

And, **the only keys that work differently** from the keyboard than they do from program memory are:

RTN, **A** thru **E**, **GTO**, **R/S**

These instructions control program execution and should be studied carefully.

Looking at a Program

Earlier, you may recall, you learned that five functions/operations are accessible in two different ways. You can press **9** **1/x** or **A**; **f** **√x** or **B**; and so on. The five keys **A** thru **E** are used to control program execution. Each key is defined by the program it controls. Default programs for **1/x**, **√x**, **y^x**, **R↓**, and **x↔y** are automatically stored in program memory for these five keys when the calculator is switched ON. This is for your convenience when doing manual calculation, so that you can use these common functions and operations (*indicated in white above the A thru E keys*) by pressing one key instead of two; e.g., **A** instead of **9** **1/x**. But the **A** thru **E** keys can be redefined by any program you choose. The short program you wrote in the introduction is an example of how this is done. You redefined the **A** key to calculate the cube of a number.

Program Memory

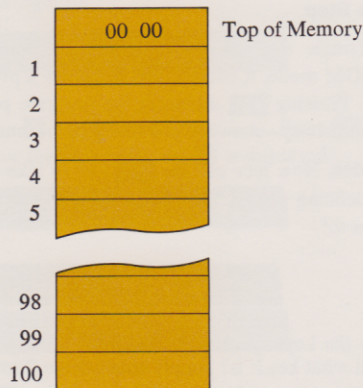
Now let's use these default programs to find out a little more about the program memory of the HP-65. Switch the calculator OFF and then ON again. The **A** thru **E** keys are now defined by the default programs. Next, slide the mode switch to W/PRGM (write program). You should see the following display:

00 00

Top of Memory Marker

Whenever you see this display, you know that you are at the top of memory. The HP-65 program memory consists of 100 usable steps and a top of memory marker. The following drawing is a

graphic representation of program memory. Notice that the top of memory marker does occupy a step (*not one of your 100*), but that no keys may be stored there. The other steps can store one and sometimes two keystrokes.



Program Pointer

When a program is run, the calculator executes each step sequentially downward by means of a program "pointer."

