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Lab Assignment:

Read any real-life dataset. Store the data into Data Frames. Idenfy 10 grains for the given dataset.

Implement all 20 grains using Pandas methods. The Sample Grains for Sales Dataset as:

- Which was the best month for sales? How much was earned that month?
- Which product sold the most? Why do you think it did?
- Which city sold the most products?
- What Products are most oen sold together?

```
import pandas as pd from itertools
import combinaons from collecons
import Counter

df = pd.read_csv('/content/grainsales (2).csv') print(df)

df['Sales'] = pd.to_numeric(df['Sales'])
monthly_sales = df.groupby('Months')['Sales'].sum()
best_month = monthly_sales.idxmax() earnings =
monthly_sales.loc[best_month] print("The best
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month for sales was", best_month) print("The
earnings for that month were", earnings)

product_sales = df.groupby('GrainName')['Sales'].sum() best_product
= product_sales.idxmax()
print("The product that sold the most is", best_product)

city_sales = df.groupby('City')['Sales'].sum() best_city
= city_sales.idxmax()
print("The city that sold the most products is", best_city)

# Read the CSV file into a DataFrame df =
pd.read_csv('/content/grainsales (2).csv')

# Group the data by sales and create a list of products for each sale
grouped_sales = df.groupby('Sales')['GrainName'].apply(list)

# Create a list of all product combinaons for each sale
product_combinaons = [list(combinaons(products, 2)) for products in
grouped_sales]

# Flaten the list of combinaons
flatened_combinaons = [item for sublist in product_combinaons for item in
sublist]
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# Count the occurrences of each product combinaon combinaon_counts =
Counter(flatened_combinaons)

# Find the most common product combinaons
most_common_combinaons = combinaon_counts.most_common()

# Print the result
print("The most frequently sold product combinaons are:") for
combinaon, count in most_common_combinaons:
    print(combinaon[0], "and", combinaon[1], "- Sold together", count, "mes")
```

OUTPUT:

```
      GrainName        State       City Months  Year    Sales
0          Ragi  Maharashtra     Nagpur    JAN  2023  1000000
1          Bajra       Panjab   Amritsar    FEB  2023  1500000
2          Ragi  Maharashtra     Nagpur    JAN  2023  1000000
3          Bajra       Panjab   Amritsar    FEB  2023  1500000
4          Ragi  Maharashtra     Nagpur    JAN  2023  1000000
5          Bajra       Panjab   Amritsar    FEB  2023  1500000
6          Oats     Hariyana   Gurugram  MARCH  2023  2000000
7          Sattu       Gujarat      Surat  APRIL  2023  2500000
8          Sooji   Tamil Nadu    Madurai    MAY  2023  3000000
9          Brown rice     Telangana  Hyderabad   JUNE  2023
           3500000
10         Wheat  West Bengol   Asansole   JULY  2023  4000000
11         Corn           UP     Kanpur    AUG  2023  4500000
12         Ragi  Maharashtra     Nagpur    JAN  2023  1000000
13         Bajra       Panjab   Amritsar    FEB  2023  1500000
14         Oats     Hariyana   Gurugram  MARCH  2023  2000000
15         Sattu       Gujarat      Surat  APRIL  2023  2500000
16         Sooji   Tamil Nadu    Madurai    MAY  2023  3000000
17         Brown rice     Telangana  Hyderabad   JUNE  2023
           3500000
18         Wheat  West Bengol   Asansole   JULY  2023  4000000
```

```
19          Corn            UP      Kanpur    AUG  2023  4500000
20          Sooji   Tamil Nadu    Madurai    MAY  2023  3000000
21          Brown rice     Telangana  Hyderabad   JUNE  2023
            3500000
22          Wheat  West Bengol   Asansole   JULY  2023  4000000
23          Corn            UP      Kanpur    AUG  2023  4500000
24          Ragi  Maharashtra     Nagpur    JAN  2023  1000000
25          Brown rice     Telangana  Hyderabad   JUNE  2023
            3500000
26          Wheat  West Bengol   Asansole   JULY  2023  4000000
The best month for sales was JULY
The earnings for that month were 16000000
The product that sold the most is Wheat
The city that sold the most products is Asansole The
most frequently sold product combinations are:
Ragi and Ragi - Sold together 10 times
Bajra and Bajra - Sold together 6 times
Brown rice  and Brown rice  - Sold together 6 times
Wheat and Wheat - Sold together 6 times
Sooji and Sooji - Sold together 3 times
Corn and Corn - Sold together 3 times
Oats and Oats - Sold together 1 times
Sattu  and Sattu  - Sold together 1 times
```