York University

Dept. of Computer Science and Engineering

Digital Logic Design

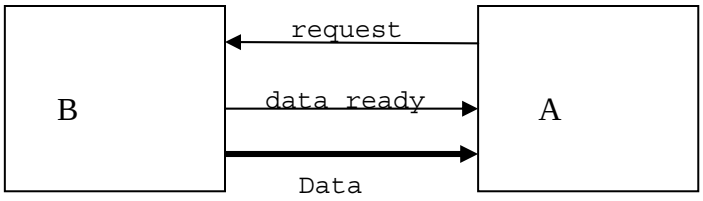
CSE3201

Lab 8

In this lab, you will design a simple system that uses handshaking protocol to transmit data between 2 devices.

Handshaking protocol

Handshaking is used to transmit/receive data between devices or circuits especially when they are running at different speeds. Usually it is implemented as device A signaling its intention to receive data by raising a `request` signal as shown in the figure below. Device B sees the request; it provides the data on the data line and raises a `data_ready` signal. Device A sees the `data_ready` signal, it knows the data are on the data lines, reads them and store them in a register. Then it lowers its `request` signal. Device B lowers its `data_ready` signal, and the exchange is complete.



Problem

In this lab, you will use the modules you built in the previous labs to implement a simple adder.
The inputs will be supplied using positional switches using handshake. The request is indicated by the adder at start time, and after it it reads an input
. The request is indicated by turning ON one of the LEDs. The user (device B above or you in the lab) responds by entering the data on the positional switches and then pushing

one of the push-button switches as a data ready signal. The adder reads the first operand. The same thing is repeated to enter the second operand, and then the result is displayed on the 7-segment display.

- The inputs are two numbers from 0-9 (binary) and the output is a two digit number.
- A reset signal resets the adder at any time and clears the display

Preparatory Work

The state diagram, the protocol, and the Verilog code.

In the lab

Demo the adder to your TA