Support Group Application Note
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Master 128 Welcome Guide Addendum

Applicable Hardware : BBC Master 128

Related Application Notes:

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THE WELCOME DISC

Unlike most software supplied by Acorn, the Welcome disc is not protected with a write protect tab. care must therefore be taken to ensure that the software supplied on the disc is not either overwritten or deleted.

The disc is supplied without a write protect tab to allow the disc to be configured, where necessary, for use with an 80 track disc drive. It is recommended that the disc should be write protected as soon as possible which, if you will be using a 40 track drive, should be before the disc is used. If you will be using an 80 track disc drive, the write protect tab should not be put in place until after the first successful use of the WELCOME80 utility and the subsequent Welcome programs.

NOTE: When the disc has been write protected, it will not be possible to add to the database provided with the DBASE program since this requires DBASE to write to the disc.

BAS128

This version of BBC BASIC gives the user access to a full 64K of memory for BASIC programs. A copy of BAS128 is supplied on both the Welcome cassette and the Welcome disc. On the cassette it is located towards the end of side two, on the disc it is located in the 80 track library.

BAS128 is loaded from the disc by typing:

```
*MOUNT <DRIVE NUMBER>
*LIB LIBRARY
*BAS128
```

and from cassette by typing:

```
*RUN BAS128
```

The screen will be cleared and the banner BBC BASIC will appear together with a bytes free message 64K. The ">" prompt will be displayed and commands can be issued in the same way as for the ROM-based BASIC.

If you are familiar with the use of BASIC and intend to write your own program, you may need to be aware of the technical differences between the ROM-based BASIC and the disc-based BAS128. The key point is that this disc based version of BBC BASIC is loaded into the RAM area in which a user program would normally reside. The 64K area of additional "sideways" RAM is then made available for other user program.

The detailed differences between the two BASICs are as follows:

1. When using BAS128, the 64K of additional memory appears to be a continuous address space above the normal 64K address space of the computer. Thus addresses &000000 to &00FFFF refer to normal memory and addresses &010000 to &01FFFF refer to the 64K bytes of sideways RAM.
   PAGE defaults to &10000.
   HIMEM defaults to &20000
   Similarly, LOMEM and TOP are addressed in this way.

2. Indirection Operators.
   Statements such as DIM code 100 will assign a 17-bit value to "code". Indirection operators may then be used to read and write data into the area of memory reserved by the DIM statement; eg:

!code=27128, PRINT code?3 or $(code+27)="HELLO"

Indirection operators will address normal memory if the calculated pointer is in the range &000000 to &00FFFF and will address sideways RAM if the pointer is in the range &010000 to &01FFFF.

3. The Assembler.
   This will operate using O% and P% as 17-bit pointers.

   a) The Destination Pointer
      If the destination for the code is in the range &000000 to &00FFFF, then normal memory is referenced. Addresses from &01000 to &01FFFF refer to sideways RAM.

   b) The Program Counter
      The code produced is adjusted so that address references in the range &010000 to &01FFFF refer to sideways RAM addresses &008000 to &00BFFF. References from one bank of sideways RAM to another are trapped giving a BANK error eg:

      P%=&13F00 : [JSR &1CF34

      will give a BANK error.
      When compiling, any code generated over a bank boundary is trapped, resulting in a WRAP error. Thus, the maximum amount of code that can be generated at one time is 16Kbytes; eg:

      P%=&13FFC : [LDA #0 : TAY : SEC : SBC &70

      will give a WRAP error since execution cannot pass from one bank to the next directly

4. SHADOW mode will be forced on so that BAS128 can reside in RAM between &3000 and &8000. The remaining memory from OSHWM to &3000 may be used by BAS128 for workspace.

5. The LOAD, SAVE and CHAIN commands make use of the OSGBPB routine.

6. The following commands, which are available under BASIC IV are not implemented with BAS128:

   LIST IF
   EDIT
   EDIT IF

Along with these commands, the TIME$ pseudo variable is not available from BAS128. For detailed information on these commands, please refer to the Welcome Guide.

The CONVERT utility

It is sometimes the case that software, which works correctly on a BBC micro model B, will not work on a Master Series computer. the reason for this will usually be found in the way in which the software is written. Because of the need for extra space, or a non-standard operation, software authors may use areas of memory not normally provided for them. it may also be the case that the software relied on a specific hardware feature, peculiar to only one of the BBC Micro range.

The Convert utility can often help in such cases by intercepting certain types of routine known to be used in some software. Unfortunately it is not possible to trap all of these routines and it is inevitable that some software will still not work even when the convert utility is used.

This utility may be found in both the library on the Welcome disc and at the end of side two of the the Welcome cassette.

To use the utility from the Welcome disc, enter the following:

*MOUNT <DRIVE NUMBER>
CHAIN "CONVERT"

To use the utility from the Welcome cassette you should enter:

CHAIN "CONVERT"

Convert, which uses one of the 16K sideways RAM pages, will remain active until the machine is switched off.

ERRATA:

Please note that the program DBASE, as described on page 32 of the Welcome Guide, is NOT present on the Welcome cassette.

When using TIMPAINT, the R key replaces the CTRL TAB command for the purposes of clearing the screen.

On page 205 the phrase SHIFT+keypad 0 should read SHIFT+keypad 1.