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python-pandas and databases like mysql

Asked 7 years, 5 months ago Active 3 months ago Viewed 110k times



The documentation for Pandas has numerous examples of best practices for working with data stored in various formats.

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However, I am unable to find any good examples for working with databases like MySQL for example.



Can anyone point me to links or give some code snippets of how to convert query results using **mysql-python** to data frames in Pandas efficiently?



python pandas

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1 Documentation: pandas.pydata.org/pandas-docs/stable/io.html#sgl-queries – Mechanical snail Jun 1 '13 at 13:26

See also: stackoverflow.com/questions/15231646/... – Mechanical snail Jun 1 '13 at 13:29

Also take a look at Blaze. - osa Dec 6 '14 at 3:59

If you're willing to spend money, I believe that Wes McKinney's book ("Python for Data Analysis") has some useful examples. – MTrenfield Dec 17 '14 at 18:00

add a comment



As Wes says, io/sql's read_sql will do it, once you've gotten a database connection using a DBI compatible library. We can look at two short examples using the MySQLdb and Cx_oracle libraries to connect to Oracle and MySQL and query their data dictionaries. Here is the example for Cx_oracle :



```
import pandas as pd
import cx_Oracle

ora_conn = cx_Oracle.connect('your_connection_string')
df_ora = pd.read_sql('select * from user_objects', con=ora_conn)
print 'loaded dataframe from Oracle. # Records: ', len(df_ora)
ora_conn.close()
```

And here is the equivalent example for Mysqldb:

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edited Dec 29 '16 at 2:34

Owen
1,086 • 1 • 11 • 23

answered Jun 21 '12 at 12:34



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For recent readers of this question: pandas have the following warning in their docs for version 14.0:

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Warning: Some of the existing functions or function aliases have been deprecated and will be removed in future versions. This includes: tquery, uquery, read_frame, frame_query, write_frame.



Warning: The support for the 'mysql' flavor when using DBAPI connection objects has been deprecated. MySQL will be further supported with SQLAlchemy engines (GH6900).

This makes many of the answers here outdated. You should use sqlalchemy:

```
from sqlalchemy import create_engine
import pandas as pd
engine = create_engine('dialect://user:pass@host:port/schema', echo=False)
f = pd.read_sql_query('SELECT * FROM mytable', engine, index_col = 'ID')
```

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edited Sep 4 '14 at 5:11

answered Jul 30 '14 at 7:04



loading a table with 133 rows and 7 columns takes around 30 secs.. can you give some insights regarding why is that? – idoda Sep 16 '14 at 13:43

@Korem I did thought about opening a new one, but I wanted to make sure it is not a trivial one first. When I use an mySql client (Sequel pro) and query the database, reuslts come up much faster. When you say "simply sending and then retrieving", is that what you mean? (using a client) − idoda Sep 17 '14 at 8:33 ▶

@idoda I mean comparing the time it takes to execute engine.execute("select * FROM mytable") with the time it takes to execute pd.read_sql_query('SELECT * FROM mytable', engine) - Korem Sep 17 '14 at 10:45

Can one pass a sqlalchemy query (session.query as in my answer below) directly to a pandas method? That would be a ripper! – dmvianna Feb 5 '15 at 2:06

add a comment



For the record, here is an example using a sqlite database:

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```
import pandas as pd
import sqlite3
with sqlite3.connect("whatever.sqlite") as con:
    sql = "SELECT * FROM table_name"
    df = pd.read_sql_query(sql, con)
    print df.shape
```

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answered Feb 26 '13 at 18:58



- 2 BTW frame_query is a synonym for read_frame() lexual Apr 29 '13 at 5:43
- 1 You can specify the column to use as an index by specifying <code>index_col='timestamp'</code> in <code>frame_query</code> .—

 Mechanical snail Jun 1'13 at 13:25

add a comment



I prefer to create queries with <u>SQLAIchemy</u>, and then make a DataFrame from it. **SQLAIchemy** makes it easier to combine **SQL** conditions Pythonically if you intend to mix and match things over and over.

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from sqlalchemy.ext.declarative import declarative base from sqlalchemy import Table from sqlalchemy import create engine from sqlalchemy.orm import sessionmaker from pandas import DataFrame import datetime # We are connecting to an existing service engine = create engine('dialect://user:pwd@host:port/db', echo=False) Session = sessionmaker(bind=engine) session = Session() Base = declarative base() # And we want to query an existing table tablename = Table('tablename', Base.metadata, autoload=True, autoload with=engine,

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edited Apr 28 '14 at 3:21

answered Apr 28 '14 at 3:08



Also you must specify the driver if it's not the same as the SQLAlchemy's default one: dialect+driver://user:pwd@host:port/db - Nuno André Sep 15 at 20:03

add a comment



MySQL example:

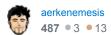
10

```
import MySQLdb as db
from pandas import DataFrame
from pandas.io.sql import frame_query

database = db.connect('localhost','username','password','database')
data = frame_query("SELECT * FROM data", database)
```

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answered Jan 21 '14 at 14:03



frame_query is now deprecated. Now use pd.read_sql(query, db) instead. - Robert Smith Apr 24 '15 at 22:43

add a comment



The same syntax works for Ms SQL server using podbc also.

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And this is how you connect to PostgreSQL using psycopg2 driver (install with "apt-get install python-psycopg2" if you're on Debian Linux derivative OS).

5



import pandas.io.sql as psql
import psycopg2

conn = psycopg2.connect("dbname='datawarehouse' user='user1' host='localhost' password='ube

q = """select month_idx, sum(payment) from bi_some_table"""

df3 = psql.frame_query(q, conn)

share improve this answer

answered Sep 11 '13 at 22:30



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For Sybase the following works (with http://python-sybase.sourceforge.net)

4

```
import pandas.io.sql as psql
import Sybase

df = psql.frame_query("<Query>", con=Sybase.connect("<dsn>", "<user>", "<pwd>"))
```

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edited Jan 9 '13 at 22:48

answered Jan 9 '13 at 22:36



add a comment



pandas.io.sql.frame_query is deprecated. Use pandas.read_sql instead.



share improve this answer





answered Dec 17 '14 at 17:34



add a comment



546 • 1 • 3 • 19



import the module



import pandas as pd
import oursql



connect

```
df_mysql = pd.read_sql(sql,conn)
print df_mysql
```

That works just fine and using pandas.io.sql frame_works (with the deprecation warning). Database used is the sample database from mysql tutorial.

share improve this answer

edited Feb 14 '16 at 15:52

Tobi Nary
4,046 • 4 • 24 • 45

answered Feb 14 '16 at 14:57



add a comment



This should work just fine.

0

```
import MySQLdb as mdb
import pandas as pd
con = mdb.connect('127.0.0.1', 'root', 'password', 'database_name');
with con:
    cur = con.cursor()
    cur.execute("select random_number_one, random_number_two, random_number_three from randomn
    rows = cur.fetchall()
    df = pd.DataFrame( [[ij for ij in i] for i in rows] )
    df.rename(columns={0: 'Random Number One', 1: 'Random Number Two', 2: 'Random Number Three
    print(df.head(20))
```

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answered Jan 31 '17 at 4:20



add a comment



This helped for me for connecting to **AWS MYSQL(RDS)** from **python 3.x** based **lambda function** and loading into a pandas DataFrame

0

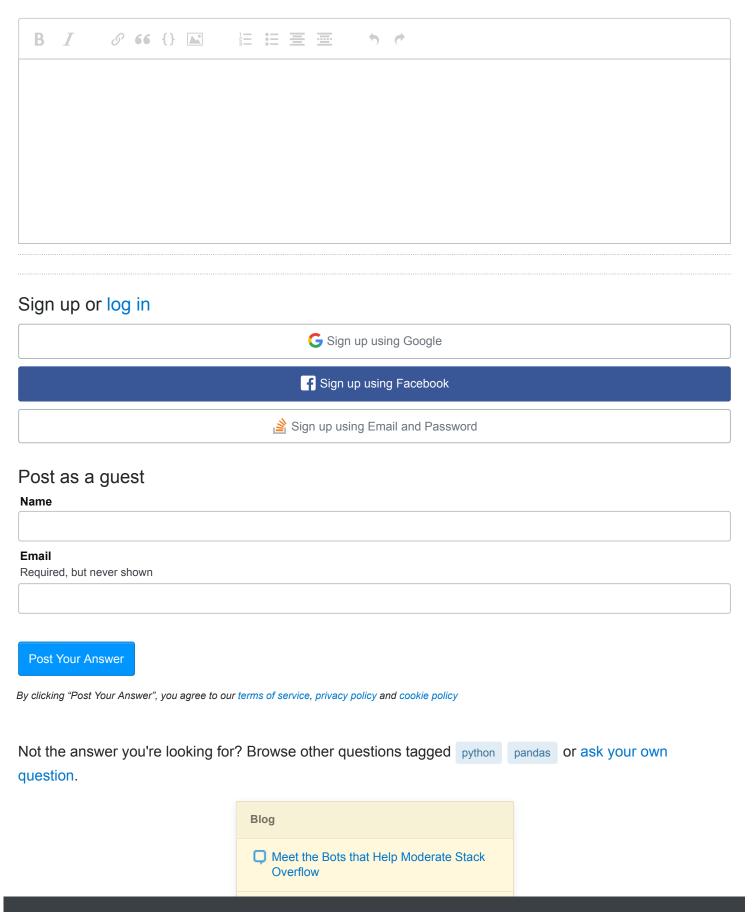
```
import json
import boto3
import pymysql
import pandas as pd
user = 'username'
password = 'XXXXXXX'
client = boto3.client('rds')
def lambda_handler(event, context):
    conn = pymysql.connect(host='xxx.xxxxus-west-2.rds.amazonaws.com', port=3306, user=user
   df= pd.read_sql('select * from TableName limit 10',con=conn)
   print(df)
   # TODO implement
   #return {
        'statusCode': 200,
        'df': df
    # }
```

share improve this answer

answered May 28 at 8:20



Your Answer



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