$$a = \longrightarrow$$
$$b = \times$$
$$C = \div$$

NOTES

These NOTES are provided to introduce the new ARCADE owner to techniques and efffects that can be generated by the Tiny Basic cartridge. Considerably more detail can be found in the ARCADIAN articles referred to in the text. In addition, a listing of available publications that can assist the more advanced programmer is included.

The ARCADIAN articles were written as descriptions of the original "Bally Basic". While this cartridge has been superseded by the current "AstroVision Basic", the explanatory material remains applicable. As new material is discovered and developed by experimenters, it will be documented in the ARCADIAN.

Your inputs are solicited, as production of the ARCADIAN is almost totally based on subscriber inputs.

SCREEN CHARACTERS   The Arcade divides the tv screen into 16320 individual dots, called pixels. This is disposed at 102 high by 160 wide. The lettering of the Arcade is 5 pixels wide-plus one, and 7 pixels high-plus one. (The 'one' is to prevent adjacent letters from running together.) A full explanation of controlling location is defined in Vol. 1, page 50, while methods to drive the lettering size upwards start on page 45.

Home-brewed characters can be generated by means of a method defined in Vol. 3, page 83. In this program, a 16x10 matrix can be selectively filled in to create a character. A further expansion of this technique is described in Vol. 3, page 128, wherein the computer is made to do most of the work.

MEMORY DUMPS The Basic can be asked to identify what is located within its memory registers in binary or hexadecimal notations by some simple programs. (binary, Vol 1, p.43; hex, page 44, for example)

SOUND GENERATION   lengthy explanation of the operation of the sound systems is found in Vol. 1, pages 62-66 and 70-73

MUSIC GENERATION (using the available three-tone system) is a subset of the sound generation system, and is covered by articles in Vol. 2, page 62, and Vol 4, page 10

BOOLEAN MATH is utilized in some functions and commands, and is discussed in Vol.1, pages 41,44, 52,55, amongst others.

&(10) is a command that gives you control over an apparent "curtain" on the screen, behind which you can place words or characters until you are ready to display them. Try
        FOR A = 0 TO 180; &(10)=A; NEXT A

        &(9) is a command that gives you control over the ability to divide the screen vertically. Try the same program as above, only replace &(10)=A with &(9)=A. Then try adding this command at the beginning: &(0)=172; &(11)=126; &(2)=82 for a colorful surprise. These are described in Vol. 1 pages 15, 40.

        MACHINE CODE programs are possible in the Arcade:-
    %(n) activates the PEEK/POKE relationship. In order to perform a PEEK function, where one observes what is stored in a memory location, one commands   A=%(nnnn)   then a PRINT A will result in the value located in location nnnn
    To place A into location nnnn, one commands %(nnnn)=A.
    CALL is a direct command to intercept a program within the system ROM. Try CALL 3177 or CALL 4910.
        Putting all of this together, and knowing how the insides of the Arcade works, enables one to write programs in machine code directly from the Keypad. The first article discussing this is in Vol. 1, page 25. There are a number of subsequent articles touching on various parts of the problem.

        PUBLICATIONS The following papers are available. At the moment, these document the Arcade with the Bally Basic installed. Exactly how much of these are applicable for the AstroVision Basic is anyone's guess. They are included for your information, and as we develop our understanding of the AstroVision Basic, we shall update, revise, or reprint the documents.
        EXECUTIVE SOFTWARE - a listing of software that does something in the Arcade, and how to execute it. Part of the document lists the ROM subroutines that are executed with an RST 38H instruction, while the second part contains the listings of the on-board ROM from 0000-1FFF. 27 pages.
        ASTROVISION BASIC a completely disassembled listing of the Basic cartridge on 70 pages, with comments. (We have a similar listing of the Bally Basic.)
        BALCHEK A program was developed by Bally software engineers which "looked at" the operation of the printed circuit board and then determined if any problems existed, all the while doing a burn-in operation. It would then identify the errant problem area. The listing and its instructions in over 60 pages. This program is also available on a chip, and in a complete, ready to operate tool.
        MANUAL OF HARDWARE AND SOFTWARE A large document made up by the Bally software design engineers explaining a number of routines, machine operations, and details of the inner workings, including some specifications of the three custom chips. The second half of the document contains disassembled listings. 300 pages.

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