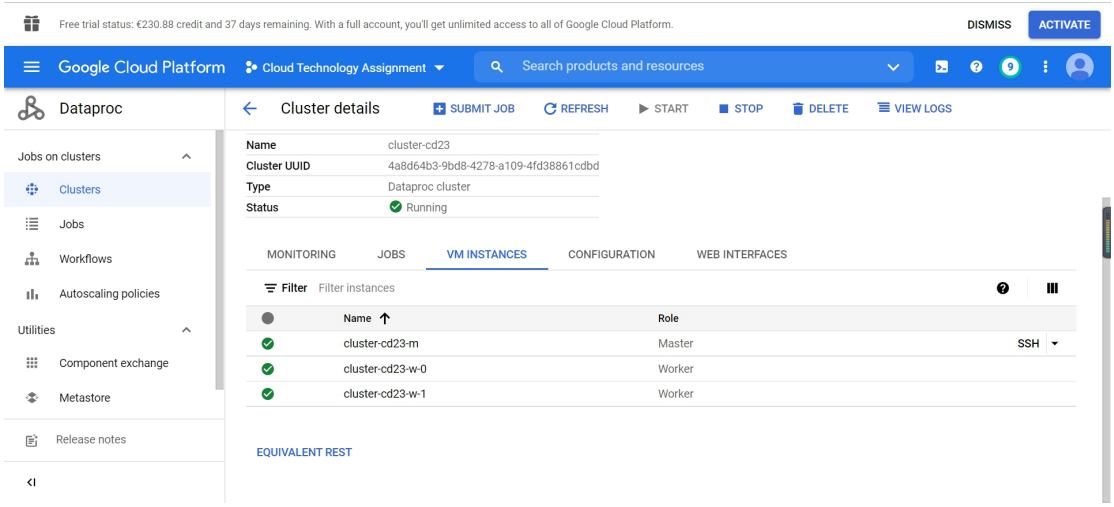
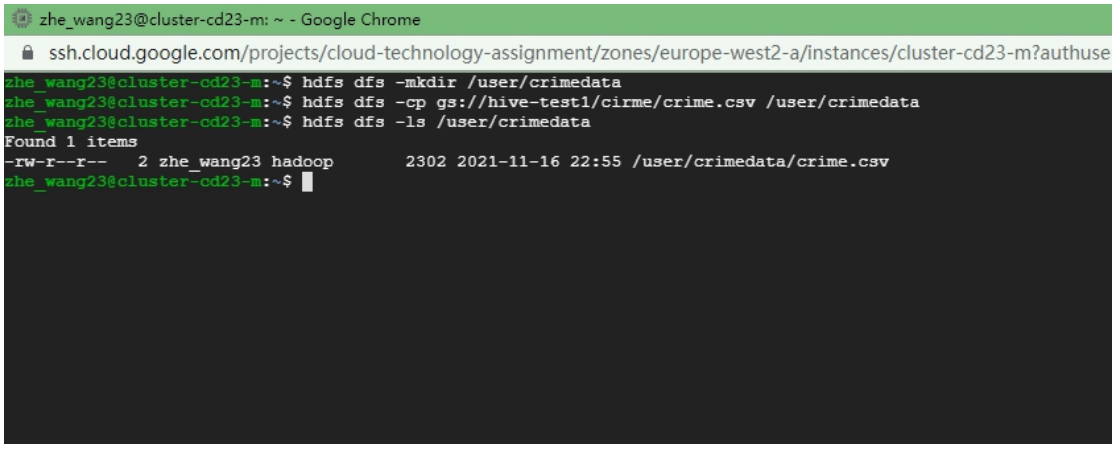
# CA675 Assignment2 For Spark

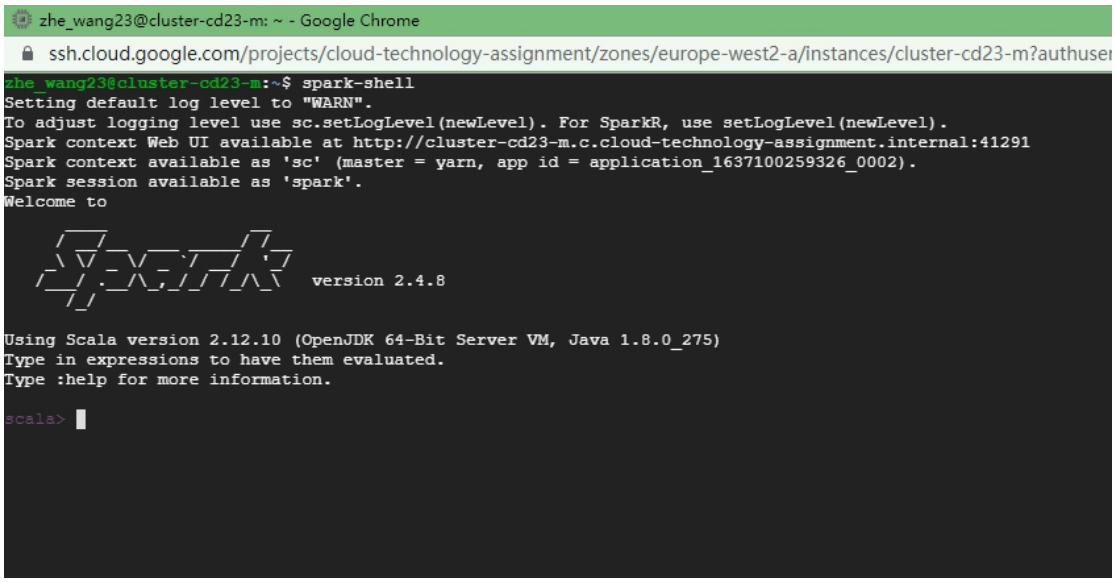
## Step 1: Startup a cluster in GCP



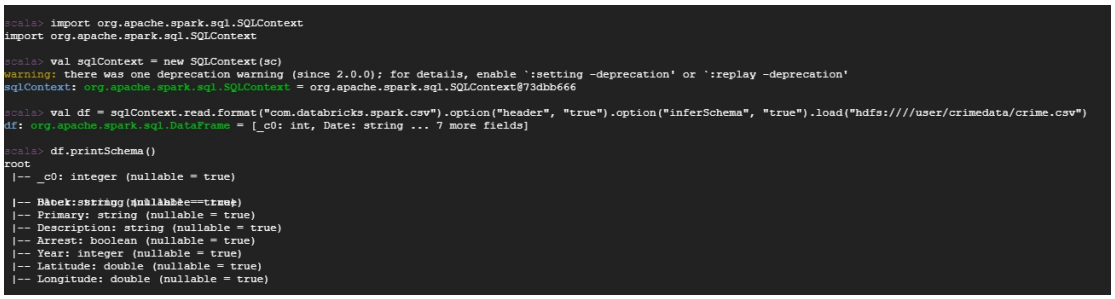

## Step 2: Upload CSV file to HDFS



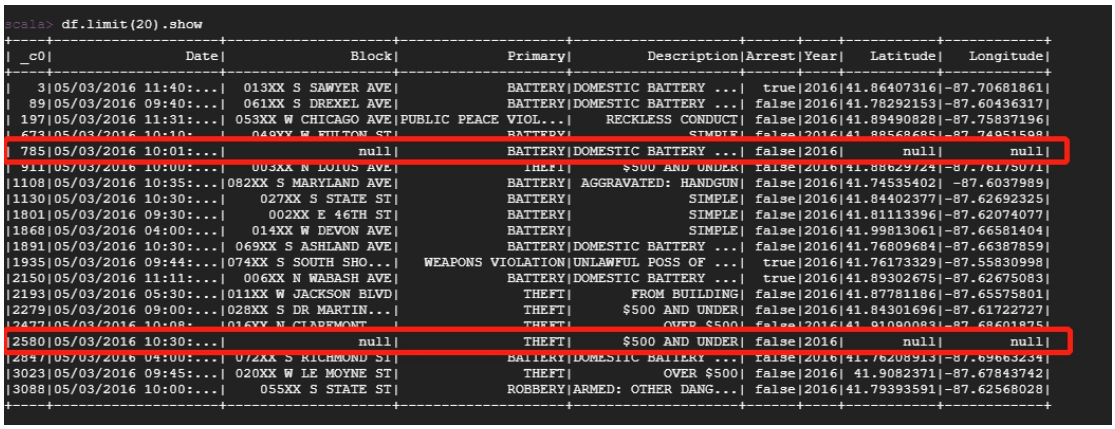
## Step 3: Launch spark-shell




## Step 4: Load CSV File into Spark and check filed name




## Step 5: Delete fields containing null value



```
scala> var res = df.na.drop()
res: org.apache.spark.sql.DataFrame = [_c0: int, Date: string ... 7 more fields]

scala> res.limit(20).show
+----+--------------------+--------------------+--------------------+--------------------+------+----+-----------+------------+
| _c0|                Date|               Block|             Primary|         Description|Arrest|Year|   Latitude|   Longitude|
+----+--------------------+--------------------+--------------------+--------------------+------+----+-----------+------------+
|   3|05/03/2016 11:40:...|  013XX S SAWYER AVE|             BATTERY|DOMESTIC BATTERY ...|  true|2016|41.86407316|-87.70681861|
|  89|05/03/2016 09:40:...|  061XX S DREXEL AVE|             BATTERY|DOMESTIC BATTERY ...| false|2016|41.78292153|-87.60436317|
| 197|05/03/2016 11:31:...| 053XX W CHICAGO AVE|PUBLIC PEACE VIOL...|    RECKLESS CONDUCT| false|2016|41.89490828|-87.75837196|
| 673|05/03/2016 10:10:...|   049XX W FULTON ST|             BATTERY|              SIMPLE| false|2016|41.88568685|-87.74951598|
| 911|05/03/2016 10:00:...|   003XX N LOTUS AVE|               THEFT|      $500 AND UNDER| false|2016|41.88629724|-87.76175071|
|1108|05/03/2016 10:35:...|082XX S MARYLAND AVE|             BATTERY| AGGRAVATED: HANDGUN| false|2016|41.74535402| -87.6037989|
|1130|05/03/2016 10:30:...|    027XX S STATE ST|             BATTERY|              SIMPLE| false|2016|41.84402377|-87.62692325|
|1801|05/03/2016 09:30:...|    002XX E 46TH ST|             BATTERY|              SIMPLE| false|2016|41.81113396|-87.62074077|
|1868|05/03/2016 04:00:...|   014XX W DEVON AVE|             BATTERY|              SIMPLE| false|2016|41.99813061|-87.66581404|
|1891|05/03/2016 10:30:...| 069XX S ASHLAND AVE|             BATTERY|DOMESTIC BATTERY ...| false|2016|41.76809684|-87.66387859|
|1935|05/03/2016 09:44:...|074XX S SOUTH SHO...|  WEAPONS VIOLATION|UNLAWFUL POSS OF ...|  true|2016|41.76173329|-87.55830998|
|2150|05/03/2016 11:11:...|  006XX N WABASH AVE|             BATTERY|DOMESTIC BATTERY ...|  true|2016|41.89302675|-87.62675083|
|2193|05/03/2016 05:30:...|011XX W JACKSON BLVD|               THEFT|       FROM BUILDING| false|2016|41.87781186|-87.65575801|
|2279|05/03/2016 09:00:...|028XX S DR MARTIN...|               THEFT|      $500 AND UNDER| false|2016|41.84301696|-87.61722727|
|2477|05/03/2016 10:08:...|016XX N CLAREMONT...|               THEFT|          OVER $500| false|2016|41.91090083|-87.68601875|
|2847|05/03/2016 04:00:...| 072XX S RICHMOND ST|             BATTERY|DOMESTIC BATTERY ...| false|2016|41.76208913|-87.69663234|
|3023|05/03/2016 09:45:...|  020XX W LE MOYNE ST|               THEFT|          OVER $500| false|2016| 41.9082371|-87.67843742|
|3088|05/03/2016 10:00:...|    055XX S STATE ST|             ROBBERY|ARMED: OTHER DANG...| false|2016|41.79393591|-87.62568028|
|3242|05/03/2016 08:00:...| 100XX S SANGAMON ST| MOTOR VEHICLE THEFT|          AUTOMOBILE| false|2016|41.71184357|-87.64660793|
+----+--------------------+--------------------+--------------------+--------------------+------+----+-----------+------------+
```

## step 6: Save new CSV file to HDFS

```
scala> res.write.format("com.databricks.spark.csv").save("hdfs:////user/crimedata/newcrime.csv")
```

```
zhe_wang23@cluster-cd23-m: ~ - Google Chrome
ssh.cloud.google.com/projects/cloud-technology-assignment/zones/europe-west2-a/instances/cluster-cd23-m?authu
zhe_wang23@cluster-cd23-m:~$ hdfs dfs -ls /user/crimedata/
Found 2 items
-rw-r--r--   2 zhe_wang23 hadoop       2302 2021-11-16 22:55 /user/crimedata/crime.csv
drwxr-xr-x   - zhe_wang23 hadoop          0 2021-11-16 23:18 /user/crimedata/newcrime.csv
zhe_wang23@cluster-cd23-m:~$
```

## Step 7 Export csv files from HDFS to google storage and download it to local couputer

```
zhe_wang23@cluster-cd23-m:~$ hadoop fs -cp /user/crimedata/newcrime.csv/  gs://hive-test1/cirme
zhe_wang23@cluster-cd23-m:~$
```