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[1] import numpy as np  
import pandas as pd  
import matplotlib.pyplot as plt

[2] loc = "/content/sales.txt"  
  
df=pd.read\_csv(loc, sep="\s+", header=None)

[3] print(df.shape)  
  
(36, 2)

[4] df.head()  
df.columns=["sales","advertising"]

[5] df.head()  
df.describe()

	sales	advertising
count	36.000000	36.000000
mean	24.255556	28.527778
std	6.185118	18.777625
min	12.000000	1.000000
25%	20.300000	15.750000

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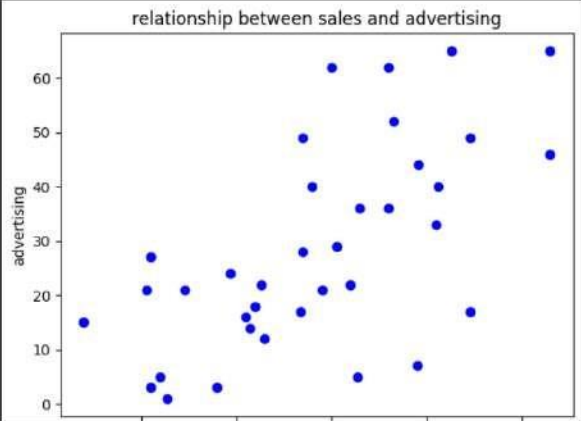
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[6] x=df["sales"].values  
y=df["advertising"].values

▶

plt.scatter(x,y, color='blue',label='scatter plot')  
plt.title("relationship between sales and advertising")  
plt.xlabel("sales")  
plt.ylabel("advertising")  
plt.show()

relationship between sales and advertising



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```
[8] x.shape
     y.shape
     (36,)
```

```
[9] x=x.reshape(-1,1)
     y=y.reshape(-1,1)
```

```
x.shape
y.shape
(36, 1)
```

```
from sklearn.model_selection import train_test_split
x_train,x_test,y_train,y_test=train_test_split(x,y,test_size=0.33,random_state=42)
```

```
[12] print(x_train.shape)
      print(x_test.shape)
      print(y_train.shape)
      print(y_test.shape)
      (24, 1)
      (12, 1)
      (24, 1)
      (12, 1)
```

```
[13] from sklearn.linear_model import LinearRegression
      lm = LinearRegression()
```

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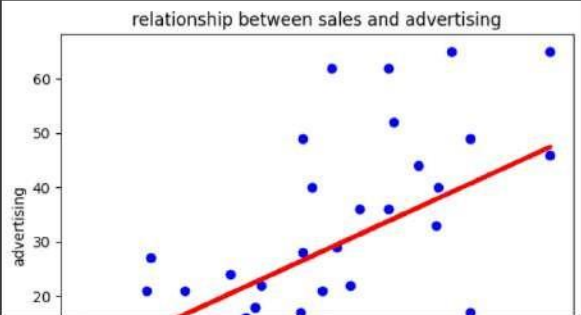
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0s

[13] from sklearn.linear\_model import LinearRegression  
  
lm = LinearRegression()  
  
lm.fit(x\_train,y\_train)  
  
y\_pred = lm.predict(x\_test)

1s

plt.scatter(x,y, color='blue',label='scatter plot')  
plt.plot(x\_test,y\_pred, color='red', linewidth=3)  
plt.title("relationship between sales and advertising")  
plt.xlabel("sales")  
plt.ylabel("advertising")  
plt.show()




The figure is a scatter plot titled "relationship between sales and advertising". The x-axis is labeled "sales" and the y-axis is labeled "advertising". The plot displays a set of blue data points representing individual observations. A red line with a thickness of 3 represents the linear regression fit, showing a positive correlation between sales and advertising. The data points are scattered around the regression line, indicating some variability in the relationship.

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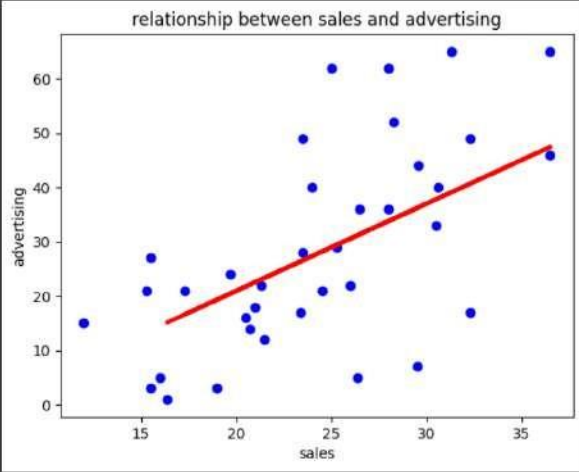
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```
plt.scatter(x,y, color='blue',label='scatter plot')
plt.plot(x_test,y_pred, color='red', linewidth=3)
plt.title("relationship between sales and advertising")
plt.xlabel("sales")
plt.ylabel("advertising")
plt.show()
```

relationship between sales and advertising



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