```
In [67]:   print('Name : ')
           print('Plot a line graph to find the average cholestrol found in various age gr
           print('Plot a line graph to find the correlation between systolic and diastolic
```

```
Name :
Plot a line graph to find the average cholestrol found in various age groups
Plot a line graph to find the correlation between systolic and diastolic bloo
d pressure found in various age groups
```

```
In [1]:   #Task 1
          #Import all the libraries and read cardiovascular.csv
          import pandas as pd
          import matplotlib.pyplot as plt

          df = pd.read_csv('cardiovascular.csv')
          df
```

Out[1]:

	Unnamed: 0	id	age	gender	height	weight	systolic_blood_pressure	diastolic_blood_p
0	0	0	50.0	2	168	62.0	110	
1	1	1	55.0	1	156	85.0	140	
2	2	2	51.0	1	165	64.0	130	
3	3	3	48.0	2	169	82.0	150	
4	4	4	47.0	1	156	56.0	100	
...	...	...	...	...	...	...	...	
69995	69995	99993	52.0	2	168	76.0	120	
69996	69996	99995	61.0	1	158	126.0	140	
69997	69997	99996	52.0	2	183	105.0	180	
69998	69998	99998	61.0	1	163	72.0	135	
69999	69999	99999	56.0	1	170	72.0	120	

70000 rows × 14 columns

Average cholestrol found in various age groups

In [2]:
```python
#Task 2
#Group by age and find the average cholesterol and make a dataframe out of it
group_by_age = df.groupby('age')['cholesterol'].mean().reset_index(name='choles
group_by_age
```

Out[2]:

	age	cholesterol
0	29.0	1.000000
1	30.0	1.000000
2	39.0	1.185955
3	40.0	1.173243
4	41.0	1.209669
5	42.0	1.167137
6	43.0	1.264894
7	44.0	1.204756
8	45.0	1.261620
9	46.0	1.220308
10	47.0	1.308147
11	48.0	1.246273
12	49.0	1.316945
13	50.0	1.280473
14	51.0	1.346496
15	52.0	1.315645
16	53.0	1.380041
17	54.0	1.331761
18	55.0	1.420932
19	56.0	1.396729
20	57.0	1.469072
21	58.0	1.415078
22	59.0	1.511465
23	60.0	1.443125
24	61.0	1.559384
25	62.0	1.450205
26	63.0	1.621345
27	64.0	1.463649

```python
In [4]: #Task 3
        #Plot a line graph for various age group and their cholesterol
        label = group_by_age['age']
        value = group_by_age['cholesterol']

        fig = plt.subplots(figsize=(19,8))

        plt.plot(label, value, label = "Average cholesterol as per age" , linewidth=3.0
        plt.xlabel('age')
        plt.xticks(rotation='vertical')

        plt.ylabel('cholesterol')

        plt.title('Average cholesterol as per age', fontsize=20)

        plt.legend()

        plt.show()
```
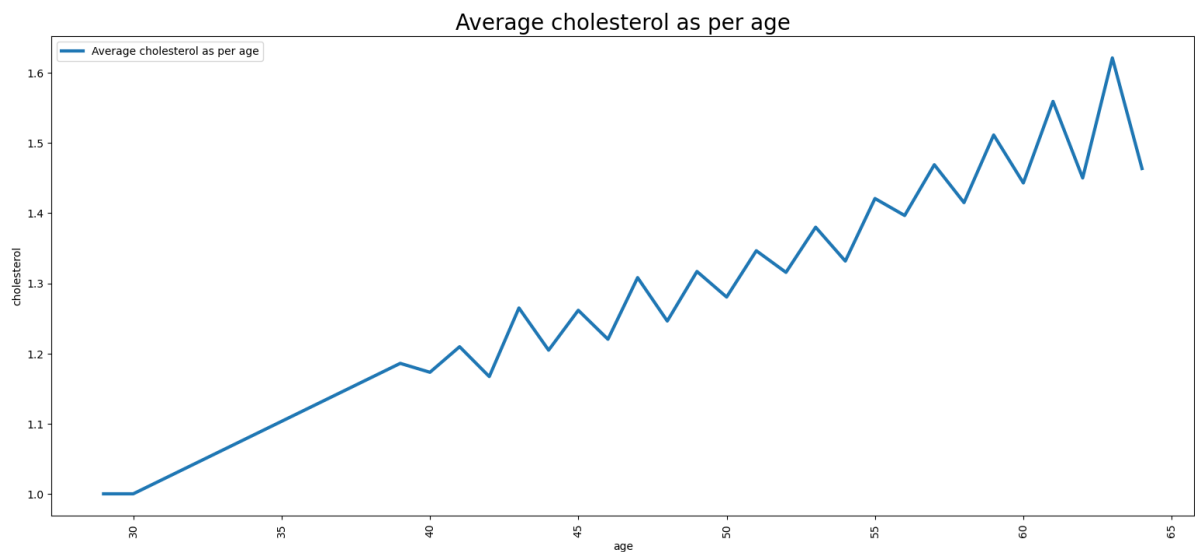

Conclusion -

Correlation between systolic and diastolic blood pressure

In [84]:
```python
# Diastolic blood pressure - is the pressure in the arteries when the heart res
# Systolic blood pressure - the pressure in your arteries when your heart beats

#predefine code for image
from IPython.display import Image
Image(filename='blood pressure readings chart.jpg')
#predefine code end
```

Out[84]:

BLOOD PRESSURE CATEGORY	SYSTOLIC mm Hg (upper number)		DIASTOLIC mm Hg (lower number)
NORMAL	LESS THAN 120	and	LESS THAN 80
ELEVATED	120 – 129	and	LESS THAN 80
HIGH BLOOD PRESSURE (HYPERTENSION) STAGE 1	130 – 139	or	80 – 89
HIGH BLOOD PRESSURE (HYPERTENSION) STAGE 2	140 OR HIGHER	or	90 OR HIGHER
HYPERTENSIVE CRISIS (consult your doctor immediately)	HIGHER THAN 180	and/or	HIGHER THAN 120

In [5]:
```python
#Task 4
#Group by age and find maximum systolic blood pressure and create a dataframe p
group_by_age_systolic = df.groupby('age')['systolic_blood_pressure'].mean().res
group_by_age_systolic
```

Out[5]:

	age	systolic_blood_pressure
0	29.0	113.333333
1	30.0	110.000000
2	39.0	119.697753
3	40.0	119.794081
4	41.0	120.589595
5	42.0	120.172779
6	43.0	129.536189
7	44.0	122.717966
8	45.0	123.913752
9	46.0	132.766154
10	47.0	132.380974
11	48.0	124.852015
12	49.0	125.683055
13	50.0	128.453358
14	51.0	130.669240
15	52.0	125.513876
16	53.0	128.348501
17	54.0	130.555062
18	55.0	128.801884
19	56.0	128.095925
20	57.0	133.284590
21	58.0	131.998240
22	59.0	131.109899
23	60.0	128.782187
24	61.0	132.385997
25	62.0	131.623010
26	63.0	137.857456
27	64.0	132.677183

In [7]:
```python
#Task 5
#Group by age and find maximum diastolic blood pressure and create a dataframe
label = group_by_age_systolic['age']
value = group_by_age_systolic['systolic_blood_pressure']

fig = plt.subplots(figsize=(19,8))

plt.plot(label, value, label = "Average systolic_blood_pressure as per age" , l
plt.xlabel('age')
plt.xticks(rotation='vertical')

plt.ylabel('systolic_blood_pressure')

plt.title('Average systolic_blood_pressure as per age', fontsize=20)

plt.legend()

plt.show()diastolic_blood_pressure
```
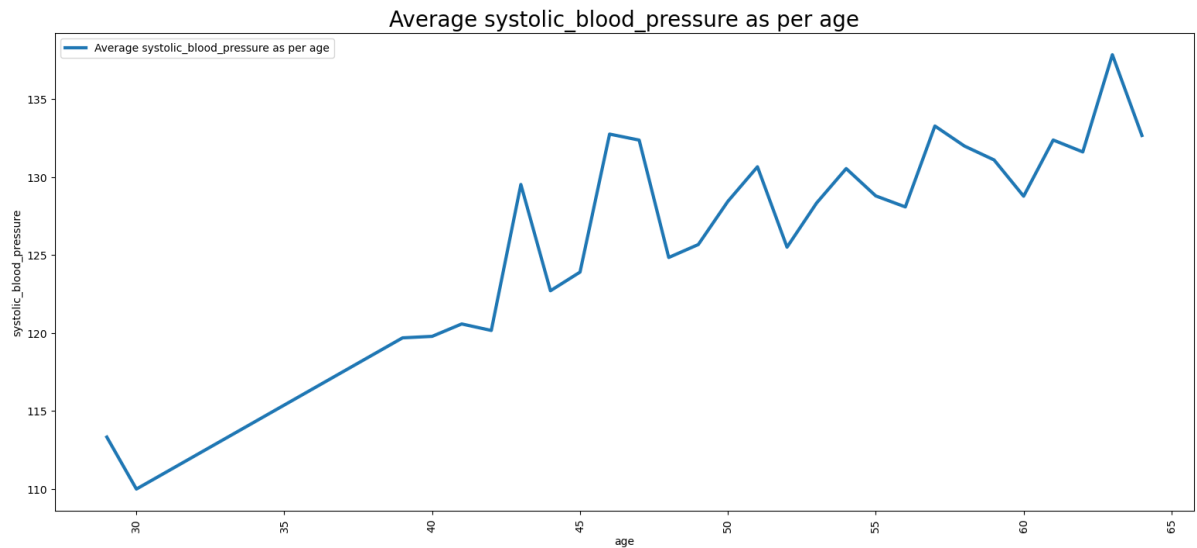
Average systolic_blood_pressure as per age

In [9]:
```python
#Task 6
#Plot a line graph to show a Correlation between systolic and diastolic blood p

import pandas as pd
import matplotlib.pyplot as plt

df = pd.read_csv('cardiovascular.csv')
df

group_by_date_systolic = df.groupby('age')['systolic_blood_pressure'].max().res
group_by_date_systolic

group_by_date_diastolic = df.groupby('age')['diastolic_blood_pressure'].max().r
group_by_date_diastolic


systolic_blood_pressure_label = group_by_date_systolic['age']
systolic_blood_pressure_value = group_by_date_systolic['systolic_blood_pressure

plt.plot(systolic_blood_pressure_label,systolic_blood_pressure_value,label = "s

diastolic_blood_pressure_label = group_by_date_diastolic['age']
diastolic_blood_pressure_value = group_by_date_diastolic['diastolic_blood_press

plt.plot(diastolic_blood_pressure_label, diastolic_blood_pressure_value, label
plt.xlabel('age')
plt.xticks(rotation='vertical')

plt.title('Correlation between the systolic_blood_pressure of age and diastolic

plt.legend()

plt.show()
```
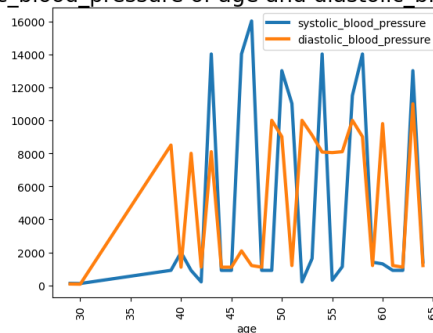
Correlation between the systolic_blood_pressure of age and diastolic_blood_pressure of age using line graph

Conclusion -

In [ ]: