In [1]:
```python
import numpy as np
import matplotlib.pyplot as plt
import pandas as pd
from sklearn.datasets import load_iris
data=load_iris()
x=data['data']
x
```

Out[1]:
```
array([[5.1, 3.5, 1.4, 0.2],
       [4.9, 3. , 1.4, 0.2],
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       [4.6, 3.1, 1.5, 0.2],
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       [5.8, 4. , 1.2, 0.2],
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       [5.2, 4.1, 1.5, 0.1],
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       [4.8, 3. , 1.4, 0.3],
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       [6.9, 3.1, 4.9, 1.5],
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       [5.8, 2.7, 5.1, 1.9],
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       [7.7, 3.8, 6.7, 2.2],
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       [6.1, 3. , 4.9, 1.8],
       [6.4, 2.8, 5.6, 2.1],
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       [7.9, 3.8, 6.4, 2. ],
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       [6.3, 2.8, 5.1, 1.5],
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       [7.7, 3. , 6.1, 2.3],
       [6.3, 3.4, 5.6, 2.4],
       [6.4, 3.1, 5.5, 1.8],
       [6. , 3. , 4.8, 1.8],
       [6.9, 3.1, 5.4, 2.1],
       [6.7, 3.1, 5.6, 2.4],
       [6.9, 3.1, 5.1, 2.3],
       [5.8, 2.7, 5.1, 1.9],
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       [6.7, 3.3, 5.7, 2.5],
       [6.7, 3. , 5.2, 2.3],
       [6.3, 2.5, 5. , 1.9],
       [6.5, 3. , 5.2, 2. ],
       [6.2, 3.4, 5.4, 2.3],
       [5.9, 3. , 5.1, 1.8]])
```

In [2]:
```python
import numpy as np
from sklearn import preprocessing, model_selection, neighbors
import pandas as pd
df = pd.read_csv('iris.csv')
#print(df.dtypes)
df.replace('?',-99999, inplace=True)# if we neglect this line the accuracy will be 93.33
print(df)
```

```
     sepal_length  sepal_width  petal_length  petal_width    species
0             5.1          3.5           1.4          0.2     setosa
1             4.9          3.0           1.4          0.2     setosa
2             4.7          3.2           1.3          0.2     setosa
3             4.6          3.1           1.5          0.2     setosa
4             5.0          3.6           1.4          0.2     setosa
..            ...          ...           ...          ...        ...
145           6.7          3.0           5.2          2.3  virginica
146           6.3          2.5           5.0          1.9  virginica
147           6.5          3.0           5.2          2.0  virginica
148           6.2          3.4           5.4          2.3  virginica
149           5.9          3.0           5.1          1.8  virginica

[150 rows x 5 columns]
```

In [3]:
```python
X=np.array(df.drop(['species'],1))
y=np.array(df['species'])
print(X)
print(y)
X_train, X_test, y_train, y_test =model_selection.train_test_split(X, y, test_size=0.2)
clf = neighbors.KNeighborsClassifier()
clf.fit(X_train, y_train)
accuracy = clf.score(X_test, y_test)
print(accuracy)
```

```
[[5.1 3.5 1.4 0.2]
 [4.9 3.  1.4 0.2]
 [4.7 3.2 1.3 0.2]
 [4.6 3.1 1.5 0.2]
 [5.  3.6 1.4 0.2]
 [5.4 3.9 1.7 0.4]
 [4.6 3.4 1.4 0.3]
 [5.  3.4 1.5 0.2]
 [4.4 2.9 1.4 0.2]
 [4.9 3.1 1.5 0.1]
 [5.4 3.7 1.5 0.2]
 [4.8 3.4 1.6 0.2]
 [4.8 3.  1.4 0.1]
 [4.3 3.  1.1 0.1]
 [5.8 4.  1.2 0.2]
 [5.7 4.4 1.5 0.4]
 [5.4 3.9 1.3 0.4]
 [5.1 3.5 1.4 0.3]
 [5.7 3.8 1.7 0.3]
 [5.1 3.8 1.5 0.3]
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 [5.1 3.7 1.5 0.4]
 [4.6 3.6 1.  0.2]
 [5.1 3.3 1.7 0.5]
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 [5.  3.  1.6 0.2]
 [5.  3.4 1.6 0.4]
 [5.2 3.5 1.5 0.2]
 [5.2 3.4 1.4 0.2]
 [4.7 3.2 1.6 0.2]
 [4.8 3.1 1.6 0.2]
 [5.4 3.4 1.5 0.4]
 [5.2 4.1 1.5 0.1]
 [5.5 4.2 1.4 0.2]
 [4.9 3.1 1.5 0.2]
 [5.  3.2 1.2 0.2]
 [5.5 3.5 1.3 0.2]
 [4.9 3.6 1.4 0.1]
 [4.4 3.  1.3 0.2]
 [5.1 3.4 1.5 0.2]
 [5.  3.5 1.3 0.3]
 [4.5 2.3 1.3 0.3]
 [4.4 3.2 1.3 0.2]
 [5.  3.5 1.6 0.6]
 [5.1 3.8 1.9 0.4]
 [4.8 3.  1.4 0.3]
 [5.1 3.8 1.6 0.2]
 [4.6 3.2 1.4 0.2]
 [5.3 3.7 1.5 0.2]
 [5.  3.3 1.4 0.2]
 [7.  3.2 4.7 1.4]
 [6.4 3.2 4.5 1.5]
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 [5.7 2.8 4.5 1.3]
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 [6.  2.2 4.  1. ]
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 [5.6 2.9 3.6 1.3]
 [6.7 3.1 4.4 1.4]
 [5.6 3.  4.5 1.5]
 [5.8 2.7 4.1 1. ]
 [6.2 2.2 4.5 1.5]
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 [5.5 2.4 3.8 1.1]
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 [6.  2.7 5.1 1.6]
 [5.4 3.  4.5 1.5]
 [6.  3.4 4.5 1.6]
 [6.7 3.1 4.7 1.5]
 [6.3 2.3 4.4 1.3]
 [5.6 3.  4.1 1.3]
 [5.5 2.5 4.  1.3]
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 [6.1 3.  4.6 1.4]
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 [5.7 3.  4.2 1.2]
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 [6.2 2.9 4.3 1.3]
 [5.1 2.5 3.  1.1]
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 [6.3 3.3 6.  2.5]
 [5.8 2.7 5.1 1.9]
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 [6.4 2.7 5.3 1.9]
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 [5.8 2.8 5.1 2.4]
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 [7.7 3.8 6.7 2.2]
 [7.7 2.6 6.9 2.3]
 [6.  2.2 5.  1.5]
 [6.9 3.2 5.7 2.3]
 [5.6 2.8 4.9 2. ]
 [7.7 2.8 6.7 2. ]
 [6.3 2.7 4.9 1.8]
 [6.7 3.3 5.7 2.1]
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 [6.2 2.8 4.8 1.8]
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 [7.4 2.8 6.1 1.9]
 [7.9 3.8 6.4 2. ]
 [6.4 2.8 5.6 2.2]
 [6.3 2.8 5.1 1.5]
 [6.1 2.6 5.6 1.4]
 [7.7 3.  6.1 2.3]
 [6.3 3.4 5.6 2.4]
 [6.4 3.1 5.5 1.8]
 [6.  3.  4.8 1.8]
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 [6.9 3.1 5.1 2.3]
 [5.8 2.7 5.1 1.9]
 [6.8 3.2 5.9 2.3]
 [6.7 3.3 5.7 2.5]
 [6.7 3.  5.2 2.3]
 [6.3 2.5 5.  1.9]
 [6.5 3.  5.2 2. ]
 [6.2 3.4 5.4 2.3]
 [5.9 3.  5.1 1.8]]
['setosa' 'setosa' 'setosa' 'setosa' 'setosa' 'setosa' 'setosa' 'setosa'
 'setosa' 'setosa' 'setosa' 'setosa' 'setosa' 'setosa' 'setosa' 'setosa'
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 'setosa' 'setosa' 'setosa' 'setosa' 'setosa' 'setosa' 'setosa' 'setosa'
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 'virginica' 'virginica' 'virginica' 'virginica' 'virginica' 'virginica'
 'virginica' 'virginica' 'virginica' 'virginica' 'virginica' 'virginica'
 'virginica' 'virginica' 'virginica']
0.9333333333333333
```

In [4]:
```python
example_measures=np.array([5.1,3.5,1.3,0.3])
example_measures=example_measures.reshape(1,-1)
prediction=clf.predict(example_measures)
print(prediction)# predict the correct variety of flower.
print(accuracy)
```

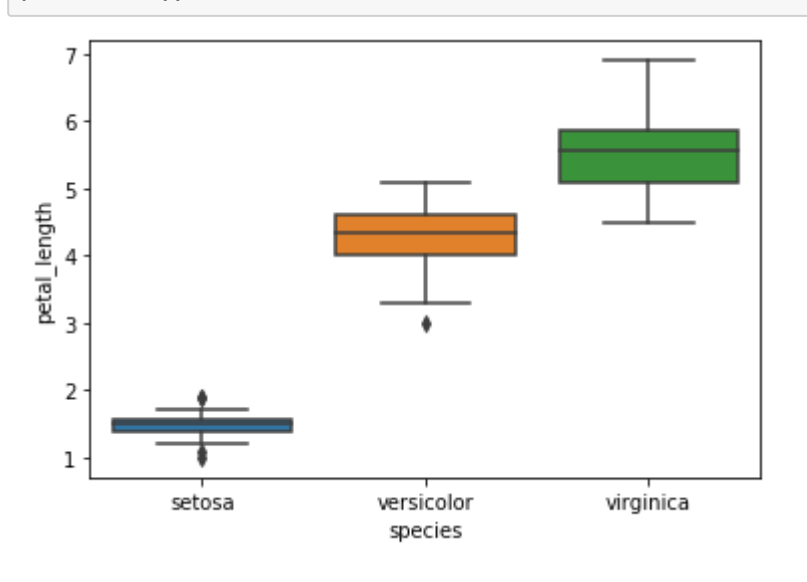
```
['setosa']
0.9333333333333333
```

In [5]:
```python
print('training accuracy {}'.format(clf.score(X_train,y_train)))
```

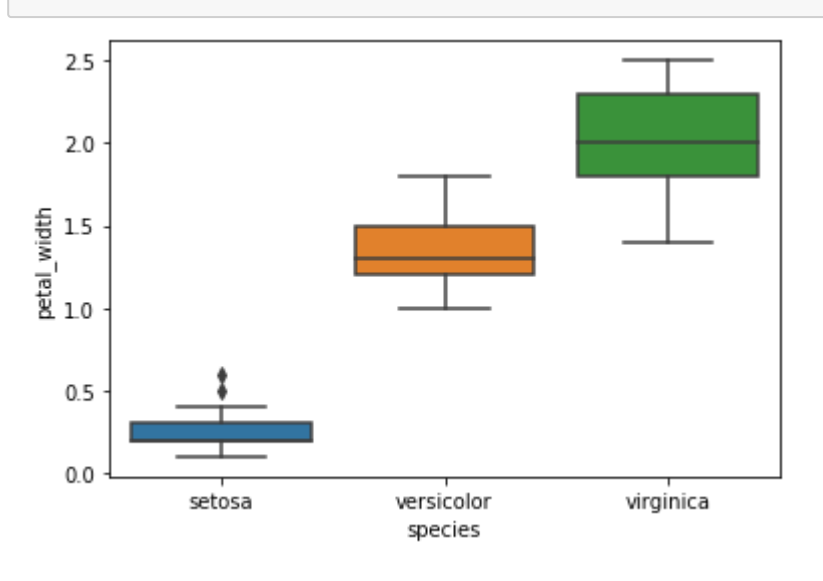
```
training accuracy 0.975
```

In [6]:
```python
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
from sklearn.model_selection import train_test_split
from sklearn.neighbors import KNeighborsClassifier
import numpy as np
```

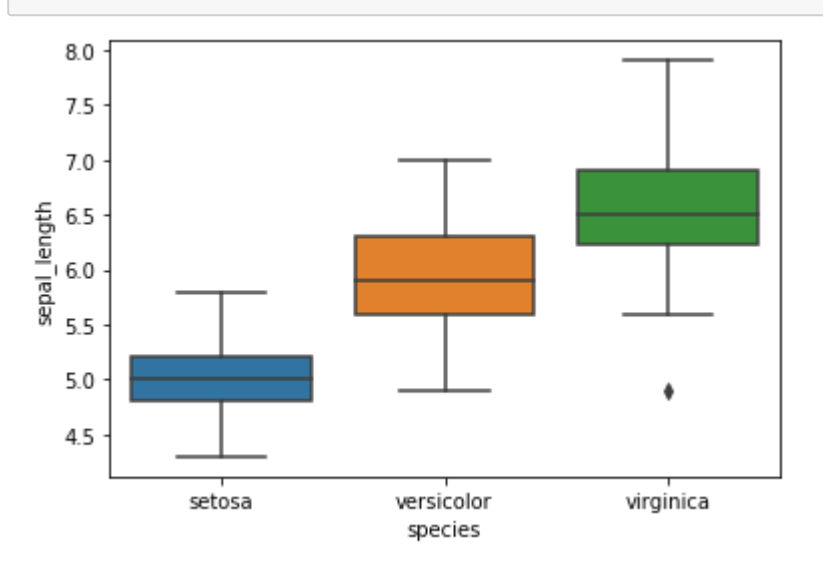
In [7]:
```python
sns.boxplot(x='species',y='petal_length',data=df)
plt.show()
```



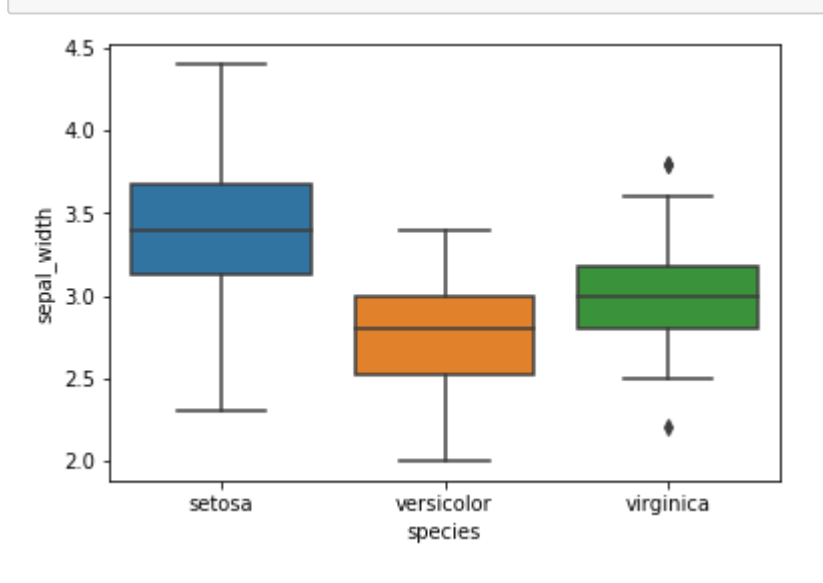
In [8]:
```python
sns.boxplot(x='species',y='petal_width',data=df)
plt.show()
```



In [9]:
```python
sns.boxplot(x='species',y='sepal_length',data=df)
plt.show()
```

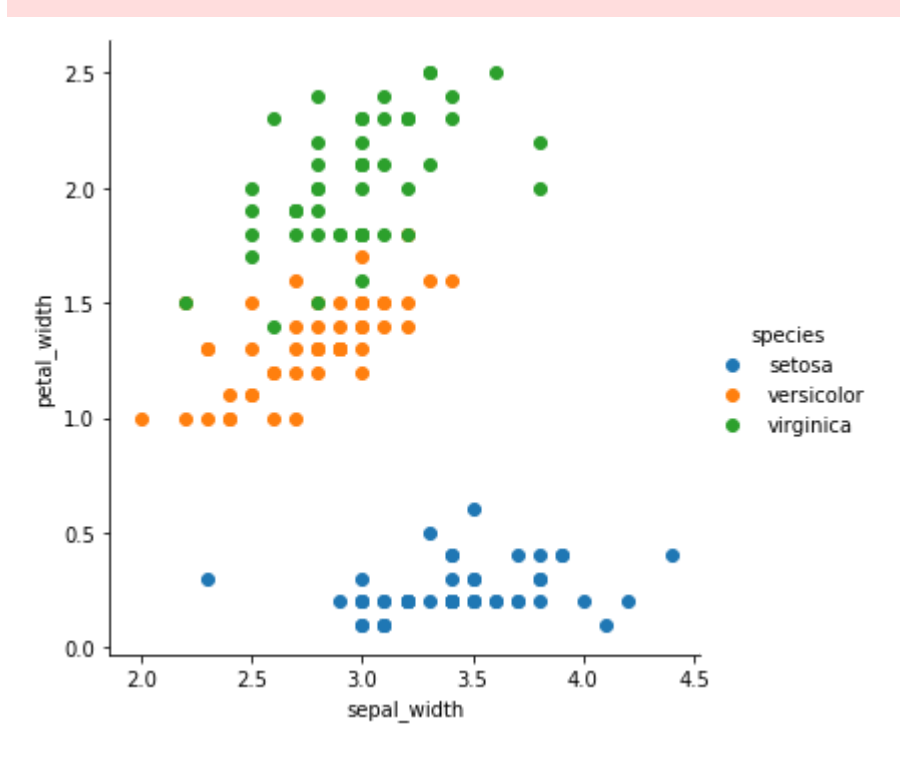


In [10]:
```python
sns.boxplot(x='species',y='sepal_width',data=df)
plt.show()
```

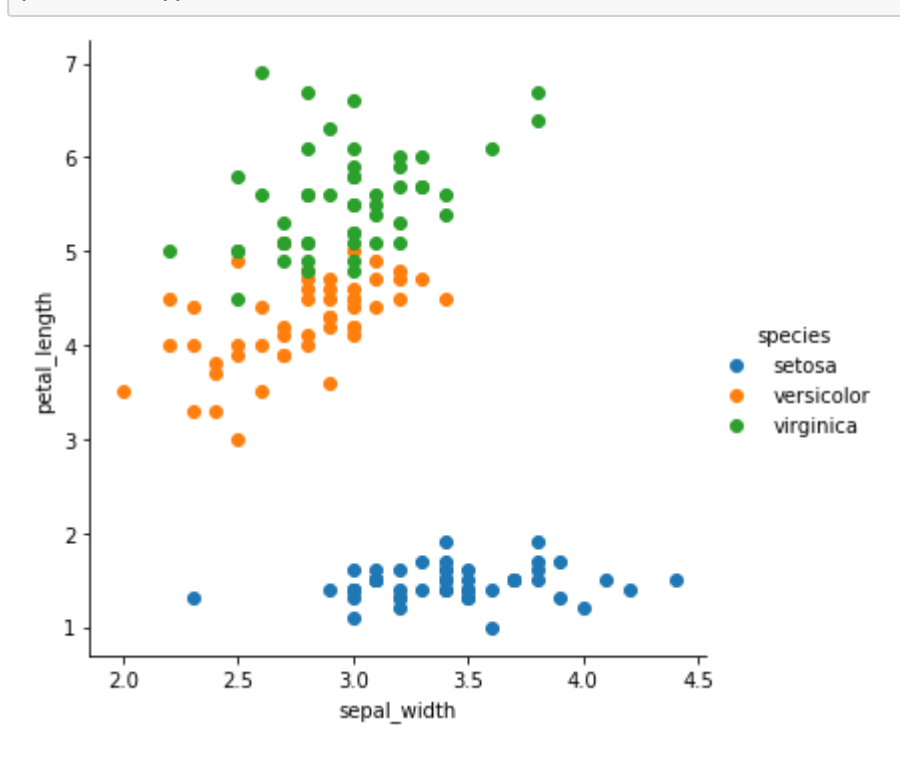


In [11]:
```python
sns.FacetGrid(df, hue='species', size=5).map(plt.scatter,'sepal_width', 'petal_width').add_legend()
plt.show()
```

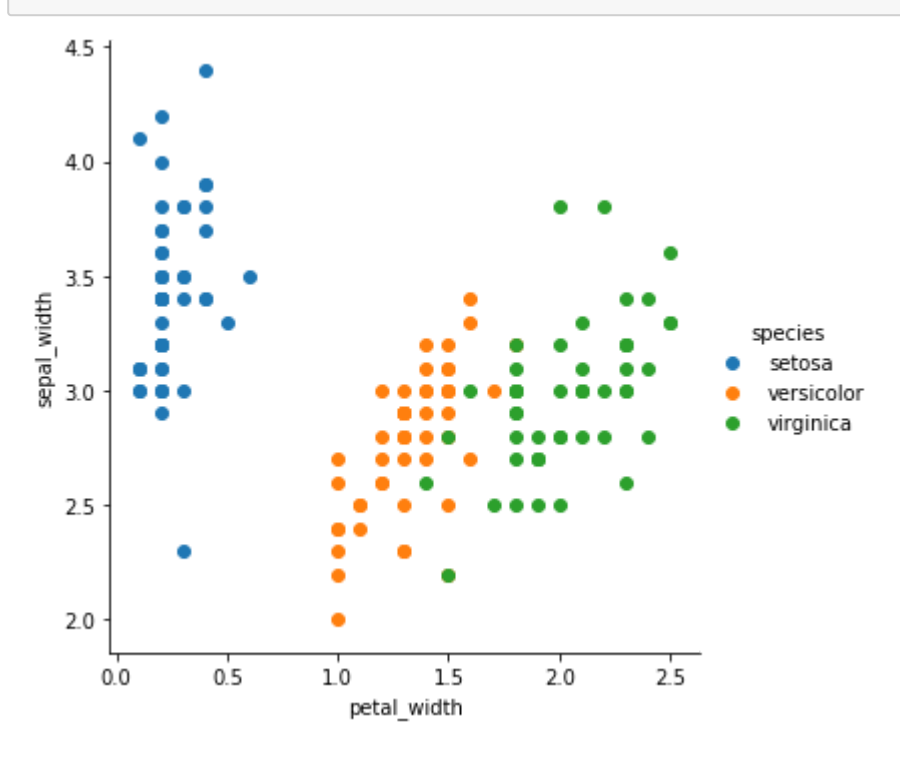
```
C:\Users\Saurabh singh\AppData\Local\Programs\Python\Python37-32\lib\site-packages\seaborn\axisgrid.py:230: UserWarning: The `size` paramter has been renamed to `height`; please update your code.
  warnings.warn(msg, UserWarning)
```



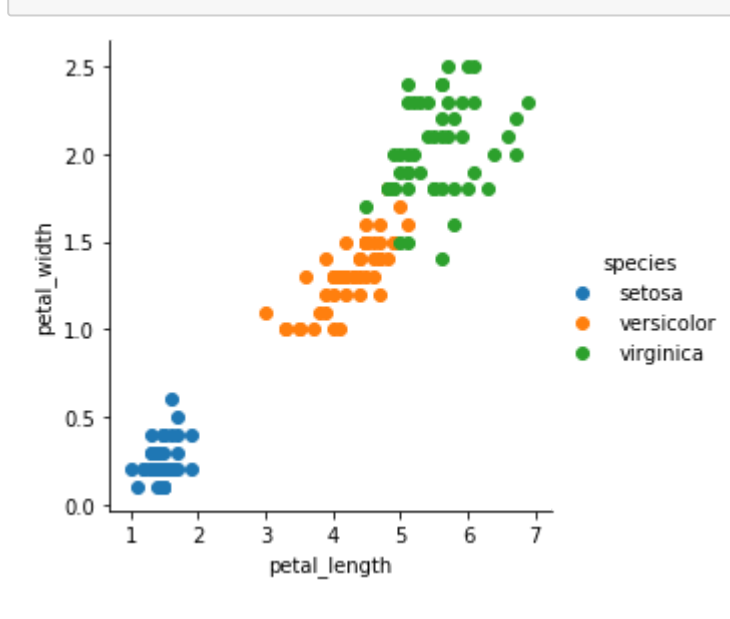
In [12]:
```python
sns.FacetGrid(df, hue='species', size=5).map(plt.scatter,'sepal_width', 'petal_length').add_legend()
plt.show()
```



In [13]:
```python
sns.FacetGrid(df, hue='species', size=5).map(plt.scatter,'petal_width', 'sepal_width').add_legend()
plt.show()
```



In [14]:
```python
sns.FacetGrid(df, hue='species', size=4).map(plt.scatter,'petal_length', 'petal_width').add_legend()
plt.show()
```



In [15]:
```python
print('training accuracy {}'.format(clf.score(X_train,y_train)))
```

```
training accuracy 0.975
```

In [16]:
```python
print('testing accuracy {}'.format(clf.score(X_test,y_test)))
```

```
testing accuracy 0.9333333333333333
```

In [ ]: