

Assignment 2

(CS 348)

Write a C program that implements a 2 pass Assembler with the instruction set as follows:

ADD, SUB, MUL, DIV, COMP, JMP, JLE, JE, JGE, JNE, JL, JG, MOV, RESW, RESB, BYTE, WORD, CALL, RET, PUSH, POP, LDA, LDX, LDA, LDX, LDL, STA, STX, STL, LDCH, STCH, TD, RD, WD.

Line	Loc	Source statement	Object code
5	1000	COPY START 1000	
10	1000	FIRST STL RETADR	141033
15	1003	CLOOP JSUB RDREC	482039
20	1006	LDA LENGTH	001036
25	1009	COMP ZERO	281030
30	100C	JEQ ENDFIL	301015
35	100F	JSUB WRREC	482061
40	1012	J CLOOP	3C1003
45	1015	ENDFIL LDA EOF	00102A
50	1018	STA BUFFER	0C1039
55	101B	LDA THREE	00102D
60	101E	STA LENGTH	0C1036
65	1021	JSUB WRREC	482061
70	1024	LDL RETADR	081033
75	1027	RSUB	4C0000
80	102A	EOF BYTE C'EOF'	454F46
85	102D	THREE WORD 3	000003
90	1030	ZERO WORD 0	000000
95	1033	RETADR RESW 1	
100	1036	LENGTH RESW 1	
105	1039	BUFFER RESB 4096	
110		.	
115		. SUBROUTINE TO READ RECORD INTO BUFFER	
120		.	
125	2039	RDREC LDX ZERO	041030
130	203C	LDA ZERO	001030
135	203F	RLOOP TD INPUT	E0205D
140	2042	JEQ RLOOP	30203F
145	2045	RD INPUT	D8205D
150	2048	COMP ZERO	281030
155	204B	JEQ EXIT	302057
160	204E	STCH BUFFER,X	549039
165	2051	TIX MAXLEN	2C205E
170	2054	JLT RLOOP	38203F
175	2057	EXIT STX LENGTH	101036
180	205A	RSUB	4C0000
185	205D	INPUT BYTE X'F1'	F1
190	205E	MAXLEN WORD 4096	001000
195		.	
200		. SUBROUTINE TO WRITE RECORD FROM BUFFER	
205		.	
210	2061	WRREC LDX ZERO	041030
215	2064	WLOOP TD OUTPUT	E02079
220	2067	JEQ WLOOP	302064
225	206A	LDCH BUFFER,X	509039
230	206D	WD OUTPUT	DC2079
235	2070	TIX LENGTH	2C1036
240	2073	JLT WLOOP	382064
245	2076	RSUB	4C0000
250	2079	OUTPUT BYTE X'05'	05
255		END FIRST	

This is the sample Input Assembly Language Program.

This is the object code corresponding to the above Assembly Language Program.

```
H^C^O^P^Y^ 00100000107A
T0010001E1410334820390010362810303010154820613C100300102A0C103900102D
T00101E150C10364820610810334C0000454F46000003000000
T0020391E041030001030E0205D30203FD8205D2810303020575490392C205E38203F
T0020571C1010364C0000F1001000041030E02079302064509039DC20792C1036
T002073073820644C000005
E001000
```