

Describe two differences between I2C master and slave devices?

The master device initiates the communication to the slave devices as slaves can't initiate a communication on their own. Slave devices have a unique hardware address.

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

SDA (data) and SCL (clock) are the two connections on an I2C bus. The data line is the line where the data transmitted goes through as well as the device addresses. The clock line synchronizes all of the devices together.

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

Open drain means that you only have a transistor to pull the line low. It is pulled up by a resistor connected to the supply voltage. Push pull means that both the supply and ground are connected to a bus line with a transistor which means you can control both. This is a bit more risky as there is a path to short the supply to ground if a mistake happens.

What is the purpose of the I2C restart condition?

The purpose of the restart condition is for a specific case. When a master wants to write and read in sequence. The restart condition ensures that another device can't initiate a new transaction because the master will need to reset the R/W bit and can only do that with a new transaction.

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

You would use the Control Register 2 (I2C_CR2) in the I2C peripheral and set the RD_WRN bit.

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?

You would use the bits [7:1] in the SADD for a 7 bit address and [9:0] for a 10 bit address.

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

One thing that was unclear was if multiple masters can communicate to one another if they are on the same bus as they are normally connected to a slave device that can't initiate a communication.