Report Phase 1

o Requirements specification:

1. We build a parser that is capable of handling source lines that are instructions, storage declaration, comments, and assembler directive.

2. For instructions, the parser is capable of decoding 2, 3 and 4-byte instructions as follows:

a) 2byte with 1 or 2 symbolic register reference (e.g., TIXR A, ADDR S,A)

b) 3-byte PC-relative with symbolic operand to include immediate, indirect, and indexed addressing

c) 3-byte absolute with non-symbolic operand to include immediate, indirect, and indexed addressing

d) 4-byte absolute with symbolic or non-symbolic operand to include immediate, indirect and indexed addressing.

3. The parser handle all storage directives (BYTE, WORD, RESW, and RESB).

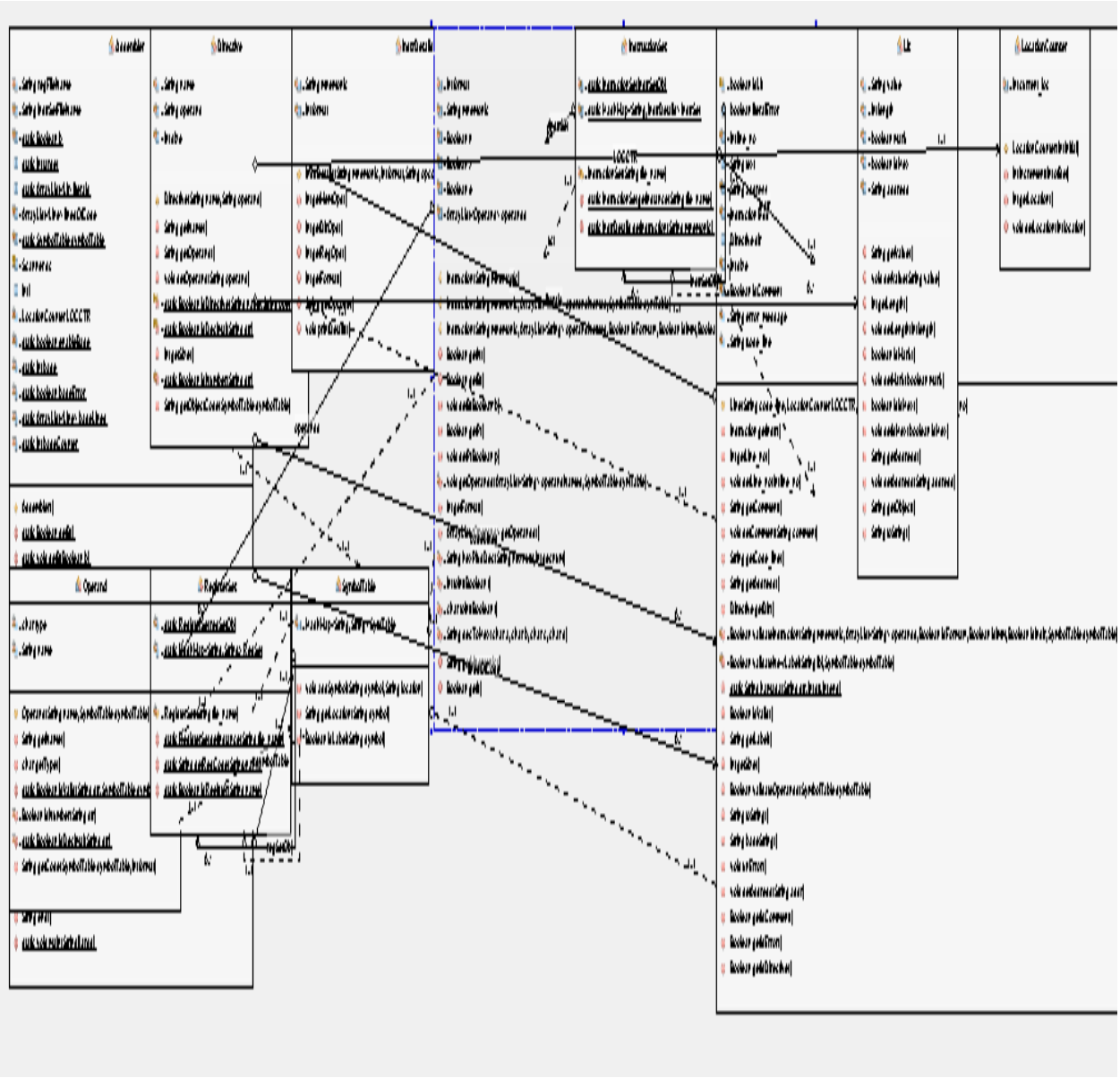
4. The output of this phase contains:

a) The symbol table.

b) The source program in a formatted.

c) A meaningful error message is printed below the line in which the error occurred.

o Design: “UML”



o Main data structures:

-Array List

-Hash Map

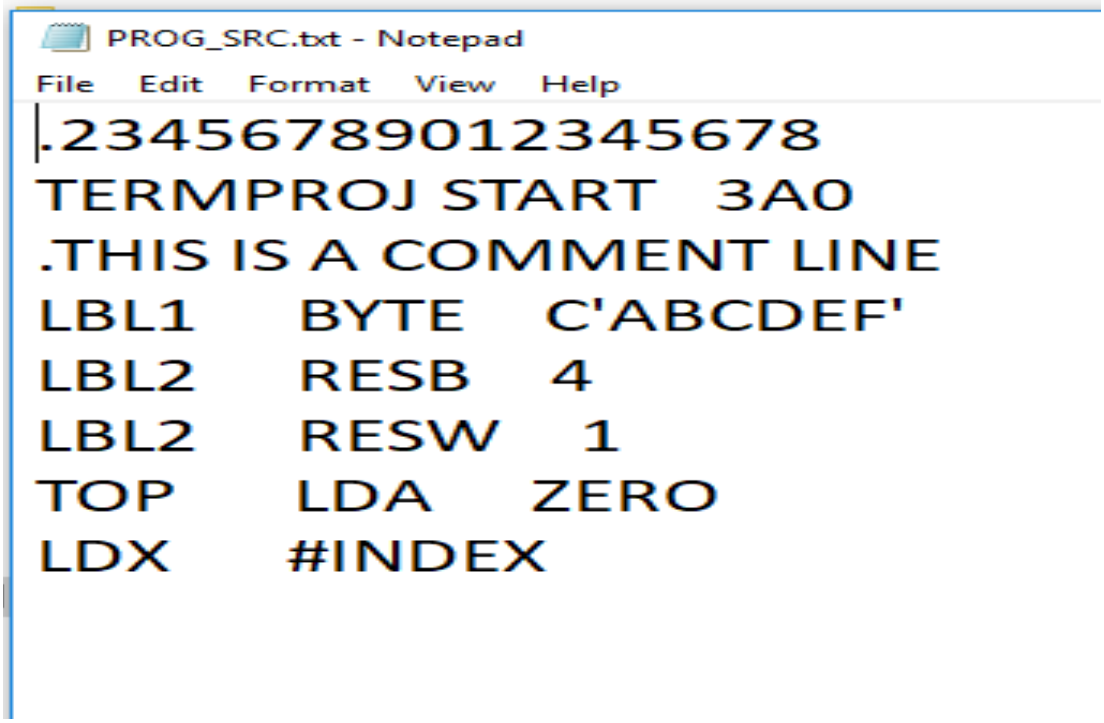
o Algorithms description:

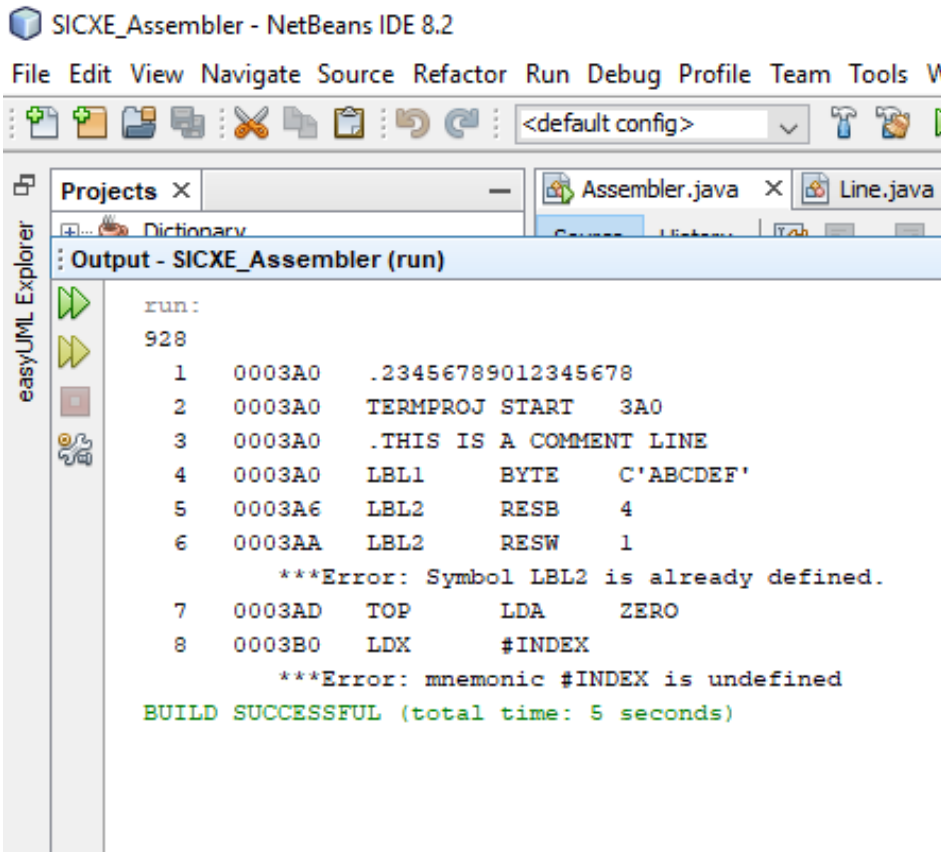
o Assumptions (if any):

-You must enter Starting address.

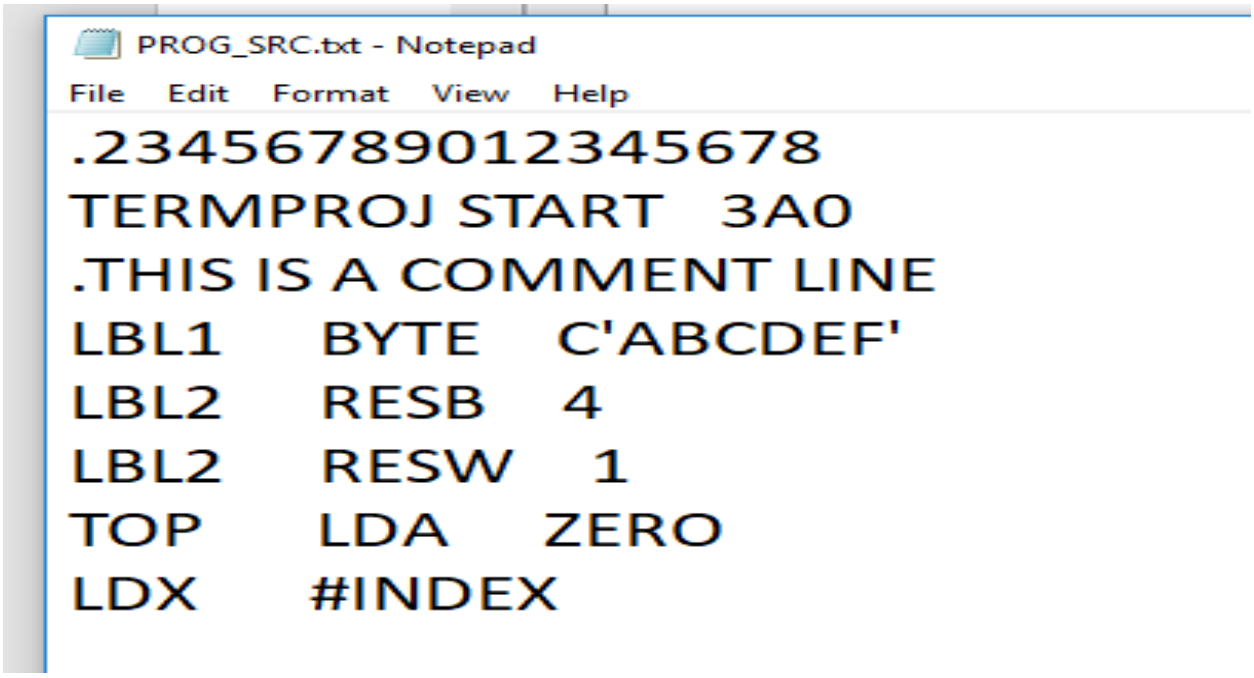
o Sample run:

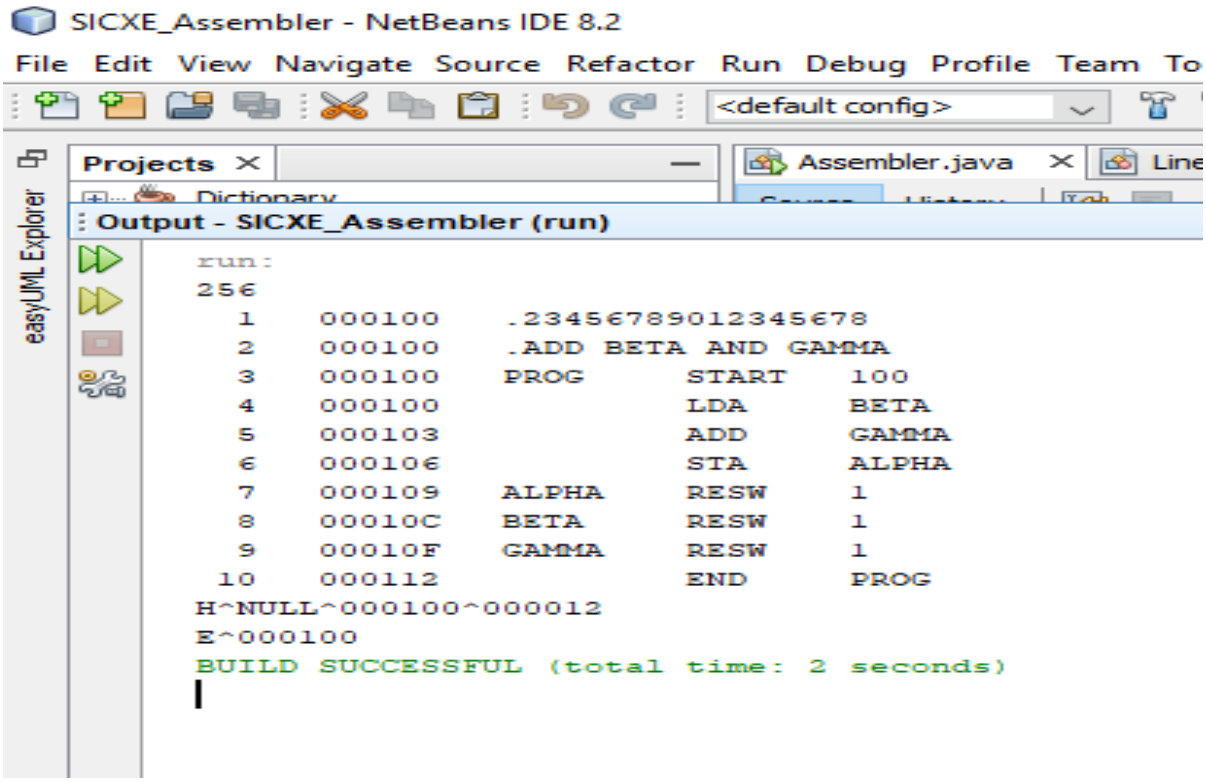
(1)



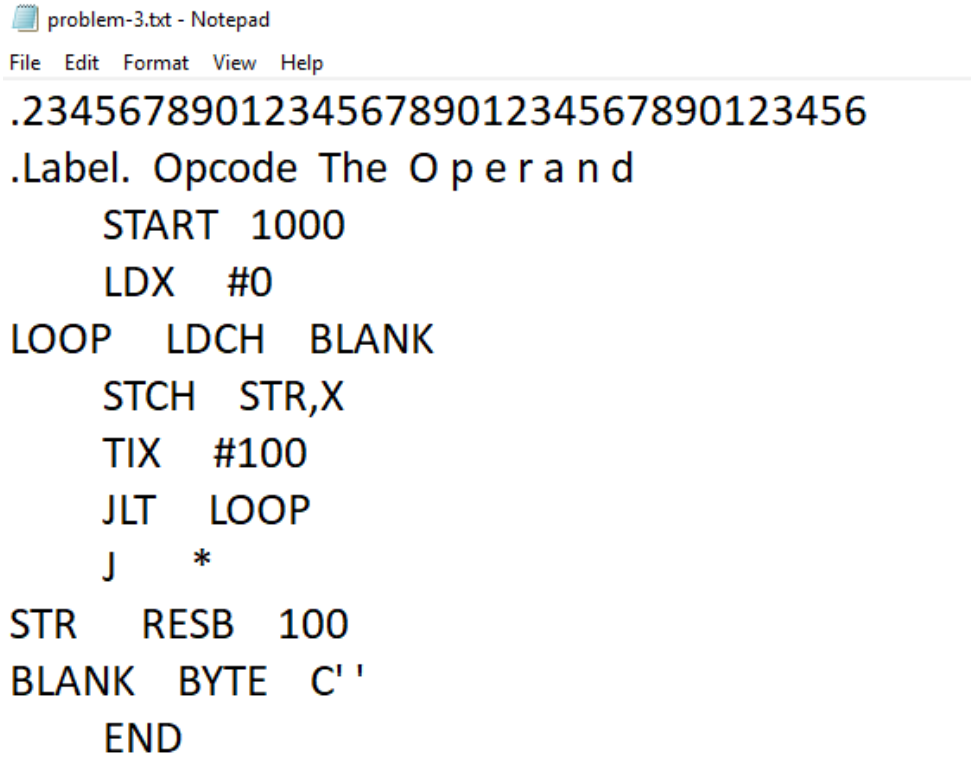

SICXE_Assembler - NetBeans IDE 8.2
File Edit View Navigate Source Refactor Run Debug Profile Team Tools W
<default config>
Projects
Assembler.java
Line.java
Output - SICXE_Assembler (run)
easyUML Explorer
run:
928
1 0003A0 .23456789012345678
2 0003A0 TERMPROJ START 3A0
3 0003A0 .THIS IS A COMMENT LINE
4 0003A0 LBL1 BYTE C'ABCDEF'
5 0003A6 LBL2 RESB 4
6 0003AA LBL2 RESW 1
***Error: Symbol LBL2 is already defined.
7 0003AD TOP LDA ZERO
8 0003B0 LDX #INDEX
***Error: mnemonic #INDEX is undefined
BUILD SUCCESSFUL (total time: 5 seconds)

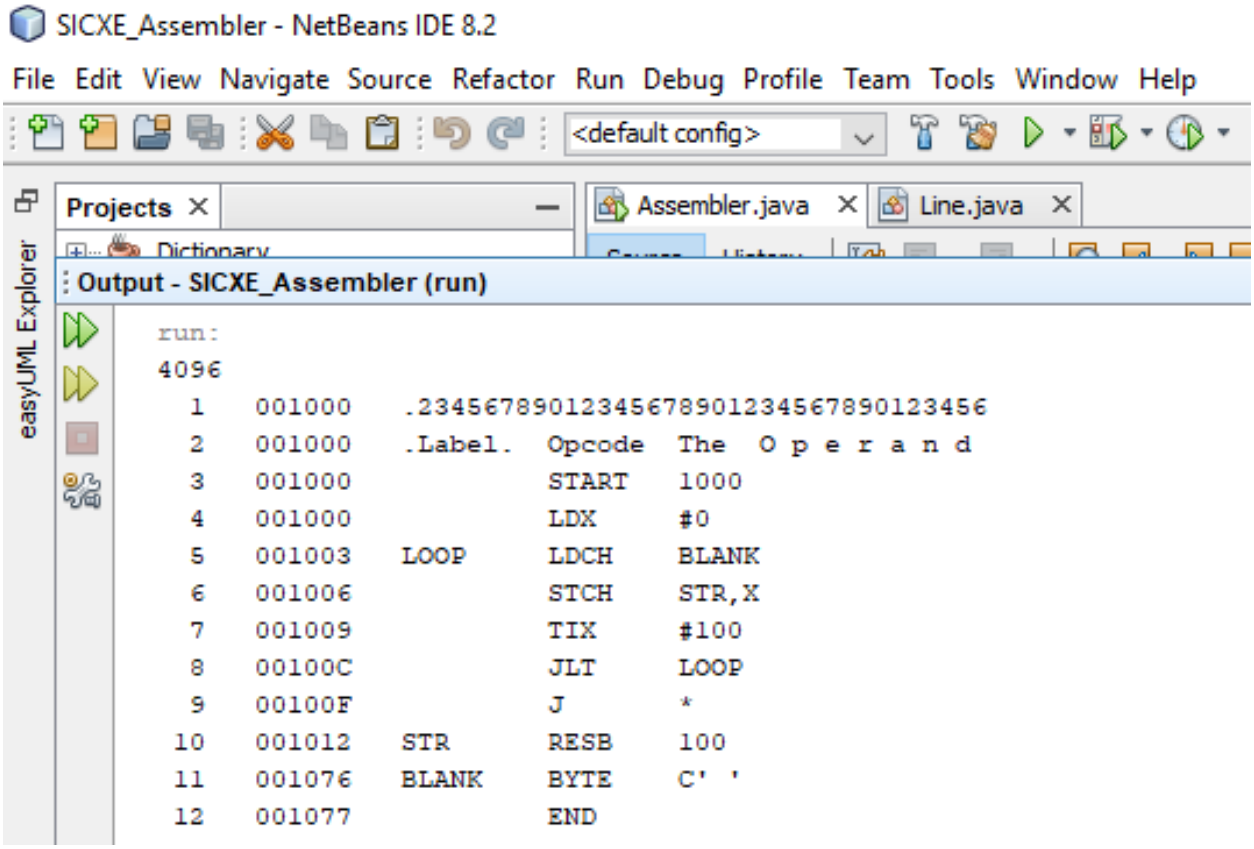
(2)


PROG_SRC.txt - Notepad
File Edit Format View Help
.23456789012345678
TERMPROJ START 3A0
.THIS IS A COMMENT LINE
LBL1 BYTE C'ABCDEF'
LBL2 RESB 4
LBL2 RESW 1
TOP LDA ZERO
LDX #INDEX


SICXE_Assembler - NetBeans IDE 8.2
File Edit View Navigate Source Refactor Run Debug Profile Team To
<default config>
Projects
Assembler.java
Output - SICXE_Assembler (run)
run:
256
1 000100 .2345678901234567 8
2 000100 .ADD BETA AND GAMMA
3 000100 PROG START 100
4 000100 LDA BETA
5 000103 ADD GAMMA
6 000106 STA ALPHA
7 000109 ALPHA RESW 1
8 00010C BETA RESW 1
9 00010F GAMMA RESW 1
10 000112 END PROG
H^NULL^000100^000012
E^000100
BUILD SUCCESSFUL (total time: 2 seconds)

(3)


problem-3.txt - Notepad
File Edit Format View Help
.23456789012345678901234567890123456
.Label. Opcode The O p e r a n d
START 1000
LDX #0
LOOP LDCH BLANK
STCH STR,X
TIX #100
JLT LOOP
J *
STR RESB 100
BLANK BYTE C' '
END


SICXE_Assembler - NetBeans IDE 8.2
File Edit View Navigate Source Refactor Run Debug Profile Team Tools Window Help
<default config>
Projects
Assembler.java
Line.java
easyUML Explorer
Output - SICXE_Assembler (run)
run:
4096
1 001000 .23456789012345678901234567890123456
2 001000 .Label. Opcode The O p e r a n d
3 001000 START 1000
4 001000 LDX #0
5 001003 LOOP LDCH BLANK
6 001006 STCH STR,X
7 001009 TIX #100
8 00100C JLT LOOP
9 00100F J *
10 001012 STR RESB 100
11 001076 BLANK BYTE C' '
12 001077 END