

## SIC ASSIGNMENT PROBLEM

Construct the object code for the source program given below.

LABEL	MNEMONIC	OPERAND
COPY	START	1000
FIRST	STL	RETADR
CLOOP	JSUB	RDREC
	LDA	LENGTH
	COMP	ZERO
	JEQ	ENDFIL
	JSUB	WRREC
	J	CLOOP
ENDFIL	LDA	EOF
	STA	BUFFER
	LDA	THREE
	STA	LENGTH
	JSUB	WRREC
	LDL	RETADR
	RSUB	
EOF	BYTE	C' EOF '
THREE	WORD	3
ZERO	WORD	0
RETADR	RESW	1
LENGTH	RESW	1
BUFFER	RESB	4096

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Subroutine to head record into buffer

LABEL	MNEMONIC	OPERAND
RDREC	LDX	ZERO
	LDA	ZERO
RLOOP	TD	INPUT
	JEQ	RLOOP
	RD	INPUT
	COMP	ZERO
	JEQ	EXIT
	STCH	BUFFER,X

	TIX	MAXLEN
	JLT	RLOOP
EXIT	STX	LENGTH
	RSUB	
INPUT	BYTE	X 'F1 '
MAXLEN	WORD	4096

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#### Subroutines to Write record into buffer

LABEL	MNEMONIC	OPERAND
WRREC	LDX	ZERO
WLOOP	TD	OUTPUT
	JEQ	WLOOP
	LDCH	BUFFER,X
	WD	OUTPUT
	TIX	LENGTH
	JLT	WLOOP
	RSUB	
OUTPUT	BYTE	X'05'

#### Opcodes :

MNEMONIC	OPCODE
STL	14
JSUB	48
LDA	00
COMP	28
JEQ	30
J	3C
STA	0C
LDL	08
LDX	04
TD	E0
RD	D8
STCH	54
TIX	2C
JLT	38
STX	10
LDCH	50
WD	DC

**NOTE: This is only 1 question please don't think that there are 3 questions !!**

**Solution :**

LOCATION	LENGTH	LABEL	MNEMONIC	OPERAND	OBJECT CODE
1000		COPY	START	1000	
1000	3	FIRST	STL	RETADR	141033
1003	3	CLOOP	JSUB	RDREC	482039
1006	3		LDA	LENGTH	001036
1009	3		COMP	ZERO	281030
100C	3		JEQ	ENDFIL	301015
100F	3		JSUB	WRREC	482061
1012	3		J	CLOOP	3C1003
1015	3	ENDFIL	LDA	EOF	00102A
1018	3		STA	BUFFER	0C1039
101B	3		LDA	THREE	00102D
101E	3		STA	LENGTH	0C1036
1021	3		JSUB	WRREC	482061
1024	3		LDL	RETADR	081033
1027	3		RSUB		4C0000
102A	1x3 = 3	EOF	BYTE	C' EOF '	45 4F 46
102D	3	THREE	WORD	3	000003
1030	3	ZERO	WORD	0	000000
1033	1x3 = 3	RETADR	RESW	1	
1036	1x3 = 3	LENGTH	RESW	1	
1039	1x4096=1000	BUFFER	RESB	4096	
2039	3	RDREC	LDX	ZERO	041030
203C	3		LDA	ZERO	001030
203F	3	RLOOP	TD	INPUT	E0205D
2042	3		JEQ	RLOOP	30203F
2045	3		RD	INPUT	D8205D
2048	3		COMP	ZERO	281030
204B	3		JEQ	EXIT	302057
204E	3		STCH	BUFFER,X	549039
2051	3		TIX	MAXLEN	2C205E
2054	3		JLT	RLOOP	38203F
2057	3	EXIT	STX	LENGTH	101036
205A	3		RSUB		4C0000
205D	1	INPUT	BYTE	X 'F1 '	F1
205E	3	MAXLEN	WORD	4096	001000
2061	3	WRREC	LDX	ZERO	041030
2064	3	WLOOP	TD	OUTPUT	E02079
2067	3		JEQ	WLOOP	302064
206A	3		LDCH	BUFFER,X	509039

206D	3		WD	OUTPUT	DC2079
2070	3		TIX	LENGTH	2C1036
2073	3		JLT	WLOOP	382064
2076	3		RSUB		4C0000
2079	1	OUTPUT	BYTE	X'05'	05
207A			END	FIRST	

## OBJECT CODE

OPCODE(8)	X (1)	DISPLACEMENT(15) = 24
14		1003 -> 141003
54	1001	039 -> 549039