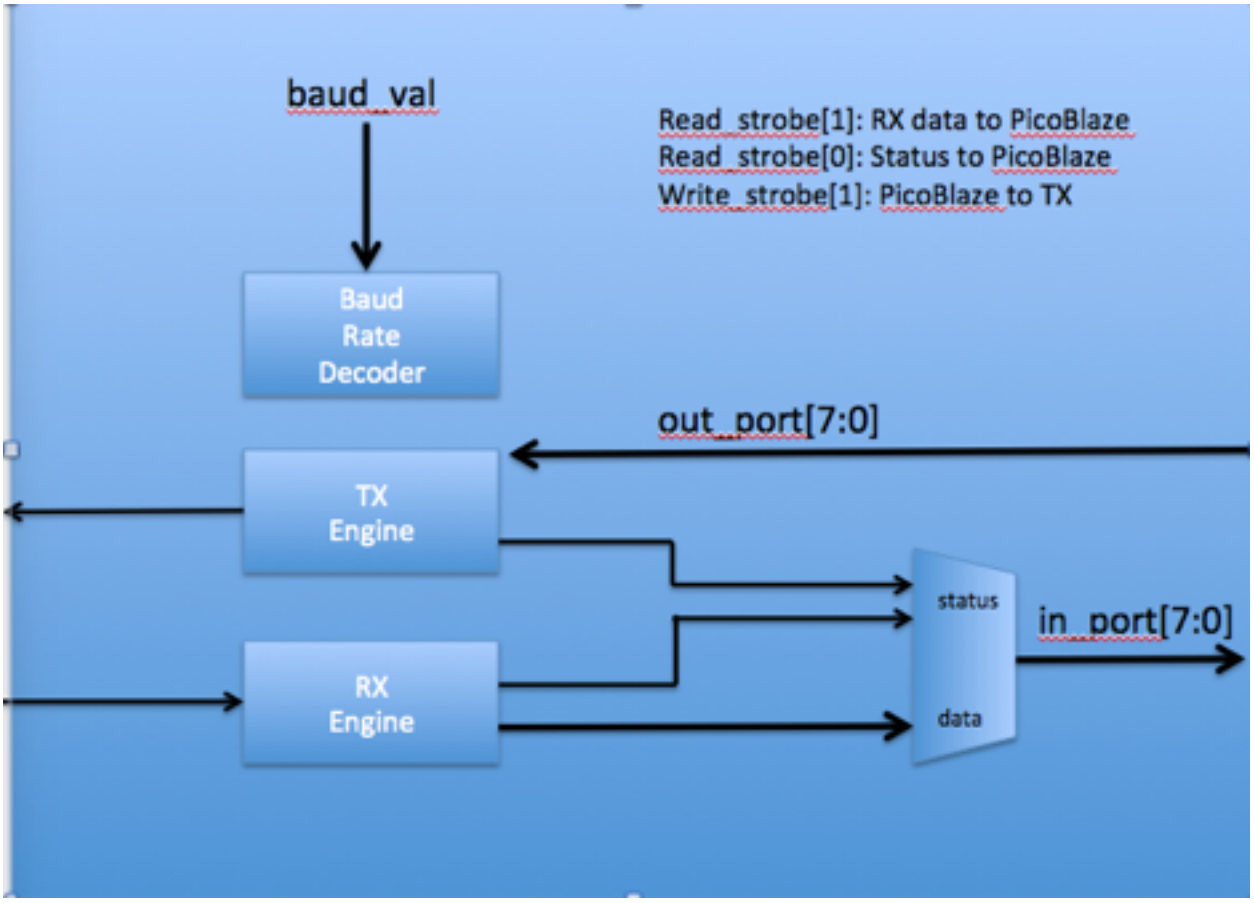
CECS460 Project Four
Full UART

This project will utilize the work done to produce the transmit engine and will complete the design of the UART. The PicoBlaze will be programmed to service the UART.

BLOCK DIAGRAM

The TX and RX engines should be capable of transmitting and receiving at the same time - this is referred to as FULL DUPLEX. This will restrict the sharing of logic between the two engines. The intention is that the TX engine be left alone (small changes may be needed for status).



SOFTWARE

The software should service the RX engine. Coming out of reset the PicoBlaze should transmit a prompt to the screen. Whenever a byte is successfully received by the RX engine the PicoBlaze will read the byte. If it is a back space (0x08) there should be a destructive delete (as long as there are characters to delete). When the PicoBlaze receives a CR or LF it should respond with a newline and a prompt. An asterisk '*' should cause the UART to respond with your home town. Every other printable ASCII character should be echoed.

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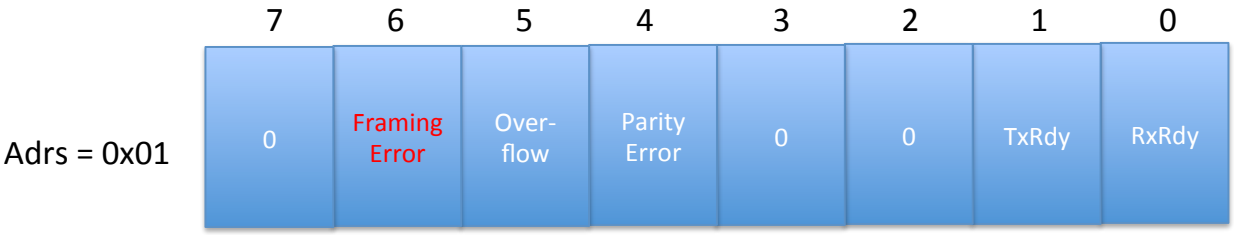
STATUS



The status register should have the following format:

Anytime the status register is read the Overflow, Parity Error, (and extra credit Framing Error) should be cleared. TxRdy should be cleared when the PicoBlaze writes a byte to the transmit engine. The RxRdy should be cleared when the PicoBlaze reads a byte from the receive engine.

0x00

SOFTWARE

The software should start up by displaying a banner and then a prompt. When the user types data the UART should echo all printable ASCII characters. If a CR or LF is received then a CR-LF PROMPT should be sent. If a BS is received then a destructive delete should be performed. Make sure you do not erase your prompt.

The full UART is due November 19.