Ex No: 6

Import a JASON file from the command line. Apply the following actions with the data present in the JASON file where, projection, aggregation, remove, count, limit, skip and sort

AIM:

To import a JASON file from the command line and apply the following actions with the data present in the JASON file where, projection, aggregation, remove, count, limit, skip and sort.

PROCEDURE:

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Step 1: Install Required Packages

Install the necessary packages using pip:
$ pip install pandas --break-system-packages

Step 2: Verify Package Installation
Verify that the required packages are installed:

```
$ python
>>> import pandas as pd
>>> from hdfs import InsecureClient
>>> print("Pandas version:", pd._version_)
>>> client = InsecureClient('http://localhost:9870', user='hadoop')
>>> print("HDFS status:", client.status('/'))
>>> exit()
```

Step 3: Create process_data.py File
Create the Python script for processing data:
$ nano process_data.py
Paste the following code into the file:

```
from hdfs import InsecureClient
import pandas as pd
import json

# Connect to HDFS
hdfs_client = InsecureClient('http://localhost:9870', user='hdfs')

# Read JSON data from HDFS
try:
    with hdfs_client.read('/home/hadoop/emp.json', encoding='utf-8') as reader:
        json_data = reader.read()
    if not json_data.strip():
        raise ValueError("The JSON file is empty.")
```

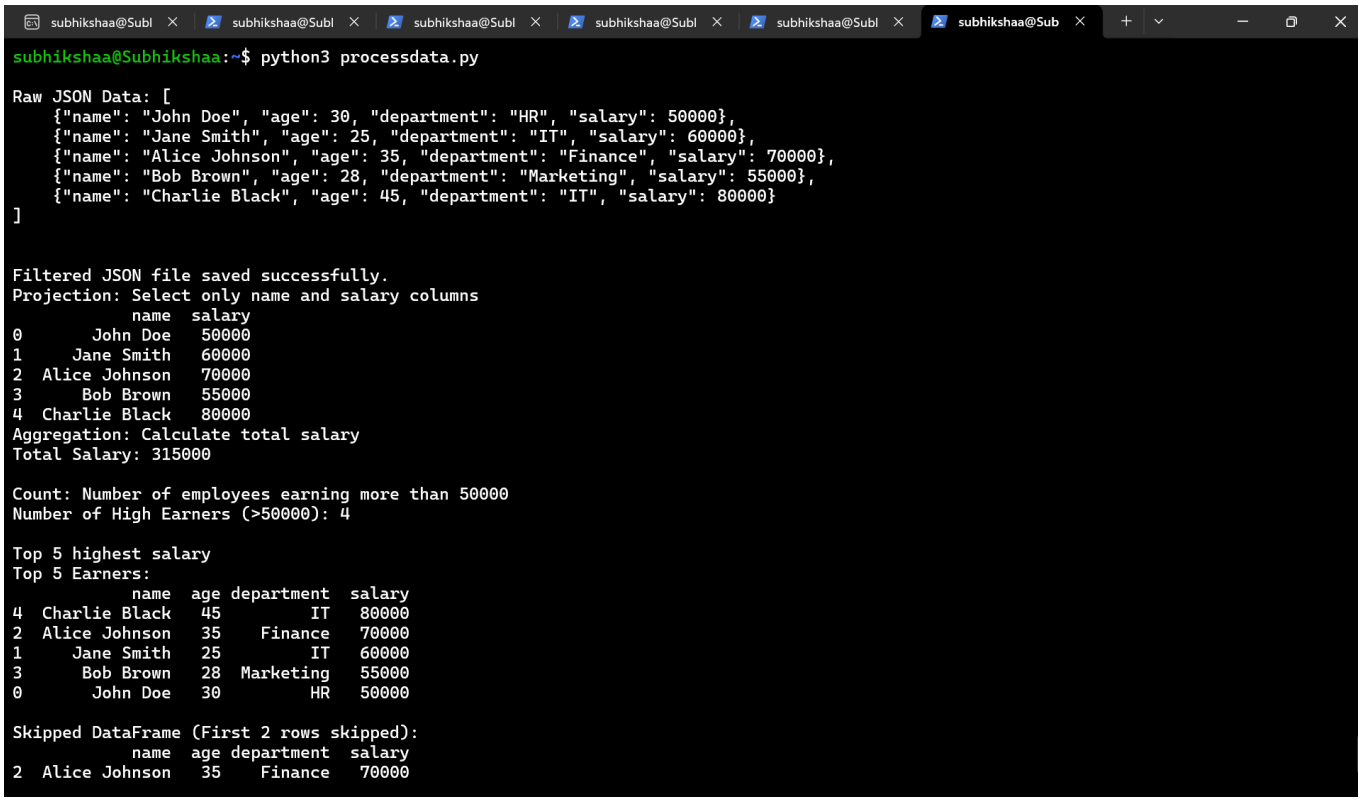
```
    data = json.loads(json_data)
except Exception as e:
    print(f"Error reading or parsing JSON data: {e}")
    exit(1)


# Convert JSON data to DataFrame
df = pd.DataFrame(data)


# Projection: Select 'name' and 'salary'
projected_df = df[['name', 'salary']]


# Aggregation: Calculate total salary
total_salary = df['salary'].sum()


# Count: Employees earning more than 50000
high_earners_count = df[df['salary'] > 50000].shape[0]


# Limit: Top 5 highest earners
top_5_earners = df.nlargest(5, 'salary')


# Skip: Skip the first 2 employees
skipped_df = df.iloc[2:]


# Remove: Filter out employees from IT department
filtered_df = df[df['department'] != 'IT']


# Save the filtered data back to HDFS
filtered_json = filtered_df.to_json(orient='records')
try:
    with hdfs_client.write('/home/hadoop/filtered_employees.json', encoding='utf-8', overwrite=True) as
writer:
        writer.write(filtered_json)
except Exception as e:
    print(f"Error saving filtered JSON data: {e}")
```

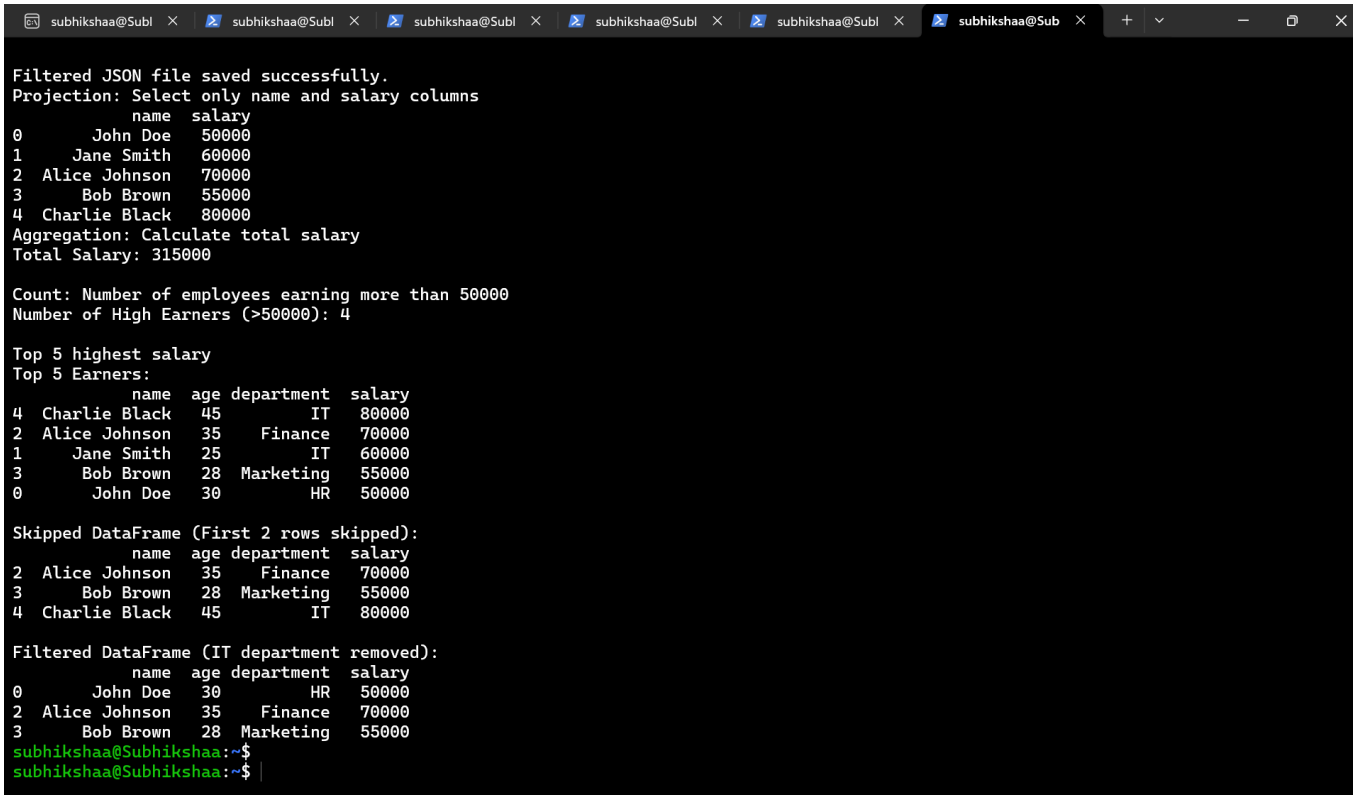
Step 4: Run the Script

Execute the script to process the data:

$ python3 process_data.py

Step 5: To view the output
hadoop@Ubuntu:~/Documents$ hdfs dfs -cat /home/hadoop/emp.json





RESULT:

Thus to import a JASON file from the command line and apply the following actions with the data present in the JASON file where, projection, aggregation, remove, count, limit, skip and sort has been executed and verified successfully.