Variable Storage in Basic 1.2 (MVP)

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x.0 Introduction

Storage of variables in the MVP partitioning scheme is outlined in this section. Basically, only two types of variables exist. These are Alphanumeric and Numeric variables. Permutations can then be made to define them as singular or array, Common, Global or Non-Common.

The scope of this document does not permit us to analyze how the storage is accomplished, but will permit the user to determine where the variable exists in memory, and to determine what type they are.

1 Variable Computation

Each partition has a control area that utilizes about 768 bytes of memory. The 0900 ~~control~~ memory section will point to the start of this area. References here must be relative to the start of the partition area.

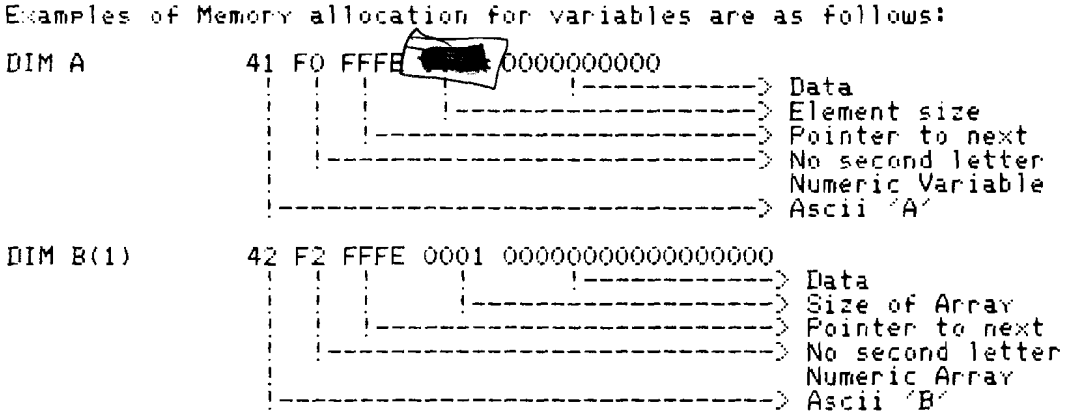
At Partition + 0300, 26 pairs of numbers are reserved. Each pair corresponds to a letter in the alphabet, starting sequentially from A to Z. This is the master table for control of the variables. During the initialization process, or during the CLEAR commands, these pairs are set to point to the last location in the current partition. Effectively, this informs the MVP program that no variable exists with that letter.

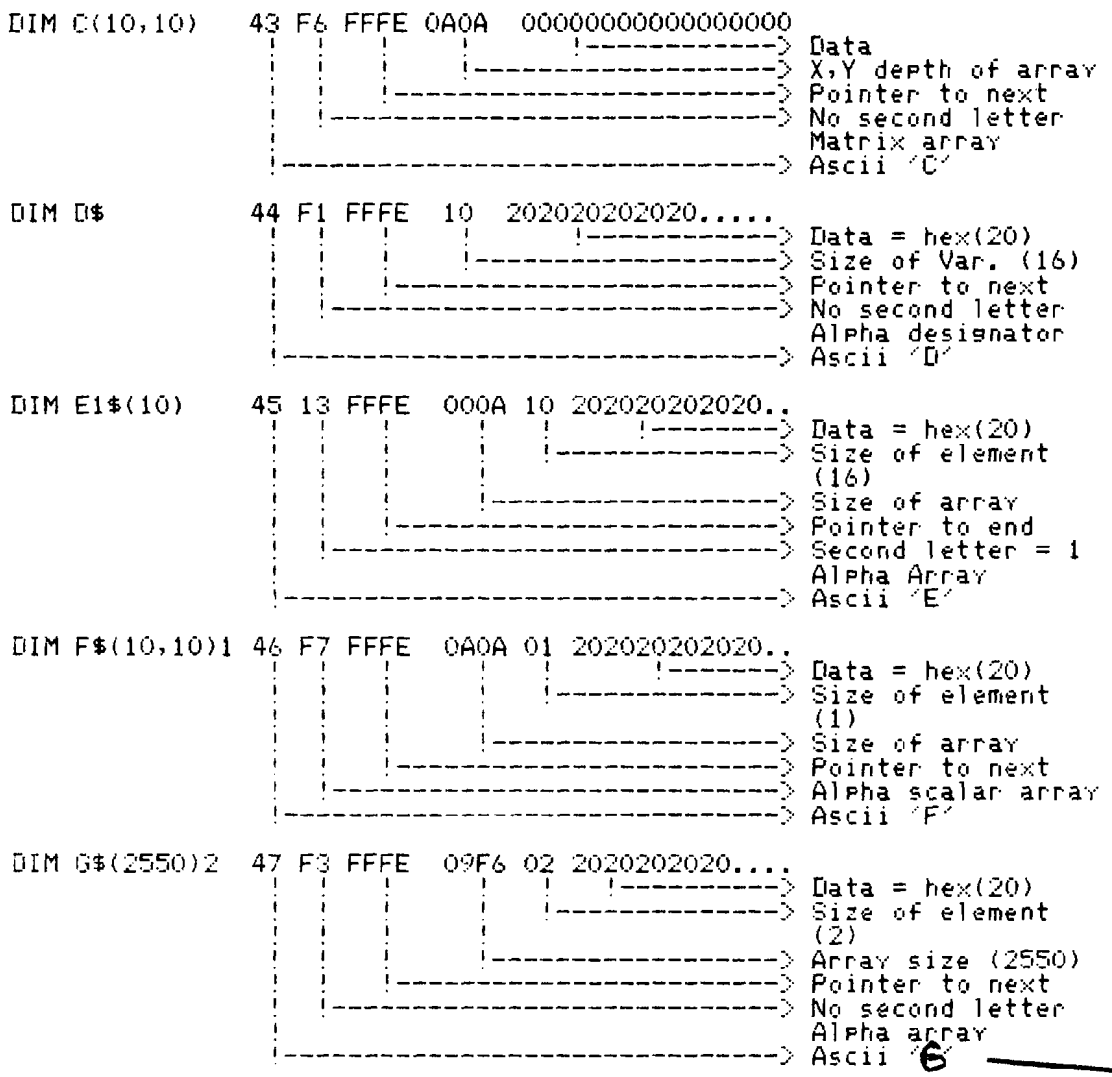
When a variable is defined, the system resets the address of the letter-pair to the last address in the system less the size of variable, less the control information. By doing so, the system now knows that a variable containing the letter exists, and can now attempt to locate the variable requested.

The variables are 'chained'. That is, each variable in the series will point to the next variable in the series. The last variable in the chain always points to the end of partition memory.

x.2 Variable definition in memory

Examples of Memory allocation for variables are as follows:





The above indicates every type of variable that can be set by Basic with the exception of Common Global variables. The Common Global variables are Conditioned by the '8' bit on in the second byte of the identification. Thus, a Global variable @A would take on the configuration:

41 F8 FFFE 0000 000000000

Note that the '8' bit is set in the second term. Other than Global common variables, Common variables are simply defined as being above a certain location in memory. This location is set when the Common has been defined. All variables above this address are common, all variables below this address are not. Therefore, selective CLEARS know what to clear by examing these locations.

x.3 Summary

The first two bytes of the actual variable control bytes have the following definitions:

xx yZ

Where: xx is the ASCII character for the variable
y is the ASCII character for the second letter of the variable. If no second character, then this is set to F.

Z is the type of variable:

0 ... Simple Numeric Data	A
1 ... Simple Alpha Data	B$
2 ... Numeric Array	B(X)
3 ... Alpha Array	A$(10)
4 ... Invalid	
5 ... Invalid	
6 ... Two dimensional Numeric	B(10,15)
7 ... Two dimensional Alpha	Z$(23,5)

By oring the variable type with the '8' bit, Global variables are defined.

Example 41 FA DIM @A(3) ←