In [1]:
```
from pyspark.sql import SparkSession
spark = SparkSession.builder.appName('Filter_operations').getOrCreate()
spark
```

Out[1]:

SparkSession - in-memory

SparkContext

Spark UI (http://DESKTOP-5NN8I6U:4042)

Version

v3.5.1

Master

local[*]

AppName

Filter_operations

In [10]:
```
df=spark.read.csv(r'C:\Users\Neha\Downloads\NARESH IT DATA SCIENCE\MAY\
```

In [11]:
```
df
```

Out[11]:
```
DataFrame[Name: string, age: int, Experience: int, Salary: int]
```

In [12]:
```
df.show()
```

```
+--------+---+----------+------+
|    Name|age|Experience|Salary|
+--------+---+----------+------+
|    jack| 31|        10| 30000|
|    alex| 30|         8| 25000|
|caroline| 29|         4| 20000|
|    paul| 24|         3| 20000|
|  sandra| 21|         1| 15000|
|casandra| 23|         2| 18000|
+--------+---+----------+------+
```

In [13]:
```
df.printSchema()
```

```
root
 |-- Name: string (nullable = true)
 |-- age: integer (nullable = true)
 |-- Experience: integer (nullable = true)
 |-- Salary: integer (nullable = true)
```

In [15]:
```
df.columns
```

Out[15]:
```
['Name', 'age', 'Experience', 'Salary']
```

Vector Assembler:

In [20]:
```
from pyspark.ml.feature import VectorAssembler
feature_assembler = VectorAssembler(inputCols=['age','Experience'],
                                    outputCol = 'Independent Features')
```

In [21]:
```
feature_assembler
```

Out[21]:
```
VectorAssembler_ed2086a260f0
```

In [22]:
```
output= feature_assembler.transform(df)
```

In [23]:
```
output.show()
```

```
+--------+---+----------+------+--------------------+
|    Name|age|Experience|Salary|Independent Features|
+--------+---+----------+------+--------------------+
|    jack| 31|        10| 30000|         [31.0,10.0]|
|    alex| 30|         8| 25000|          [30.0,8.0]|
|caroline| 29|         4| 20000|          [29.0,4.0]|
|    paul| 24|         3| 20000|          [24.0,3.0]|
|  sandra| 21|         1| 15000|          [21.0,1.0]|
|casandra| 23|         2| 18000|          [23.0,2.0]|
+--------+---+----------+------+--------------------+
```

In [24]:
```
output.columns
```

Out[24]:
```
['Name', 'age', 'Experience', 'Salary', 'Independent Features']
```

In [25]:
```
finalised_data= output.select ('Independent Features', 'Salary')

```

In [26]:
```
finalised_data.show()
```

```
+--------------------+------+
|Independent Features|Salary|
+--------------------+------+
|         [31.0,10.0]| 30000|
|          [30.0,8.0]| 25000|
|          [29.0,4.0]| 20000|
|          [24.0,3.0]| 20000|
|          [21.0,1.0]| 15000|
|          [23.0,2.0]| 18000|
+--------------------+------+
```

In [ ]:
```

```

Linear Regression Model:

In [72]:
```
from pyspark.ml.regression import LinearRegression
train_data, test_data = finalised_data.randomSplit([0.75,0.25])
regressor = LinearRegression(featuresCol='Independent Features', labelC
regressor = regressor.fit(train_data)
```

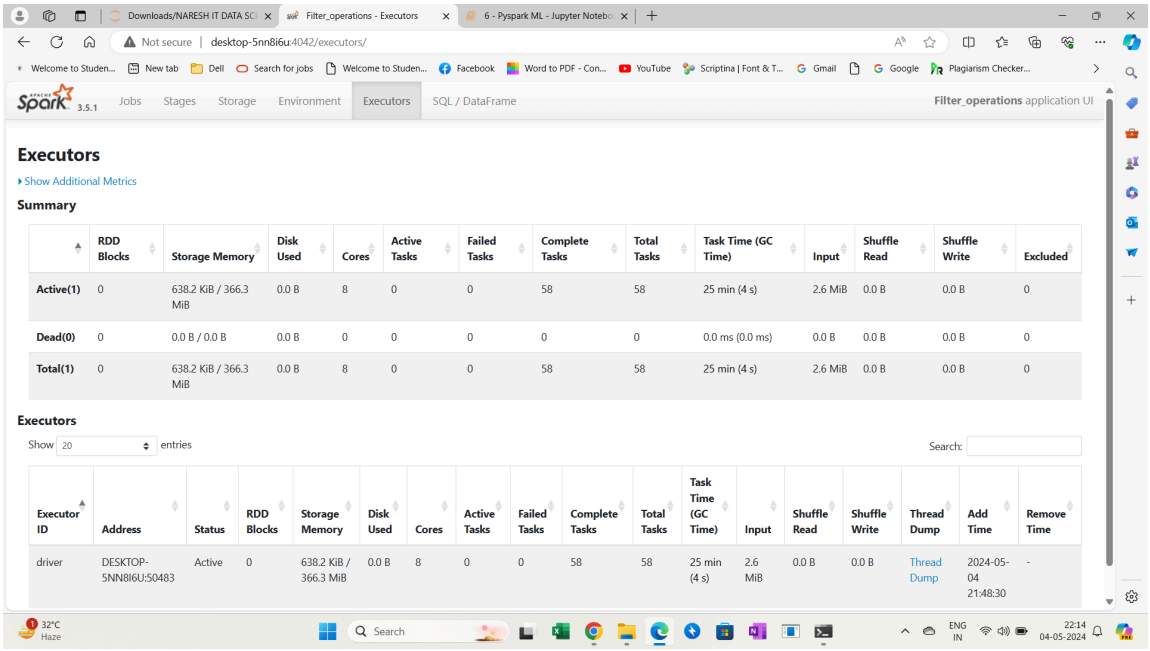
In [73]:
```
regressor
```

Out[73]:
```
LinearRegressionModel: uid=LinearRegression_2d0ec61160d5, numFeatures=2
```

In [74]:
```
pred_results = regressor.evaluate(test_data)
```

In [75]:
```
pred_results.predictions.show()
```

```
+--------------------+------+------------------+
|Independent Features|Salary|        prediction|
+--------------------+------+------------------+
|          [21.0,1.0]| 15000| 19285.71428571376|
|          [23.0,2.0]| 18000|18571.428571428507|
|          [29.0,4.0]| 20000|12857.142857144696|
+--------------------+------+------------------+
```



In [ ]:
```
```