**MySQL Workflow Theory**

There are steps that are recommended before the data import.

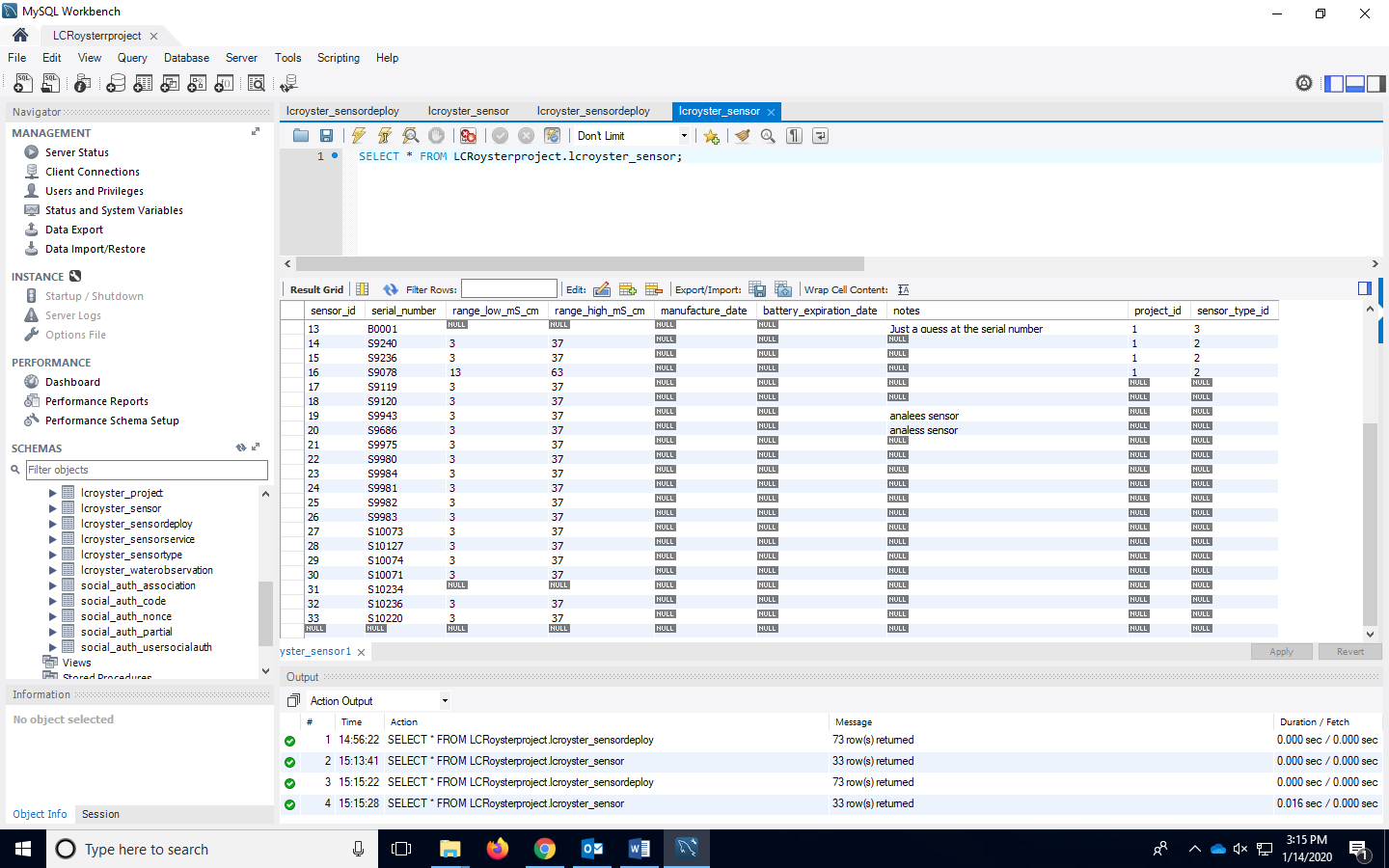
Pre-steps

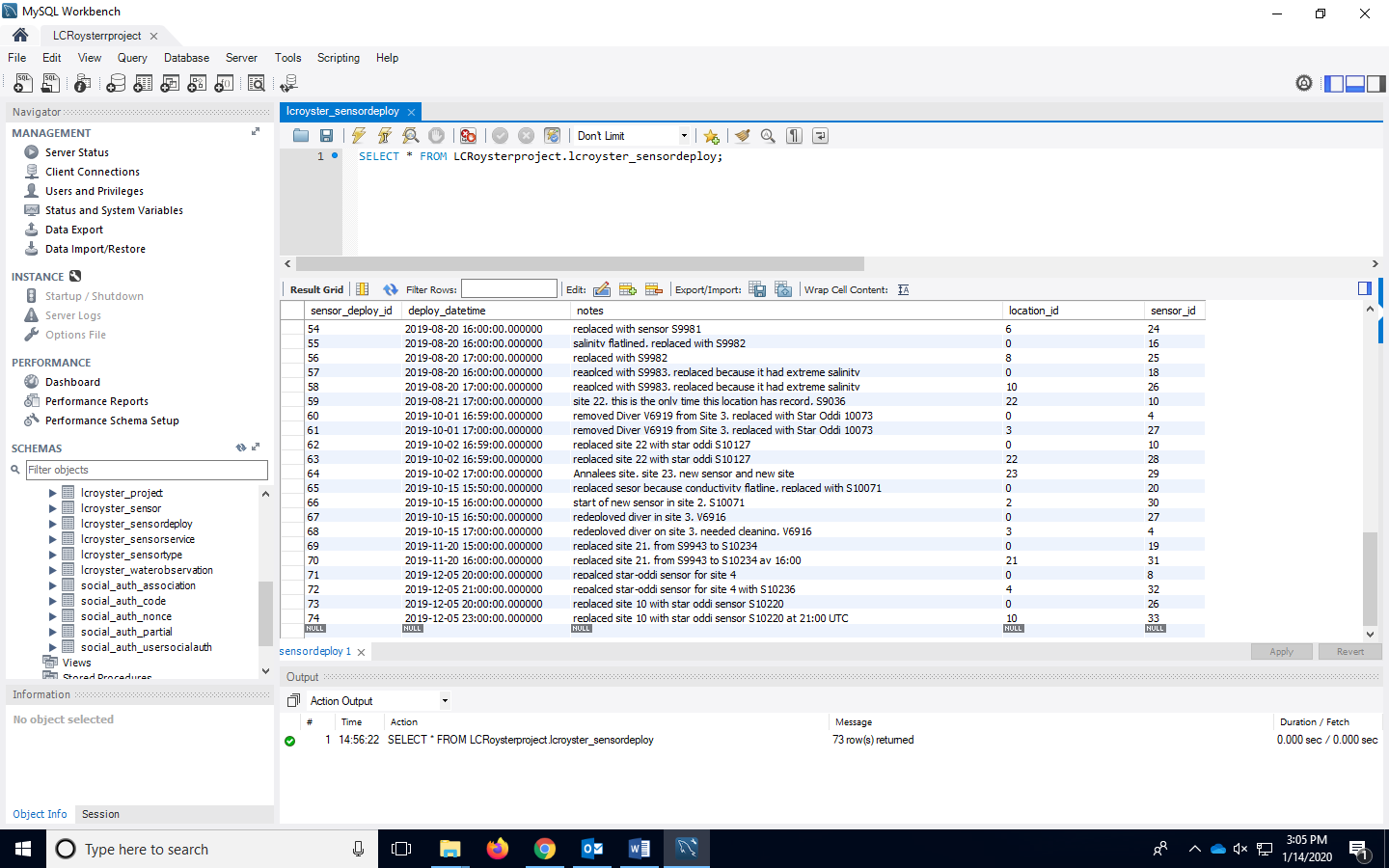
1. Enter the latest water quality service information into the service\_log.xlsx file located in:

T:\Oyster Project\oyster\_project2\project\_task\_working\t7\_data\_management\wq

* Find the scanned data sheets here: T:\Oyster Project\oyster\_project2\project\_task\_working\t7\_data\_management\wq\data\wq\_datasheet
* Enter in the information from the scanned data sheets into the service log including, date, times, observation count, and most importantly the sensor serial numbers.

2. Noticing which sensors are in what location is the main goal of entering in the data of the service log. If a sensor is exchanged or taken out from the field, the MySQL databases needs to have those changes before the import process.

* Take note of which location the sensor is located, what is the old serial number of the sensor, and what is the new sensor serial number.
* The MySQL database has a “check-in” and “check-out” procedure for updating sensors.
* All sensor serial numbers need to be entered prior to any “check-in” or “check-out” procedure. Enter all new sensor serial numbers the table **lcroyster\_sensor**. Add all applicable information. Include an “S” for Star-Oddi serial numbers.
* The **lcroyster\_sensordeploy** table is the table to edit which sensors are in which site location.
  + Make sure to check out the sensor by adding the date and time what the sensor should be “checked-out” and make the location\_id to 0. Make sure to save every time a new MySQL line is created and completed. Add a new line with the date and time that the new/replacement sensor should be active. This time can be in the future.

**SENSOR UPDATES NEED TO BE COMPLETED PRIOR TO IMPORT.**

**Continuous Data Import Steps:**

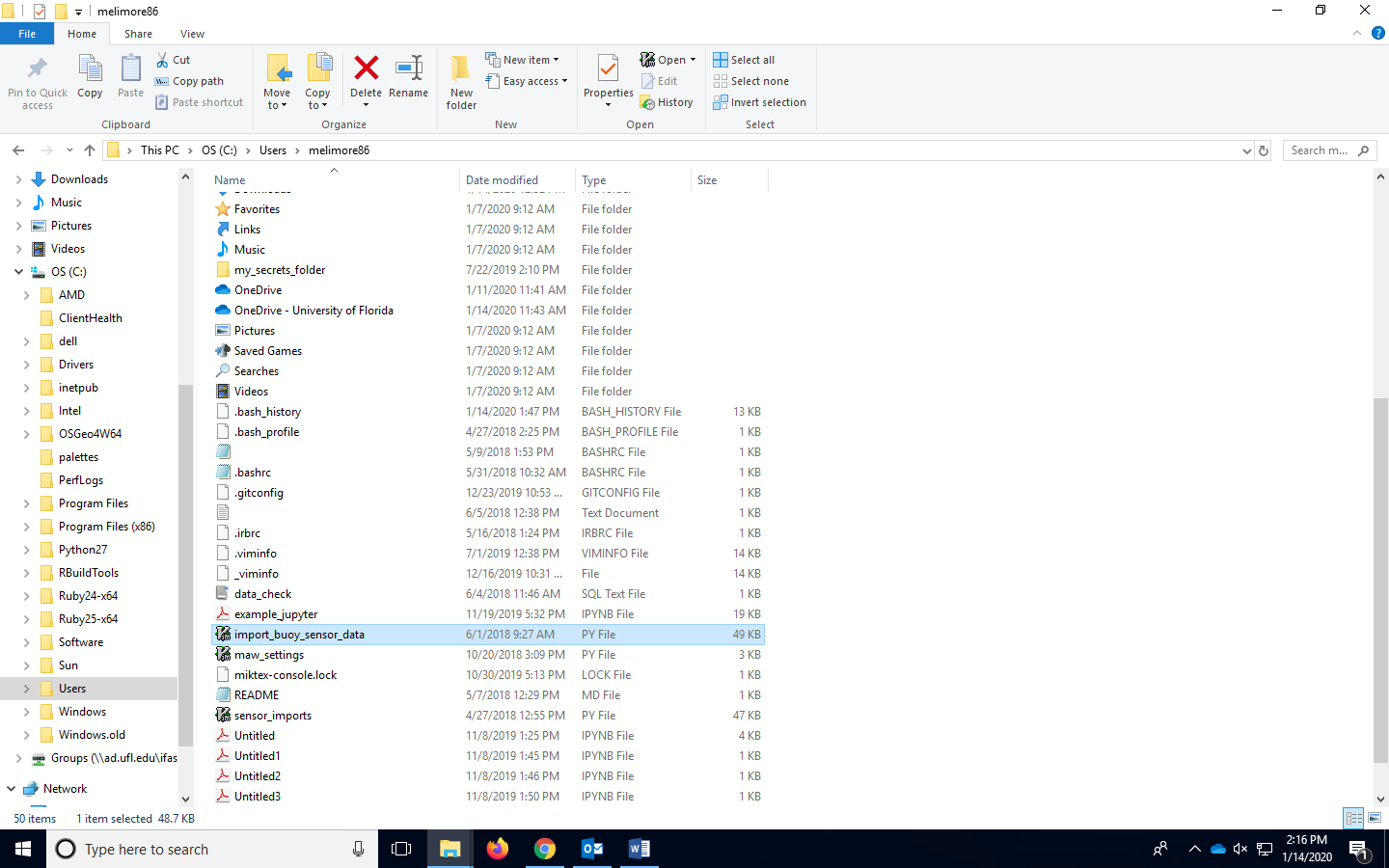
Location of data files:

T:\Oyster Project\oyster\_project2\project\_task\_working\t7\_data\_management\wq

1. Verify all files are complete and correct in the **new\_data** folder.

* You can verify that all of the files are complete, by clicking on each file, and checking the data contents inside. The contents should have variable observations.
* You can also verify that the names of the data files are correctly named.
  + 20200103\_wq10\_star <- this should be the format of the name of the file
  + Be aware the .star and .dat files will import differently, so the last prefix will need to be the name of type of sensor file
  + \_diver are files from the Diver sensor (.mon)
  + \_star are files from the Star- Oddi Sensor (.dat)

2. Navigate to the folder where your *import\_buoy\_sensor\_data.py* and my\_secrets\_folder are located.



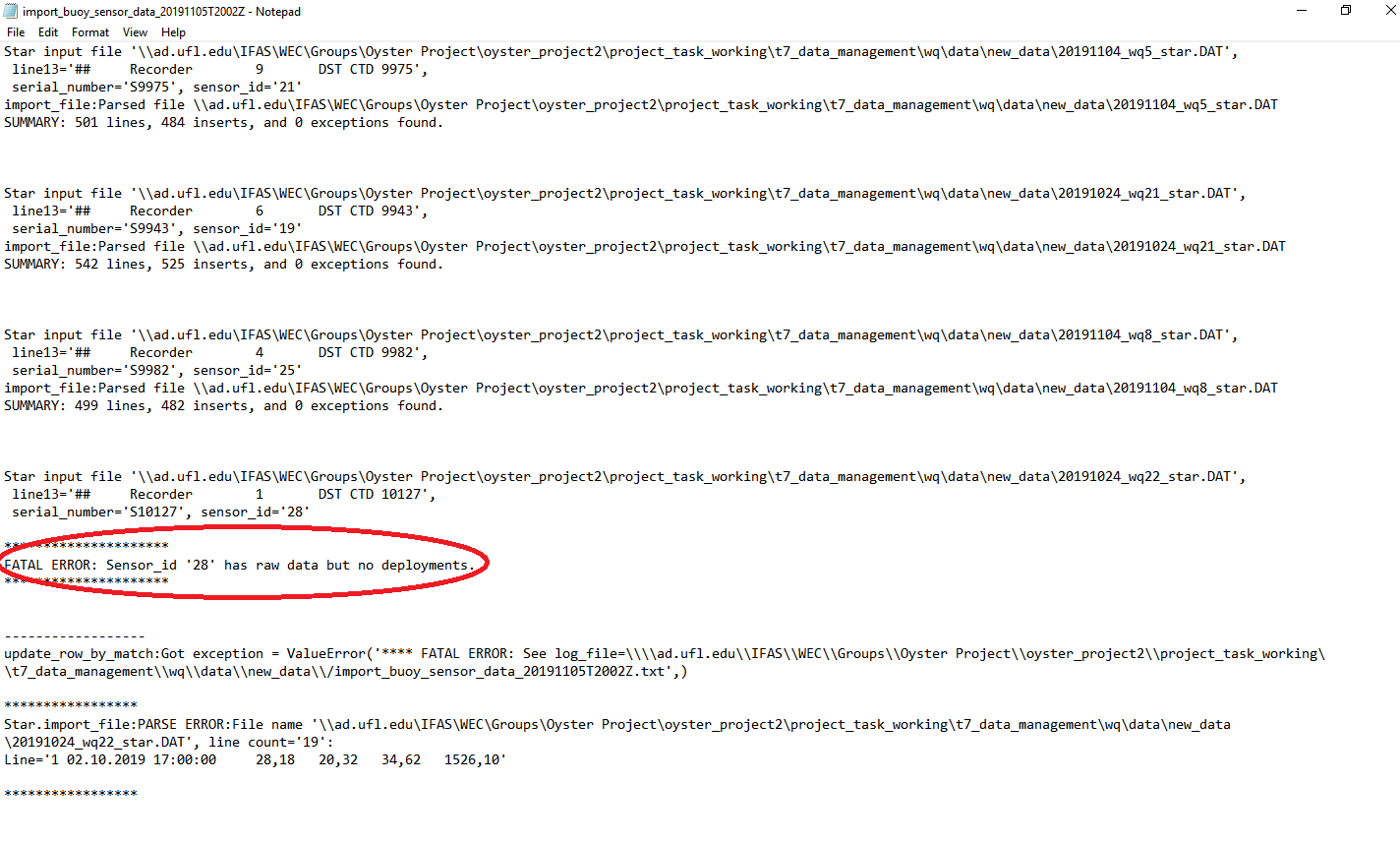
3. Right click to your Git Bash terminal. The code for the import process is

*python import\_buoy\_sensor\_data.py*

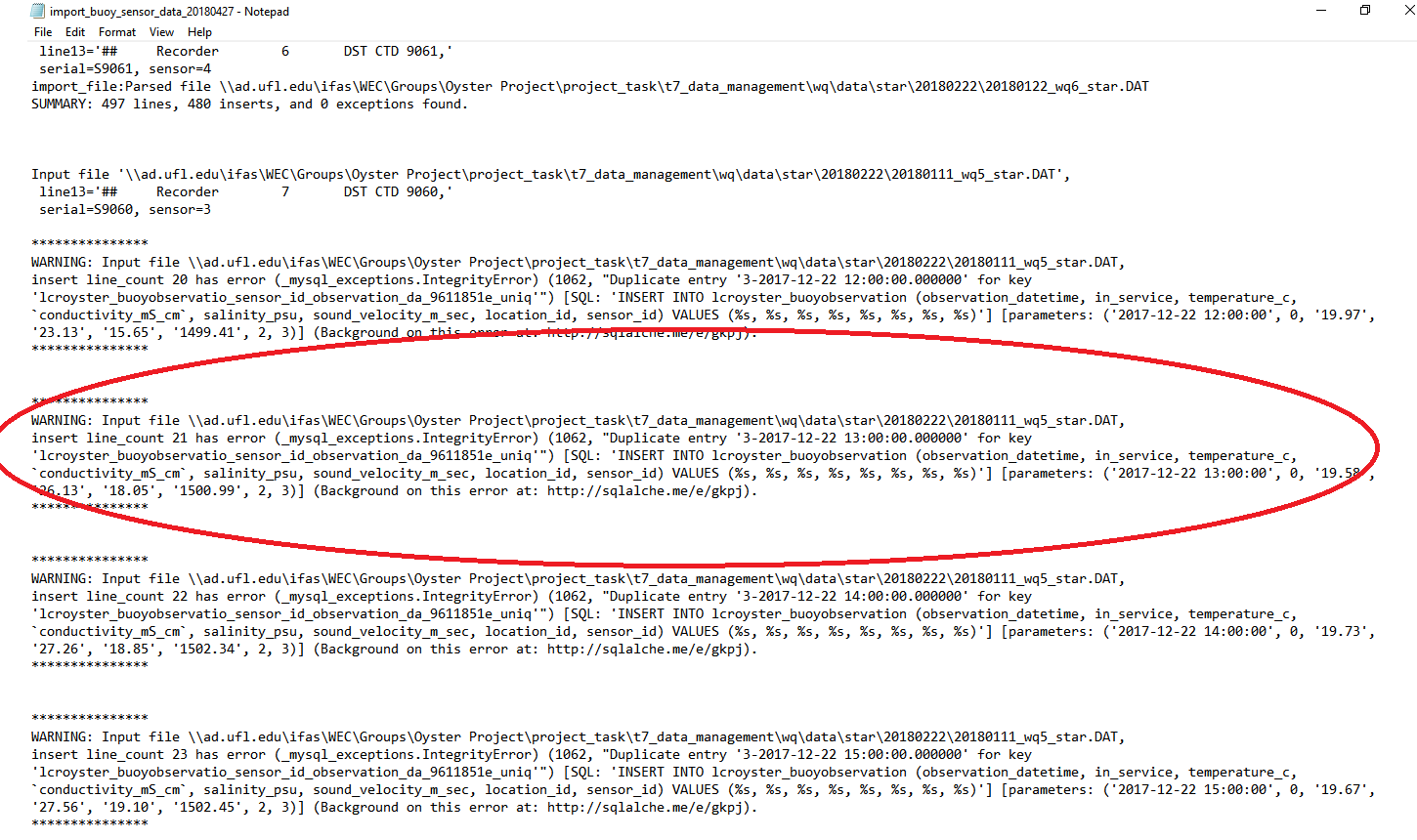
An import process should start and each file will end in a result. An import report will also appear in the **new\_data** folder, where

4. Move the newly imported files into the **imported\_data** folder.

5. Double check the python import file that will appear after the import completion, in the **new\_data** folder.

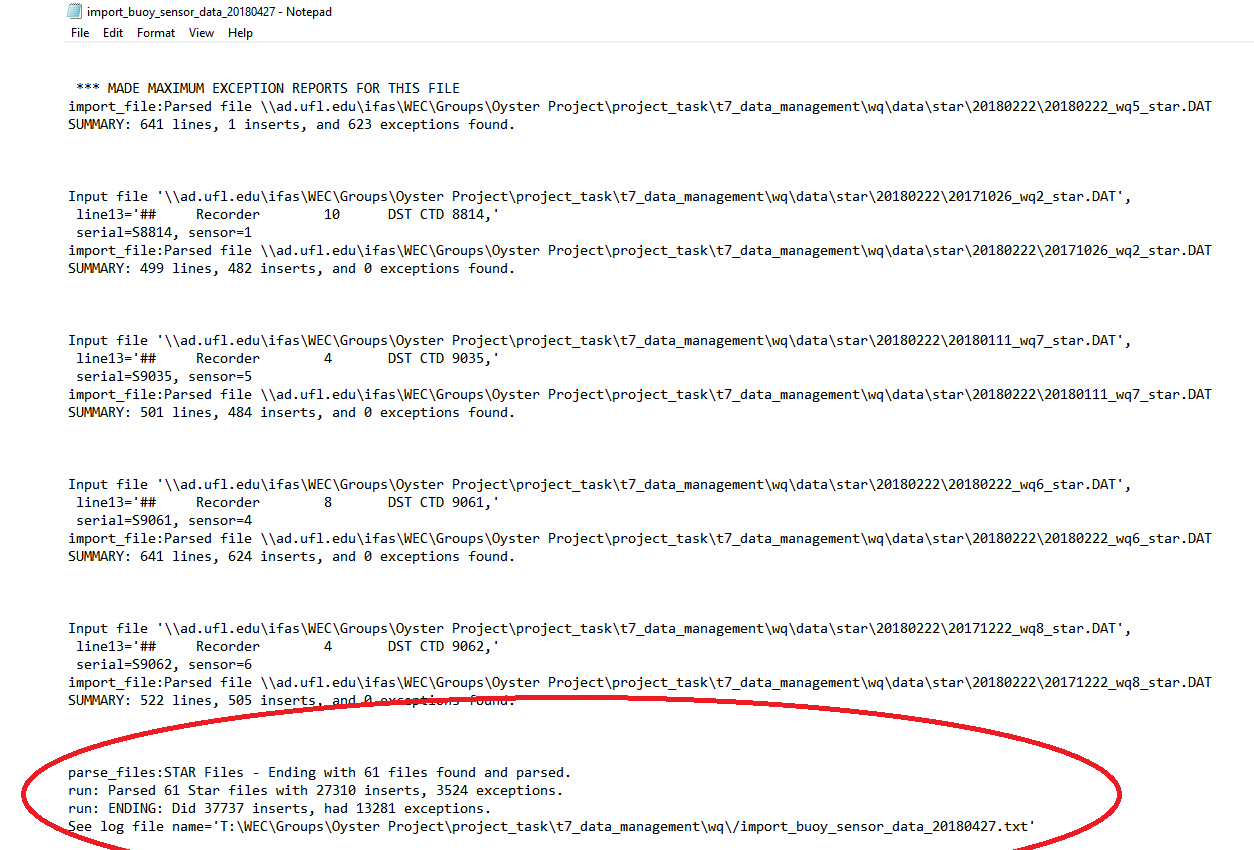
Look for warnings or errors. Some examples are below:

Screen shot- This screen shot displays that a sensor ID was not properly allocated to a site. Each sensor will have its own sensor \_id that is numerical. Double check the MySQL tables: **lcroyster\_sensnor** and **lcroyster\_sensordeploy**.



Screen shot- The WARNING in this import log might arise if the data file has been incorrectly name, if the file has also been imported, if the file has no observations, or if the sensor for the file is not added into the MySQL **lcroyster\_sensor** table.

Check the import log file for additional information about the import.



Screen shot- Double check with your service log to make sure all of the observations are imported. This information can be found at the end of the import log.

**Discrete date data entry**

There are two types of discrete data, Lakewatch, and YSI measurements. Lakewatch measurements usually are processed and updated about every 3 months. YSI, on the other hand, are collected on every water quality service trip. YSI measurements need to be manually entered into the MySQL database.

1. The table to enter the discrete measurements is the MySQL **lcroyster\_waterobservation** table. This table will have far fewer observations than the **lcroyster\_buoyobservation** table.

2. Enter in the information according to the fields specified. With every few cells that are completed, click the Apply button (button right). If you don’t frequently save with the Apply button, you might incorrectly type in the wrong fields and MySQL will not allow you to save. In the sensor\_id column:

5= YSI

4= Lakewatch

The **lcroyster\_sensortype** table displays all of the sensor types including YSI and Lakewatch.

The time of the YSI and Lakewatch to be entered in the column **observation\_datetime** is the time in the water quality service data sheet. Double check that all of the dates and times are entered in the following format.

YYYY-MM-DD HH:MM:SS.000000

Note: There is no completion report when all of the observations are entered. There is also no way for a user to revert back to a previous MySQL.

To revert back to a previous’ s day MySQL, contact the UF IT help desk:

Help Desk support is available in person (check their hours here) and 24/7 via phone (352-392-HELP/4357) and email (helpdesk@ufl.edu), <http://helpdesk.ufl.edu/>.

Most commonly used tables:

* lcroyster\_buoyobservation – continuous sensor observations (import using python)
* lcroyster\_location- the information for the physical locations of where sensors could be found
* lcroyster\_sensor – information pertaining to each sensor
* lcroyster\_sensordeploy – an account of when and where the sensors have been checked into or checked out of (needs to be review prior to python import)
* lcroyster\_sensorservice – exactly the same as the service log excel sheet
* lcroyster\_sensortype- unique identifier for each sensor type
* lcroyster\_waterobservation – discrete observations (manually entered)

Each table is specifically linked to other tables through foreign keys (columns). This document will discuss which foreign keys are linked to other keys.

Resources:

<https://www.youtube.com/watch?v=9ylj9NR0Lcg>

<https://www.mysqltutorial.org/>

<https://www.guru99.com/mysql-tutorial.html>