```
In [1]:   import pandas as pd
```

Display the first five rows:

```
In [2]:
```

Out[2]:

	InvoiceNo	StockCode	Description	Quantity	InvoiceDate	UnitPrice	CustomerID	Country
0	536365	85123A	WHITE HANGING HEART T-LIGHT HOLDER	6	2010-12-01 08:26:00	2.55	17850.0	United Kingdom
1	536365	71053	WHITE METAL LANTERN	6	2010-12-01 08:26:00	3.39	17850.0	United Kingdom
2	536365	84406B	CREAM CUPID HEARTS COAT HANGER	8	2010-12-01 08:26:00	2.75	17850.0	United Kingdom
3	536365	84029G	KNITTED UNION FLAG HOT WATER BOTTLE	6	2010-12-01 08:26:00	3.39	17850.0	United Kingdom
4	536365	84029E	RED WOOLLY HOTTIE WHITE HEART.	6	2010-12-01 08:26:00	3.39	17850.0	United Kingdom

Are there missing values in the dataset?

```
In [3]:
```

```
Dropped 135080 lines with missing values.
```

Give a general description about the dataset:

```
In [4]:
```

```
The dataset contains 406829 transactions generated by 4372 customers from 37 countries.
There are 4906888 items sold and in $8,300,065.81 dollars.
```

Rank the countries based on their number of transactions:

```
In [5]:
```

Out[5]:
```
The top 10 countries with the most number of transactions are:
United Kingdom    361878
Germany             9495
France              8491
EIRE                7485
Spain               2533
Netherlands         2371
Belgium             2069
Switzerland         1877
Portugal            1480
Australia           1259
Name: Country, dtype: int64
```

Some general descriptions about the products:

```
In [6]:
```

Out[6]:
```
The dataset has 3896 unique product. The most sold 20 are:
['World War 2 Gliders Asstd Designs',
 'Jumbo Bag Red Retrospot',
 'Assorted Colour Bird Ornament',
 'White Hanging Heart T-Light Holder',
```

```
    'Pack Of 72 Retrospot Cake Cases',
    'Popcorn Holder',
    'Rabbit Night Light',
    'Mini Paint Set Vintage ',
    'Pack Of 12 London Tissues ',
    'Pack Of 60 Pink Paisley Cake Cases',
    'Brocade Ring Purse ',
    'Victorian Glass Hanging T-Light',
    'Assorted Colours Silk Fan',
    'Red  Harmonica In Box ',
    'Jumbo Bag Pink Polkadot',
    'Small Popcorn Holder',
    '60 Teatime Fairy Cake Cases',
    'Lunch Bag Red Retrospot',
    'Heart Of Wicker Small',
    'Jumbo Bag Strawberry']
```

What are the top 5 pairs of the most frequently purchased product together?

Hint: By purchased together, you may want to check this based on the InvoiceNo. If two items have the same invoice number, then that means they are bought together.

In [8]:

In [9]:

In [10]:

```
They are:
Green Regency Teacup And Saucer together with Roses Regency Teacup And Saucer
Jumbo Bag Pink Polkadot together with Jumbo Bag Red Retrospot
Alarm Clock Bakelike Green together with Alarm Clock Bakelike Red
Lunch Bag Pink Polkadot together with Lunch Bag Red Retrospot
Lunch Bag  Black Skull. together with Lunch Bag Red Retrospot
```

Find out the top-10 customers with the most spendings:

In [11]:

Out[11]:

CustomerID	Country	Spending
18087.0	United Kingdom	1667546.67
16029.0	United Kingdom	1449214.29
17940.0	United Kingdom	961149.88
14646.0	Netherlands	491457.30
14911.0	EIRE	371383.34
12744.0	Singapore	305724.76
18102.0	United Kingdom	288769.27
15299.0	United Kingdom	260944.33
17450.0	United Kingdom	237461.12
12415.0	Australia	227486.32

In [ ]: