EE 352

Homework #4

Due September 28, 2001

Draw a schematic for your bi-directional parallel port:

Bi–Directional Parallel Port

Use an Altera EPM7128 for your circuit. Show how to connect the pins of the EPM7128 to the 8-bit ISA bus and the 25-pin parallel port connector. Use the following pinout for the parallel port connector (your port will connect to the side labeled TEST):

```
    STANDARD                        TEST
STB  C0   o————————1————————o  S6   ACK
     D0   o————————2————————o  D0
     D1   o————————3————————o  D1
     D2   o————————4————————o  D2
     D3   o————————5————————o  D3
     D4   o————————6————————o  D4
     D5   o————————7————————o  D5
     D6   o————————8————————o  D6
     D7   o————————9————————o  D7
ACK  S6   o———————10————————o  C0   STB
BSY  S7   o———————11————————o  C2   INI
PAP  S5   o———————12————————o  C1   ALF
ONOF S4   o———————13————————o  C3   DSL
ALF  C1   o———————14————————o  S5   PAP
ERR  S3   o———————15————————o  S3   ERR
INI  C2   o———————16————————o  S7   BSY
DSL  C3   o———————17————————o  S4   ONOF
     GND  o———————18————————o  GND
     GND  o———————19————————o  GND
     GND  o———————20————————o  GND
     GND  o———————21————————o  GND
     GND  o———————22————————o  GND
     GND  o———————23————————o  GND
     GND  o———————24————————o  GND
     GND  o———————25————————o  GND
```

The following is not due next week, but you need to start thinking about it:

Start working on a program to transfer data from a PC with a regular parallel port to a PC using your bi-directional parallel port (with the data lines set up for input). Use a handshaking scheme like the one below:
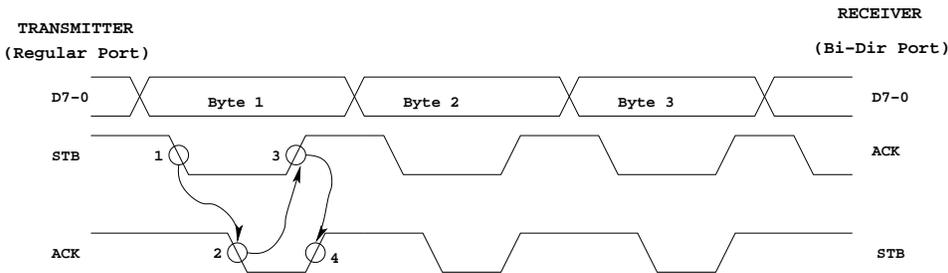

```
1:  After putting new data on data lines, transmitter brings its STB low

2:  Receiver sees its ACK go low.  It reads data and brings its STB low

3:  Transmitter sees its ACK go high.  It brings its STB back high

4:  Receiver sees its ACK go high.  It brings its STB high.

When transmitter sees its ACK go high handshake is complete, and transmitter
can send next byte.
```

You will have two programs: one running on the sending PC and one running on the receiving PC. You should start the program on the receiving PC, connect the cable, then start the program on the sending PC. The program on the sending PC should take a file name you specify, and send that file to the receiving PC. The program on the receiving PC should save the file from the sender with the same name.