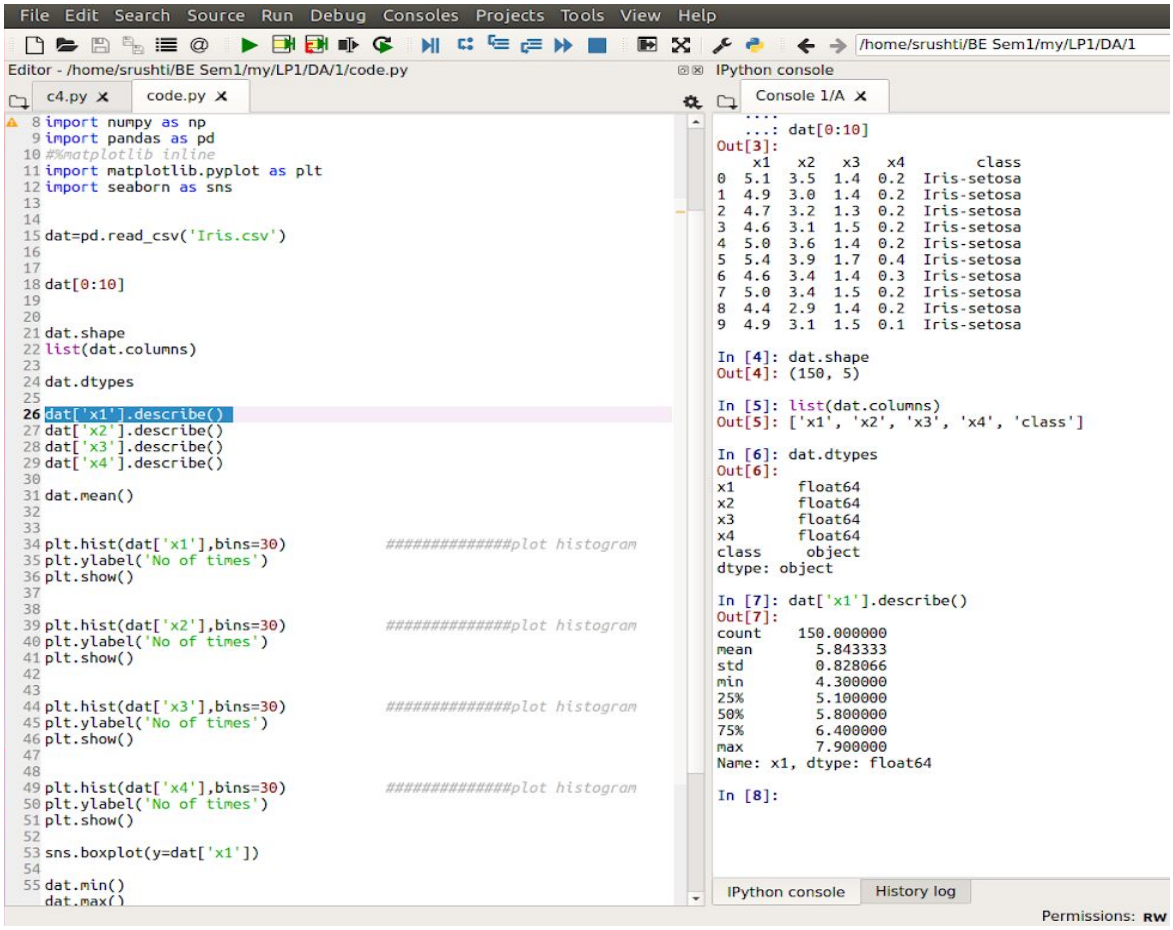
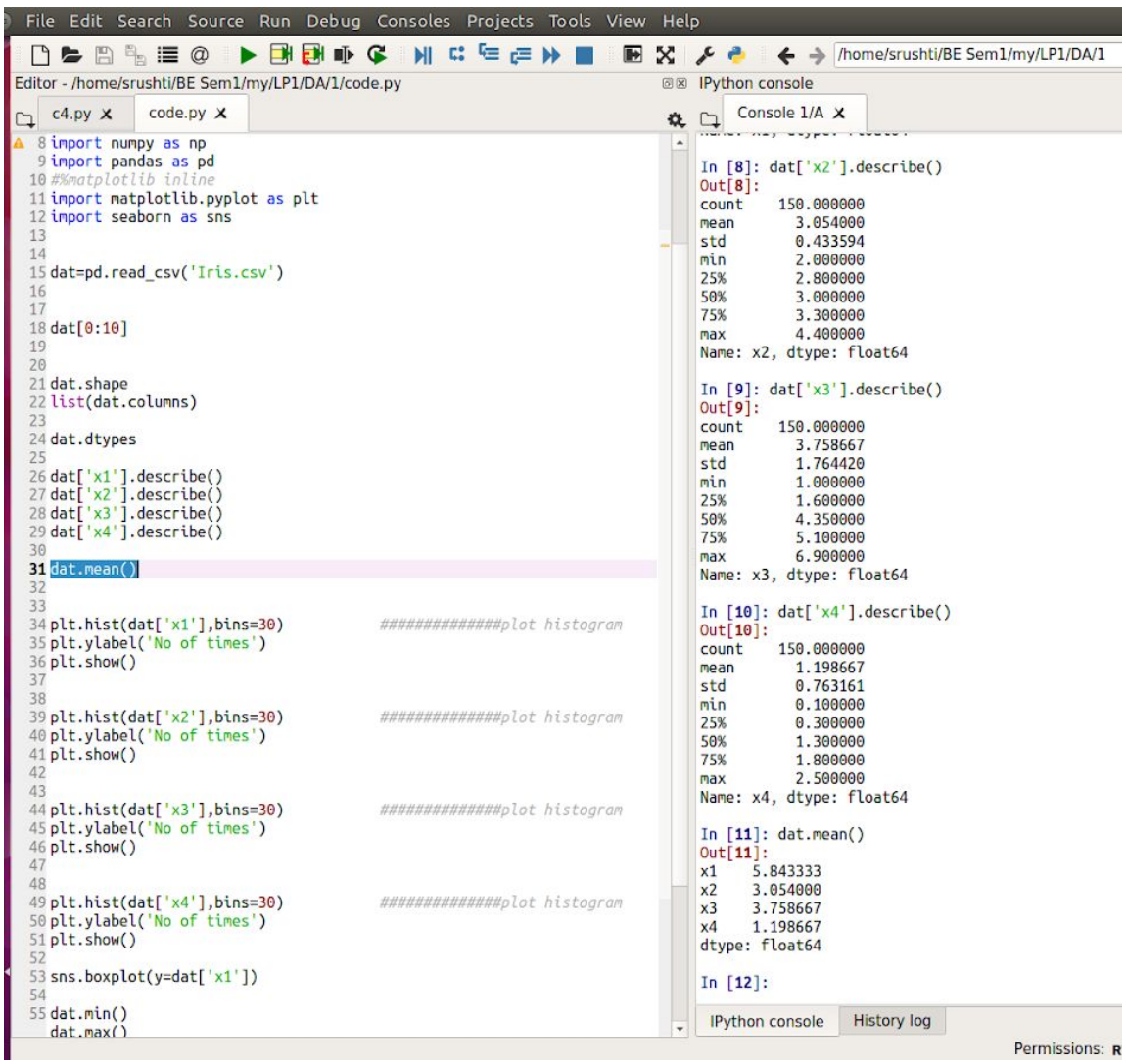
CODE

```
import numpy as np
import pandas as pd
#%matplotlib inline
import matplotlib.pyplot as plt
import seaborn as sns
dat=pd.read_csv('Iris.csv')
dat[0:10]

dat.shape
list(dat.columns)

dat.dtypes

dat['x1'].describe()
dat['x2'].describe()
dat['x3'].describe()
dat['x4'].describe()

dat.mean()

plt.hist(dat['x1'],bins=30)
plt.ylabel('No of times')
plt.show()


plt.hist(dat['x2'],bins=30)
plt.ylabel('No of times')
plt.show()


plt.hist(dat['x3'],bins=30)
plt.ylabel('No of times')
plt.show()


plt.hist(dat['x4'],bins=30)
plt.ylabel('No of times')
plt.show()

sns.boxplot(y=dat['x1'])
sns.boxplot(y=dat['x2'])
sns.boxplot(y=dat['x3'])
sns.boxplot(y=dat['x4'])


dat.max()
dat.min()
sns.boxplot(x=dat['class'],y=dat['x2'])

dat.pstdev()

sns.boxplot(data=dat.ix[:,0:4])

sns.boxplot(x=dat['class'],y=dat['x1'])

sns.boxplot(x=dat['class'],y=dat['x3'])

sns.boxplot(x=dat['class'],y=dat['x4'])
```

OUTPUT


File Edit Search Source Run Debug Consoles Projects Tools View Help
/home/srushti/BE Sem1/my/LP1/DA/1
Editor - /home/srushti/BE Sem1/my/LP1/DA/1/code.py
c4.py
code.py
IPython console
Console 1/A
8 import numpy as np
9 import pandas as pd
10 #%matplotlib inline
11 import matplotlib.pyplot as plt
12 import seaborn as sns
15 dat=pd.read_csv('Iris.csv')
18 dat[0:10]
21 dat.shape
22 list(dat.columns)
24 dat.dtypes
26 dat['x1'].describe()
27 dat['x2'].describe()
28 dat['x3'].describe()
29 dat['x4'].describe()
31 dat.mean()
34 plt.hist(dat['x1'],bins=30) ##############plot histogram
35 plt.ylabel('No of times')
36 plt.show()
39 plt.hist(dat['x2'],bins=30) ##############plot histogram
40 plt.ylabel('No of times')
41 plt.show()
44 plt.hist(dat['x3'],bins=30) ##############plot histogram
45 plt.ylabel('No of times')
46 plt.show()
49 plt.hist(dat['x4'],bins=30) ##############plot histogram
50 plt.ylabel('No of times')
51 plt.show()
53 sns.boxplot(y=dat['x1'])
55 dat.min()
dat.max()
...: dat[0:10]
Out[3]:
x1 x2 x3 x4 class
0 5.1 3.5 1.4 0.2 Iris-setosa
1 4.9 3.0 1.4 0.2 Iris-setosa
2 4.7 3.2 1.3 0.2 Iris-setosa
3 4.6 3.1 1.5 0.2 Iris-setosa
4 5.0 3.6 1.4 0.2 Iris-setosa
5 5.4 3.9 1.7 0.4 Iris-setosa
6 4.6 3.4 1.4 0.3 Iris-setosa
7 5.0 3.4 1.5 0.2 Iris-setosa
8 4.4 2.9 1.4 0.2 Iris-setosa
9 4.9 3.1 1.5 0.1 Iris-setosa
In [4]: dat.shape
Out[4]: (150, 5)
In [5]: list(dat.columns)
Out[5]: ['x1', 'x2', 'x3', 'x4', 'class']
In [6]: dat.dtypes
Out[6]:
x1 float64
x2 float64
x3 float64
x4 float64
class object
dtype: object
In [7]: dat['x1'].describe()
Out[7]:
count 150.000000
mean 5.843333
std 0.828066
min 4.300000
25% 5.100000
50% 5.800000
75% 6.400000
max 7.900000
Name: x1, dtype: float64
In [8]:
IPython console
History log
Permissions: RW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/home/srushti/BE Sem1/my/LP1/DA/1
Editor - /home/srushti/BE Sem1/my/LP1/DA/1/code.py
c4.py
code.py
IPython console
Console 1/A
8 import numpy as np
9 import pandas as pd
10 #%matplotlib inline
11 import matplotlib.pyplot as plt
12 import seaborn as sns
15 dat=pd.read_csv('Iris.csv')
18 dat[0:10]
21 dat.shape
22 list(dat.columns)
24 dat.dtypes
26 dat['x1'].describe()
27 dat['x2'].describe()
28 dat['x3'].describe()
29 dat['x4'].describe()
31 dat.mean()
34 plt.hist(dat['x1'],bins=30) ##############plot histogram
35 plt.ylabel('No of times')
36 plt.show()
39 plt.hist(dat['x2'],bins=30) ##############plot histogram
40 plt.ylabel('No of times')
41 plt.show()
44 plt.hist(dat['x3'],bins=30) ##############plot histogram
45 plt.ylabel('No of times')
46 plt.show()
49 plt.hist(dat['x4'],bins=30) ##############plot histogram
50 plt.ylabel('No of times')
51 plt.show()
53 sns.boxplot(y=dat['x1'])
55 dat.min()
dat.max()
In [8]: dat['x2'].describe()
Out[8]:
count 150.000000
mean 3.054000
std 0.433594
min 2.000000
25% 2.800000
50% 3.000000
75% 3.300000
max 4.400000
Name: x2, dtype: float64
In [9]: dat['x3'].describe()
Out[9]:
count 150.000000
mean 3.758667
std 1.764420
min 1.000000
25% 1.600000
50% 4.350000
75% 5.100000
max 6.900000
Name: x3, dtype: float64
In [10]: dat['x4'].describe()
Out[10]:
count 150.000000
mean 1.198667
std 0.763161
min 0.100000
25% 0.300000
50% 1.300000
75% 1.800000
max 2.500000
Name: x4, dtype: float64
In [11]: dat.mean()
Out[11]:
x1 5.843333
x2 3.054000
x3 3.758667
x4 1.198667
dtype: float64
In [12]:
IPython console
History log
Permissions: R

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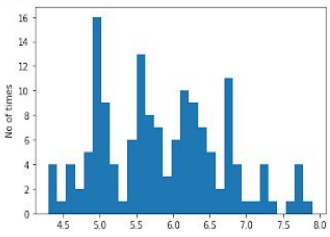
c4.py | code.py

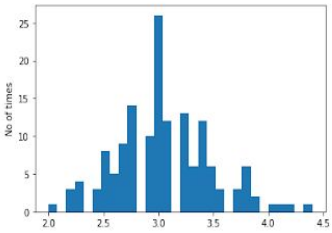
```
18 dat[0:10]
19
20
21 dat.shape
22 list(dat.columns)
23
24 dat.dtypes
25
26 dat['x1'].describe()
27 dat['x2'].describe()
28 dat['x3'].describe()
29 dat['x4'].describe()
30
31 dat.mean()
32
33
34 plt.hist(dat['x1'],bins=30)            ##############plot histogram
35 plt.ylabel('No of times')
36 plt.show()
37
38
39 plt.hist(dat['x2'],bins=30)            ##############plot histogram
40 plt.ylabel('No of times')
41 plt.show()
42
43
44 plt.hist(dat['x3'],bins=30)            ##############plot histogram
45 plt.ylabel('No of times')
46 plt.show()
47
48
49 plt.hist(dat['x4'],bins=30)            ##############plot histogram
50 plt.ylabel('No of times')
51 plt.show()
52
53 sns.boxplot(y=dat['x1'])
54
55 dat.min()
56 dat.max()
57
58 sns.boxplot(x=dat['class'],y=dat['x2'])
59
60 dat.pstdev()
61
62 sns.boxplot(data=dat.ix[:,0:4])
63
64 sns.boxplot(x=dat['class'],y=dat['x2'])
65
```

IPython console

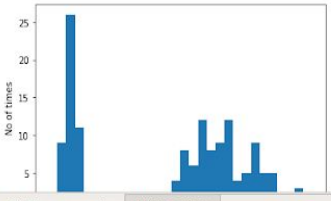
Console 1/A




```
In [13]: plt.hist(dat['x2'],bins=30)            ##############plot histogram
    ...: plt.ylabel('No of times')
    ...: plt.show()
```




```
In [14]: plt.hist(dat['x3'],bins=30)            ##############plot histogram
    ...: plt.ylabel('No of times')
    ...: plt.show()
```



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c4.py | code.py

```
18 dat[0:10]
19
20
21 dat.shape
22 list(dat.columns)
23
24 dat.dtypes
25
26 dat['x1'].describe()
27 dat['x2'].describe()
28 dat['x3'].describe()
29 dat['x4'].describe()
30
31 dat.mean()
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33
34 plt.hist(dat['x1'],bins=30)            ##############plot histogram
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36 plt.show()
37
38
39 plt.hist(dat['x2'],bins=30)            ##############plot histogram
40 plt.ylabel('No of times')
41 plt.show()
42
43
44 plt.hist(dat['x3'],bins=30)            ##############plot histogram
45 plt.ylabel('No of times')
46 plt.show()
47
48
49 plt.hist(dat['x4'],bins=30)            ##############plot histogram
50 plt.ylabel('No of times')
51 plt.show()
52
53 sns.boxplot(y=dat['x1'])
54
55 dat.min()
56 dat.max()
57
58 sns.boxplot(x=dat['class'],y=dat['x2'])
59
60 dat.pstdev()
61
62 sns.boxplot(data=dat.ix[:,0:4])
63
64 sns.boxplot(x=dat['class'],y=dat['x2'])
65
```
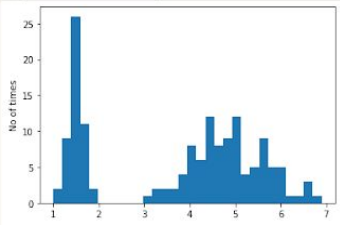
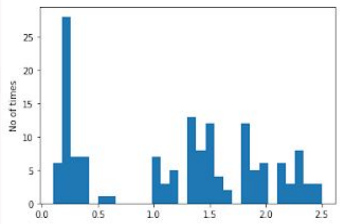

IPython console

Console 1/A




```
In [15]: plt.hist(dat['x4'],bins=30)            ##############plot histogram
    ...: plt.ylabel('No of times')
    ...: plt.show()
```




```
In [16]:
```

IPython console | History log

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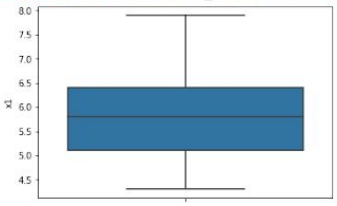
c4.py | code.py*

```
18 dat[0:10]
19
20
21 dat.shape
22 list(dat.columns)
23
24 dat.dtypes
25
26 dat['x1'].describe()
27 dat['x2'].describe()
28 dat['x3'].describe()
29 dat['x4'].describe()
30
31 dat.mean()
32
33
34 plt.hist(dat['x1'],bins=30)            ##############plot histogram
35 plt.ylabel('No of times')
36 plt.show()
37
38
39 plt.hist(dat['x2'],bins=30)            ##############plot histogram
40 plt.ylabel('No of times')
41 plt.show()
42
43
44 plt.hist(dat['x3'],bins=30)            ##############plot histogram
45 plt.ylabel('No of times')
46 plt.show()
47
48
49 plt.hist(dat['x4'],bins=30)            ##############plot histogram
50 plt.ylabel('No of times')
51 plt.show()
52
53 sns.boxplot(y=dat['x1'])
54 sns.boxplot(y=dat['x2'])
55 sns.boxplot(y=dat['x3'])
56 sns.boxplot(y=dat['x4'])
57
58 dat.min()
59 dat.max()
60
61 sns.boxplot(x=dat['class'],y=dat['x2'])
62
63 dat.pstdev()
64
65 sns.boxplot(data=dat.ix[:,0:4])
```

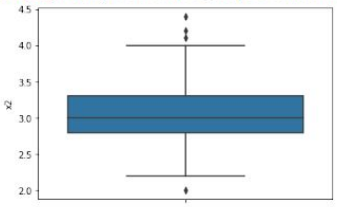
IPython console

Console 1/A

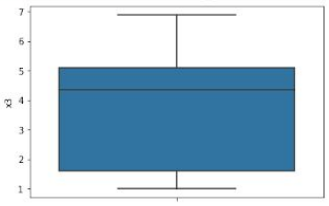
```
In [16]: sns.boxplot(y=dat['x1'])
Out[16]: <matplotlib.axes._subplots.AxesSubplot at 0x7fc0e5fdff10>
```




```
In [17]: sns.boxplot(y=dat['x2'])
Out[17]: <matplotlib.axes._subplots.AxesSubplot at 0x7fc0e600c250>
```




```
In [18]: sns.boxplot(y=dat['x3'])
Out[18]: <matplotlib.axes._subplots.AxesSubplot at 0x7fc0e61459d0>
```



IPython console | History log

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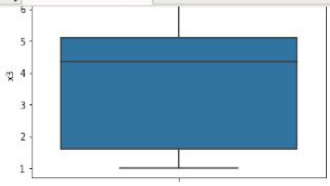
c4.py | code.py*

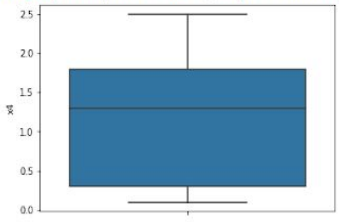
```
21 dat.shape
22 list(dat.columns)
23
24 dat.dtypes
25
26 dat['x1'].describe()
27 dat['x2'].describe()
28 dat['x3'].describe()
29 dat['x4'].describe()
30
31 dat.mean()
32
33
34 plt.hist(dat['x1'],bins=30)            ##############plot histogram
35 plt.ylabel('No of times')
36 plt.show()
37
38
39 plt.hist(dat['x2'],bins=30)            ##############plot histogram
40 plt.ylabel('No of times')
41 plt.show()
42
43
44 plt.hist(dat['x3'],bins=30)            ##############plot histogram
45 plt.ylabel('No of times')
46 plt.show()
47
48
49 plt.hist(dat['x4'],bins=30)            ##############plot histogram
50 plt.ylabel('No of times')
51 plt.show()
52
53 sns.boxplot(y=dat['x1'])
54 sns.boxplot(y=dat['x2'])
55 sns.boxplot(y=dat['x3'])
56 sns.boxplot(y=dat['x4'])
57
58
59 dat.max()
60 dat.min()
61 sns.boxplot(x=dat['class'],y=dat['x2'])
62
63 dat.pstdev()
64
65 sns.boxplot(data=dat.ix[:,0:4])
66
67 sns.boxplot(x=dat['class'],y=dat['x2'])
68
```

IPython console

Console 1/A




```
In [19]: sns.boxplot(y=dat['x4'])
Out[19]: <matplotlib.axes._subplots.AxesSubplot at 0x7fc0e65f6950>
```




```
In [20]: dat.min()
    ...: dat.max()
Out[20]:
x1                 7.9
x2                 4.4
x3                 6.9
x4                 2.5
class    Iris-virginica
dtype: object

In [21]: dat.min()
Out[21]:
x1                 4.3
x2                   2
x3                   1
x4                 0.1
class    Iris-setosa
dtype: object

In [22]: sns.boxplot(x=dat['class'],y=dat['x2'])
```

IPython console | History log

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c4.py | code.py*

```
21 dat.shape
22 list(dat.columns)
23
24 dat.dtypes
25
26 dat['x1'].describe()
27 dat['x2'].describe()
28 dat['x3'].describe()
29 dat['x4'].describe()
30
31 dat.mean()
32
33
34 plt.hist(dat['x1'],bins=30)            ##############plot histogram
35 plt.ylabel('No of times')
36 plt.show()
37
38
39 plt.hist(dat['x2'],bins=30)            ##############plot histogram
40 plt.ylabel('No of times')
41 plt.show()
42
43
44 plt.hist(dat['x3'],bins=30)            ##############plot histogram
45 plt.ylabel('No of times')
46 plt.show()
47
48
49 plt.hist(dat['x4'],bins=30)            ##############plot histogram
50 plt.ylabel('No of times')
51 plt.show()
52
53 sns.boxplot(y=dat['x1'])
54 sns.boxplot(y=dat['x2'])
55 sns.boxplot(y=dat['x3'])
56 sns.boxplot(y=dat['x4'])
57
58
59 dat.max()
60 dat.min()
61 sns.boxplot(x=dat['class'],y=dat['x2'])
62
63 dat.pstdev()
64
65 sns.boxplot(data=dat.ix[:,0:4])
66
67 sns.boxplot(x=dat['class'],y=dat['x2'])
68
```

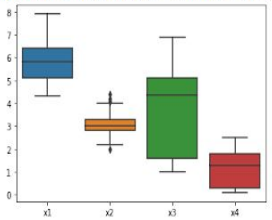
IPython console

Console 1/A

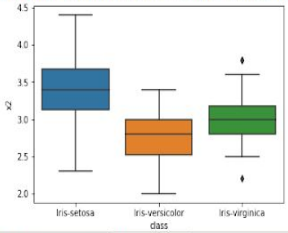
```
In [24]: sns.boxplot(data=dat.ix[:,0:4])
__main__:1: FutureWarning:
.ix is deprecated. Please use
.loc for label based indexing or
.iloc for positional indexing

See the documentation here:
http://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#ix-indexer-is-deprecated
/home/srushti/anaconda3/lib/python3.7/site-packages/pandas/core/indexing.py:822: FutureWarning:
.ix is deprecated. Please use
.loc for label based indexing or
.iloc for positional indexing

See the documentation here:
http://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#ix-indexer-is-deprecated
  retval = getattr(retval, self.name)._getitem_axis(key, axis=i)
Out[24]: <matplotlib.axes._subplots.AxesSubplot at 0x7fc0e5ef32d0>
```




```
In [25]: sns.boxplot(x=dat['class'],y=dat['x2'])
Out[25]: <matplotlib.axes._subplots.AxesSubplot at 0x7fc0e5e98b50>
```



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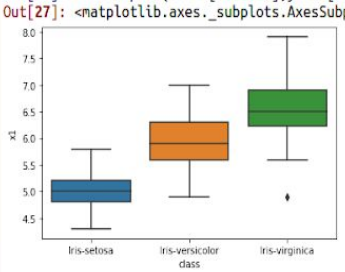
```
24 dat.dtypes
25
26 dat['x1'].describe()
27 dat['x2'].describe()
28 dat['x3'].describe()
29 dat['x4'].describe()
30
31 dat.mean()
32
33
34 plt.hist(dat['x1'],bins=30)            ##############plot histogram
35 plt.ylabel('No of times')
36 plt.show()
37
38
39 plt.hist(dat['x2'],bins=30)            ##############plot histogram
40 plt.ylabel('No of times')
41 plt.show()
42
43
44 plt.hist(dat['x3'],bins=30)            ##############plot histogram
45 plt.ylabel('No of times')
46 plt.show()
47
48
49 plt.hist(dat['x4'],bins=30)            ##############plot histogram
50 plt.ylabel('No of times')
51 plt.show()
52
53 sns.boxplot(y=dat['x1'])
54 sns.boxplot(y=dat['x2'])
55 sns.boxplot(y=dat['x3'])
56 sns.boxplot(y=dat['x4'])
57
58
59 dat.max()
60 dat.min()
61 sns.boxplot(x=dat['class'],y=dat['x2'])
62
63 dat.pstdev()
64
65 sns.boxplot(data=dat.ix[:,0:4])
66
67 sns.boxplot(x=dat['class'],y=dat['x1'])
68
69 sns.boxplot(x=dat['class'],y=dat['x3'])
70
71 sns.boxplot(x=dat['class'],y=dat['x4'])
```

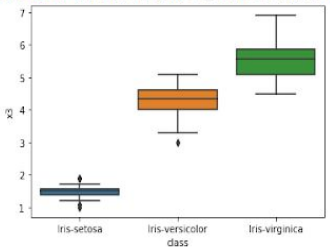
IPython console

Console 1/A

```
In [27]: sns.boxplot(x=dat['class'],y=dat['x1'])
Out[27]: <matplotlib.axes._subplots.AxesSubplot at 0x7fc0e5d4b210>
```




```
In [28]: sns.boxplot(x=dat['class'],y=dat['x3'])
Out[28]: <matplotlib.axes._subplots.AxesSubplot at 0x7fc0e5cd5450>
```




```
In [29]:
```

IPython console | History log

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