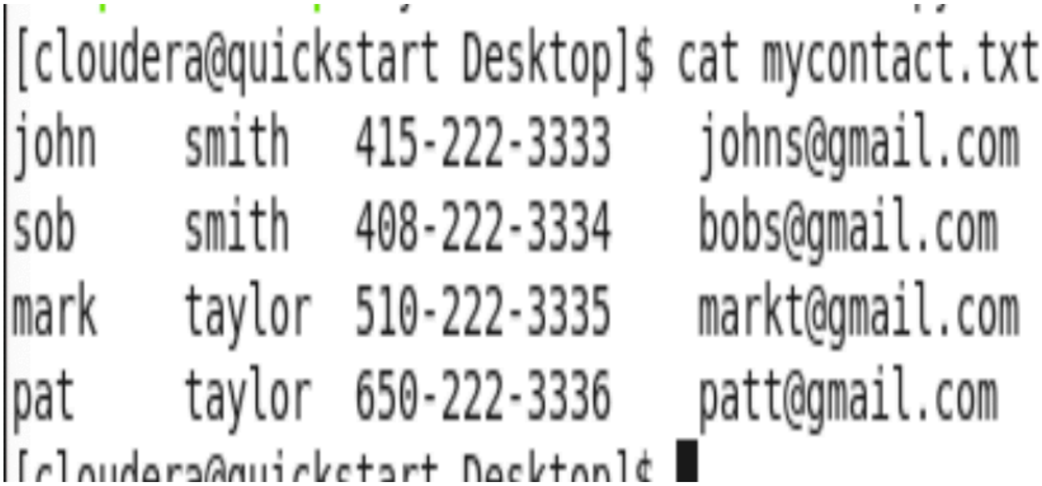
My project: writing UDF for Hive in python

Aim : mask personally identifiable information (PII) data on Cloudera Hadoop Quickstart vm.

Skills : sql, hive, hive UDF, python, command line, etc

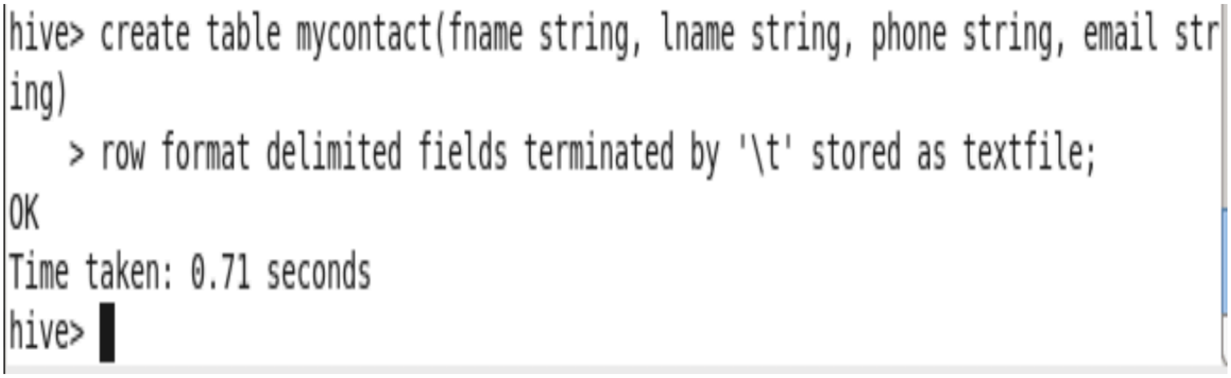
1. Create a data set in lower case.



```
[cloudera@quickstart Desktop]$ cat mycontact.txt
john    smith   415-222-3333    johns@gmail.com
sob     smith   408-222-3334    bobs@gmail.com
mark    taylor  510-222-3335    markt@gmail.com
pat     taylor  650-222-3336    patt@gmail.com
[cloudera@quickstart Desktop]$
```

2. Create a Table in Hive

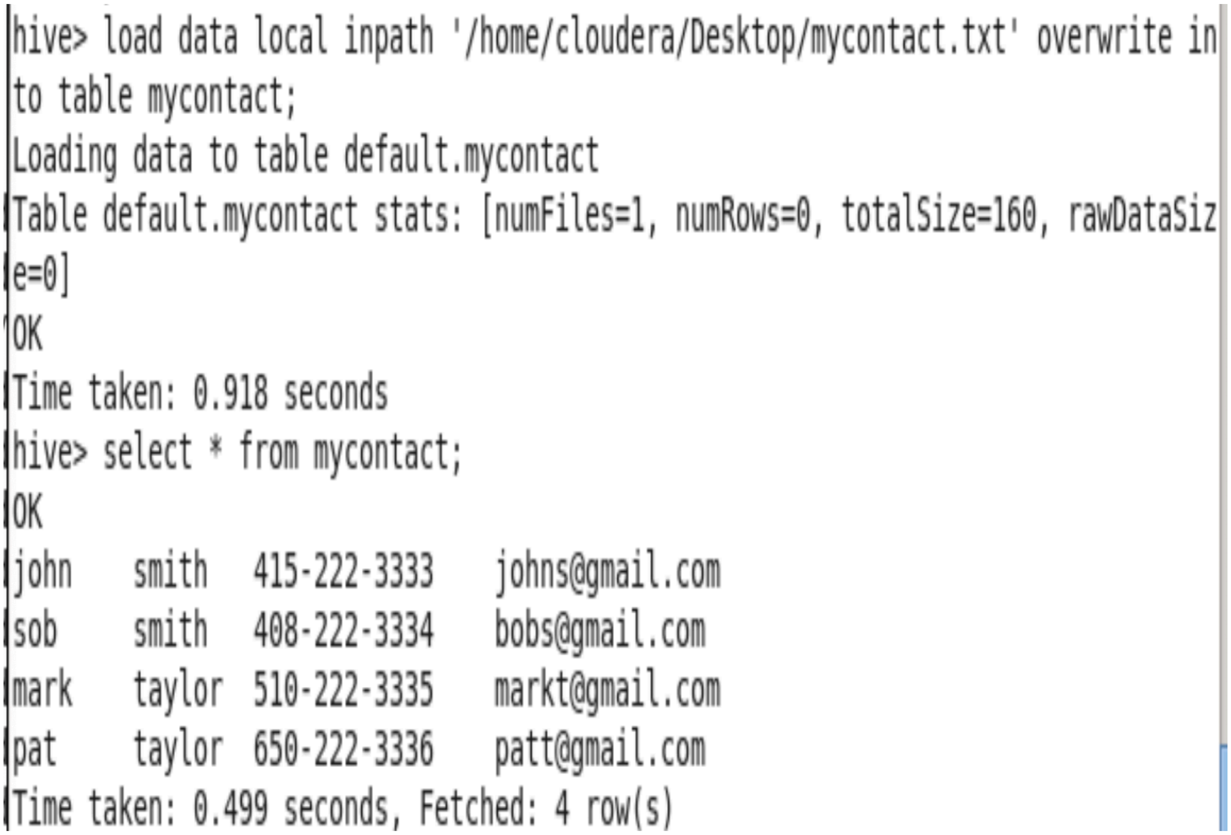
CREATE table mycontact(fname STRING, lname STRING,phone STRING, email STRING)
row format delimited fields terminated by ’\t’ stored as textile;



```
hive> create table mycontact(fname string, lname string, phone string, email str
ing)
    > row format delimited fields terminated by '\t' stored as textfile;
OK
Time taken: 0.71 seconds
hive>
```

3. Load the Data

load data local inpath ‘/home/cloudera/Desktop/mycontact.txt’ overwrite into table mycontact;

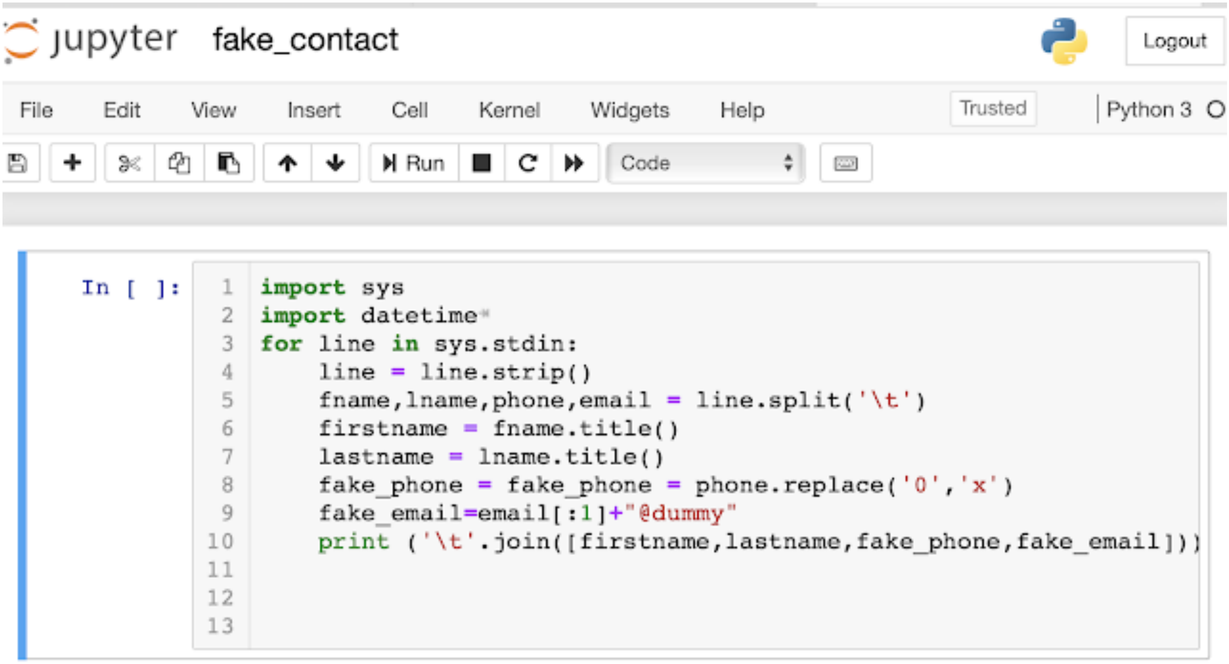


```
hive> load data local inpath '/home/cloudera/Desktop/mycontact.txt' overwrite in
to table mycontact;
Loading data to table default.mycontact
Table default.mycontact stats: [numFiles=1, numRows=0, totalSize=160, rawDataSiz
e=0]
OK
Time taken: 0.918 seconds
hive> select * from mycontact;
OK
john    smith   415-222-3333    johns@gmail.com
sob     smith   408-222-3334    bobs@gmail.com
mark    taylor  510-222-3335    markt@gmail.com
pat     taylor  650-222-3336    patt@gmail.com
Time taken: 0.499 seconds, Fetched: 4 row(s)
```

4. Write UDF in Python

```
import sys
import datetime
for line sys.stdin:   # Read data from STDIN.
   line = line.strip() # Strip the data into individual lines.
   fname,lname,phone,email = line.split('\t')  # Split the line into words based on
tab delimiter
   firstname = fname.title()  #  covert all first characters into upper case
   lastname = lname.title()
   fake_phone = fake_phone = phone.replace('0','x') #convert phone number '0'
into 'x'
  fake_email=fake_email=email[:1]+"@dummy.com" #convert email address ending
@dummy
```

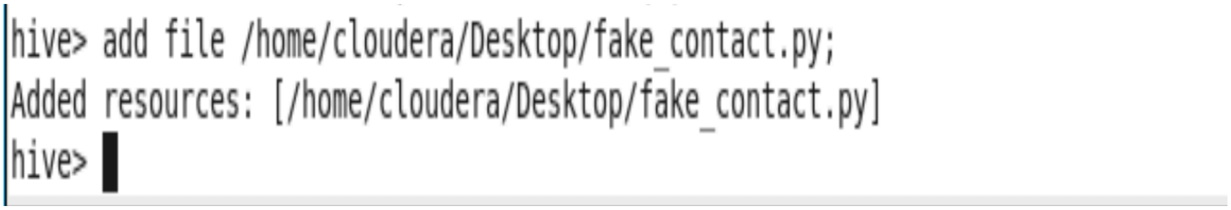
print ('\t'.join([firstname,lastname,fake_phone,fake_email]))



```
import sys
import datetime
for line in sys.stdin:
    line = line.strip()
    fname,lname,phone,email = line.split('\t')
    firstname = fname.title()
    lastname = lname.title()
    fake_phone = fake_phone = phone.replace('0','x')
    fake_email=email[:1]+"@dummy"
    print ('\t'.join([firstname,lastname,fake_phone,fake_email]))
```

5. Add the Python File into Hive

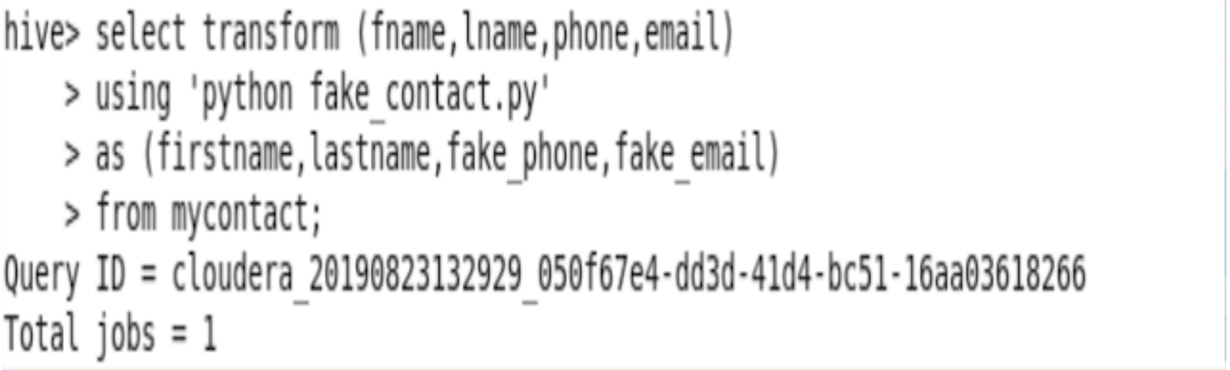
add file /home/cloudera/Desktop/fake_contact.py;



```
hive> add file /home/cloudera/Desktop/fake_contact.py;
Added resources: [/home/cloudera/Desktop/fake_contact.py]
hive> 
```

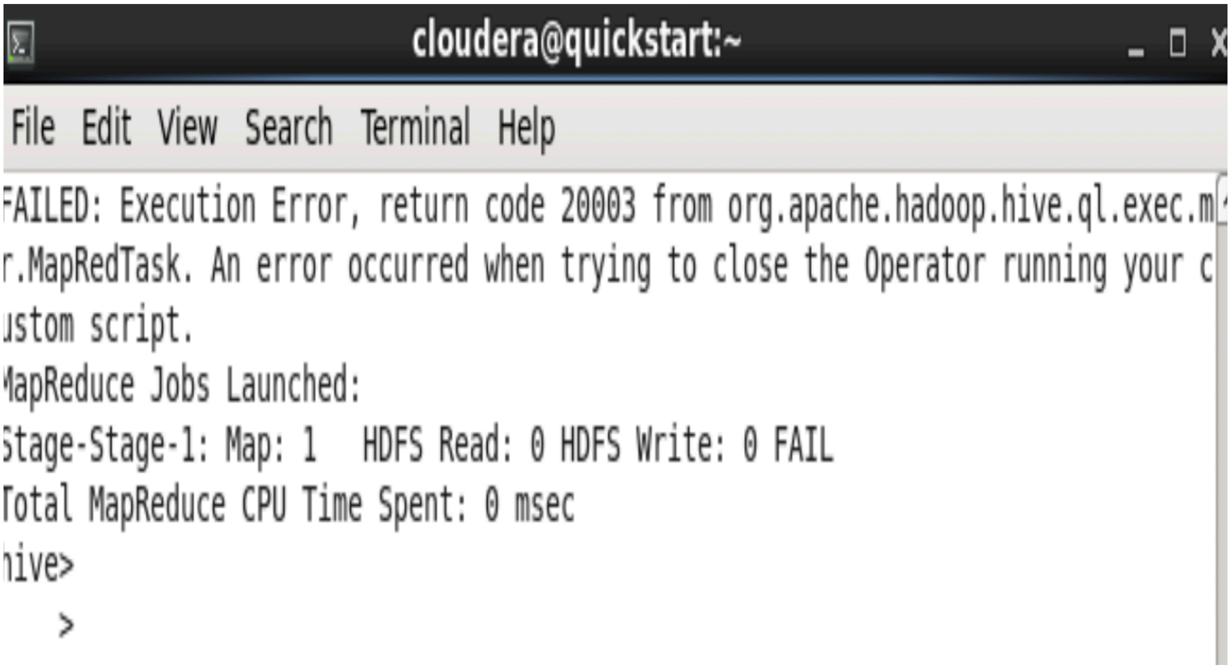
6. Run the Python UDF using 'transform'

SELECT TRANSFORM (fname,lname,phone,email) USING ‘python fake_contact.py’ AS (firstname,lastname,fake_phone,fake_email) FROM mycontact;



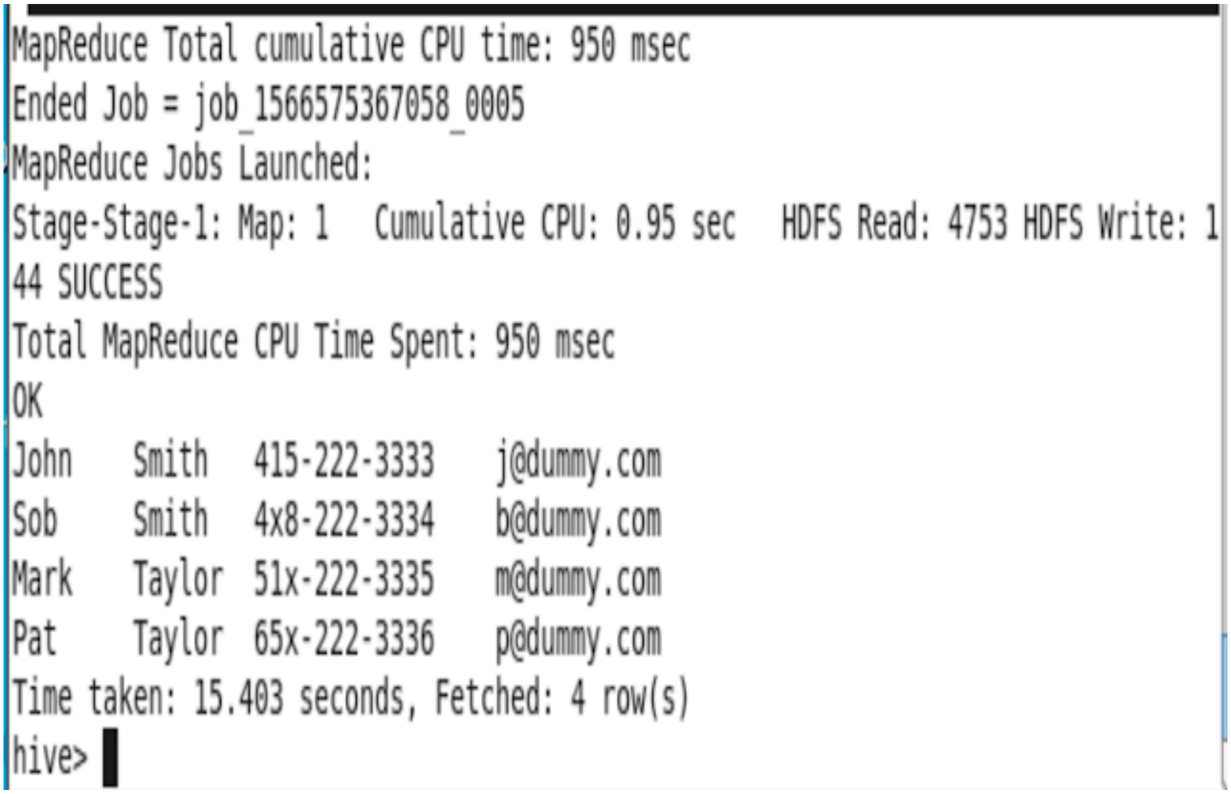
```
hive> select transform (fname,lname,phone,email)
    > using 'python fake_contact.py'
    > as (firstname,lastname,fake_phone,fake_email)
    > from mycontact;
Query ID = cloudera_20190823132929_050f67e4-dd3d-41d4-bc51-16aa03618266
Total jobs = 1
```

7. **Fail: Execution error since I forget one "( )" in python code.**



```
FAILED: Execution Error, return code 20003 from org.apache.hadoop.hive.ql.exec.m
r.MapRedTask. An error occurred when trying to close the Operator running your c
ustom script.
MapReduce Jobs Launched:
Stage-Stage-1: Map: 1   HDFS Read: 0 HDFS Write: 0 FAIL
Total MapReduce CPU Time Spent: 0 msec
hive>
    >
```

8. **Fix and rerun**



```
MapReduce Total cumulative CPU time: 950 msec
Ended Job = job_1566575367058_0005
MapReduce Jobs Launched:
Stage-Stage-1: Map: 1   Cumulative CPU: 0.95 sec   HDFS Read: 4753 HDFS Write: 1
44 SUCCESS
Total MapReduce CPU Time Spent: 950 msec
OK
John    Smith   415-222-3333    j@dummy.com
Sob     Smith   4x8-222-3334    b@dummy.com
Mark    Taylor  51x-222-3335    m@dummy.com
Pat     Taylor  65x-222-3336    p@dummy.com
Time taken: 15.403 seconds, Fetched: 4 row(s)
hive>
```

8. Result

name : **j**ohn smith -> **J**ohn Smith
phone number : 51**0**-222-3355 -> 5**x**0-222-3355
email: j**ohns@gmail.com -**> j**@dummy.com**