In [1]:
```
# Importing pandas package to install iris data

import pandas as pd

from sklearn.datasets import load_iris
iris_dataset= load_iris()
```

In [2]:
```
#Identifying the dataset key information
print ("Key of iris_dataset: \n{}" .format(iris_dataset.keys()))
```

```
Key of iris_dataset:
dict_keys(['data', 'target', 'frame', 'target_names', 'DESCR', 'feature_names', 'filename', 'data_module'])
```

In [3]:
```
#Print the Iris dataset information and references
print(iris_dataset['DESCR'])
```

```
.. _iris_dataset:

Iris plants dataset
--------------------

**Data Set Characteristics:**

    :Number of Instances: 150 (50 in each of three classes)
    :Number of Attributes: 4 numeric, predictive attributes and the class
    :Attribute Information:
        - sepal length in cm
        - sepal width in cm
        - petal length in cm
        - petal width in cm
        - class:
                - Iris-Setosa
                - Iris-Versicolour
                - Iris-Virginica

    :Summary Statistics:

    ============== ==== ==== ======= ===== ====================
                    Min  Max   Mean    SD   Class Correlation
    ============== ==== ==== ======= ===== ====================
    sepal length:   4.3  7.9   5.84   0.83    0.7826
    sepal width:    2.0  4.4   3.05   0.43   -0.4194
    petal length:   1.0  6.9   3.76   1.76    0.9490  (high!)
    petal width:    0.1  2.5   1.20   0.76    0.9565  (high!)
    ============== ==== ==== ======= ===== ====================

    :Missing Attribute Values: None
    :Class Distribution: 33.3% for each of 3 classes.
    :Creator: R.A. Fisher
    :Donor: Michael Marshall (MARSHALL%PLU@io.arc.nasa.gov)
    :Date: July, 1988

The famous Iris database, first used by Sir R.A. Fisher. The dataset is taken
from Fisher's paper. Note that it's the same as in R, but not as in the UCI
Machine Learning Repository, which has two wrong data points.

This is perhaps the best known database to be found in the
pattern recognition literature.  Fisher's paper is a classic in the field and
is referenced frequently to this day.  (See Duda & Hart, for example.)  The
data set contains 3 classes of 50 instances each, where each class refers to a
type of iris plant.  One class is linearly separable from the other 2; the
latter are NOT linearly separable from each other.

.. topic:: References

   - Fisher, R.A. "The use of multiple measurements in taxonomic problems"
     Annual Eugenics, 7, Part II, 179-188 (1936); also in "Contributions to
     Mathematical Statistics" (John Wiley, NY, 1950).
   - Duda, R.O., & Hart, P.E. (1973) Pattern Classification and Scene Analysis.
     (Q327.D83) John Wiley & Sons.  ISBN 0-471-22361-1.  See page 218.
   - Dasarathy, B.V. (1980) "Nosing Around the Neighborhood: A New System
     Structure and Classification Rule for Recognition in Partially Exposed
     Environments".  IEEE Transactions on Pattern Analysis and Machine
     Intelligence, Vol. PAMI-2, No. 1, 67-71.
   - Gates, G.W. (1972) "The Reduced Nearest Neighbor Rule".  IEEE Transactions
     on Information Theory, May 1972, 431-433.
   - See also: 1988 MLC Proceedings, 54-64.  Cheeseman et al"s AUTOCLASS II
     conceptual clustering system finds 3 classes in the data.
   - Many, many more ...
```

In [4]:
```
#Identify the three Iris classifications
print("Target name:{}". format(iris_dataset['target_names']))
```

```
Target name:['setosa' 'versicolor' 'virginica']
```

In [5]:
```
# Identify the dimensions
print("Feature names: \n{}". format(iris_dataset['feature_names']))
```

```
Feature names:
['sepal length (cm)', 'sepal width (cm)', 'petal length (cm)', 'petal width (cm)']
```

In [6]:
```
#Identify the data type for this data which in this case is the integar format
print("Type of data: {}". format(type(iris_dataset['data'])))
```

```
Type of data: <class 'numpy.ndarray'>
```

In [8]:
```
#Identify the amount of rows and columns of the data
print("Shape of data: {}". format(iris_dataset['data'] .shape))
```

```
Shape of data: (150, 4)
```

In [9]:
```
#Show the first 5 columns of the data
print("First 5 columns of data: \n{}". format(iris_dataset['data'][:5]))
```

```
First 5 columns of data:
[[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]]
```

In [11]:
```
iris_df = pd.DataFrame(iris_dataset.data)

iris_df.head()
```

Out[11]:

	0	1	2	3
0	5.1	3.5	1.4	0.2
1	4.9	3.0	1.4	0.2
2	4.7	3.2	1.3	0.2
3	4.6	3.1	1.5	0.2
4	5.0	3.6	1.4	0.2

In [15]:
```
# Added the headers to the columns
iris_df.columns = ['sepal_length', 'sepal_width', 'petal_length', 'petal_width']
iris_df.head()
```

Out[15]:

	sepal_length	sepal_width	petal_length	petal_width
0	5.1	3.5	1.4	0.2
1	4.9	3.0	1.4	0.2
2	4.7	3.2	1.3	0.2
3	4.6	3.1	1.5	0.2
4	5.0	3.6	1.4	0.2

In [17]:
```
target_df = pd.DataFrame(iris_dataset.target)
target_df = target_df.rename(columns = {0: 'target'})
target_df.head()
```

Out[17]:

	target
0	0
1	0
2	0
3	0
4	0

In [18]:
```
df = pd.concat([iris_df,target_df], axis=1)
df
```

Out[18]:

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

150 rows × 5 columns

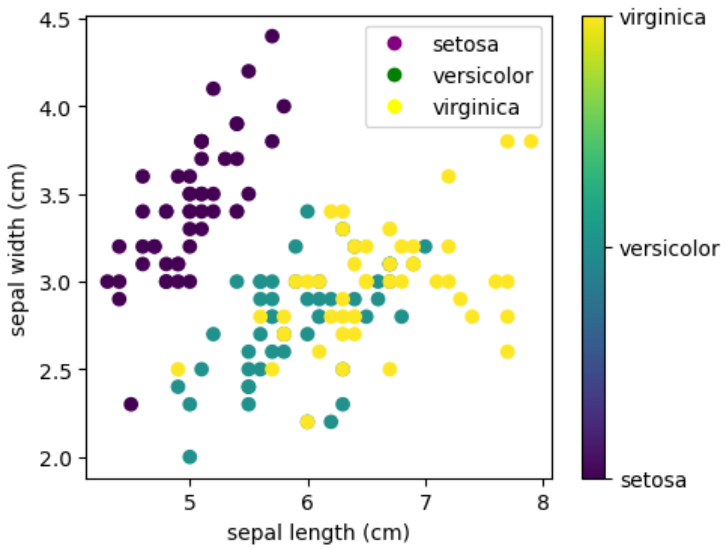
In [19]:
```
print("Target: \n{}". format(iris_dataset['target']))
```

```
Target:
[0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 2 2 2 2 2 2 2 2 2 2 2
 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
 2 2]
```

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

x = 0
y = 1

formatter = plt.FuncFormatter(lambda i, *args: iris_dataset.target_names[int(i)])
```

In [30]:
```
plt.figure(figsize=(5,4))
plt.scatter(iris_dataset.data[:, x], iris_dataset.data[:,y], c=iris_dataset.target)
plt.colorbar(ticks=[0,1,2], format=formatter)
plt.xlabel(iris_dataset.feature_names[x])
plt.ylabel(iris_dataset.feature_names[y])

class_labels = iris_dataset.target_names
legend_aliases = [plt.Line2D([0,0],[0,0], color=['purple','green','yellow'][i],marker='o', linestyle='', label=label) fo

plt.legend(handles=legend_aliases)
```

Out[30]:
```
<matplotlib.legend.Legend at 0x1f39d1ba4d0>
```



In [ ]: