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CS350

Milestone Two: Lab Questions

1. Why do both the SerialTest-Write.py and SerialLightControl-Client.py scripts use the encode()

method of the string datatype when writing data to the serial port?

The encode() method is used to convert a string into a byte representation before sending it over the serial port, since the serial communication protocol works with byte data, not strings. This is commonly accomplished using the UTF-8 encoding.

2. Why does the SerialTest-Read.py script use the decode() method of the string datatype when

reading the data from the serial port?

The decode() method is used to convert the data from bytes back to strings, basically it reverses the encode() process. This is done because the data is received in byte form from the serial port, but it needs to be converted to a string to be used in further string operations, and so humans can read the information.

3. What is the purpose of the try/except block in both the SerialLightControl-Client.py script and

the SerialLightControl-Server.py script?

The tr/except block is mainly utilized for error handling, therefore allowing the program to anticipate potential errors and handle them accordingly without crashing the program. Also, the block will allow the program to continue operating and exit smoothly when the user is finished. Specifically, in the “SerialLightControl-Client.py” the block handles errors that occur during communication with the serial port. Similarly, in the “SerialLightControl-Server.py” the block helps catch errors within the main loop.

4. Why is it necessary to make sure that the GPIO pins are always returned to their original state at the end of program run?

It is necessary to make sure the GPIO pins are returned to their original state so they do not leave the hardware in a harmful state. For example, if the pins stay “On’ there could be power going even if it appears off, and this could cause harm to the machine or a user. Otherwise, leaving the pins in an undefined state could affect the stability and functionality of the overall system, including making troubleshooting harder in the future.