

**BASIC PROGRAM**

You enter this at the keyboard

150 A\$ = A\$ + "BASIC":PRINT A\$

Operating System BASIC Line Manager

Line Data

A

T

A

T

A

T

A

End Of Line Data

BASIC Interpreter

TOKEN HANDLER

EXPRESSION EVALUATOR

DATA MANAGER



Token



ASCII Coded Data

MACHINE CODE INSTRUCTION

You enter this at the keyboard

LDA \$ 32 40

Op-code

AD

ASSEMBLER

Lo Byte Address

32

Hi Byte Address

40

MICROPROCESSOR
OP-CODE DECODER

LOAD

Operation

2 Bytes

Length

40

32

Data Registers

Step-By-Step

These panels show how a line of BASIC programming and an instruction in machine code are translated and executed

The Operating System supplies line data in standard form and substitutes tokens for BASIC keywords

You type RUN

The BASIC interpreter searches the line for tokens and their associated data, using the value of the token to locate the appropriate Operating System handling subroutine

The assembler translates the Assembly language mnemonic into a 1-byte op-code and stores the 2-byte operand in lo-hi form

When the instruction is executed, the op-code is decoded by the microprocessor into length and operation codes so that the correct number of bytes following the op-code is treated as the operand