The 6811 Wookie User's Manual

Submitted to: Dr. Barnicki

Submitted by: CS401 Group 2

    Kalle Anderson

    Jason Buttron

    Paul Clarke

    Matt Enwald

Date Submitted: Feb. 10, 1998

Introduction

The 6811 Wookie was created to help the Motorola assembly programmer debug and test programs more easily and convenient. Because the 6811 Wookie runs without any external hardware, the programmer has no external dependencies or hardware connection problems.

This manual describes the basic operation of the 6811 Wookie user interface. More detailed help can be found in the on-line help for the 6811 Wookie application.

LOADING AN S19 FILE

Click on File and Load .s19 file to open the Microsoft Windows Open common dialog box. The default file type is S19, but the .LST file must also be present in the same directory as the S19 file you want to load.

When an S19 file is selected, the LST file will be loaded into the code view below the main dialog. The Set HC11 Mode window also appears. One of the following choices must be selected: Briefcase, Rug Warrior Bootstrap, or Rug Warrior Expanded. The start address is the start value for the program counter. The default value in this window comes from the ORG statement in the .LST file.

CLOSING THE S19 FILE

To close the S19 file, select Close from the File menu. This will clear the .LST file from the code viewing area. This will not erase the program that is loaded in memory, and the program may still be executed.

EXECUTING THE PROGRAM

The current line that the program counter points to is always highlighted in the .LST file view. The HC11 can be executed in two different ways, stepping and running at full speed.

Running a Program at Full Speed

To run the HC11 at full speed, click the red light button in the main interface. The light will turn green and the 6811 Wookie will be running (at about _ speed of the real HC11 microprocessor). Click the button again to stop the simulator. The current line of code that the program counter is on will be highlighted in the LST view. Other ways to start and stop the simulator are by pressing the G key or under Simulator and Simulator Start/Stop from the menu.

Setting Break Points

To set a break point in the LST file so that the simulator will stop when the program counter reaches the break point address, simply enter the value for the break point in the break point text box in the main interface. The value should be in hex to match the value of the address in the second column of the LST file. This tool is very helpful if the break point is set inside an interrupt.

Stepping Through a Program

To step the program counter through the code one instruction at a time, either click the walking man button under the light button in the main interface, press the space bar, or select Simulator and Simulator step under the menu. The highlighted line in the LST view will be automatically updated for each step.

CPU Registers

The CPU registers of the 6811 Wookie are accumulator A (ACCA), accumulator B (ACCB), accumulator D (ACCD), index register X (IX), index register Y (IY), stack pointer (SP), program counter (PC) and condition code register (CCR).

Viewing the CPU Registers

To view the accumulators and micro controller unit registers, click on the MCU button in the main interface. A pop-up window containing the ACCA, ACCB, ACCD, IX, IY, SP, PC, and the CCR is displayed. Notice that all the other functions can still be performed from the tool bar or main interface while this window is open. The values for the registers are updated when the simulator is stepped or stopped.

Modifying the CPU Registers

To change the value of a register, first click on its name so that its highlighted. Then click on the Modify button in the MCU window. Select the proper base and enter the new value in the text box. Notice that when a new base is selected, the value in the text box is automatically converted to the new base. Click OK when finished.

Memory

The memory map of the 6811 Wookie has a range of any address from $0000 to $FFFF. The following section describes the various ways to view and modify memory locations.

Viewing Memory

To view or set the contents of memory, click on the Memory button in the main interface. The dialog window that is displayed will allow both view and modify operations. If the Display Memory radio button is selected, then the memory starting at the start address (base determined by the numeric base) is displayed in the memory text box. The number of bytes determines how many bytes after the start address are displayed in the Memory text box.

Setting any memory

If the Set Memory radio button is selected in the Memory window, then the memory starting at the start address is set to the first byte of memory in the Memory text box. The value in the Number of Bytes text box determines how many succeeding bytes after the start address are also set to the first byte of the memory in the Memory text box.

Adding a Memory Watch

Click on the Memory Watch button in the main interface. The Memory watch pop-up dialog will appear, and can be left open while other commands are executed, such as step or run. To add a memory watch, click the Add button in the Memory Watch window. Add the name of your variable and the address in hex. Its name, address and contents will be displayed in the Memory Watch window upon clicking OK. To change the value of any variable in the memory watch, click on the name of the variable so that its name is highlighted, and click on the Modify button. The following window will display the current value of the variable in its text box in the base corresponding to its Memory Watch base. Select the proper base and enter the new value. Notice that the number in the text box will automatically be converted when a new base is selected. Click OK to change the value of the variable to the contents of the text box.

Notes on Memory Watches

The only time the values of the variables are updated is when the simulator is stopped or stepped. To update the values while the simulator is running, click on the Update button. To delete a memory watch from the display, click on the name of the variable and then click the Delete button. To toggle the base of the value of all the variables among hex, decimal and binary, click the Base button.

Adding all the FCB and RMB variables to the memory watch

To automatically add all the FCB or RMB variables in the LST file to the Memory Watch, Click Tools and Add Rmb watches from the menu. The Memory Watch window must be open to perform this function.

REGISTERS

To view the values of the registers in memory (from $1000 to $103F) click the Registers button. The Register Watch window has the same functionality as the Memory Watch window. The functions are the same as the Memory Watch window, except the Add and Delete buttons are not available. All the registers are already displayed. If other addresses need to be added to the list, use the Memory Watch window.

PORTS

The following section describes how to view and change the state of any of the I/O Ports.

Viewing the State of a Port

To view a port, click on the corresponding Port button in the main interface area. For example, to display the state of Port A, click on the Port A button. The Port A window will appear with eight LEDs and its hex value. A bright red LED indicates a high state on the pin, and conversely a dark LED represents a low state on the pin.

This Port window is a pop-up dialog window, so other functions can be executed while the window remains open. The state will automatically be updated during both the simulator step and simulator run functions.

Notice

If the LED is desired to be active on a low signal, pressing the Activate Low button will reverse the lighting of the LEDs. Inversely, if the LEDs are active low and they are desired to be active on a high signal, press the Active High button to reverse the lighting of the LEDs.

Toggling the State of a Pin

To toggle the state of a pin, click on its LED and the value will automatically change. This can be done whether the simulator is running or stopped.