Programming Task

We send "trade orders" to brokers regularly and the broker, upon receiving our orders, will execute our orders at the designated stock exchanges.  At each day end, the broker will send 'trade confirms' back to us and let us know which order was executed and by how much.  Trade reconciliation process tries to reconcile the "trade order" file with the "trade confirm" file to check for possible irregularities.  These irregularities include, but not limited to,

double execution (an order is executed twice or more),

excessive execution (executed more than we ordered),

inconsistent trading cost (commission, taxes…), … etc.

incomplete execution (an order is not executed)

recessive execution (executed less than we ordered)

carryover execution (left to be executed next day)

currency inconsistent ( irregularity in cost due to currency change)

Of course, orders can be partially executed during the day.  Although this is considered as an irregularity, portfolio managers typically would like to know how much was left to be executed during the next day.

Here are the steps for this programming task:

1.      Use pandas to read "trade\_orders" and "trade\_confirms" files into DataFrames.

2.      Reconcile the "trade order" and "trade confirm" dataframes.

3.      To help a portfolio manager review the trading result, please write three tabs into an XLSX with relevant information:

         Completed order: orders that are fully executed

         Partial order: orders that are not fully executed

         Irregularities: erroneous execution/confirm

Goal of the Task

Through this exercise, we would like to gauge 1) your ability to program in Python efficiently, 2) your programming style, 3) your problem solving approach, 4) your familiarity with Object Oriented design, and 5) your ability to present relevant information for sound business decision making.  Some portion of the programming task is more or less open-ended.  Please feel free to make assumption as you see fit or to write a separate document highlighting your thought process and why you choose to program in certain way.  Please follow commonly accepted Python coding style, so your code is readable to others.

Three files are attached -- 1) trade orders:  the order file we send to a broker, 2) trade confirms: the confirm file we received from the broker, and 3) schema: descriptions of data fields in file 1) and 2).  Please send me questions if there are questions we can help clarify.