Lab Assignment 27

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Topic: Pandas Pivot Table

A **Pivot Table** in **Pandas** is a powerful tool used to summarize, aggregate, and reshape data. It's especially useful when you need to explore and analyze large datasets by grouping data along different dimensions, such as rows and columns. Pivot tables are similar to Excel's pivot tables but with additional flexibility in Python.

Basic Syntax of a Pivot Table in Pandas

DataFrame.pivot_table(data,values=None,index=None, columns=None, aggfunc='mean', fill_value=None, margins=False) Parameters:

- **data**: The DataFrame you want to summarize.
- **values**: Column(s) to aggregate (optional).
- **index**: Keys to group by along rows (like row labels).
- **columns**: Keys to group by along columns (like column labels).
- **aggfunc**: Function to aggregate the values. Common options are mean, sum, count, min, max, etc. (default is mean).
- **fill_value**: Value to replace NaN values if any.
- **margins**: Adds subtotals for rows and columns (like "All" in Excel's Pivot Tables).

Q1. Region-wise, Manager-wise and Salesman wise - To Find Total Sales Amount.

Code:

lab27.py > ...

```
#Q1.Region wise,Manager-wise and Salesman wise-To Find Total Sales Amount.
import pandas as pd
import numpy as np
df = pd.read_csv('salesdata.csv')
print(df.head())
print(df.tail())

df1 = pd.pivot_table(df,index=["Region","Manager","SalesMan"],values="Sale_amt",aggfunc=np.sum)
print(df1)
```

Output:

```
                          Sale_amt
Region  Manager SalesMan
Central Douglas John       124016.0
        Hermann Luis       206373.0
                Shelli      33698.0
                Sigal      125037.5
        Marth   Steven      14000.0
        Martha  Steven     185690.0
        Timothy David      140955.0
East    Douglas Karen       48204.0
        Martha  Alexander  236703.0
                Diana       36100.0
West    Douglas Michael     66836.0
        Timothy Stephen     88063.0
```

Q2. Item-Wise - To find total Units

Code:

```python
#Q2.Item-Wise To find total Unites.
import pandas as pd
import numpy as np
df = pd.read_csv('salesdata.csv')
print(df.head())
print(df.tail())

df2 = pd.pivot_table(df,index=["Region","Item"],values='Units',aggfunc = np.sum)
print(df2)
```

Output:

```
              Units
Item
Cell Phone      278
Desk             10
Home Theater    722
Television      716
Video Games     395
```

Q3. Region-Wise, Item Wise - To find Sales Amt

Code:

```python
#Q3.Region-Wise, Item Wise- To find Sales Amt.
import pandas as pd
import numpy as np
df = pd.read_csv('salesdata.csv')
print(df.head())
print(df.tail())

df3 = pd.pivot_table(df,index=['Item','Region'],values='Sale_amt',aggfunc = np.sum)
print(df3)
```

Output:

```
                    Sale_amt
Item         Region
Cell Phone   Central    6075.0
             East      39375.0
             West      17100.0
Desk         Central     875.0
             West        375.0
Home Theater Central   212000.0
             East      117000.0
             West       32000.0
Television   Central   596604.0
             East      155740.0
             West      105424.0
Video Games  Central    14215.5
             East        8892.0
```

Q4. Manager-Wise - To Find Mean Sale Amt

Code:

```python
#Q4.Manager-Wise- To find Mean Sale Amt.
import pandas as pd
import numpy as np
df = pd.read_csv('salesdata.csv')
print(df.head())
print(df.tail())

df4 = pd.pivot_table(df,index=['Manager'],values='Sale_amt',aggfunc= np.mean)
print(df4)
```

Output:

```
              Sale_amt
Manager
Douglas   29882.000000
Hermann   30425.708333
Marth     14000.000000
Martha    35268.692308
Timothy   25446.444444
```