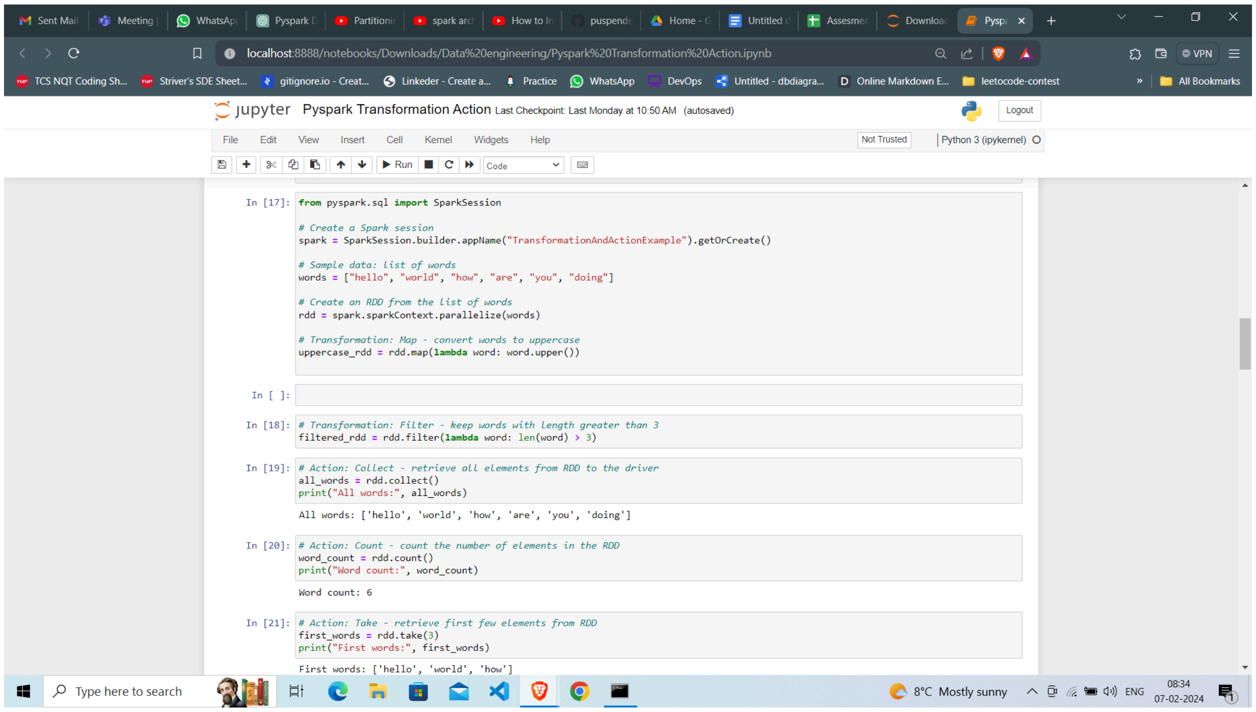
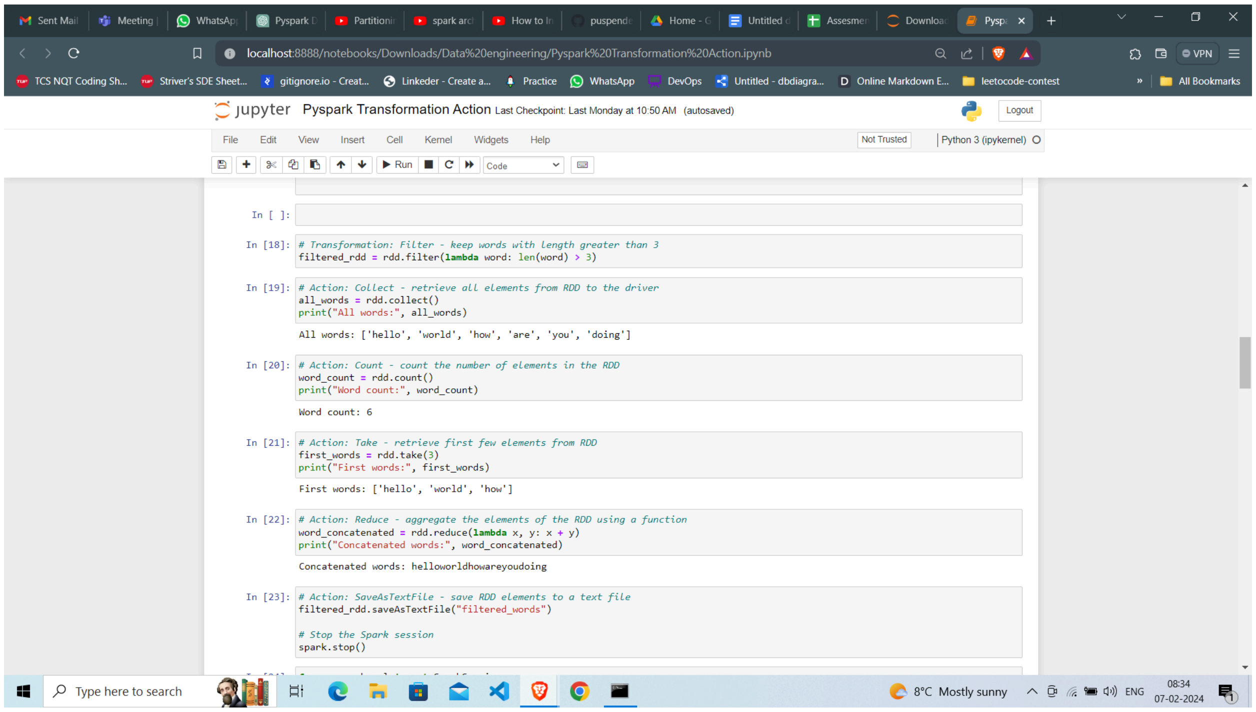
Transformation And Actions


jupyter Pyspark Transformation Action Last Checkpoint: Last Monday at 10:50 AM (autosaved)

```
In [17]: from pyspark.sql import SparkSession

         # Create a Spark session
         spark = SparkSession.builder.appName("TransformationAndActionExample").getOrCreate()

         # Sample data: list of words
         words = ["hello", "world", "how", "are", "you", "doing"]

         # Create an RDD from the list of words
         rdd = spark.sparkContext.parallelize(words)

         # Transformation: Map - convert words to uppercase
         uppercase_rdd = rdd.map(lambda word: word.upper())

In [ ]:

In [18]: # Transformation: Filter - keep words with length greater than 3
         filtered_rdd = rdd.filter(lambda word: len(word) > 3)

In [19]: # Action: Collect - retrieve all elements from RDD to the driver
         all_words = rdd.collect()
         print("All words:", all_words)

         All words: ['hello', 'world', 'how', 'are', 'you', 'doing']

In [20]: # Action: Count - count the number of elements in the RDD
         word_count = rdd.count()
         print("Word count:", word_count)

         Word count: 6

In [21]: # Action: Take - retrieve first few elements from RDD
         first_words = rdd.take(3)
         print("First words:", first_words)

         First words: ['hello', 'world', 'how']
```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```
In [ ]:

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         first_words = rdd.take(3)
         print("First words:", first_words)

         First words: ['hello', 'world', 'how']
```

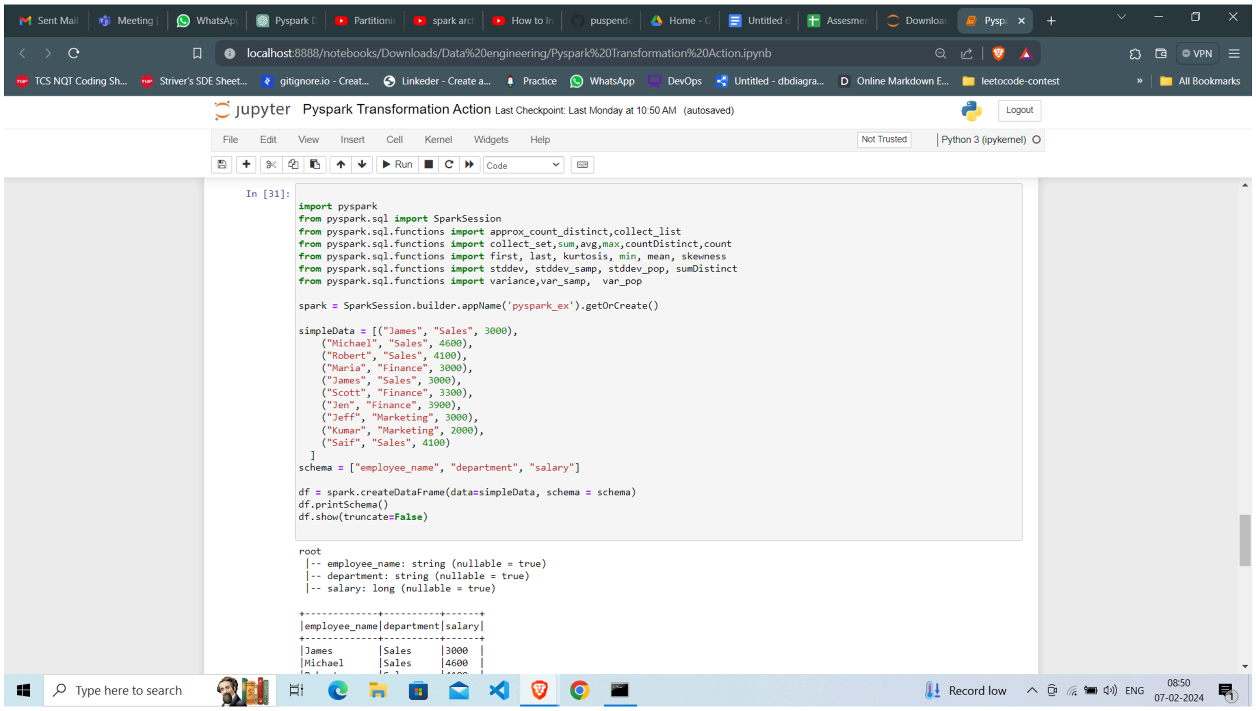
```
In [22]: # Action: Reduce - aggregate the elements of the RDD using a function
         word_concatenated = rdd.reduce(lambda x, y: x + y)
         print("Concatenated words:", word_concatenated)

         Concatenated words: helloworldhowareyoudoing

In [23]: # Action: SaveAsTextFile - save RDD elements to a text file
         filtered_rdd.saveAsTextFile("filtered_words")

         # Stop the Spark session
         spark.stop()
```

SQL Query in PySpark



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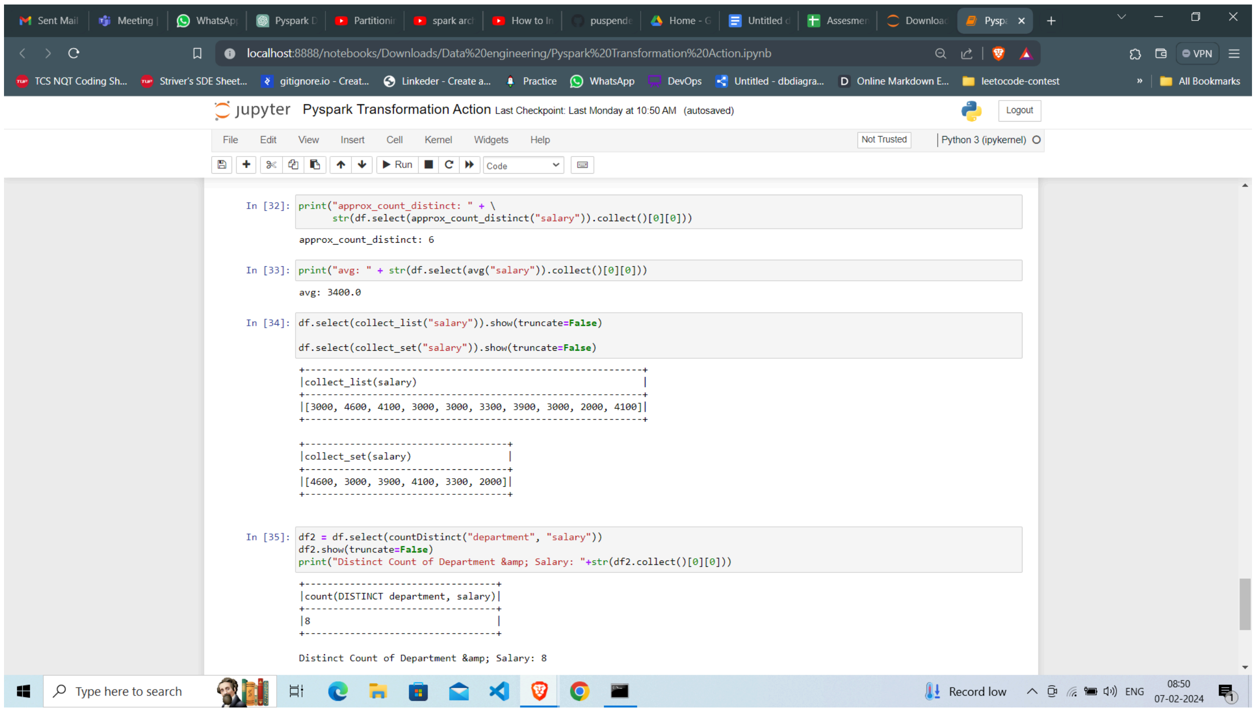
In [31]:

```
import pyspark
from pyspark.sql import SparkSession
from pyspark.sql.functions import approx_count_distinct,collect_list
from pyspark.sql.functions import collect_set,sum,avg,max,countDistinct,count
from pyspark.sql.functions import first, last, kurtosis, min, mean, skewness
from pyspark.sql.functions import stddev, stddev_samp, stddev_pop, sumDistinct
from pyspark.sql.functions import variance,var_samp,  var_pop

spark = SparkSession.builder.appName('pyspark_ex').getOrCreate()

simpleData = [("James", "Sales", 3000),
    ("Michael", "Sales", 4600),
    ("Robert", "Sales", 4100),
    ("Maria", "Finance", 3000),
    ("James", "Sales", 3000),
    ("Scott", "Finance", 3300),
    ("Jen", "Finance", 3900),
    ("Jeff", "Marketing", 3000),
    ("Kumar", "Marketing", 2000),
    ("Saif", "Sales", 4100)
  ]
schema = ["employee_name", "department", "salary"]

df = spark.createDataFrame(data=simpleData, schema = schema)
df.printSchema()
df.show(truncate=False)
```

```
root
 |-- employee_name: string (nullable = true)
 |-- department: string (nullable = true)
 |-- salary: long (nullable = true)

+-------------+----------+------+
|employee_name|department|salary|
+-------------+----------+------+
|James        |Sales     |3000  |
|Michael      |Sales     |4600  |
```



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In [32]:

```
print("approx_count_distinct: " + \
      str(df.select(approx_count_distinct("salary")).collect()[0][0]))
```

```
approx_count_distinct: 6
```

In [33]:

```
print("avg: " + str(df.select(avg("salary")).collect()[0][0]))
```

```
avg: 3400.0
```

In [34]:

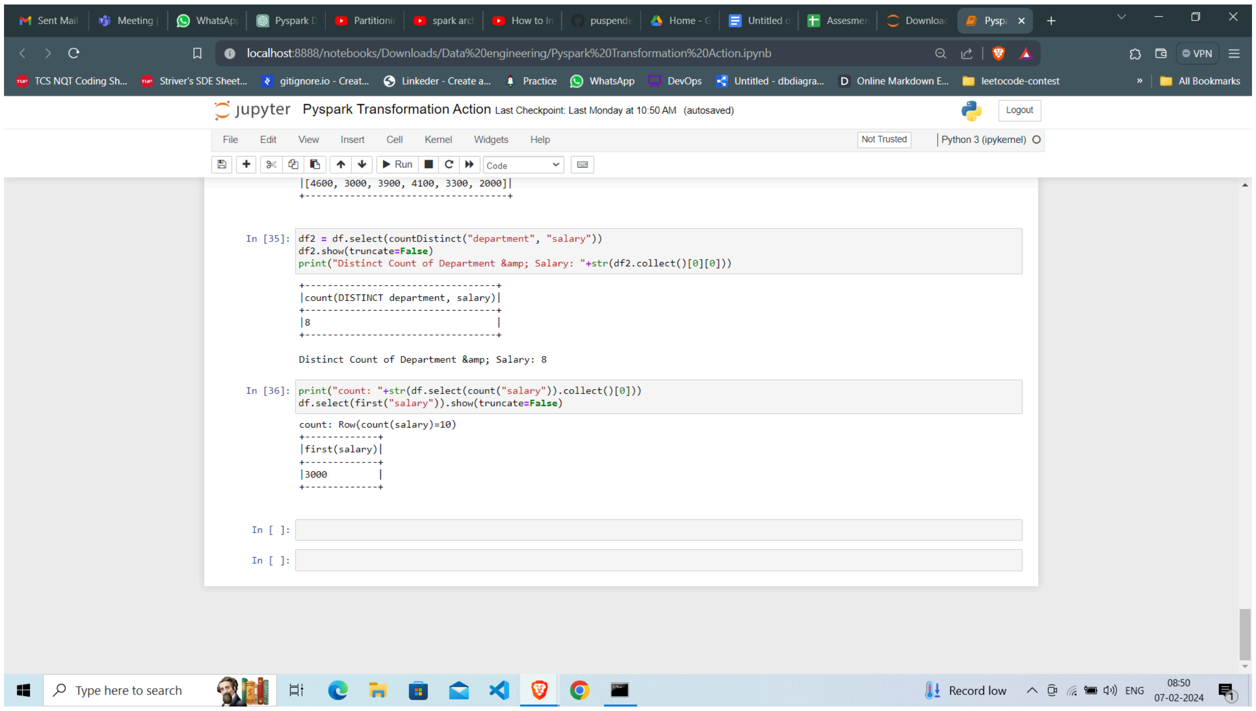
```
df.select(collect_list("salary")).show(truncate=False)

df.select(collect_set("salary")).show(truncate=False)
```

```
+------------------------------------------------------------+
|collect_list(salary)                                        |
+------------------------------------------------------------+
|[3000, 4600, 4100, 3000, 3000, 3300, 3900, 3000, 2000, 4100]|
+------------------------------------------------------------+

+------------------------------------+
|collect_set(salary)                 |
+------------------------------------+
|[4600, 3000, 3900, 4100, 3300, 2000]|
+------------------------------------+
```

In [35]:

```
df2 = df.select(countDistinct("department", "salary"))
df2.show(truncate=False)
print("Distinct Count of Department &amp; Salary: "+str(df2.collect()[0][0]))
```

```
+----------------------------------+
|count(DISTINCT department, salary)|
+----------------------------------+
|8                                 |
+----------------------------------+

Distinct Count of Department &amp; Salary: 8
```


localhost:8888/notebooks/Downloads/Data%20engineering/Pyspark%20Transformation%20Action.ipynb
jupyter Pyspark Transformation Action Last Checkpoint: Last Monday at 10:50 AM (autosaved)
File Edit View Insert Cell Kernel Widgets Help
Not Trusted
Python 3 (ipykernel)
Run
Code

```
|[4600, 3000, 3900, 4100, 3300, 2000]|
+------------------------------------+
```

In [35]:
```python
df2 = df.select(countDistinct("department", "salary"))
df2.show(truncate=False)
print("Distinct Count of Department &amp; Salary: "+str(df2.collect()[0][0]))
```

```
+----------------------------------+
|count(DISTINCT department, salary)|
+----------------------------------+
|8                                 |
+----------------------------------+

Distinct Count of Department &amp; Salary: 8
```

In [36]:
```python
print("count: "+str(df.select(count("salary")).collect()[0]))
df.select(first("salary")).show(truncate=False)
```

```
count: Row(count(salary)=10)
+-------------+
|first(salary)|
+-------------+
|3000         |
+-------------+
```

In [ ]:

In [ ]: