PCWRITE – Transfer data between an IBM PC and the CT 1401

Operating Instructions

The PCWRITE system is intended to transfer data between the Computer History Museum's IBM 1401 "CT" system and the IBM Personal Computer (PC) also located in the CHM computer room. A typical use would be to take object files produced elsewhere by the ROPE assembly/simulator system, and punch the object decks.

1. **The PCWRITE System Components** (See Figures 1 & 2)

   1.1. A hardware "**Blue Box**", which electronically connects the CHM "CT" IBM 1401 Serial Port to the IBM PC Printer (Parallel) Port, allowing data transfer in either direction. This box was originally built by Buzz Bellefleur, the previous owner of the CT 1401, and is located within the CT 1401 CPU enclosure at the right side.

   1.2. A 1401 program known as **SERVER**. This program was written in 1401 Autocoder, runs on the CT IBM 1401, and communicates to the IBM 1401 serial port.

   1.3. An IBM Personal Computer (PC), located in the CHM 1401 Demonstration Room.

   1.4. A program known as **PCWRITE**, which runs on the IBM PC. This program was written in C Language, runs on the PC, and communicates via the PC Printer Port and the Blue Box to the SERVER program on the CT 1401. PCWRITE can perform several different types of data transfers between the PC and the 1401.

2. **Preparing your data on the IBM PC**

   2.1. The ROPE system is described elsewhere. It is a Web-based system for creating IBM 1401 Autocoder programs, assembling them, and testing them using a simulator.

   2.2. Files created by the ROPE system include IBM 1401 object programs in card-image format, Autocoder assembly listings in printable format, and tape object decks suitable for transmission to IBM 729 tape-load format.

   2.3. For typical use with the PCWRITE system, you should put your ROPE output files file on a USB thumb drive and bring it to the CHM IBM 1401 Demonstration Laboratory.

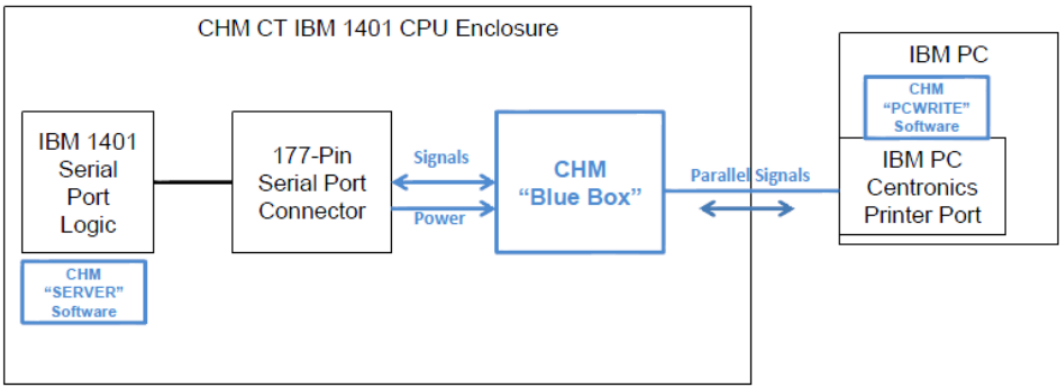

Figure 1: PCWRITE system components

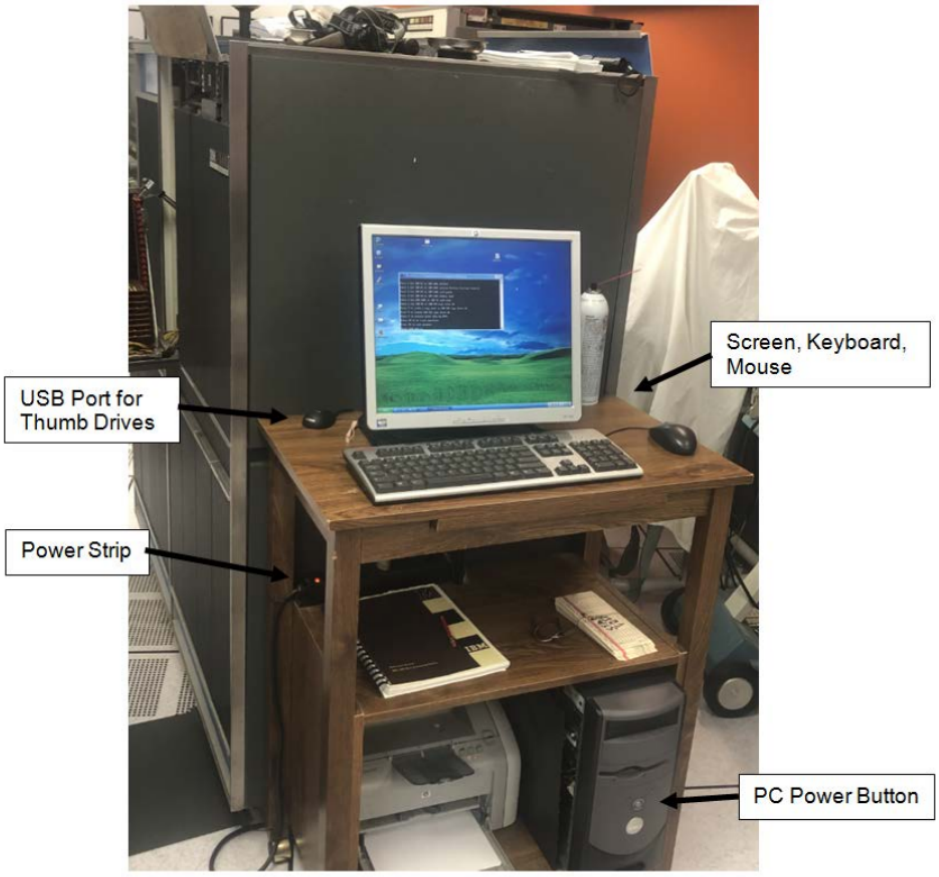

Figure 2: PCWRITE IBM PC Cart and CT 1401 CPU Enclosure

3. Starting SERVER pm the CT 1401

   3.1. Set the 1401 CPU Tape Control dial to "N" (Normal). The Blue Box hardware will not work correctly otherwise.

   3.2. Ready the 1403 Printer.

   3.3. If you intend to punch an object deck, ready the 1402 Punch and load it with blank cards.

   3.4. Load the SERVER program via the 1402 Reader, as for any 1401 program. The current version of this program is "**SERVER TEN.14**".

   3.5. The SERVER program will reach an initial HALT. The Red HALT light on the 1401 CPU front panel should be on.

   3.6. Press START on the 1401 console to continue execution of SERVER. SERVER will wait while you begin operations on the IBM PC with PCWRITE.

4. **Turning on the IBM PC and starting PCWRITE on the IBM PC** (See Figure 2)

   4.1. Turn on the power strip on the IBM PC cart. The light on the power strip should go on.

   4.2. Turn on the IBM PC by pressing the Power button in the center of the PC cabinet. The green Power light should go on.

   4.3. Wait for the PC screen to finish Windows XP power-up and display a screen of icons.

   4.4. Place your USB thumb drive containing your ROPE object deck into the USB port on the PC cart.

   4.5. Use the PC mouse to click on the icon named **PCWRITER.EXE**. This should display a black Windows Command-Line window, with the initial prompt as shown in Figure 3.

   4.6. Reply by typing the character "y". You do not need to press ENTER. The PC screen should now display the menu shown in Figure 4. There are a several useful functions that the PCWRITE program can perform, involving transfer of data between the IBM PC and the IBM 1401.

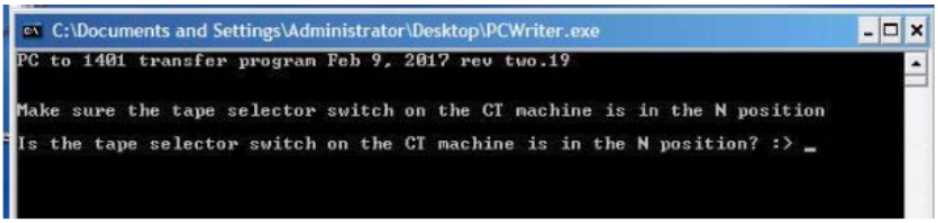

Figure 3: PCWRITE Prompt #1

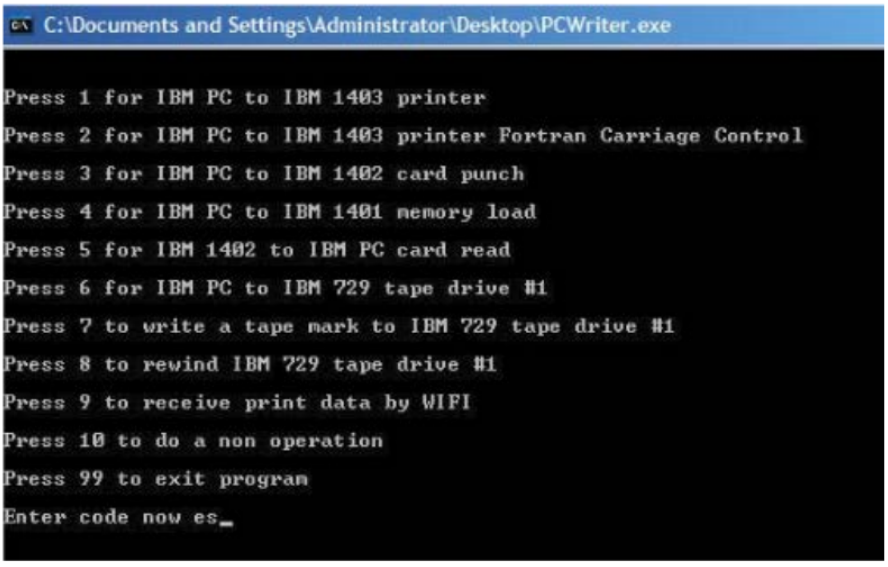

Figure 4: PCWRITE Prompt #2

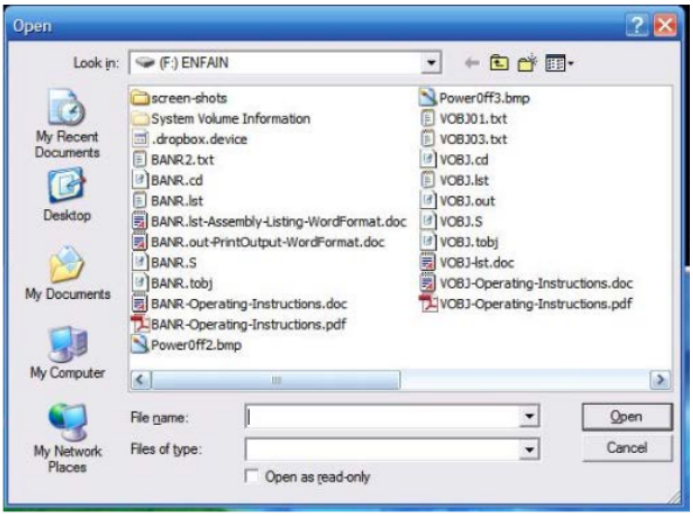

Figure 5: File Selection Prompt (Showing Thumb Drive)

5. PCWRITE Functions

5.1. Punch an Object Deck

5.1.1. To punch an object deck, type the digit "3" to prompt #2 (see Figure 4) and press ENTER. The screen should display a File Selection prompt as shown in Figure 5.

5.1.2. Using the PC keyboard and/or mouse, select your object deck on the PC. Usually you will select the USB device (Device "F:" on this system) and then your object file, named something like "F:MYPROG.cd".

5.1.3. The PCWRITE and SERVER programs should now begin punching your object deck on the 1402 Punch. When punching is complete, the IBM PC screen will return to the prompt shown in Figure 4. You can continue to use PCWRITE functions.

5.2. Other PCWRITE Functions

5.2.1. Other PCWRITE Functions shown in Figure 4 will be documented in the future. Some useful functions are:

5.2.1.1. Print a ROPE-created assembly listing on the IBM 1403 Printer. Option 2 ("Fortran Carriage Control") is probably best for ROPE Autocoder listings It interprets the character "1" in position 1 as "Skip to Top of Page and Print", and the character "0" as "Skip a Blank Line and Print".

5.2.1.2. Read a card deck on the 1402 Reader and transfer it to the Thumb Drive on the PC.

5.2.1.3. Transfer a ROPE-created tape-object file to a 729 Tape Drive for later tape-loading on the IBM 1401.

6. Turning off the IBM PC after use

6.1. If the PCWRITE prompt shown in Figure 4 is active, type “99” and press ENTER to exit the PCWRITE program.

6.2. Terminate Windows/XP politely

6.2.1. Using the mouse, left-click on the Windows/XT green START rectangle at the bottom left of the screen (see Figure 6). A prompt will be displayed (2). Left-click on “Turn Off Computer”. Another prompt will be displayed (3). Again, left-click on “Turn Off”. At this point the IBM PC should power off, and the green light at the center of the PC cabinet should turn off. The screen may display something indicating it has lost connection to the IBM PC computer.

6.2.2. Turn off the A/C power strip. The red light on the power strip should go off.

Figure 6: Terminating Windows XP and Powering off the IBM PC