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CS 5780

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Lab 5 – Pre Lab Assignment

1. Describe two differences between I2C master and slave devices?

I2C Master Devices initiate communication with slave devices, and it selects a specific slave by sending its address to the bus. I2C Slave devices each have their own unique hardware I2C address, and they can respond to a master device when requested, but can’t start a new transaction on their own.

1. What are the two connections in an I2C bus? Describe their purpose.

There are two signal lines the SDA and the SCL. The SCL is where a master device produces clock transitions. The slave device uses this clock signal for both receiving and transmitting data. The SDA, serial data line is shared by both the master and slave where they both produce data on the line.

1. What is the difference between open-drain and push-pull outputs?

Push-Pull Outputs have more than one transistor that allows the device to push the output line “high” as well as pulling it “low” by connecting to ground. Open-Drain Outputs only have a single transistor and can only pull the output to a low state.

1. What is the purpose of the I2C restart condition?

Its purpose is to allow issuing a new start condition without ending the previous transaction.

1. What peripheral register would you use to set the read/write direction of the next I2C transaction?

You would use the RD\_WRN register.

1. The 10-bit SADD bit-field holds the slave device address. Since standard I2C addresses only use 7 bits, to which bits in the bit-field would you write the shorter address?

They are written in the CR2 register. And since the 7 bits are written in the center of the bit field, the shorter address will be written toward the higher end of the register.

1. Name one thing you found confusing or unclear in the lab.

I would say the SADD fields and how to correctly handle the 10-bit field address vs the 7 bit I2C addresses was the most confusing part for me.