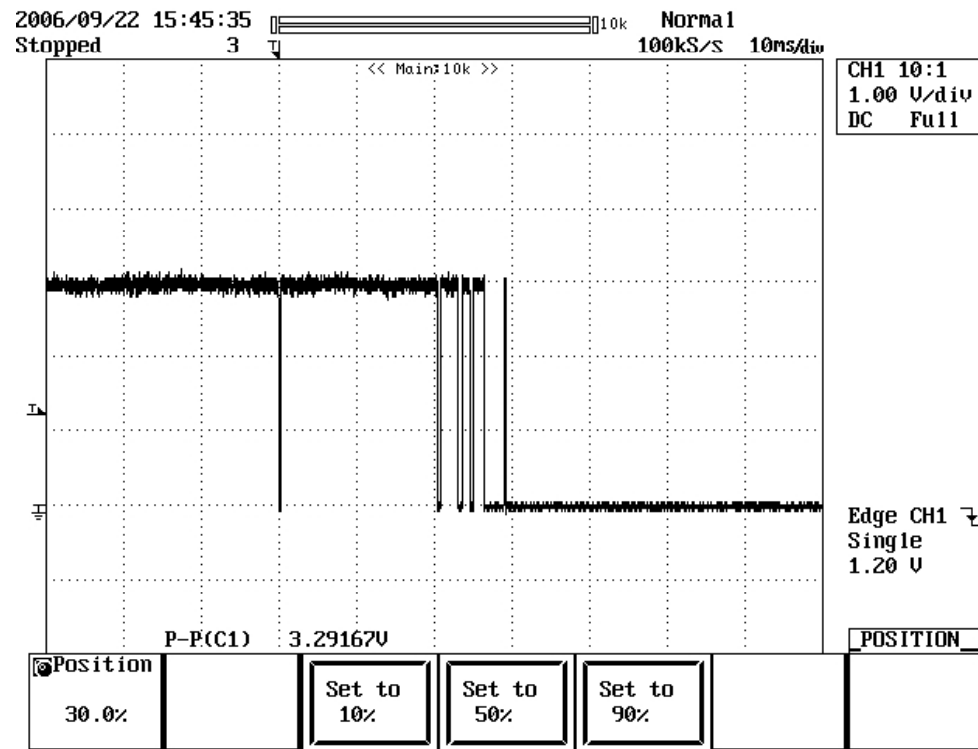


ボールが移動

a) オン時



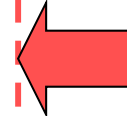
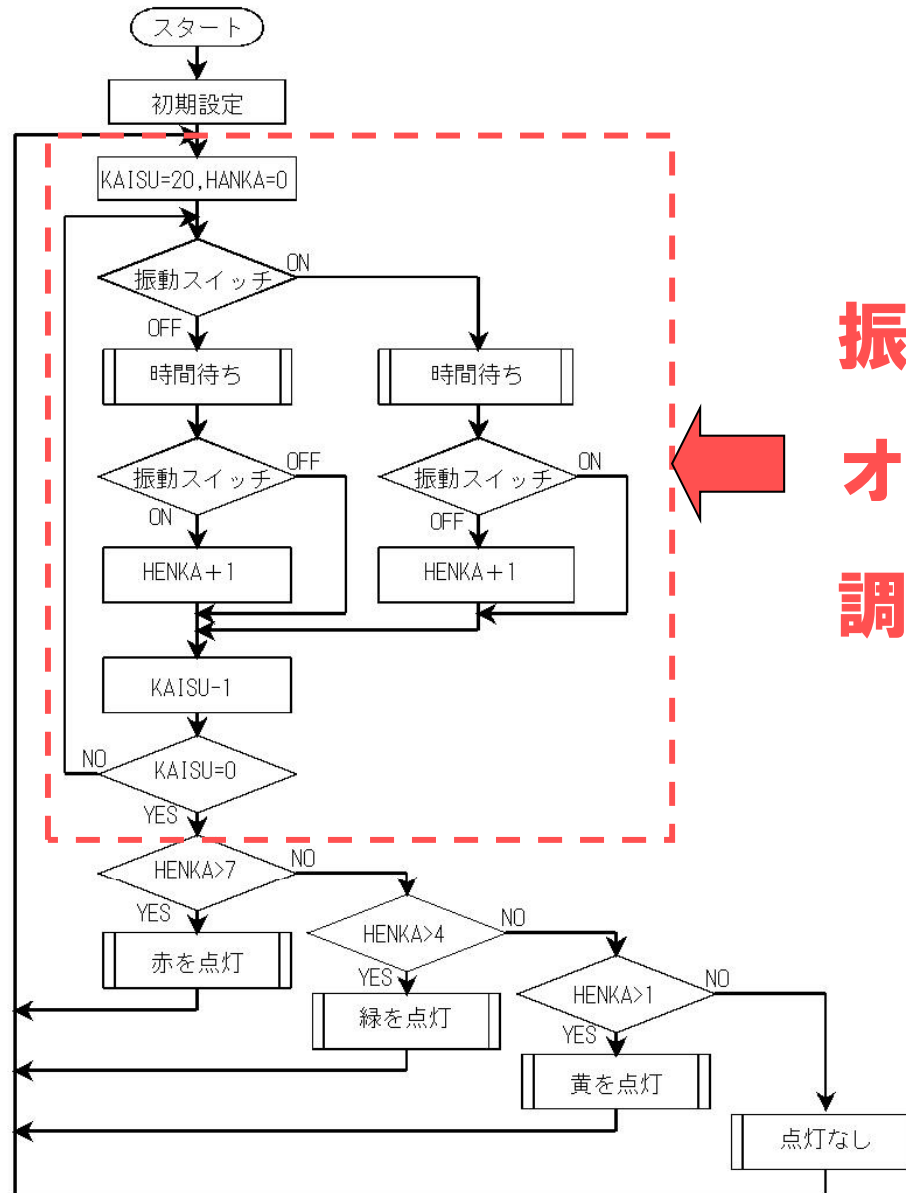
b) オフ時



オンからオフ時の観察



処理の流れ（フローチャート）



振動スイッチの
オン/オフ状態を
調べる

LOOP0

```
MOVLW    D'20'  
MOVWF    KAISU  
MOVLW    D'0'  
MOVWF    HENKA
```

CHECK1

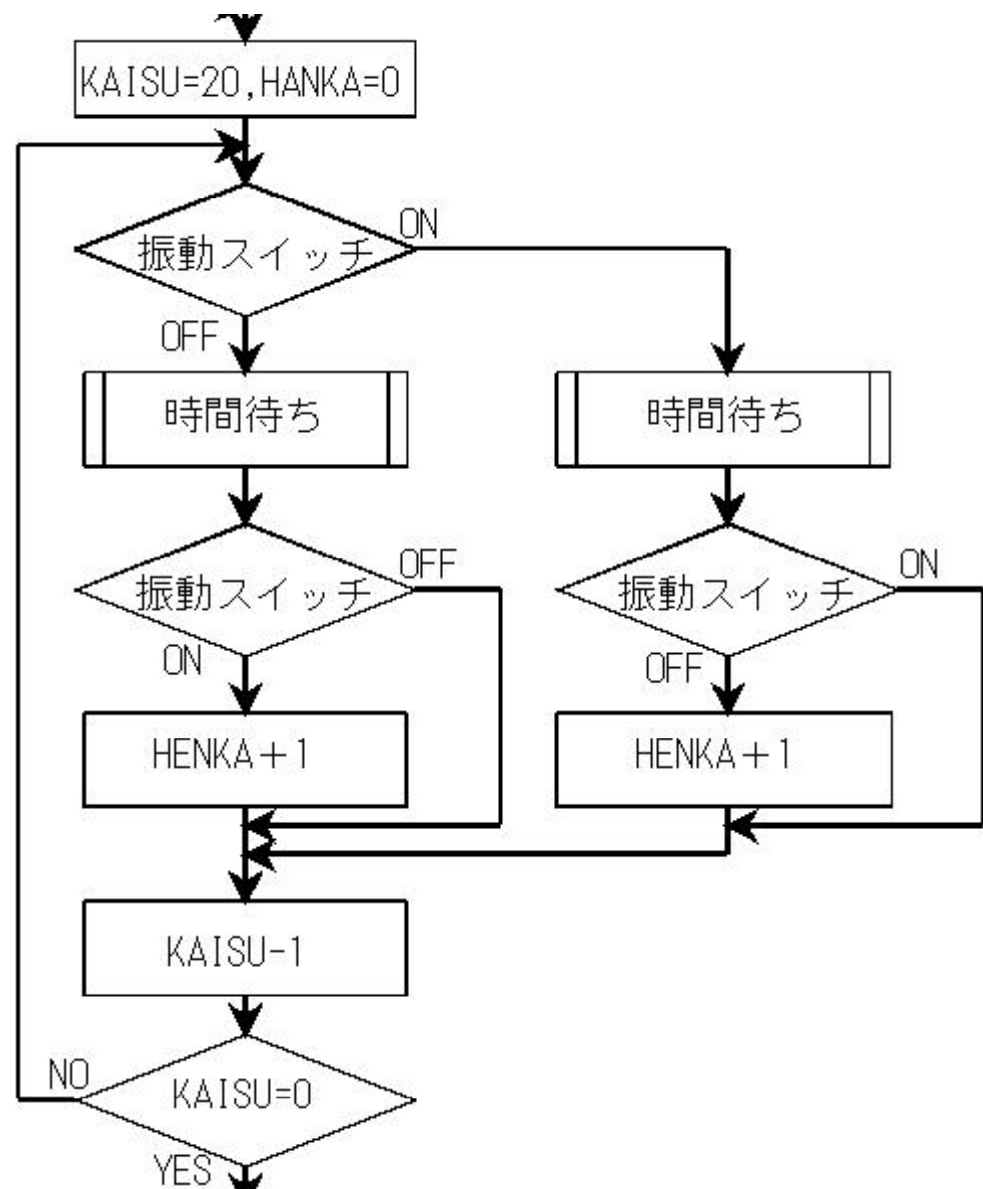
```
BTFSC    PORTA,5  
GOTO     CHECK2  
CALL     WAIT1  
BTFSC    PORTA,5  
INCF     HENKA,1  
GOTO     CHECK9
```

CHECK2

```
CALL     WAIT1  
BTFSS    PORTA,5  
INCF     HENKA,1
```

CHECK9

```
DECFSZ   KAISU,1  
GOTO     CHECK1
```



LOOP0

```
MOVLW    D'20'  
MOVWF    KAISU  
MOVLW    D'0'  
MOVWF    HENKA
```

CHECK1

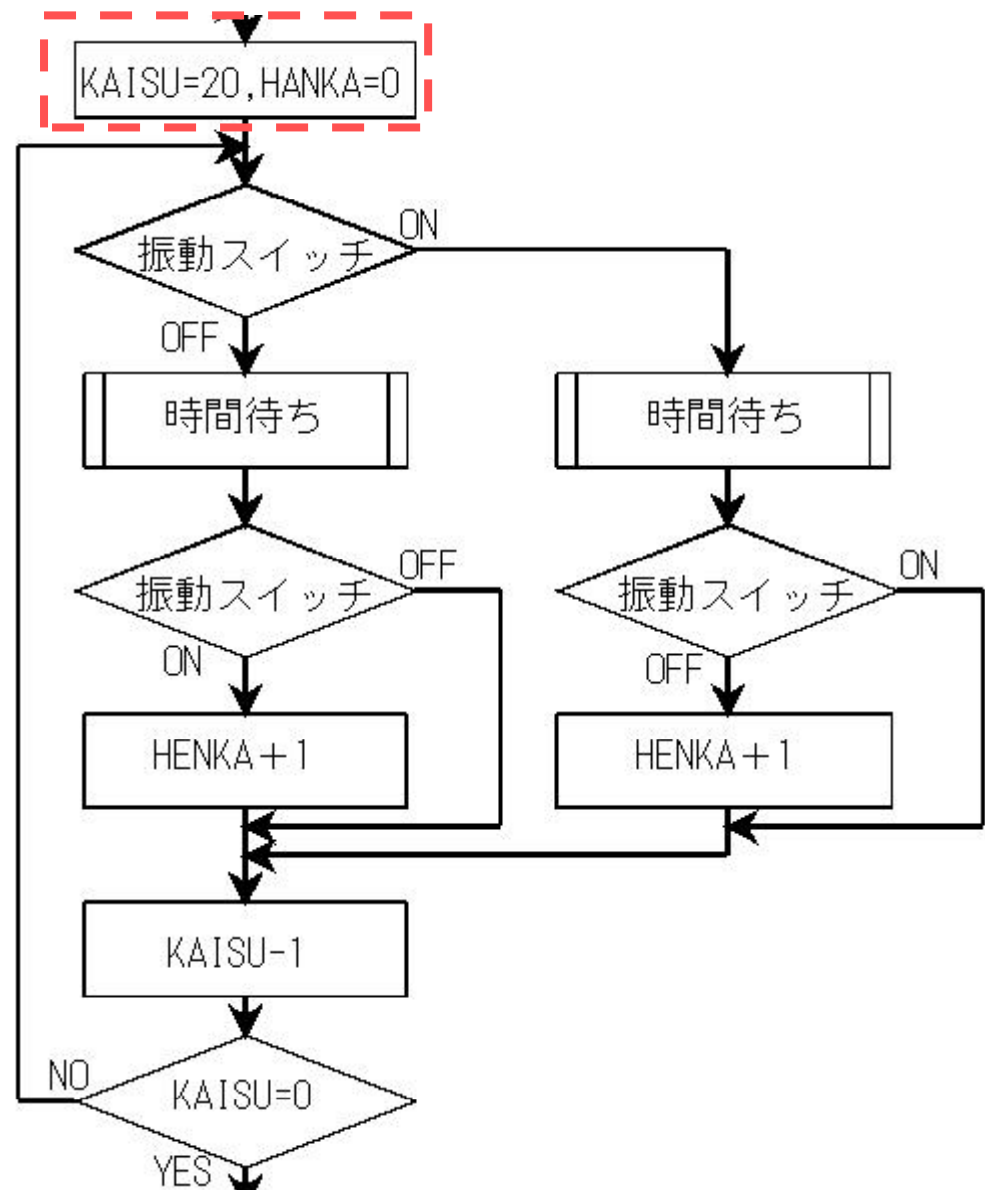
```
BTFSC    PORTA,5  
GOTO     CHECK2  
CALL     WAIT1  
BTFSC    PORTA,5  
INCF     HENKA,1  
GOTO     CHECK9
```

CHECK2

```
CALL     WAIT1  
BTFSS    PORTA,5  
INCF     HENKA,1
```

CHECK9

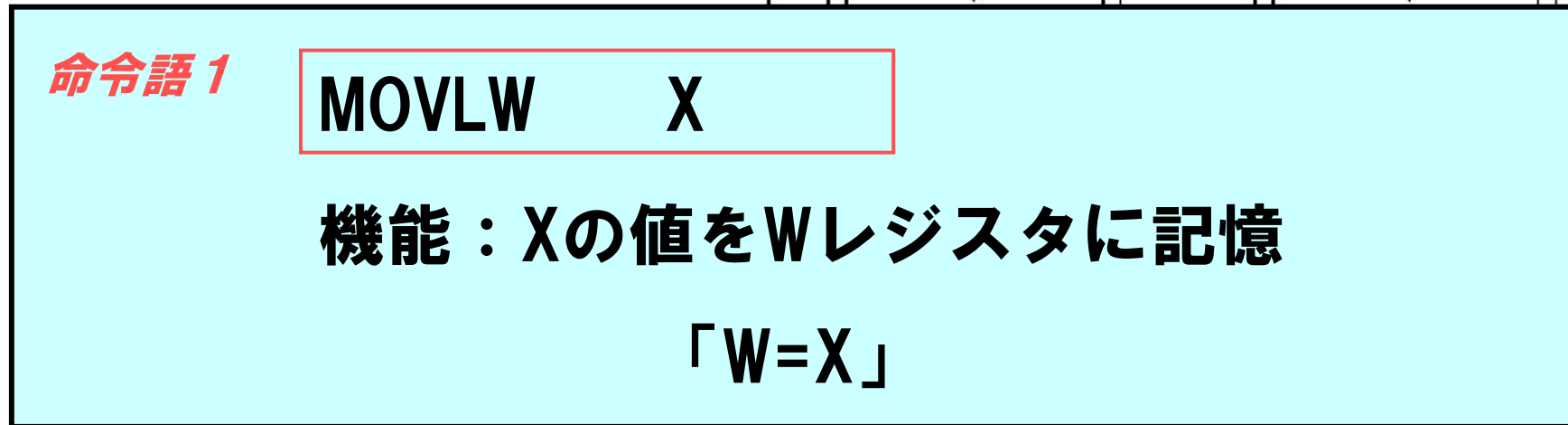
```
DECFSZ   KAISU,1
```



LOOP0

```
MOVLW    D'20'  
MOVWF    KAISU  
MOVLW    D'0'  
MOVWF    HENKA
```

CHECK1



命令語 1

MOV LW X

機能 : Xの値をWレジスタに記憶

「W=X」

CHECK2

```
CALL     WAIT1  
BTFSS    PORTA,5  
INCF     HENKA,1
```

CHECK9

```
DECFSZ   KAISU,1
```

KAISU-1

KAISU=0

YES

NO

LOOP0

```
MOVLW    D'20'  
MOVWF    KAISU  
MOVLW    D'0'  
MOVWF    HENKA
```

CHECK1

命令語2

```
MOVWF    X
```

機能：Wの値をXレジスタに記憶

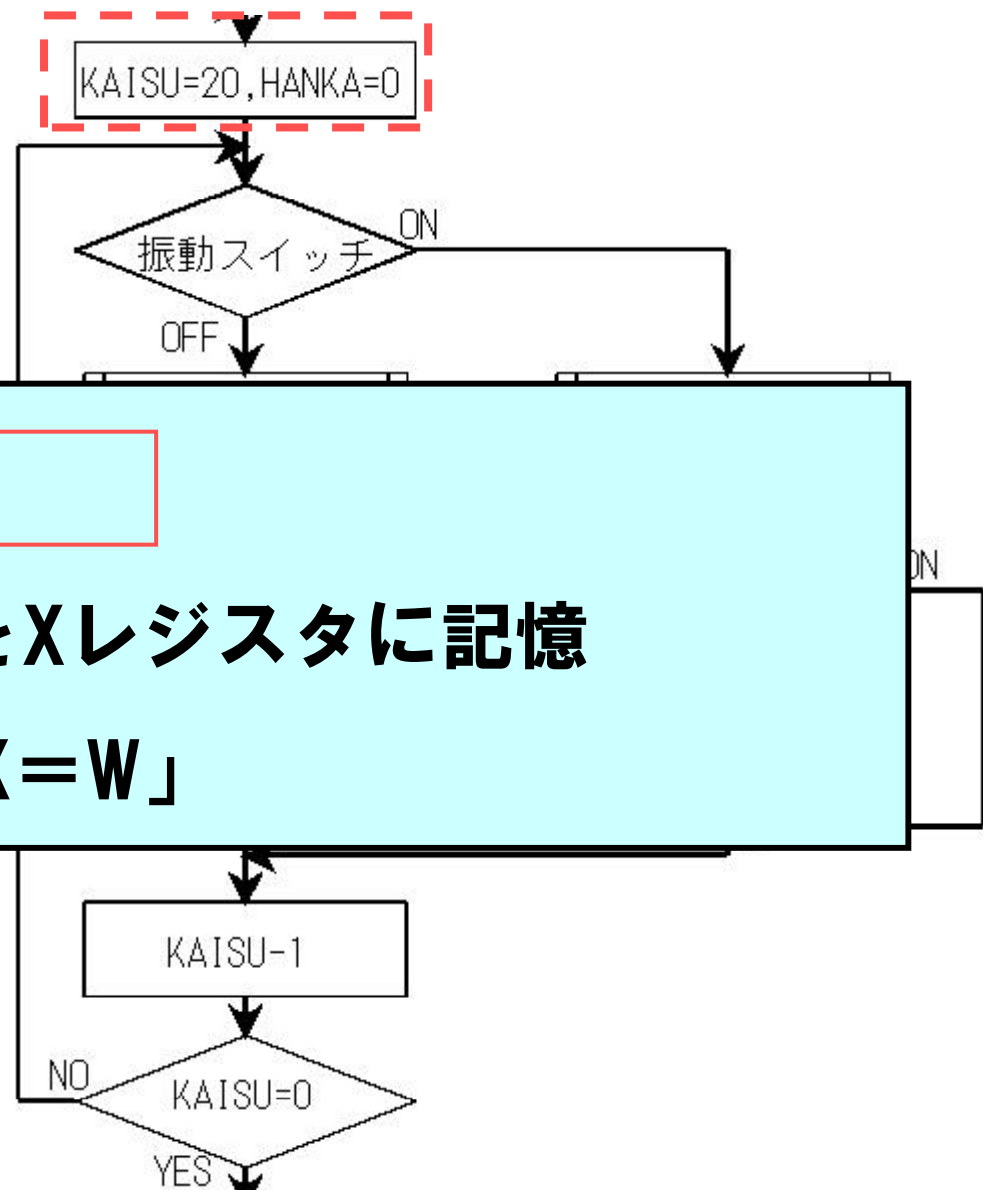
「X=W」

CHECK2

```
CALL    WAIT1  
BTFSS   PORTA,5  
INCF    HENKA,1
```

CHECK9

```
DECFSZ  KAISU,1
```



LOOP0

```
MOVLW D'20'  
MOVWF KAISU  
MOVLW D'0'  
MOVWF HENKA
```

CHECK1

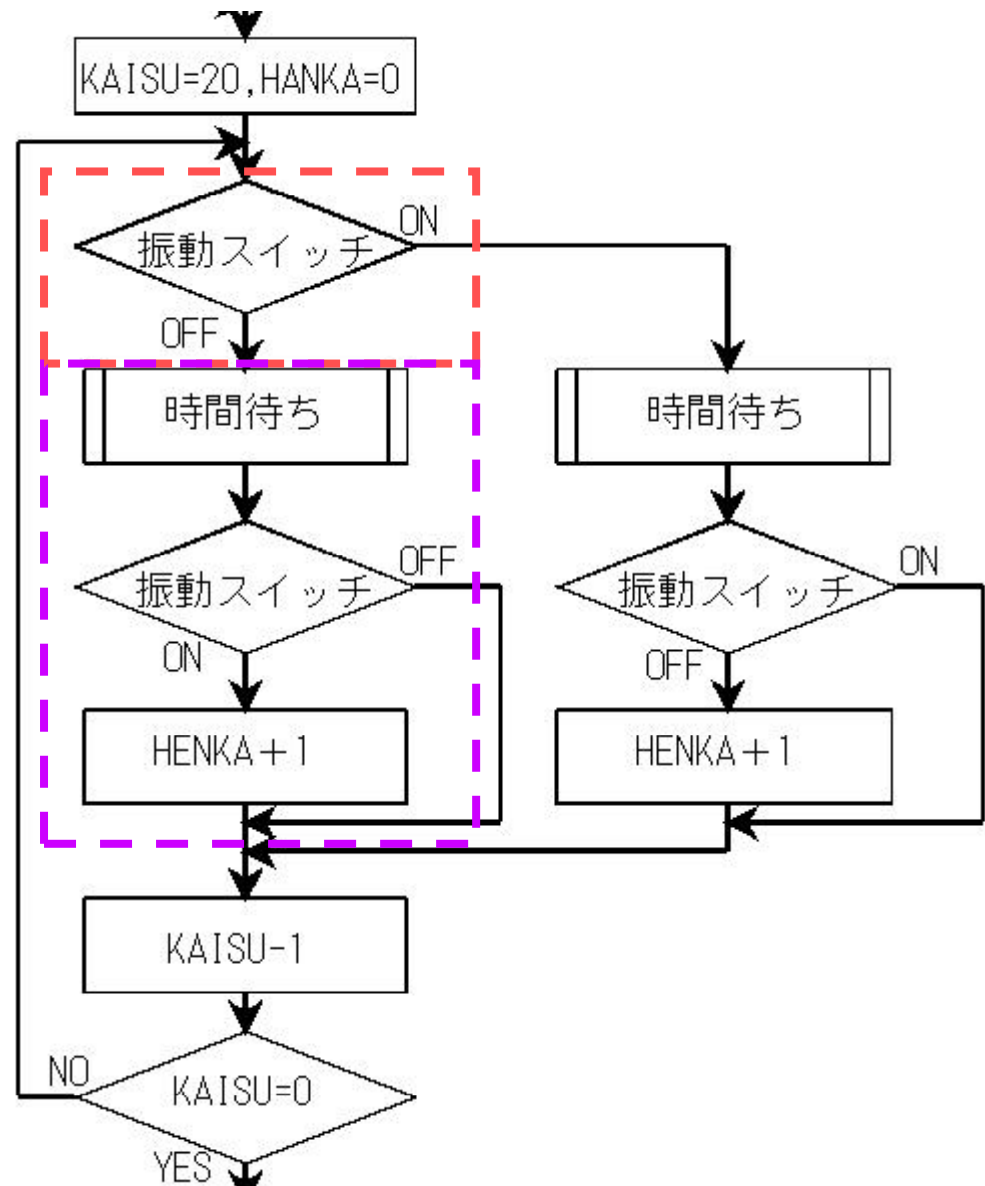
```
BTFSC PORTA,5  
GOTO CHECK2  
CALL WAIT1  
BTFSC PORTA,5  
INCF HENKA,1  
GOTO CHECK9
```

CHECK2

```
CALL WAIT1  
BTFSS PORTA,5  
INCF HENKA,1
```

CHECK9

```
DECFSZ KAISU,1
```



命令語3

BTFSC X, N

機能：XレジスタのNビットを調べ、
0（クリア）ならば次の命令をスキップ

CHECK1

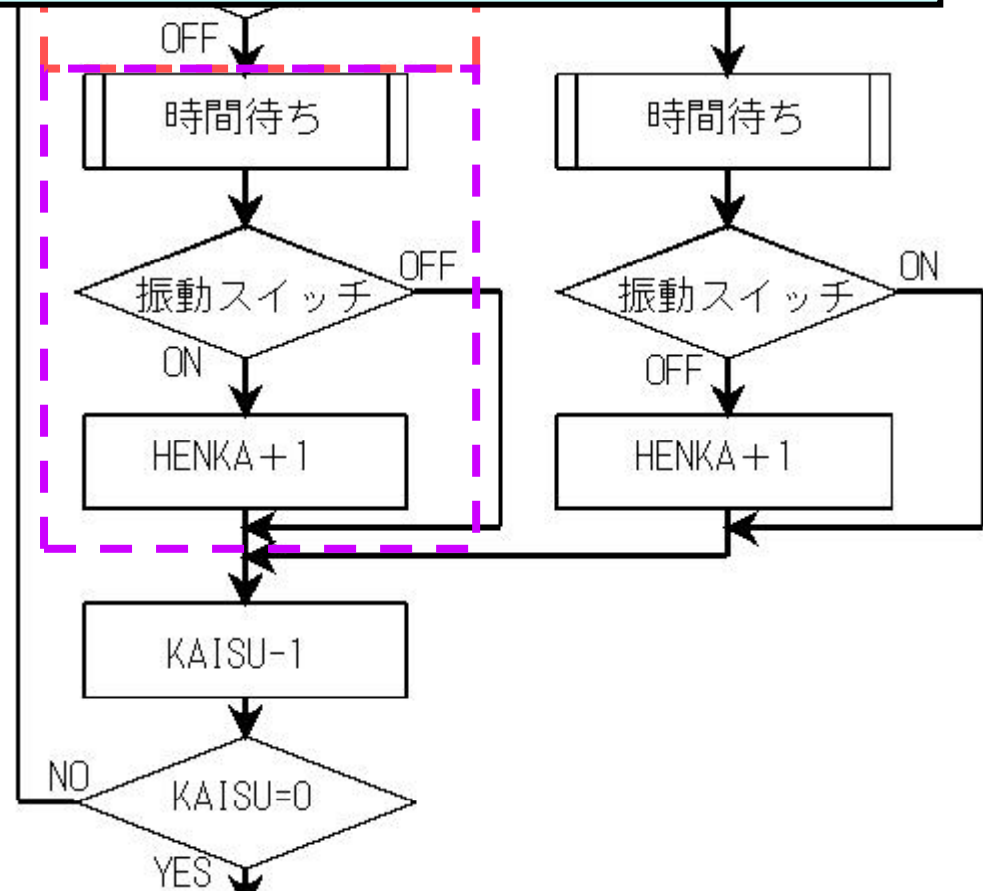
```
BTFSC PORTA,5  
GOTO CHECK2  
CALL WAIT1  
BTFSC PORTA,5  
INCF HENKA,1  
GOTO CHECK9
```

CHECK2

```
CALL WAIT1  
BTFSS PORTA,5  
INCF HENKA,1
```

CHECK9

```
DECFSZ KAISU,1
```



命令語 4

GOTO ラベル

機能：指定のラベル行へジャンプ
(処理を移行)

CHECK1

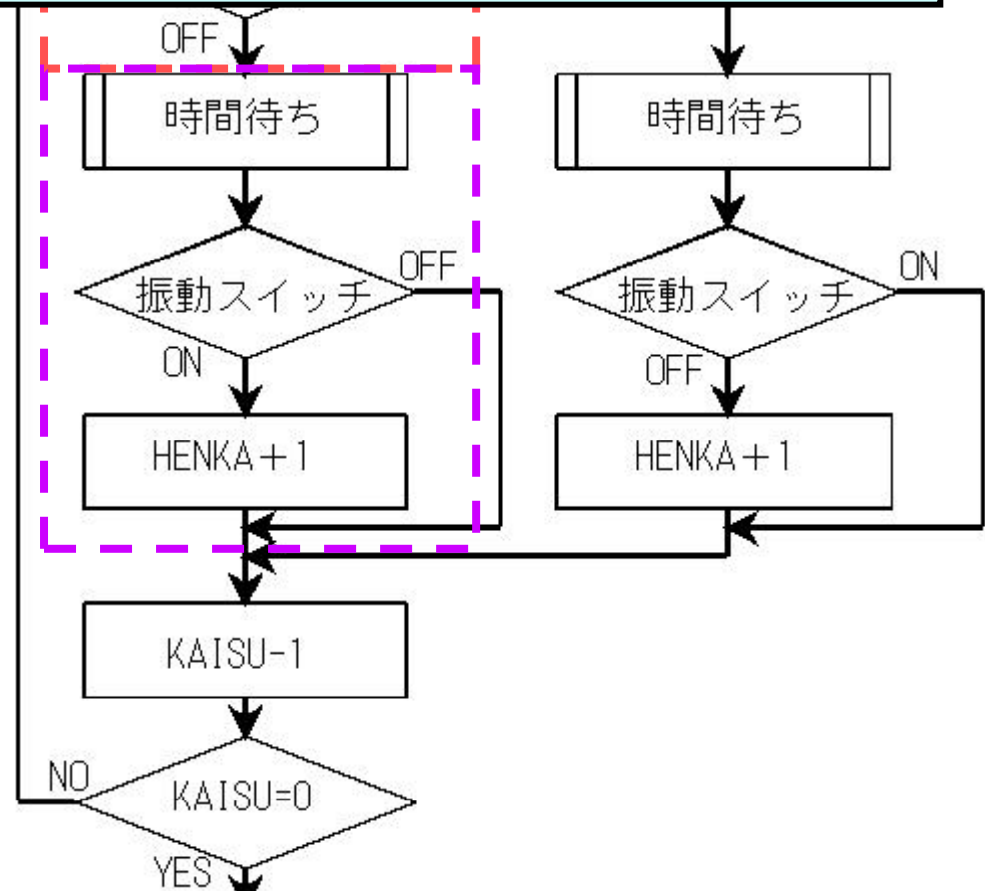
```
BTFSC PORTA,5  
GOTO CHECK2  
CALL WAIT1  
BTFSC PORTA,5  
INCF HENKA,1  
GOTO CHECK9
```

CHECK2

```
CALL WAIT1  
BTFSS PORTA,5  
INCF HENKA,1
```

CHECK9

```
DECFSZ KAISU,1
```



LOOP0

```
MOVLW D'20'  
MOVWF KAISU  
MOVLW D'0'  
MOVWF HENKA
```

CHECK1

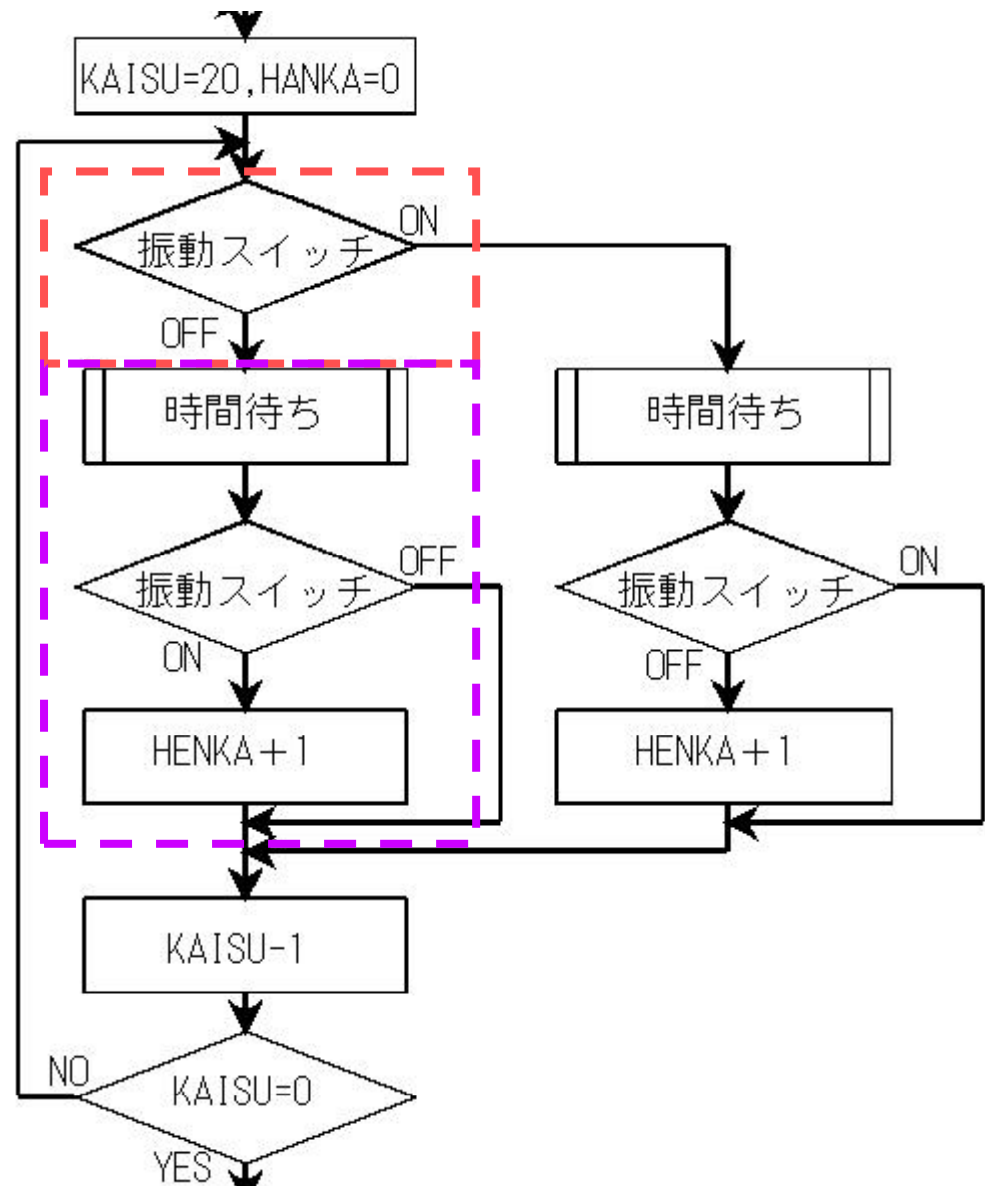
```
BTFSC PORTA,5  
GOTO CHECK2  
CALL WAIT1  
BTFSC PORTA,5  
INCF HENKA,1  
GOTO CHECK9
```

CHECK2

```
CALL WAIT1  
BTFSS PORTA,5  
INCF HENKA,1
```

CHECK9

```
DECFSZ KAISU,1
```



命令語5

CALL ラベル

機能：指定ラベルのサブルーチンを呼び出す（終了後は次の命令に戻る）

CHECK1

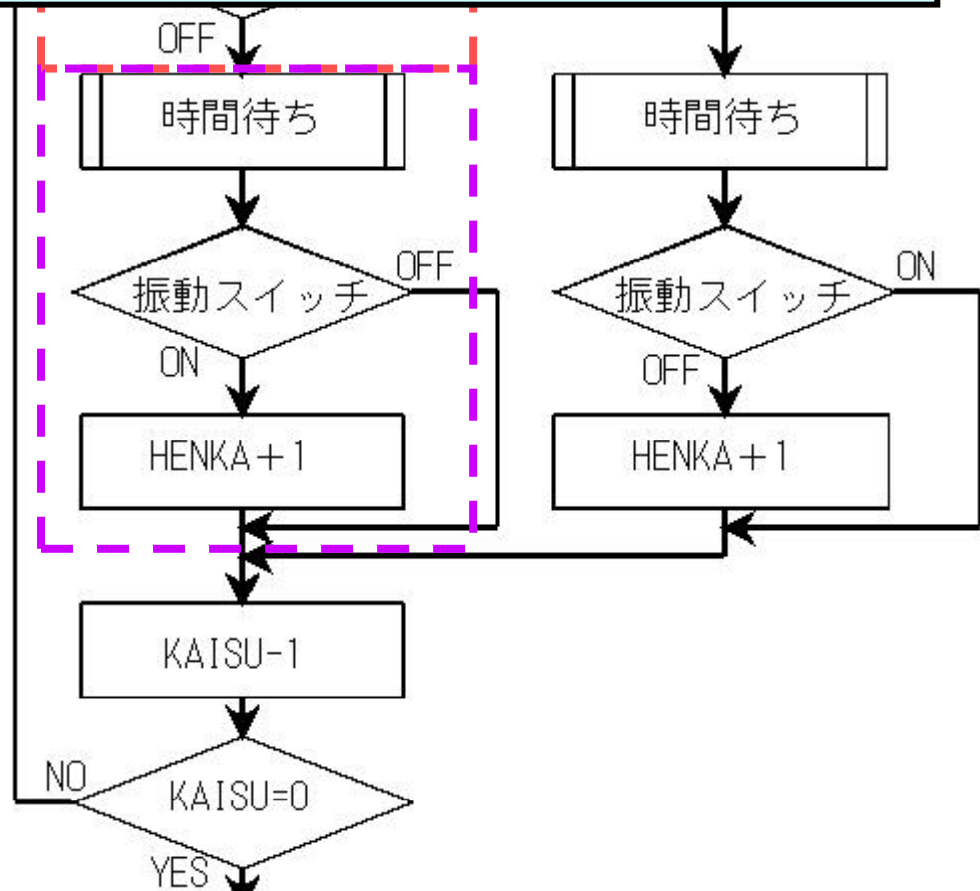
```
BTFSC PORTA,5
GOTO CHECK2
CALL WAIT1
BTFSC PORTA,5
INCF HENKA,1
GOTO CHECK9
```

CHECK2

```
CALL WAIT1
BTFSS PORTA,5
INCF HENKA,1
```

CHECK9

```
DECFSZ KAISU,1
```

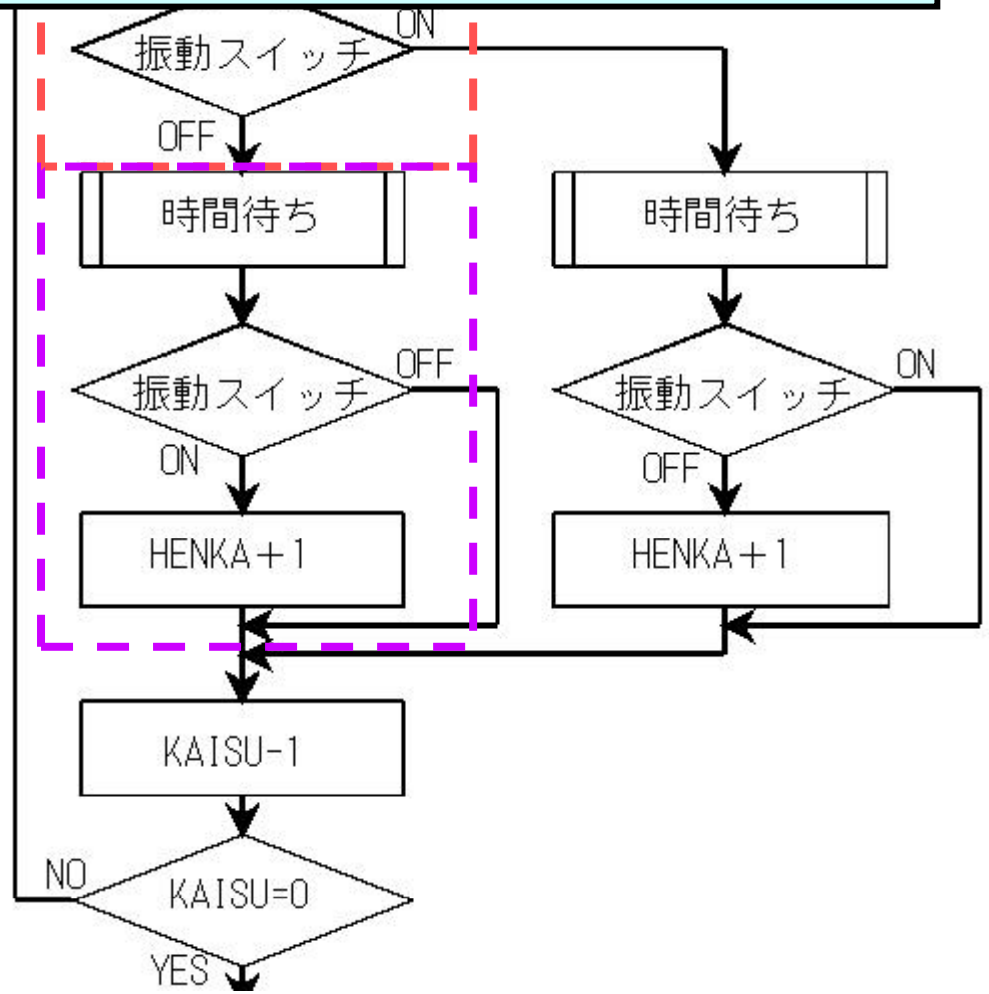


命令語6

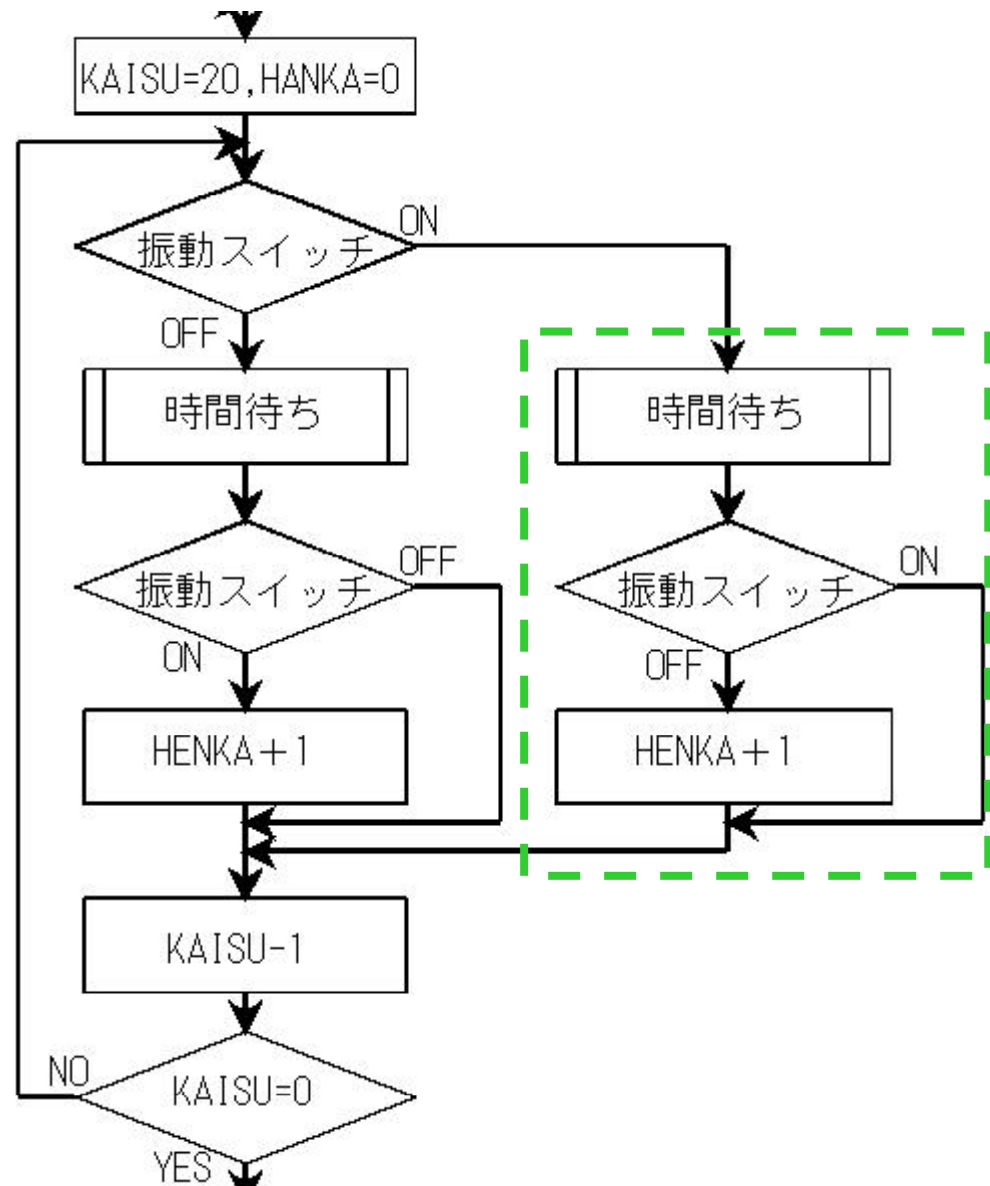
INCF X, 1

機能：レジスタXの値を+1する

MOVWF	HENKA
CHECK1	
BTFSC	PORTA,5
GOTO	CHECK2
CALL	WAIT1
BTFSC	PORTA,5
INCF	HENKA,1
GOTO	CHECK9
CHECK2	
CALL	WAIT1
BTFSS	PORTA,5
INCF	HENKA,1
CHECK9	
DECFSZ	KAISU,1



	MOVWF	KAISU
	MOVLW	D'0'
	MOVWF	HENKA
CHECK1	BTFSC	PORTA,5
	GOTO	CHECK2
	CALL	WAIT1
	BTFSC	PORTA,5
	INCF	HENKA,1
	GOTO	CHECK9
CHECK2	CALL	WAIT1
	BTFSS	PORTA,5
	INCF	HENKA,1
CHECK9	DECFSZ	KAISU,1
	GOTO	CHECK1



命令語7

BTFSS X, N

C

機能：XレジスタのNビットを調べ、
1（セット）ならば次の命令をスキップ

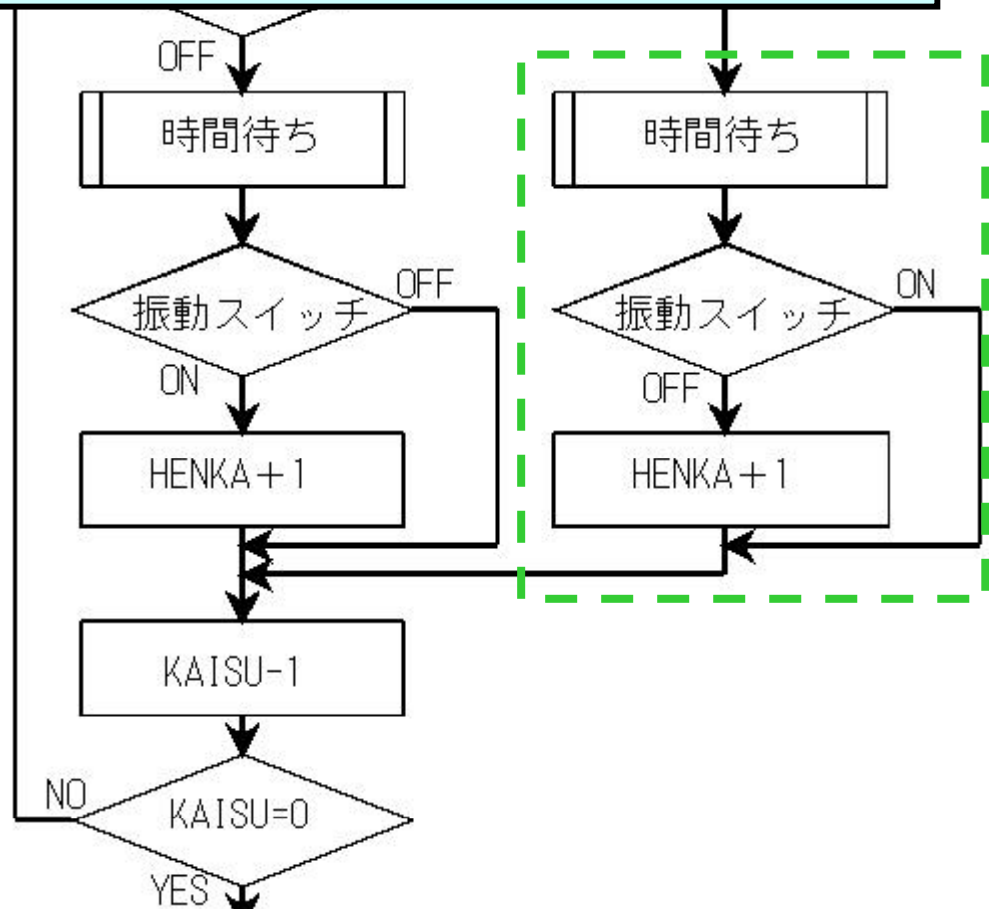
```
CALL    WAIT1  
BTFSC  PORTA,5  
INCF   HENKA,1  
GOTO   CHECK9
```

CHECK2

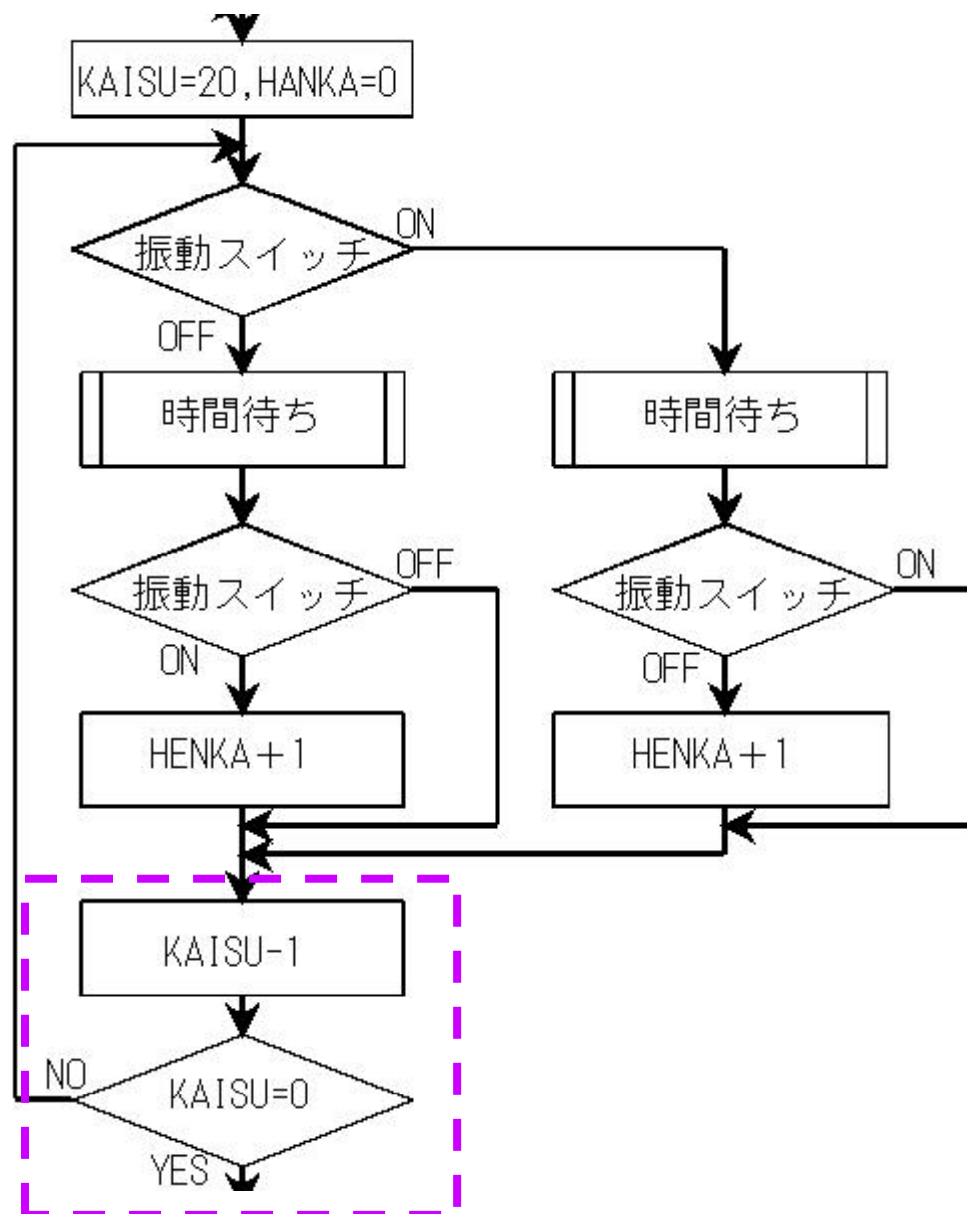
```
CALL    WAIT1  
BTFSS  PORTA,5  
INCF   HENKA,1
```

CHECK9

```
DECFSZ KAISU,1  
GOTO   CHECK1
```



	MOVLW	D 0
	MOVWF	HENKA
CHECK1	BTFSC	PORTA,5
	GOTO	CHECK2
	CALL	WAIT1
	BTFSC	PORTA,5
	INCF	HENKA,1
	GOTO	CHECK9
CHECK2	CALL	WAIT1
	BTFSS	PORTA,5
	INCF	HENKA,1
CHECK9	DECFSZ	KAISU,1
	GOTO	CHECK1



命令語 8

DECFSZ X, 1

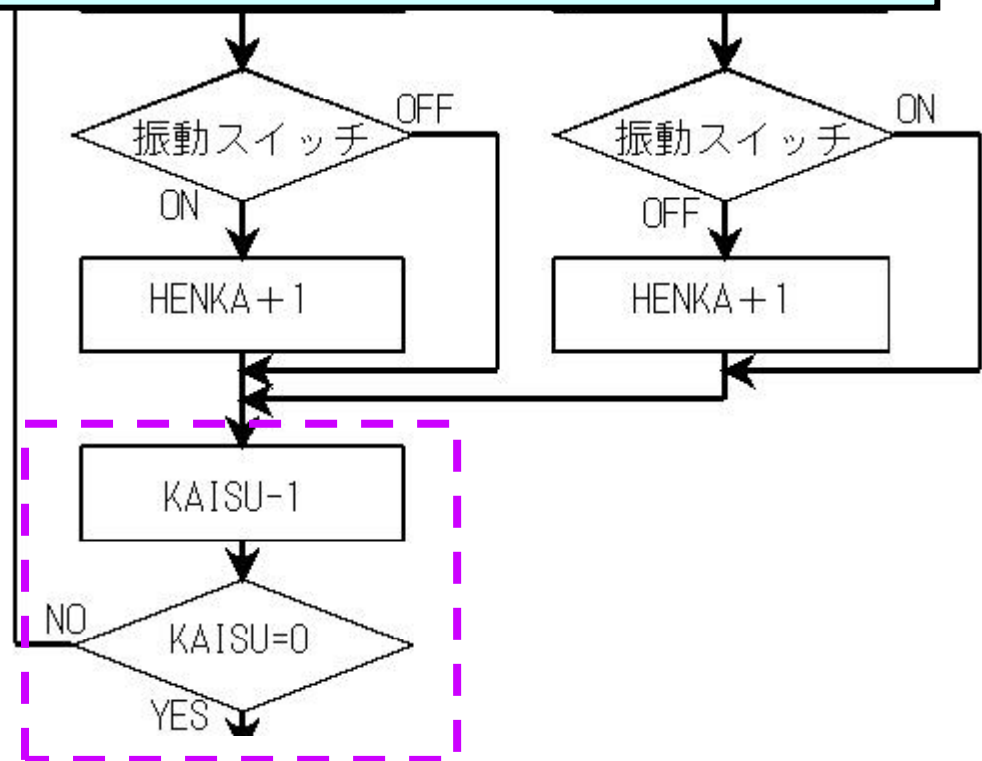
C

機能：Xレジスタの値を-1し、
0 (ゼロ) ならば次の命令をスキップ

```
BTFSC PORTA,5
INCF HENKA,1
GOTO CHECK9

CHECK2
CALL WAIT1
BTFSS PORTA,5
INCF HENKA,1

CHECK9
DECFSZ KAISU,1
GOTO CHECK1
```



LOOP0

```
MOVLW    D'20'  
MOVWF    KAISU  
MOVLW    D'0'  
MOVWF    HENKA
```

CHECK1

```
BTFSC    PORTA,5  
GOTO     CHECK2  
CALL     WAIT1  
BTFSC    PORTA,5  
INCF     HENKA,1  
GOTO     CHECK9
```

CHECK2

```
CALL     WAIT1  
BTFSS    PORTA,5  
INCF     HENKA,1
```

CHECK9

```
DECFSZ   KAISU,1  
GOTO     CHECK1
```

