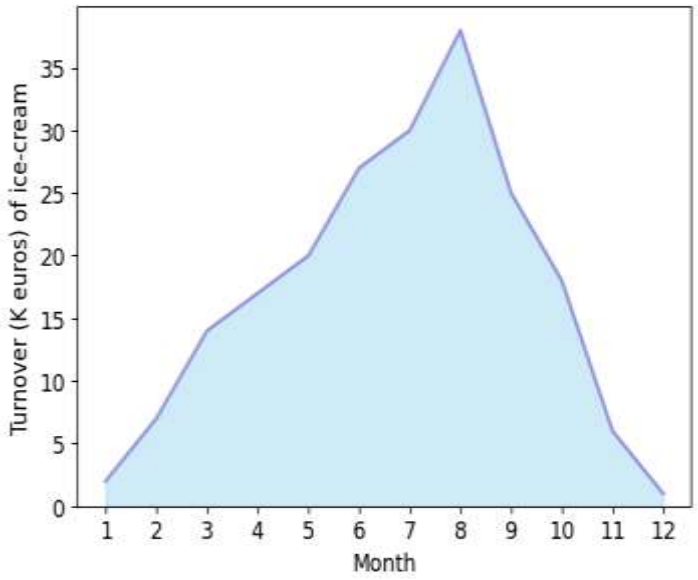
# PRACTICAL 12

**#Area Graph**

```
import datetime
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
turnover = [2, 7, 14, 17, 20, 27, 30, 38, 25, 18, 6, 1]
plt.fill_between(np.arange(12), turnover,
                 color="skyblue", alpha=0.4)
plt.plot(np.arange(12), turnover, color="Slateblue",
         alpha=0.6, linewidth=2)
plt.tick_params(labelsize=12)
plt.xticks(np.arange(12), np.arange(1,13))
plt.xlabel('Month', size=12)
plt.ylabel('Turnover (K euros) of ice-cream', size=12)
plt.ylim(bottom=0)
plt.show()
```

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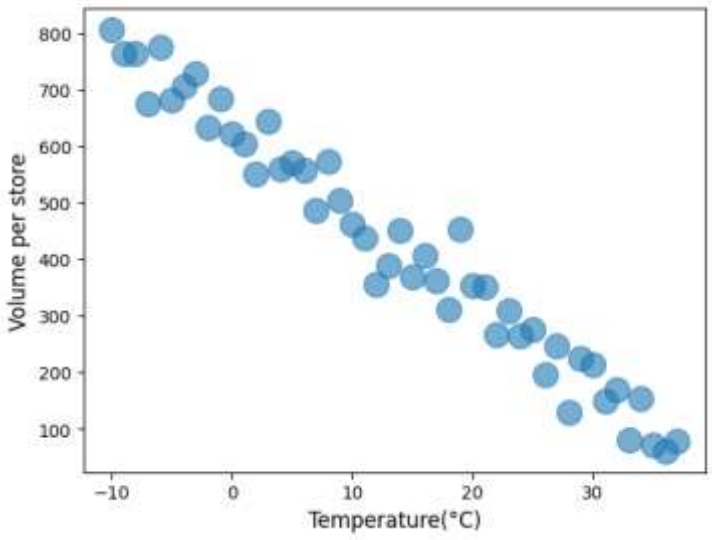
**#Scatter plots**

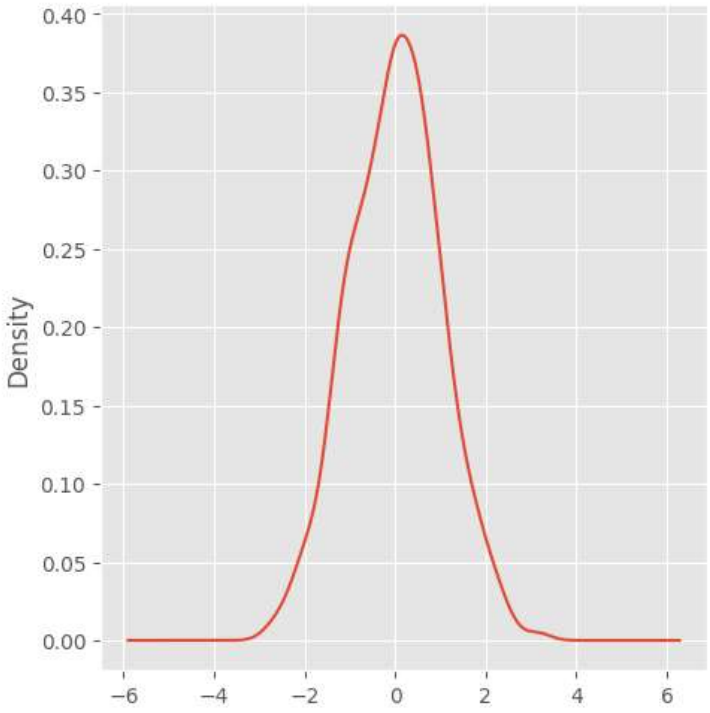
```
import numpy as np
import matplotlib.pyplot as plt
plt.scatter(x=range(-10, 38, 1),
y=range(770, 60, -15)-np.random.randn(48)*40,
            s=200,
            alpha=0.6)
plt.xlabel('Temperature(°C)', size=12)
plt.ylabel('Volume per store', size=12)
plt.show()
```



# PRACTICAL 12

**#Kernel Density Estimate**

```
import sys
import os
import pandas as pd
import matplotlib as ml
import numpy as np
from matplotlib import pyplot as plt
ml.style.use('ggplot')
figl=plt.figure(figsize=(5, 5))
ser = pd.Series (np.random.randn(1000))
ser.plot(figsize=(5, 5), kind='kde')
sPicNameOut1='/content/kde.png'
plt.savefig(sPicNameOut1,dpi=600)
plt.tight_layout()
plt.show()
```

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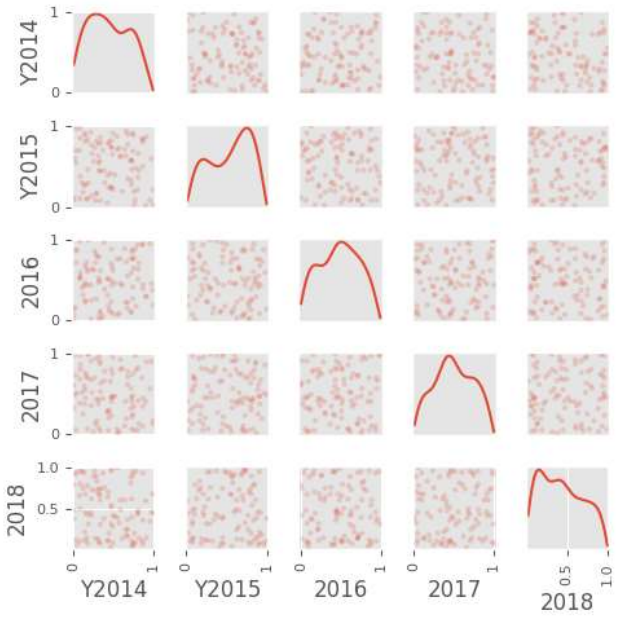
**#Scatter Plot Matrix**

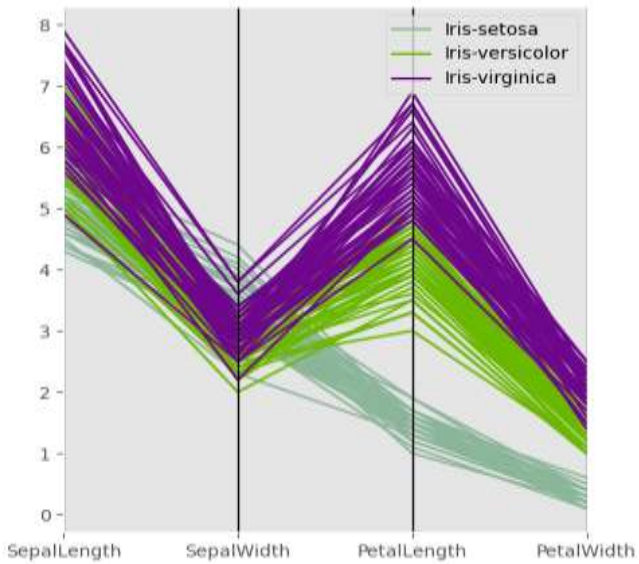
```
import sys
import os
import pandas as pd
import matplotlib as ml
import numpy as np
from matplotlib import pyplot as plt
fig2=plt.figure(figsize=(5, 5))
from pandas.plotting import scatter_matrix
df = pd.DataFrame(np.random.rand(100, 5),
columns=['Y2014', 'Y2015','2016','2017','2018'])
scatter_matrix(df, alpha=0.2,
               figsize=(5,5), diagonal='kde')
sPicNameOut2='/content/scatter_matrix.png'
plt.savefig(sPicNameOut2, dpi=600)
plt.tight_layout()
plt.show()
```



# PRACTICAL 12

**#Parallel Coordinates**

```
import sys
import os
import pandas as pd
import matplotlib as ml
import numpy as np
from matplotlib import pyplot as plt
from pandas.plotting import parallel_coordinates
plt.figure(figsize=(5,5))
sDataFile='/content/iris1.csv'
data = pd.read_csv(sDataFile)
parallel_coordinates (data, 'Name')
sPicNameOut2='/content/parallel_coordinates.png'
plt.savefig(spicNameOut2, dpi=600)
plt.tight_layout()
plt.show()
```

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**#Autocorrelation Plot**

```
import sys
import os
import pandas as pd
import matplotlib as ml
import numpy as np
from matplotlib import pyplot as plt
from pandas.plotting import autocorrelation_plot
plt.figure(figsize=(5,5))
data = pd.Series (0.7* np.random.rand(1000) + \
0.3* np.sin(np.linspace(-9* np.pi, 9 * np.pi, num=1000)))
autocorrelation_plot(data)
spicNameOut2='/content/autocorrelation_plot.png'
plt.savefig(sPicNameOut2,dpi=600)
plt.tight_layout()
plt.show()
```