

## Programming Assignment #2

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Q1 – Assign the location in the memory, find the object code for the instructions then create the object program

Loc		Obj. Code
4000	SUM START	4000
4000	FIRST LDX	ZERO 044018
4003	LDA	ZERO 044018
4006	LOOP ADD	TABLE, X 18C015
4009	TIX	COUNT 2C4018
400C	JLT	LOOP 384006
400F	STA	TOTAL 0C401E
4012	RSUB	4C0000
4015	TABLE RESW	2000
4018	COUNT RESW	1
401B	ZERO WORD	0 000000
401E	TOTAL RESW	1
4021	END	FIRST

Q2 – Assign the location in the memory, find the object code for the instructions then create the object program

Loc		Obj. Code
	SUM START	0
0000	FIRST LDX	#0 050000
0003	LDA	#0 010000
0006	+LDB	#TABLE2 691790
	BASE	TABLE2
000A	LOOP ADD	TABLE, X 18A013
000D	ADD	TABLE2, X 18C000
0010	TIX	COUNT 2F200A
0013	JLT	LOOP 382FF4
0016	+STA	TOTAL 0F02F00
001A	RSUB	4F000
001D	COUNT RESW	1
0020	TABLE RESW	2000
1790	TABLE2 RESW	2000
2F00	TOTAL RESW	1
2F03	END	FIRST

16. Suppose LENGTH is defined as in the program of Fig. 2.9. What would be the difference between the following sequences of statements?

a. LDA LENGTH  
SUB #1

b. LDA LENGTH-1

a. LDA LENGTH initializes index value to length

SUB #1 will subtract 1 from the length

b. LDA LENGTH will initialize the index value with length-1

17. Referring to the definitions of symbols in Fig. 2.10, give the value, type, and intuitive meaning (if any) of each of the following expressions:

- $\text{BUFFER} - \text{FIRST}$  decreases buffer value by var in first
- $\text{BUFFER} + 4095$  address + 4095
- $\text{MAXLEN} - 1$  iterates by a factor of 1
- $\text{BUFFER} + \text{MAXLEN} - 1$  increase buffer by  $\text{MAXLEN} - 1$
- $\text{BUFFER} - \text{MAXLEN}$  decrease buffer by  $\text{MAXLEN}$
- $2 * \text{LENGTH}$  doubles length
- $2 * \text{MAXLEN} - 1$  double max value of length - 1 (prevents overflow)
- $\text{MAXLEN} - \text{BUFFER}$  value type: absolute
- $\text{FIRST} + \text{BUFFER}$  appends first to buffer
- $\text{FIRST} - \text{BUFFER} + \text{BUFEND}$  appends first - buffer to bufend

18. In the program of Fig. 2.9, what is the advantage of writing (on line 107)

```
MAXLEN EQU BUFEND - BUFFER
```

instead of

```
MAXLEN EQU 4096 ?
```

MAXLEN will have more efficient space/address allocation than the original line

19. In the program of Fig. 2.15, could we change line 190 to

```
MAXLEN EQU BUFEND - BUFFER
```

and line 133 to

```
+LDT #MAXLEN
```

as we did in Fig. 2.9?

No, both these changes would not be possible due to address issues that would result from  $\text{BUFEND} - \text{BUFFER}$  and  $\# \text{MAXLEN}$ .