MATPLOTLIB ASSIGNMENT

In [7]:
```python
#import libraries
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
```

Scipy:

We have the min and max temperatures in a city In India for each months of the year. We would like to find a function to describe this and show it graphically, the dataset given below.

Task:

1.fitting it to the periodic function

2.plot the fit

Data

Max = 39, 41, 43, 47, 49, 51, 45, 38, 37, 29, 27, 25

Min = 21, 23, 27, 28, 32, 35, 31, 28, 21, 19, 17, 18

In [24]:
```python
Months = np.arange(12)
max_temp = np.array([39, 41, 43, 47, 49, 51, 45, 38, 37, 29, 27, 25 ])
min_temp =np.array([ 21, 23, 27, 28, 32, 35, 31, 28, 21, 19, 17, 18])
Temperature = np.linspace(20,50,12)
```

In [29]:
```python
#plt.scatter(Month , Temprature)
plt.figure(figsize=(8,6))
plt.scatter(Month ,Max,c = "r")
plt.scatter(Month ,Min , c= "b" )
plt.xlabel("Month")
plt.ylabel("Temperature")
```

Out[29]: Text(0, 0.5, 'Temperature')
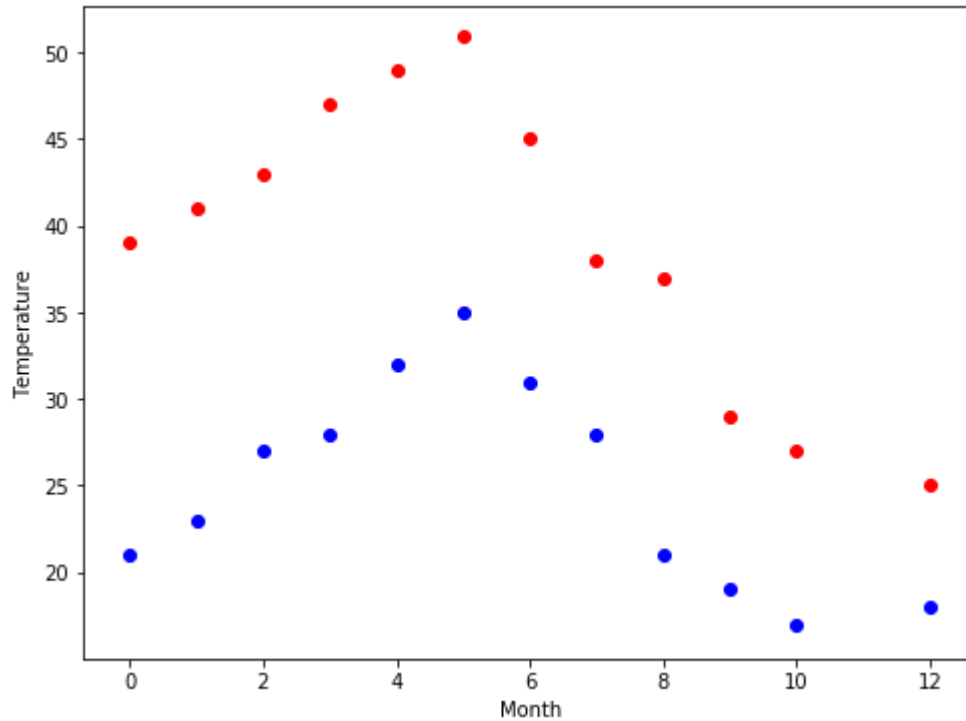
1.fitting it to the periodic function

```python
In [30]: from scipy import optimize
         def yearly_temps(times, avg, ampl, time_offset):
             return (avg+ ampl * np.cos((times + time_offset) * 2 * np.pi / times.max()))

         res_max, cov_max = optimize.curve_fit(yearly_temps, Months, max_temp, [20, 10, 0]
         res_min, cov_min = optimize.curve_fit(yearly_temps, Months, min_temp, [-40, 20, 0
```
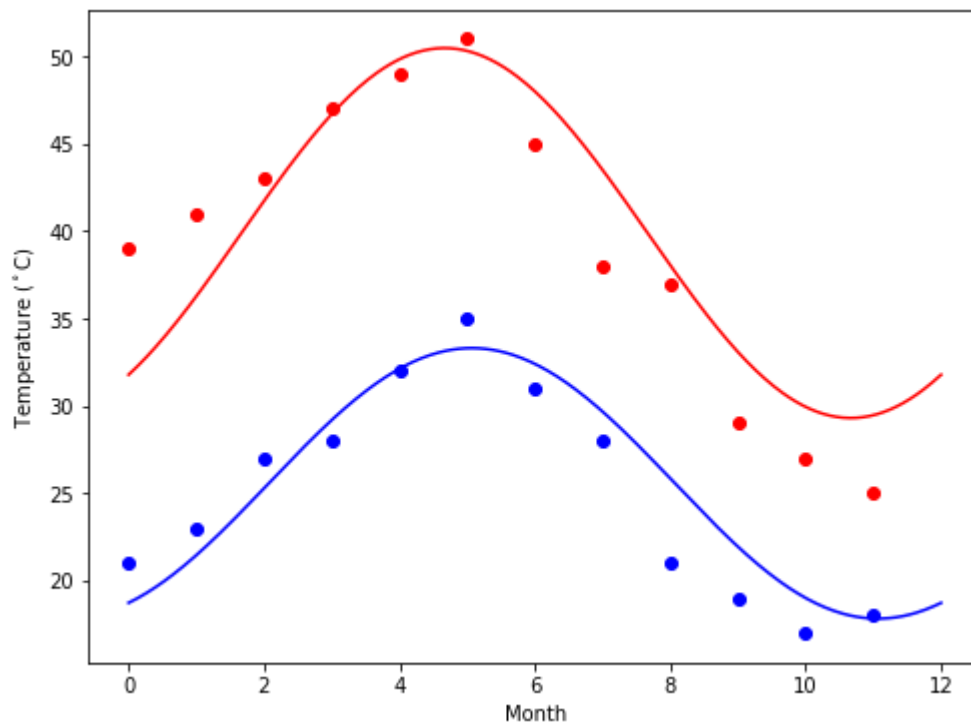
2.Plot the fit

```python
In [28]: days = np.linspace(0, 12, num=365)

         plt.figure(figsize=(8,6))
         plt.plot(Months, max_temp, 'ro')
         plt.plot(days, yearly_temps(days, *res_max), 'r-')
         plt.plot(Months, min_temp, 'bo')
         plt.plot(days, yearly_temps(days, *res_min), 'b-')
         plt.xlabel('Month')
         plt.ylabel('Temperature ($^\circ$C)')

         plt.show()
```



```
In [ ]:
```

Matplotlib:

This assignment is for visualization using matplotlib:

data to use:

url=https://raw.githubusercontent.com/Geoyi/Cleaning-Titanic-Data/master/titanic_original.csv (https://raw.githubusercontent.com/Geoyi/Cleaning-Titanic-Data/master/titanic_original.csv)

titanic = pd.read_csv(url)

Charts to plot:

1. Create a pie chart presenting the male/female proportion

```
In [10]: url = "https://raw.githubusercontent.com/Geoyi/Cleaning-Titanic-Data/master/titar
         titanic = pd.read_csv(url)
```

```
In [11]: titanic.head()
         x = titanic["sex"]
         Dummy = pd.get_dummies(x)
         T = pd.concat((titanic , Dummy),axis = 1)
         T1 = T.drop(["sex","male" ],axis = 1)
         T1.head()
```

Out[11]:

	pclass	survived	name	age	sibsp	parch	ticket	fare	cabin	embarked	boat	b
0	1.0	1.0	Allen, Miss. Elisabeth Walton	29.0000	0.0	0.0	24160	211.3375	B5	S	2	
1	1.0	1.0	Allison, Master. Hudson Trevor	0.9167	1.0	2.0	113781	151.5500	C22 C26	S	11	
2	1.0	0.0	Allison, Miss. Helen Loraine	2.0000	1.0	2.0	113781	151.5500	C22 C26	S	NaN	
3	1.0	0.0	Allison, Mr. Hudson Joshua Creighton	30.0000	1.0	2.0	113781	151.5500	C22 C26	S	NaN	1
4	1.0	0.0	Allison, Mrs. Hudson J C (Bessie Waldo Daniels)	25.0000	1.0	2.0	113781	151.5500	C22 C26	S	NaN	

```
In [12]: x = T1["female"]
         Col = pd.Series(x, dtype=int)
```

In [13]:
```python
Total_female = sum(Col)
for i in Col.shape:
    row = i
    break
Total_male = abs(row - Total_female)
L = [Total_male , Total_female]
plt.title('Male/Female Proportion')
plt.pie(L,labels = [ "male ", "female "],autopct="%0.2f%%")
plt.show()
```
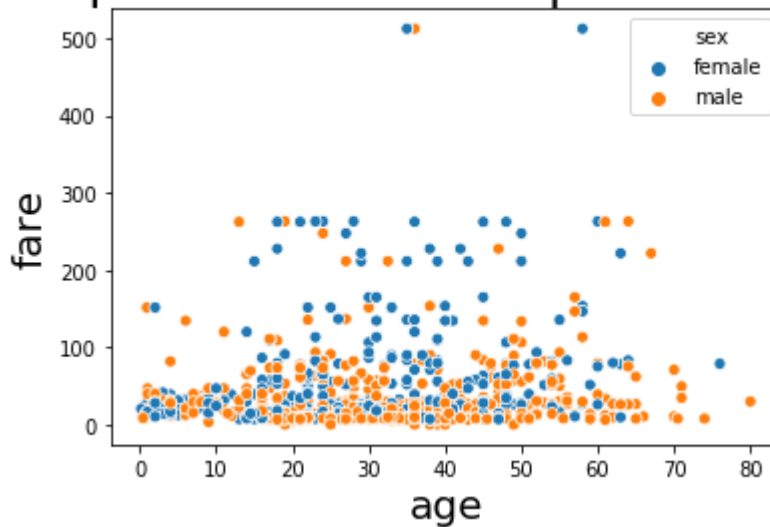
Male/Female Proportion

male

64.43%

35.57%

female
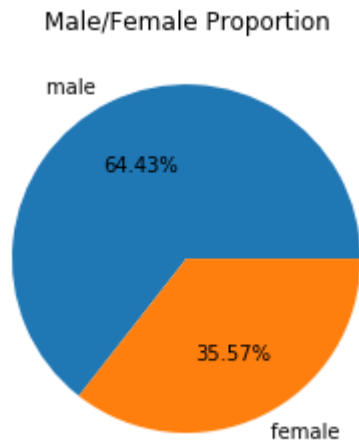
2. Create a scatterplot with the Fare paid and the Age, differ the plot color by gender

In [33]:
```python
plt.title('scatterplot with the Fare paid and the Age',fontsize=25)
plt.xlabel('Fare',fontsize=20)
plt.ylabel('Age',fontsize=20)
sns.scatterplot(y=titanic["fare"], x=titanic["age"], hue=titanic["sex"])
plt.figure(figsize=(8,6))
```

Out[33]: <Figure size 576x432 with 0 Axes>

<Figure size 576x432 with 0 Axes>

In [ ]: