In [1]:
```
import numpy as np
```

In [2]:
```
import pandas as pd
```

In [3]:
```
import matplotlib.pyplot as plt
```

In [4]:
```
%matplotlib inline
```

In [5]:
```
iris = pd.read_csv("Iris.csv")
```

In [6]:
```
headers = list(iris)
```

In [7]:
```
headers
```

Out[7]:
```
['Id',
 'SepalLengthCm',
 'SepalWidthCm',
 'PetalLengthCm',
 'PetalWidthCm',
 'Species']
```

In [8]:
```
features = headers[1:5]
```

In [9]:
```
features
```

Out[9]:
```
['SepalLengthCm', 'SepalWidthCm', 'PetalLengthCm', 'PetalWidthCm']
```

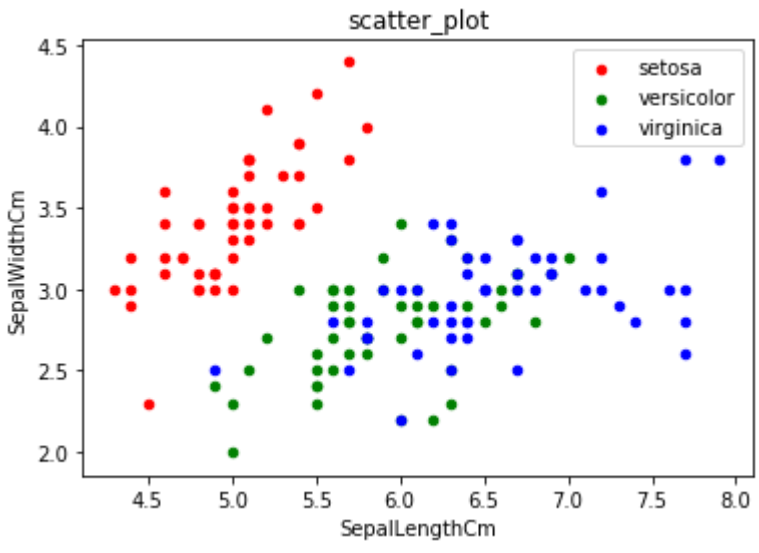
In [10]:
```
iris.head()
```

Out[10]:

	Id	SepalLengthCm	SepalWidthCm	PetalLengthCm	PetalWidthCm	Species
0	1	5.1	3.5	1.4	0.2	Iris-setosa
1	2	4.9	3.0	1.4	0.2	Iris-setosa
2	3	4.7	3.2	1.3	0.2	Iris-setosa
3	4	4.6	3.1	1.5	0.2	Iris-setosa
4	5	5.0	3.6	1.4	0.2	Iris-setosa

In [12]:
```
ax = iris[iris.Species=='Iris-setosa'].plot.scatter(x='SepalLengthCm', y='SepalWidthCm',
                                                    color='red', label='setosa')
iris[iris.Species=='Iris-versicolor'].plot.scatter(x='SepalLengthCm', y='SepalWidthCm',
                                                   color='green', label='versicolor', ax=ax)
iris[iris.Species=='Iris-virginica'].plot.scatter(x='SepalLengthCm', y='SepalWidthCm',
                                                  color='blue', label='virginica', ax=ax)
ax.set_title("scatter_plot")
```

Out[12]:
```
Text(0.5,1,'scatter_plot')
```



In [26]:
```
min_i=iris['SepalLengthCm'].min()
max_i=iris['SepalLengthCm'].max()
```

min=4.2999999999999998 max=7.9000000000000004

In [27]:
```
print("{} - {} ".format(min_i,max_i))
```

```
4.3 - 7.9
```

In [43]:
```
order = list(iris['SepalLengthCm'])
```

In [47]:
```
order.sort(reverse=True)
```

In [49]:
```
order[1]
```

Out[49]: 7.7

In [50]:
```
slcl=list(iris['SepalWidthCm'])
```

In [52]:
```
nparr = np.array(slcl)
```

In [53]:
```
np.mean(nparr)
```

Out[53]: 3.0540000000000003

In [54]:
```
def create_len(cols):
    len = cols[0]
    if len<5:
        return 'small'
    else:
        return 'large'
```

In [56]:
```
iris['Length']=iris[['SepalLengthCm']].apply(create_len,axis=1)
```

In [57]:
```
iris.head()
```

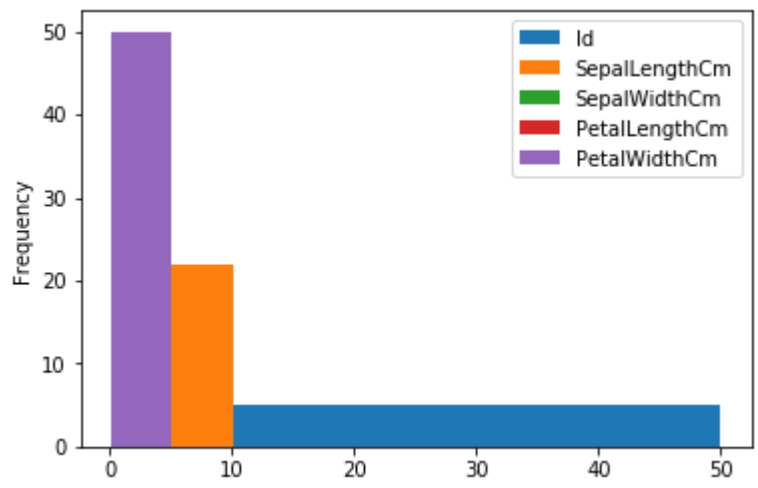
Out[57]:

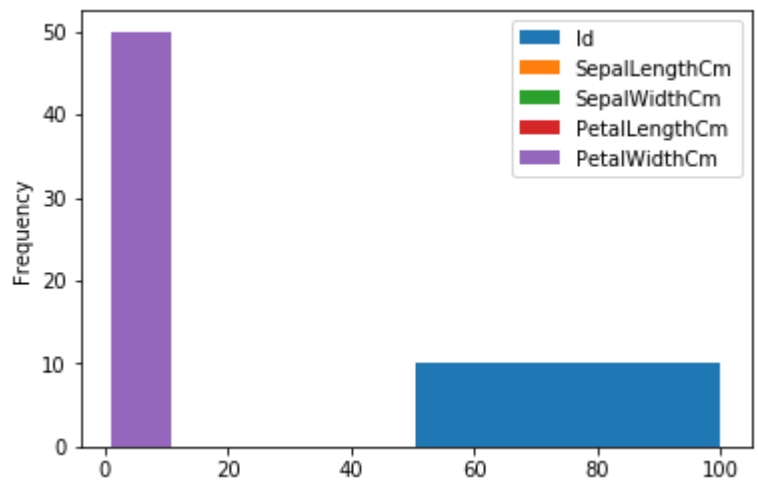
	Id	SepalLengthCm	SepalWidthCm	PetalLengthCm	PetalWidthCm	Species	Length
0	1	5.1	3.5	1.4	0.2	Iris-setosa	large
1	2	4.9	3.0	1.4	0.2	Iris-setosa	small
2	3	4.7	3.2	1.3	0.2	Iris-setosa	small
3	4	4.6	3.1	1.5	0.2	Iris-setosa	small
4	5	5.0	3.6	1.4	0.2	Iris-setosa	large

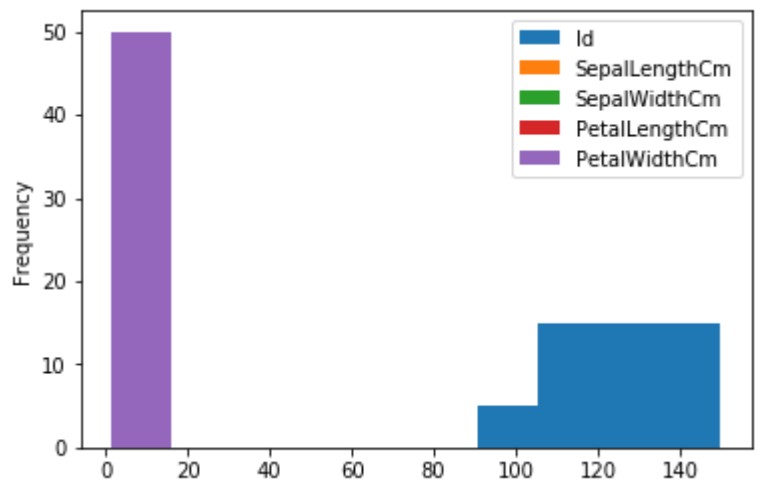
In [59]:
```
sp = iris.groupby('Species')
```

In [65]:
```
sp.plot(kind='hist')
```

Out[65]:
```
Species
Iris-setosa        AxesSubplot(0.125,0.125;0.775x0.755)
Iris-versicolor    AxesSubplot(0.125,0.125;0.775x0.755)
Iris-virginica     AxesSubplot(0.125,0.125;0.775x0.755)
dtype: object
```







In [72]:
```
iris['SepalLengthCm'].std()
```

Out[72]:
```
0.82806612797786305
```

In [73]:
```
iris.corr()
```

Out[73]:

	Id	SepalLengthCm	SepalWidthCm	PetalLengthCm	PetalWidthCm
Id	1.000000	0.716676	-0.397729	0.882747	0.899759
SepalLengthCm	0.716676	1.000000	-0.109369	0.871754	0.817954
SepalWidthCm	-0.397729	-0.109369	1.000000	-0.420516	-0.356544
PetalLengthCm	0.882747	0.871754	-0.420516	1.000000	0.962757
PetalWidthCm	0.899759	0.817954	-0.356544	0.962757	1.000000

In [ ]:
```

```

In [74]:
```
iris.isnull()
```

Out[74]:

	Id	SepalLengthCm	SepalWidthCm	PetalLengthCm	PetalWidthCm	Species	Length
0	False	False	False	False	False	False	False
1	False	False	False	False	False	False	False
2	False	False	False	False	False	False	False
3	False	False	False	False	False	False	False
4	False	False	False	False	False	False	False
5	False	False	False	False	False	False	False
6	False	False	False	False	False	False	False
7	False	False	False	False	False	False	False
8	False	False	False	False	False	False	False
9	False	False	False	False	False	False	False
10	False	False	False	False	False	False	False
11	False	False	False	False	False	False	False
12	False	False	False	False	False	False	False
13	False	False	False	False	False	False	False
14	False	False	False	False	False	False	False
15	False	False	False	False	False	False	False
16	False	False	False	False	False	False	False
17	False	False	False	False	False	False	False
18	False	False	False	False	False	False	False
19	False	False	False	False	False	False	False
20	False	False	False	False	False	False	False
21	False	False	False	False	False	False	False
22	False	False	False	False	False	False	False
23	False	False	False	False	False	False	False
24	False	False	False	False	False	False	False
25	False	False	False	False	False	False	False
26	False	False	False	False	False	False	False
27	False	False	False	False	False	False	False
28	False	False	False	False	False	False	False
29	False	False	False	False	False	False	False
...	...	...	...	...	...	...	...
120	False	False	False	False	False	False	False
121	False	False	False	False	False	False	False
122	False	False	False	False	False	False	False
123	False	False	False	False	False	False	False
124	False	False	False	False	False	False	False
125	False	False	False	False	False	False	False
126	False	False	False	False	False	False	False
127	False	False	False	False	False	False	False
128	False	False	False	False	False	False	False
129	False	False	False	False	False	False	False
130	False	False	False	False	False	False	False
131	False	False	False	False	False	False	False
132	False	False	False	False	False	False	False
133	False	False	False	False	False	False	False
134	False	False	False	False	False	False	False
135	False	False	False	False	False	False	False
136	False	False	False	False	False	False	False
137	False	False	False	False	False	False	False
138	False	False	False	False	False	False	False
139	False	False	False	False	False	False	False
140	False	False	False	False	False	False	False
141	False	False	False	False	False	False	False

	Id	SepalLengthCm	SepalWidthCm	PetalLengthCm	PetalWidthCm	Species	Length
142	False	False	False	False	False	False	False
143	False	False	False	False	False	False	False
144	False	False	False	False	False	False	False
145	False	False	False	False	False	False	False
146	False	False	False	False	False	False	False
147	False	False	False	False	False	False	False
148	False	False	False	False	False	False	False
149	False	False	False	False	False	False	False

150 rows × 7 columns

In [75]:
```
#no missing data
```

In [78]:
```
iris.to_csv('iris_after.csv',index=False)
```

In [ ]:
```

```