

Simulating Data Input and Output

The following procedures demonstrate how to simulate a stream (simple I/O). This information applies to all DSP families.

Note: An example program for an ADSP-218x DSP is used to demonstrate the setup.

ADSP-218x Example Program

The following procedures are based on Example2 included with the VisualDSP++ software in the installation's \218x\Examples directory.

The example program is a talk-thru program. The DSP receives a value in SPORT1 and then transmits it through SPORT1. The main part of the program is an infinite loop that waits for a SPORT1 receive interrupt. The interrupt service routine performs all data processing. (In this example, transferring data from the SPORT receive register to the SPORT transmit register.)

Suggestion: Open and view the associated registers when you run the example program or your own I/O simulation.

For simulation purposes, an input file (serin.dat) provides the input for the serial port. VisualDSP++ creates an output file (serout.dat) to store the SPORT output.

Before you begin, open an editor window to create the serin.dat file. Enter several 8-bit numbers, for example:

```
01010001
11110000
00001010
```

Once this data file has been saved and closed, you are ready to configure the streams.

Before Configuring the Stream

Complete the following steps.

1. Assemble and link the code to create an executable file.
2. Select a new session with an **ADSP-2181** target.
3. Load the executable.
4. From the **Debug** menu, choose **Restart** to simulate code boot-up.
5. From the **Settings** menu, choose **Streams**.

The **Streams** dialog box appears.

6. Click **Add**.

The **Add New Stream** dialog box appears.

Configuring the Output Stream

Configure the output stream as follows.

1. Under **Source**, select **Debug target** and set **Device** to **Sport 1**.

Note: To configure a stream for a multiprocessor system, select the processor in **Processor**.

2. Under **Destination**, select **File** and enter the file associated with SPORT1 (**serout.dat**, in this example).

This file captures the data.

3. In **Format**, select **Binary**.

4. Optionally, clear **Rewind on reset or restart**. By default, this option is selected, allowing a

regression test to use one file to continue testing. Clearing this option does not rewind the file pointer to the start of the file.

5. Click **Connect**.

The output stream is now configured.

Configuring the Input Stream

Configure the input stream as follows.

1. Under **Source**, click **File** and browse to select **serin.dat** in the following directory:
 \Examples\Example2
2. Set **Format** to **Binary**.
3. Optionally, clear **Rewind on reset or restart**. By default, this option is selected, allowing a regression test to use one file to continue testing. Clearing this option does not rewind the file pointer to the start of the file.
4. Under **Destination**, set **Debug target** to **Sport 1**.

The input stream is now configured.

5. Click **OK**.

The **Streams** dialog appears, and the configured stream displays in the **Active streams** list.

6. Click **OK**.

The **Streams** dialog box closes.

Running the Streams Program

The following procedure sets up an RFS1 interrupt to occur every 200 cycles.

To run the program

1. From the **Settings** menu, choose **Interrupts**.

The **Interrupt Timing** dialog box appears.

Use this dialog box to instruct the target to generate one or more interrupts. The first interrupt is generated after **Offset cycles (Delay)** instruction cycles. When **Min cycles** equals **Max cycles**, the signal is subsequently generated every **Min cycles**. Otherwise, the signal is generated at a random interval between **Min cycles** and **Max cycles**.

2. In **External interrupts**, select **RFS1**.
3. For the **Min cycles** and **Max cycles**, enter **200**.
4. Run the program.

After a few seconds, an error message (similar to the following) indicates that the end of the file has been reached.

```
Encountered end of file:  
FILE (C:\Program Files\Analog Devices\VisualDSP  
\218x\Examples\Example2\Serin.dat, Binary)  
Error in reading from stream for SPORT1.
```

5. Check the contents of the output file to determine whether the talk-thru simulation executed properly.

The values in serout.dat and serin.dat should agree.

See Also

[Hardware simulation](#)