```
In [5]:
          import pandas as pd
          import seaborn as sns
          import matplotlib.pyplot as mlt
 In [8]: df = pd.read csv(r"C:\Users\asmit\Downloads\IRIS.csv")
In [10]:
          df.head()
Out[10]:
             sepal_length sepal_width petal_length petal_width
                                                                    species
          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
                                                1.5
                      4.6
                                   3.1
                                                             0.2 Iris-setosa
          4
                      5.0
                                   3.6
                                                1.4
                                                             0.2 Iris-setosa
In [12]: df.info()
         <class 'pandas.core.frame.DataFrame'>
        RangeIndex: 150 entries, 0 to 149
        Data columns (total 5 columns):
          #
              Column
                             Non-Null Count Dtype
         0
              sepal_length 150 non-null
                                              float64
              sepal width
                             150 non-null
                                              float64
              petal_length 150 non-null
          2
                                              float64
          3
              petal_width
                             150 non-null
                                              float64
              species
                             150 non-null
                                              object
        dtypes: float64(4), object(1)
        memory usage: 6.0+ KB
In [13]: df.describe()
Out[13]:
                 sepal_length sepal_width petal_length petal_width
                   150.000000
                                150.000000
                                             150.000000
                                                          150.000000
          count
          mean
                     5.843333
                                  3.054000
                                               3.758667
                                                            1.198667
            std
                     0.828066
                                  0.433594
                                               1.764420
                                                            0.763161
            min
                     4.300000
                                  2.000000
                                               1.000000
                                                            0.100000
           25%
                     5.100000
                                  2.800000
                                               1.600000
                                                            0.300000
            50%
                     5.800000
                                  3.000000
                                               4.350000
                                                            1.300000
           75%
                     6.400000
                                  3.300000
                                               5.100000
                                                            1.800000
                     7.900000
                                  4.400000
                                               6.900000
                                                            2.500000
            max
```

```
In [14]: df.isnull().sum()
Out[14]: sepal_length
         sepal_width
                         0
         petal_length
                         0
         petal_width
                         0
                         0
         species
         dtype: int64
         - df['species'].value_counts()
In [15]:
Out[15]: species
         Iris-setosa
                           -50
         Iris-versicolor
                           -50
         Iris-virginica
                           -50
         Name: count, dtype: int64
In [16]: df.groupby('species').describe().T
```

sepal_length         count         50,000000         50,000000         50,000000           mean         5,006000         5,936000         6,588000           std         0,352490         0,516171         0,635880           min         4,300000         4,900000         4,900000           25%         4,800000         5,600000         6,225000           50%         5,000000         5,900000         6,500000           75%         5,200000         6,300000         7,900000           sepal_width         count         50,000000         50,000000         7,900000           std         0,381024         0,313798         0,322497           min         2,300000         2,500000         2,800000           25%         3,125000         2,500000         3,000000           25%         3,400000         2,800000         3,000000           3,00000         3,400000         2,800000         3,000000           4,40000         3,400000         3,400000         5,000000         5,000000           50%         1,464000         4,260000         5,552000         5,552000           40         1,464000         4,00000         5,552000         4,50000         5,	Out[16]:		species	Iris-setosa	Iris-versicolor	Iris-virginica
std         0.352490         0.516171         0.635880           min         4.300000         4.900000         4.900000           25%         4.800000         5.600000         6.225000           50%         5.000000         5.900000         6.500000           75%         5.200000         6.300000         7.900000           max         5.800000         7.000000         50.000000           sepal_width         count         50.000000         50.000000         50.000000           std         0.381024         0.313798         0.322497           min         2.300000         2.00000         2.200000           25%         3.125000         2.525000         2.800000           3.400000         2.800000         3.000000         3.000000           max         4.400000         3.400000         3.000000         3.000000           petal_length         count         50.000000         50.000000         50.000000         50.000000           std         0.173511         0.469911         0.551895         1.00000         4.00000         5.55000         5.55000           petal_width         count         50.00000         4.00000         5.00000         50.00000		sepal_length	count	50.000000	50.000000	50.000000
min 4.30000 4.90000 4.90000 25% 4.80000 5.60000 6.225000 50% 5.00000 5.900000 6.500000 75% 5.20000 6.300000 6.900000 max 5.800000 7.000000 7.900000 sepal_width count 50.000000 50.000000 50.000000 10			mean	5.006000	5.936000	6.588000
25%   4.800000   5.600000   6.225000			std	0.352490	0.516171	0.635880
50%   5.000000   5.900000   6.500000     75%   5.200000   6.300000   6.900000     max   5.800000   7.000000   7.9000000     mean   3.418000   2.770000   2.974000     std   0.381024   0.313798   0.322497     min   2.300000   2.000000   2.200000     25%   3.125000   2.525000   2.800000     50%   3.400000   2.800000   3.000000     75%   3.675000   3.000000   3.175000     max   4.400000   3.400000   3.800000     mean   1.464000   4.260000   5.552000     std   0.173511   0.469911   0.551895     min   1.000000   3.000000   4.500000     25%   1.575000   4.600000   5.875000     max   1.900000   4.350000   5.875000     max   1.900000   5.0000000   5.0000000     petal_width   count   50.000000   50.000000   50.000000     mean   0.244000   1.326000   2.026000     std   0.107210   0.197753   0.274650     min   0.100000   1.000000   1.400000     25%   0.200000   1.200000   1.8000000			min	4.300000	4.900000	4.900000
75%         5.200000         6.300000         6.900000           max         5.800000         7.000000         7.900000           sepal_width         count         50.000000         50.000000         50.000000           std         0.381024         0.313798         0.322497           min         2.300000         2.000000         2.200000           25%         3.125000         2.525000         2.800000           50%         3.400000         2.800000         3.00000           75%         3.675000         3.000000         3.175000           max         4.400000         3.400000         3.800000           petal_length         count         50.000000         50.000000         50.000000         50.000000           std         0.173511         0.469911         0.551895         1.00000         4.00000         5.552000           std         1.500000         4.350000         5.550000         5.75000         5.550000           petal_width         count         50.00000         50.00000         50.00000         50.00000           petal_width         count         50.00000         50.00000         50.00000         50.00000           max         1.900000			25%	4.800000	5.600000	6.225000
max         5.800000         7.000000         7.900000           sepal_width         count         50.000000         50.000000         50.00000           mean         3.418000         2.770000         2.974000           std         0.381024         0.313798         0.322497           min         2.300000         2.000000         2.200000           25%         3.125000         2.525000         2.800000           50%         3.400000         2.800000         3.000000           75%         3.675000         3.000000         3.175000           max         4.400000         3.400000         3.800000           petal_length         count         50.000000         50.000000         50.000000         50.000000           std         0.173511         0.469911         0.551895           min         1.000000         3.000000         4.500000           50%         1.500000         4.350000         5.550000           75%         1.575000         4.600000         5.875000           max         1.900000         5.100000         6.900000           petal_width         count         50.000000         50.000000         50.000000         50.00000			50%	5.000000	5.900000	6.500000
sepal_width         count         50.000000         50.000000         50.000000           mean         3.418000         2.770000         2.974000           std         0.381024         0.313798         0.322497           min         2.300000         2.000000         2.200000           25%         3.125000         2.525000         2.800000           50%         3.400000         2.800000         3.000000           75%         3.675000         3.000000         3.175000           max         4.400000         3.400000         3.800000           petal_length         count         50.000000         50.000000         50.000000           std         0.173511         0.469911         0.551895           min         1.000000         3.000000         4.500000           50%         1.500000         4.000000         5.550000           75%         1.575000         4.600000         5.875000           max         1.900000         5.000000         50.00000         50.00000           petal_width         count         50.000000         50.00000         50.00000         50.00000           mean         0.244000         1.326000         2.026000			75%	5.200000	6.300000	6.900000
mean         3.418000         2.770000         2.974000           std         0.381024         0.313798         0.322497           min         2.300000         2.000000         2.200000           25%         3.125000         2.525000         2.800000           50%         3.400000         2.800000         3.000000           75%         3.675000         3.000000         3.175000           max         4.400000         3.400000         50.000000           50%         50.000000         50.000000         50.000000           std         0.173511         0.469911         0.551895           min         1.000000         3.000000         4.500000           25%         1.400000         4.350000         5.550000           50%         1.500000         4.350000         5.875000           max         1.900000         5.100000         6.900000           petal_width         count         50.000000         50.000000         50.000000           std         0.107210         0.197753         0.274650           min         0.100000         1.200000         1.800000			max	5.800000	7.000000	7.900000
std         0.381024         0.313798         0.322497           min         2.300000         2.000000         2.200000           25%         3.125000         2.525000         2.800000           50%         3.400000         2.800000         3.000000           75%         3.675000         3.000000         3.175000           max         4.400000         3.400000         3.800000           petal_length         count         50.000000         50.000000         50.000000           std         0.173511         0.469911         0.551895           min         1.000000         3.000000         4.500000           25%         1.400000         4.000000         5.550000           75%         1.575000         4.600000         5.875000           max         1.900000         50.00000         50.00000           petal_width         count         50.000000         50.00000         50.00000           petal_width         count         50.00000         50.00000         50.00000           petal_width         count         50.00000         50.00000         50.00000           petal_width         count         50.00000         50.00000         50.00000     <		sepal_width	count	50.000000	50.000000	50.000000
min         2.300000         2.000000         2.200000           25%         3.125000         2.525000         2.800000           50%         3.400000         2.800000         3.000000           75%         3.675000         3.000000         3.175000           max         4.400000         3.400000         3.800000           petal_length         count         50.000000         50.000000         50.000000           std         0.173511         0.469911         0.551895           min         1.000000         3.000000         4.500000           25%         1.400000         4.000000         5.100000           50%         1.500000         4.600000         5.875000           max         1.900000         5.100000         50.00000           petal_width         count         50.000000         50.000000         50.000000           std         0.107210         0.197753         0.274650           min         0.100000         1.200000         1.800000			mean	3.418000	2.770000	2.974000
25% 3.125000 2.525000 2.800000 50% 3.400000 2.800000 3.000000 75% 3.675000 3.000000 3.175000 max 4.400000 3.400000 50.000000  petal_length count 50.000000 50.000000 50.000000  std 0.173511 0.469911 0.551895 min 1.000000 3.000000 4.500000  25% 1.400000 4.000000 5.100000  50% 1.500000 4.350000 5.550000  75% 1.575000 4.600000 5.875000  max 1.900000 50.000000 50.000000  petal_width count 50.000000 50.000000 50.000000  mean 0.244000 1.326000 2.0260000  std 0.107210 0.197753 0.274650  min 0.100000 1.000000 1.800000			std	0.381024	0.313798	0.322497
50%         3.400000         2.800000         3.000000           75%         3.675000         3.000000         3.175000           max         4.400000         3.400000         3.800000           petal_length         count         50.000000         50.000000         50.000000           std         0.173511         0.469911         0.551895           min         1.000000         3.00000         4.500000           25%         1.400000         4.000000         5.100000           50%         1.575000         4.600000         5.875000           max         1.900000         5.100000         6.900000           petal_width         count         50.000000         50.000000         50.000000           std         0.107210         0.197753         0.274650           min         0.100000         1.200000         1.800000			min	2.300000	2.000000	2.200000
75%         3.675000         3.000000         3.175000           max         4.400000         3.400000         3.800000           petal_length         count         50.000000         50.000000         50.000000           std         0.173511         0.469911         0.551895           min         1.000000         3.000000         4.500000           25%         1.400000         4.00000         5.100000           50%         1.575000         4.600000         5.875000           max         1.900000         5.100000         6.900000           petal_width         count         50.000000         50.000000         50.000000           std         0.107210         0.197753         0.274650           min         0.100000         1.000000         1.800000			25%	3.125000	2.525000	2.800000
max         4.400000         3.400000         3.800000           petal_length         count         50.000000         50.000000         50.000000           mean         1.464000         4.260000         5.552000           std         0.173511         0.469911         0.551895           min         1.000000         3.000000         4.500000           25%         1.400000         4.000000         5.100000           50%         1.575000         4.600000         5.875000           max         1.900000         5.100000         6.900000           petal_width         count         50.000000         50.000000         50.000000           std         0.107210         0.197753         0.274650           min         0.100000         1.000000         1.400000           25%         0.200000         1.200000         1.800000			50%	3.400000	2.800000	3.000000
petal_length         count         50.000000         50.000000         50.000000           mean         1.464000         4.260000         5.552000           std         0.173511         0.469911         0.551895           min         1.000000         3.000000         4.500000           25%         1.400000         4.000000         5.100000           50%         1.575000         4.600000         5.875000           max         1.900000         5.100000         6.900000           petal_width         count         50.000000         50.000000         50.000000           std         0.107210         0.197753         0.274650           min         0.100000         1.200000         1.800000			75%	3.675000	3.000000	3.175000
mean         1.464000         4.260000         5.552000           std         0.173511         0.469911         0.551895           min         1.000000         3.000000         4.500000           25%         1.400000         4.00000         5.100000           50%         1.500000         4.350000         5.875000           max         1.900000         5.100000         6.900000           petal_width         count         50.000000         50.000000         50.000000           mean         0.244000         1.326000         2.026000           std         0.107210         0.197753         0.274650           min         0.100000         1.000000         1.800000			max	4.400000	3.400000	3.800000
std         0.173511         0.469911         0.551895           min         1.000000         3.000000         4.500000           25%         1.400000         4.000000         5.100000           50%         1.500000         4.350000         5.875000           75%         1.575000         4.600000         5.875000           max         1.900000         5.100000         6.900000           petal_width         count         50.000000         50.000000         50.000000           mean         0.244000         1.326000         2.026000           std         0.107210         0.197753         0.274650           min         0.100000         1.000000         1.400000           25%         0.200000         1.200000         1.800000		petal_length	count	50.000000	50.000000	50.000000
min         1.000000         3.000000         4.500000           25%         1.400000         4.000000         5.100000           50%         1.500000         4.350000         5.550000           75%         1.575000         4.600000         5.875000           max         1.900000         5.100000         6.900000           count         50.000000         50.000000         50.000000           std         0.107210         0.197753         0.274650           min         0.100000         1.000000         1.400000           25%         0.200000         1.200000         1.800000			mean	1.464000	4.260000	5.552000
25%       1.400000       4.000000       5.100000         50%       1.500000       4.350000       5.550000         75%       1.575000       4.600000       5.875000         max       1.900000       5.100000       6.900000         50.000000       50.000000       50.000000         mean       0.244000       1.326000       2.026000         std       0.107210       0.197753       0.274650         min       0.100000       1.000000       1.400000         25%       0.200000       1.200000       1.800000			std	0.173511	0.469911	0.551895
50%       1.500000       4.350000       5.550000         75%       1.575000       4.600000       5.875000         max       1.900000       5.100000       6.900000         50.000000       50.000000       50.000000         mean       0.244000       1.326000       2.026000         std       0.107210       0.197753       0.274650         min       0.100000       1.000000       1.400000         25%       0.200000       1.200000       1.800000			min	1.000000	3.000000	4.500000
75%       1.575000       4.600000       5.875000         max       1.900000       5.100000       6.900000         petal_width       count       50.000000       50.000000       50.000000         mean       0.244000       1.326000       2.026000         std       0.107210       0.197753       0.274650         min       0.100000       1.000000       1.400000         25%       0.200000       1.200000       1.800000			25%	1.400000	4.000000	5.100000
max         1.900000         5.100000         6.900000           petal_width         count         50.000000         50.000000         50.000000           mean         0.244000         1.326000         2.026000           std         0.107210         0.197753         0.274650           min         0.100000         1.000000         1.400000           25%         0.200000         1.200000         1.800000			50%	1.500000	4.350000	5.550000
petal_width         count         50.000000         50.000000         50.000000           mean         0.244000         1.326000         2.026000           std         0.107210         0.197753         0.274650           min         0.100000         1.000000         1.400000           25%         0.200000         1.200000         1.800000			75%	1.575000	4.600000	5.875000
mean         0.244000         1.326000         2.026000           std         0.107210         0.197753         0.274650           min         0.100000         1.000000         1.400000           25%         0.200000         1.200000         1.800000			max	1.900000	5.100000	6.900000
std0.1072100.1977530.274650min0.1000001.0000001.40000025%0.2000001.2000001.800000		petal_width	count	50.000000	50.000000	50.000000
min0.1000001.0000001.40000025%0.2000001.2000001.800000			mean	0.244000	1.326000	2.026000
<b>25%</b> 0.200000 1.200000 1.800000			std	0.107210	0.197753	0.274650
			min	0.100000	1.000000	1.400000
<b>50%</b> 0.200000 1.300000 2.000000			25%	0.200000	1.200000	1.800000
			50%	0.200000	1.300000	2.000000

## species Iris-setosa Iris-versicolor Iris-virginica 75% 0.300000 1.500000 2.300000 max 0.600000 1.800000 2.500000

## In [19]: sns.pairplot(df, hue='species')

C:\Users\asmit\anaconda3\Lib\site-packages\seaborn\\_oldcore.py:1119: FutureWarning: use\_inf\_as\_na option is deprecated and will be removed in a future version. Convert inf values to NaN before operating instead.

with pd.option\_context('mode.use\_inf\_as\_na', True):

C:\Users\asmit\anaconda3\Lib\site-packages\seaborn\\_oldcore.py:1119: FutureWarning: use\_inf\_as\_na option is deprecated and will be removed in a future version. Convert inf values to NaN before operating instead.

with pd.option\_context('mode.use\_inf\_as\_na', True):

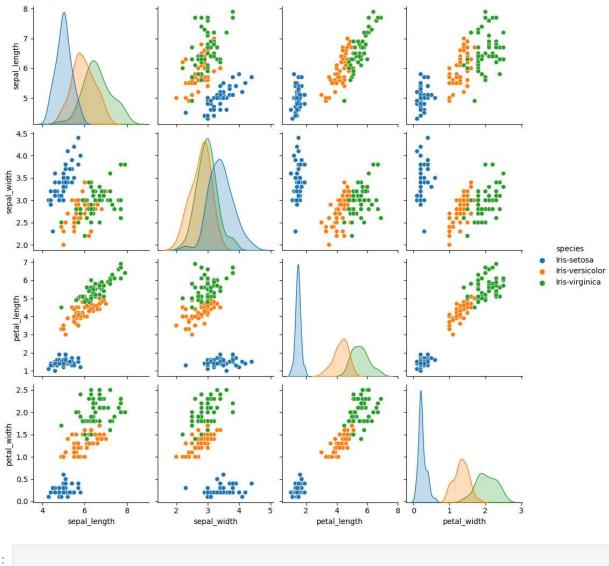
C:\Users\asmit\anaconda3\Lib\site-packages\seaborn\\_oldcore.py:1119: FutureWarning: use\_inf\_as\_na option is deprecated and will be removed in a future version. Convert inf values to NaN before operating instead.

with pd.option\_context('mode.use\_inf\_as\_na', True):

C:\Users\asmit\anaconda3\Lib\site-packages\seaborn\\_oldcore.py:1119: FutureWarning: use\_inf\_as\_na option is deprecated and will be removed in a future version. Convert inf values to NaN before operating instead.

with pd.option\_context('mode.use\_inf\_as\_na', True):

Out[19]: <seaborn.axisgrid.PairGrid at 0x255730b5650>



```
In [ ]:
In [ ]:
```