

#HW2

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- HW2

```
MUL_TABLE    RESW      81
              LDX       #0
              LDA       #1
              LDT       #1
              LDS       #0

LOOP1         LDT       #243
              COMPR     X,T
              JEQ       END
              LDT       #1
              LDA       #1
              ADDR      T,S
LOOP2         LDT       #1
              MULR      S,T
              MULR      A,T
              STT       MUL_TABLE,X
              LDT       #3
              ADD       #1
              ADDR      T,X
              COMP      #10
              JLT       LOOP2

              J         LOOP1

END           RSUB
```

指令	大小 (byte)	記憶體存取次數
LDX #0	3	1
LDA #1	3	1
LDT #1	3	1
LDS #0	3	1
LDT #243	3	1
COMPR X,T	2	0
JEQ END	3	1
LDT #1	3	1
LDA #1	3	1
ADDR T,S	2	0
LDT #1	3	1
MULR S,T	2	0
MULR A,T	2	0
STT MUL_TABLE,X	3	2
LDT #3	3	1
ADD #1	3	1
ADDR T,X	2	0
COMP #10	3	1
JLT LOOP2	3	1
J LOOP1	3	1
RSUB	1	0

the size of this instruction (number of bytes) : $4 \times 3 + 16 \times 9 + 24 \times 81 + 1 = 2101$
byte

the number of memory accesses required to execute this instruction : $4 + 4 \times 9 + 8 \times 81 = 688$ 次

- HW1

ZERO	WORD	0
ONE	WORD	1
THREE	WORD	3
TEN	WORD	10
I	RESW	1
TEMP	RESW	1
Y	RESW	1
MUL_TABLE	RESW	81

	LDX	ZERO
	LDA	ONE
	STA	I
	STA	TEMP
LOOP1	LDA	I
	COMP	TEN
	JEQ	END
	LDA	ONE
	STA	TEMP
LOOP2	LDA	I
	MUL	TEMP
	LDX	Y
	STA	MUL_TABLE,X
	LDA	Y
	ADD	THREE
	STA	Y
	LDA	TEMP
	ADD	ONE
	STA	TEMP
	COMP	TEN
	JLT	LOOP2
	LDA	I
	ADD	ONE
	STA	I
	J	LOOP1
END	RSUB	

指令	大小 (byte)	記憶體存取次數
LDX ZERO	3	2
LDA ONE	3	2
STA I	3	2
STA TEMP	3	2
LDA I	3	2
COMP TEN	3	2
JEQ END	3	1
LDA ONE	3	2
STA TEMP	3	2
LDA I	3	2
MUL TEMP	3	2
LDX Y	3	2
STA MUL_TABLE,X	3	3
LDA Y	3	2
ADD THREE	3	2
STA Y	3	2
LDA TEMP	3	2
ADD ONE	3	2
STA TEMP	3	2
COMP TEN	3	2
JLT LOOP2	3	1

LDA I	3	2
ADD ONE	3	2
STA I	3	2
J LOOP1	3	1
RSUB	1	0

the size of this instruction (number of bytes) : $9 \times 3 + 36 \times 81 + 27 \times 9 + 1 = 3187$
byte

the number of memory accesses required to execute this instruction : $9 \times 2 + 24 \times 81 + 16 \times 9 = 2142$ 次

比較

程式	the size of this instruction (number of bytes)	the number of memory accesses required to execute this instruction
HW1	3187 byte	2142 次
HW2	2101 byte	688 次