In [ ]:

In [ ]:
```
# Dados de vendas de 3 filiais de um Supermercado por 3 meses, fazer uma análise preditiva com base nos numeros apres
```

In [1]:
```
#base para o pydatasteak
import numpy as np
import pandas as pd
import matplotlib
import matplotlib.pyplot as plt
import seaborn as sns

#escolher cores diferentes com aparencia profissional
import colorsys
```

In [2]:
```
# usar o estilo seaborn - talk - fontes, bordas, legendas etc.
plt.style.use('seaborn-talk')

# import e filters, onde no futuro va mudar alguma coisa, para nao ver as mensagens:
import warnings
warnings .filterwarnings ('ignore')

#para executar o grafico aqui no notebook mesmo:
%matplotlib inline
```

In [3]:
```
# importar o arquivo e visulaizar na tela:
dataset = pd.read_csv('supermarket_sales - Sheet1.csv')
dataset
```

Out[3]:

h	City	Customertype	Gender	Productline	Unitprice	Quantity	Tax 5%	Total	Date	Time	Payment	cogs	gross margin percentage	gross income
A	Yangon	Member	Female	Health and beauty	74.69	7	26.1415	548.9715	1/5/2019	13:08	Ewallet	522.83	4.761905	26.1415
C	Naypyitaw	Normal	Female	Electronic accessories	15.28	5	3.8200	80.2200	3/8/2019	10:29	Cash	76.40	4.761905	3.8200
A	Yangon	Normal	Male	Home and lifestyle	46.33	7	16.2155	340.5255	3/3/2019	13:23	Credit card	324.31	4.761905	16.2155
A	Yangon	Member	Male	Health and beauty	58.22	8	23.2880	489.0480	1/27/2019	20:33	Ewallet	465.76	4.761905	23.2880
A	Yangon	Normal	Male	Sports and travel	86.31	7	30.2085	634.3785	2/8/2019	10:37	Ewallet	604.17	4.761905	30.2085
..	...	...	...	...	...	...	...	...	...	...	...	...	...	...
C	Naypyitaw	Normal	Male	Health and beauty	40.35	1	2.0175	42.3675	1/29/2019	13:46	Ewallet	40.35	4.761905	2.0175
B	Mandalay	Normal	Female	Home and lifestyle	97.38	10	48.6900	1022.4900	3/2/2019	17:16	Ewallet	973.80	4.761905	48.6900
A	Yangon	Member	Male	Food and beverages	31.84	1	1.5920	33.4320	2/9/2019	13:22	Cash	31.84	4.761905	1.5920
A	Yangon	Normal	Male	Home and lifestyle	65.82	1	3.2910	69.1110	2/22/2019	15:33	Cash	65.82	4.761905	3.2910
A	Yangon	Member	Female	Fashion accessories	88.34	7	30.9190	649.2990	2/18/2019	13:28	Cash	618.38	4.761905	30.9190

mns

In [ ]:

In [ ]:

In [6]:
```
# Resumo estatistico do dataset, qtd para cada uma das  coluna,Md,Dp, Min, Max e os quartiz isso para ter uma ideia
# de distribuição
print(dataset.describe())
```

```
         Unitprice     Quantity        Tax 5%        Total         cogs  \
count  1000.000000  1000.000000  1000.000000  1000.000000  1000.00000
mean     55.672130     5.510000    15.379369   322.966749   307.58738
std      26.494628     2.923431    11.708825   245.885335   234.17651
min      10.080000     1.000000     0.508500    10.678500    10.17000
25%      32.875000     3.000000     5.924875   124.422375   118.49750
50%      55.230000     5.000000    12.088000   253.848000   241.76000
75%      77.935000     8.000000    22.445250   471.350250   448.90500
max      99.960000    10.000000    49.650000  1042.650000   993.00000

       gross margin percentage  gross income      Rating
count             1.000000e+03   1000.000000  1000.00000
mean              4.761905e+00     15.379369     6.97270
std               6.220360e-14     11.708825     1.71858
min               4.761905e+00      0.508500     4.00000
25%               4.761905e+00      5.924875     5.50000
50%               4.761905e+00     12.088000     7.00000
75%               4.761905e+00     22.445250     8.50000
max               4.761905e+00     49.650000    10.00000
```

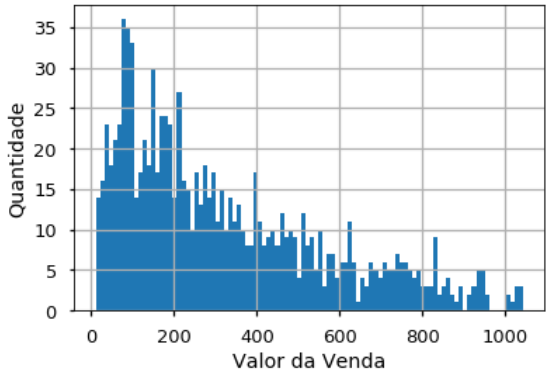
In [7]:
```
# verificar o formato do dataset:
dataset.shape
```

Out[7]: (1000, 17)

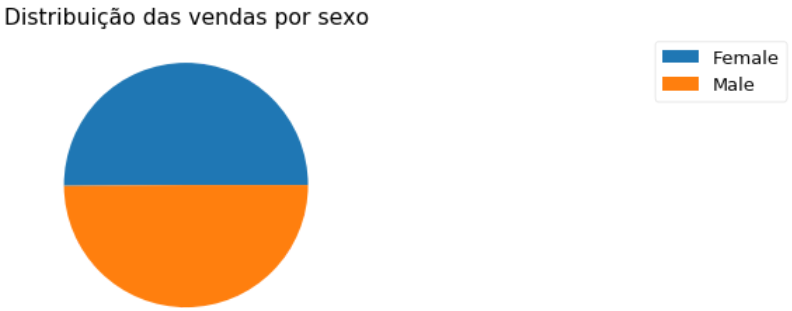
In [8]:
```
#verificar se ha linhas vazias
dataset.isnull().sum()
```

Out[8]:
```
Invoice ID                 0
Branch                     0
City                       0
Customertype               0
Gender                     0
Productline                0
Unitprice                  0
Quantity                   0
Tax 5%                     0
Total                      0
Date                       0
Time                       0
Payment                    0
cogs                       0
gross margin percentage    0
gross income               0
Rating                     0
dtype: int64
```

In [9]:
```
# Gerar um Histograma com a Distribuição das Vendas por quantidades e valores de vendas.
# Possivel verificar onde está a concentração por valor.

dataset.Total.hist( bins = 100)
plt.xlabel('Valor da Venda')
plt.ylabel('Quantidade')
plt.show()
```



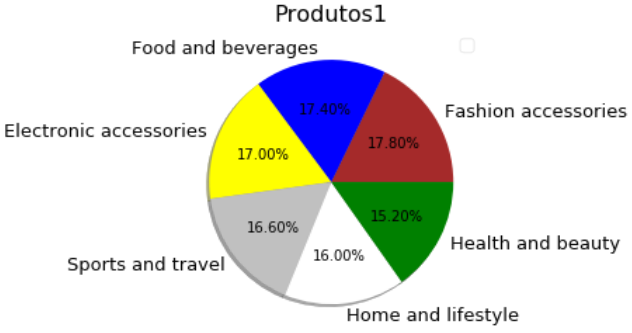
In [35]:
```
# Verificar a distribução das vendas por sexo, onde está a maior concentração:

# para definir a quantidade:
labels = dataset.Gender.value_counts().index
num = len(dataset.Total.value_counts().index)

# Criar uma lista de cores:

# Criar o Gráfico de Pizza:
#definir as fatias e o texto
fatias, texto = plt.pie(dataset.Gender.value_counts( ))
#aspectos para os eixos.
plt.axes( ).set_aspect('equal','datalim')
# legenda ao lado do grafico
plt.legend(fatias,labels, bbox_to_anchor = (1.8,1))
plt.title('Distribuição das vendas por sexo')
plt.show()
```



In [37]:
```
dataset['Productline'].value_counts()
```

Out[37]:
```
Fashion accessories       178
Food and beverages        174
Electronic accessories    170
Sports and travel         166
Home and lifestyle        160
Health and beauty         152
Name: Productline, dtype: int64
```

In [38]:
```
# Participação das vendas por produtos:

fatias = [178, 174, 170, 166, 160, 152]
labels = "Fashion accessories","Food and beverages","Electronic accessories","Sports and travel","Home and lifestyle",

colors = ['brown','blue','yellow','silver','white','green']
explode = [0,0,0,0,0,0]
plt.pie(fatias, labels = labels, colors = colors, explode = explode, shadow = True, autopct = "%.2f%%" )
plt.title('Produtos1', fontsize = 16)
plt.axis('off')
plt.legend('')
plt.show()
```

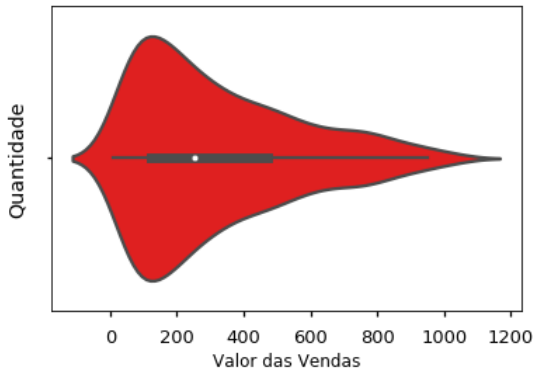


In [41]:
```
# Quais os principais produtos vendidos

#Definir a quantidade
num = len(dataset.Productline.value_counts().index)

label = dataset.Productline.value_counts( ).index
colors =['Orange', 'red','blue','green','brouw','silver','black']

#Gráfico de Pizza
fatias, texto=plt.pie(dataset.Productline.value_counts(), startangle = 90)
plt.axes().set_aspect('equal','datalim')
plt.legend(fatias,lebels, bbox_to_anchor =(1.5,1))
plt.title('Produtos')
plt.show()
```

```
---------------------------------------------------------------------------
NameError                                 Traceback (most recent call last)
<ipython-input-41-7ba2c077fd69> in <module>
     10 fatias, texto=plt.pie(dataset.Productline.value_counts(), startangle = 90)
     11 plt.axes().set_aspect('equal','datalim')
---> 12 plt.legend(fatias,lebels, bbox_to_anchor =(1.5,1))
     13 plt.title('Produtos')
     14 plt.show()

NameError: name 'lebels' is not defined
```

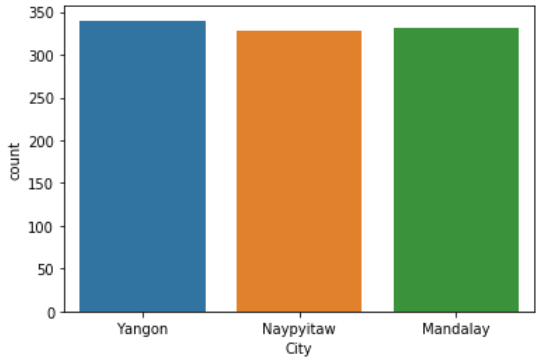
In [ ]:
```
```

In [52]:
```
sns.violinplot(dataset['Total'],color = 'red')
plt.title('', fontsize = 12)
plt.xlabel('Valor das Vendas', fontsize = 12)
plt.ylabel('Quantidade')
plt.show()
```



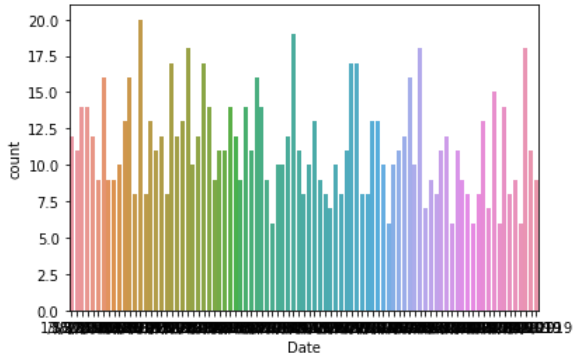
In [13]:
```
sns.countplot(dataset['City'])
```

Out[13]: <matplotlib.axes._subplots.AxesSubplot at 0x28229e9a548>

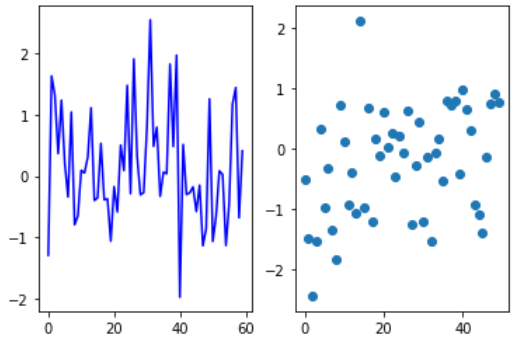


In [14]:
```
sns.countplot(dataset['Date'])
```

Out[14]: <matplotlib.axes._subplots.AxesSubplot at 0x28229f06508>

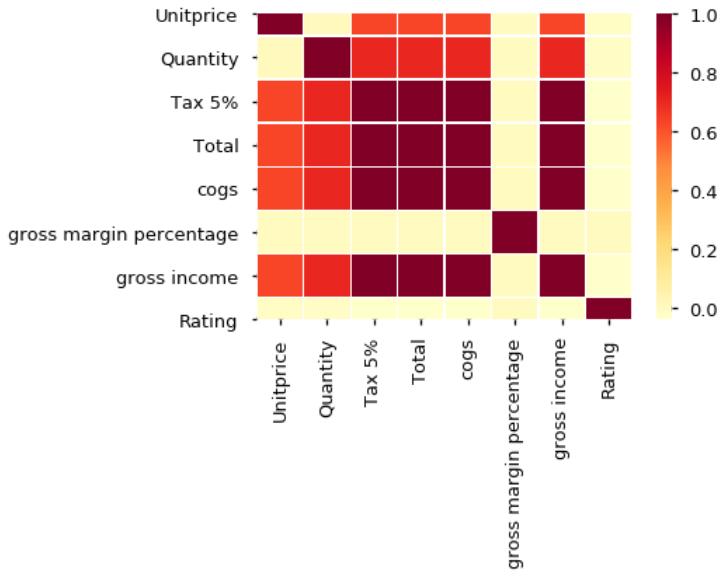


In [17]:
```
%matplotlib inline

fig = plt.figure()
ax1= plt.figure()

ax1 = fig.add_subplot(1,2,1)
ax1.plot(np.random.randn(60), color = 'blue')

ax2 = fig.add_subplot( 1,2,2)
ax2.scatter(np.arange(50), np.random.randn(50))

plt.show()
```



<Figure size 432x288 with 0 Axes>

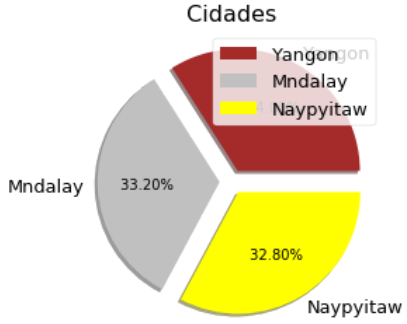
In [60]:
```
corr = dataset.corr()
sns.heatmap(corr, cmap = "YlOrRd",linewidths = 0.2)
plt.show()
```



In [19]:
```
dataset['City'].value_counts()
```

Out[19]:
```
Yangon       340
Mandalay     332
Naypyitaw    328
Name: City, dtype: int64
```

In [59]:
```
fatias = [340, 332,328]
labels = "Yangon", "Mndalay", "Naypyitaw"
colors =['brown','silver','yellow']
explode = [0.1,0.1,0.1]
plt.pie(fatias, labels = labels, colors = colors, explode = explode, shadow = True, autopct = " %.2f%% " )
plt.title(' Cidades ', fontsize = 16)
plt.axis('on')
plt.legend()
plt.show()
```



In [ ]: