In [1]:
```
import pandas as pd
import matplotlib.pyplot as plt
%matplotlib inline
import seaborn as sns
import warnings
warnings.filterwarnings('ignore')

from sklearn.linear_model import LogisticRegression as lr
from sklearn import metrics
from sklearn.metrics import classification_report
from sklearn.metrics import accuracy_score
```

In [2]:
```
irisdf = pd.read_csv("C:/Users/HP/Downloads/iris.csv")
#first 5 dataset
irisdf.head()
```

Out[2]:

	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

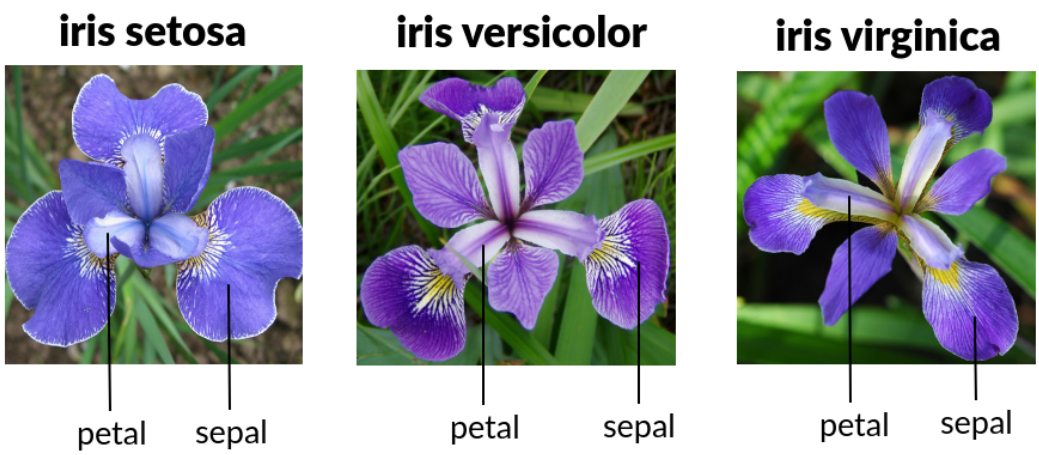
In [3]:
```
#last 5 dataset
irisdf.tail()
```

Out[3]:

	Id	SepalLengthCm	SepalWidthCm	PetalLengthCm	PetalWidthCm	Species
145	146	6.7	3.0	5.2	2.3	Iris-virginica
146	147	6.3	2.5	5.0	1.9	Iris-virginica
147	148	6.5	3.0	5.2	2.0	Iris-virginica
148	149	6.2	3.4	5.4	2.3	Iris-virginica
149	150	5.9	3.0	5.1	1.8	Iris-virginica

In [4]:
```
from IPython import display
display.Image("C:/Users/HP/Downloads/iris.png")
```

Out[4]:



In [5]:
```
irisdf.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 150 entries, 0 to 149
Data columns (total 6 columns):
 #   Column         Non-Null Count  Dtype  
---  ------         --------------  -----  
 0   Id             150 non-null    int64  
 1   SepalLengthCm  150 non-null    float64
 2   SepalWidthCm   150 non-null    float64
 3   PetalLengthCm  150 non-null    float64
 4   PetalWidthCm   150 non-null    float64
 5   Species        150 non-null    object 
dtypes: float64(4), int64(1), object(1)
memory usage: 7.2+ KB
```

In [6]:
```
irisdf.shape
```

Out[6]:
```
(150, 6)
```

In [7]:
```
irisdf.size
```

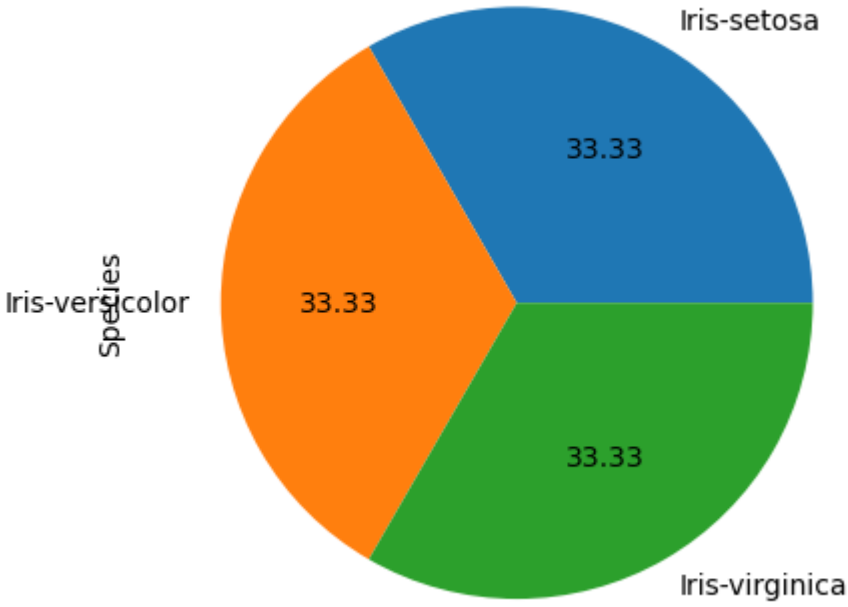
Out[7]:
```
900
```

In [8]:
```
#check for values of each species whether its balanced or imbalanced
irisdf['Species'].value_counts()
```

Out[8]:
```
Iris-setosa        50
Iris-versicolor    50
Iris-virginica     50
Name: Species, dtype: int64
```

In [9]:
```
# Visualization in form of pie chart
irisdf['Species'].value_counts().plot(kind='pie',autopct='%.2f')
```

Out[9]:
```
<AxesSubplot:ylabel='Species'>
```



In [10]:
```
#Check if any null values is present in give dataset
irisdf.isnull().sum()
```

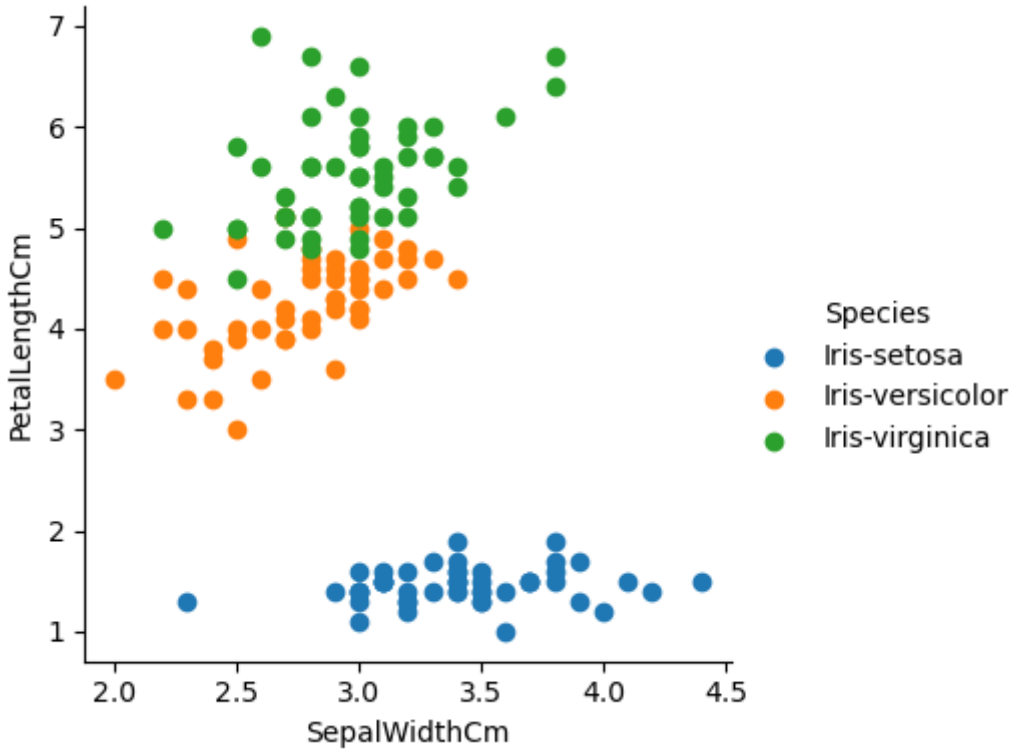
Out[10]:
```
Id               0
SepalLengthCm    0
SepalWidthCm     0
PetalLengthCm    0
PetalWidthCm     0
Species          0
dtype: int64
```

In [11]:
```
#Check for duplicate values
duplicate_count = irisdf.duplicated().sum()
print(duplicate_count)
```

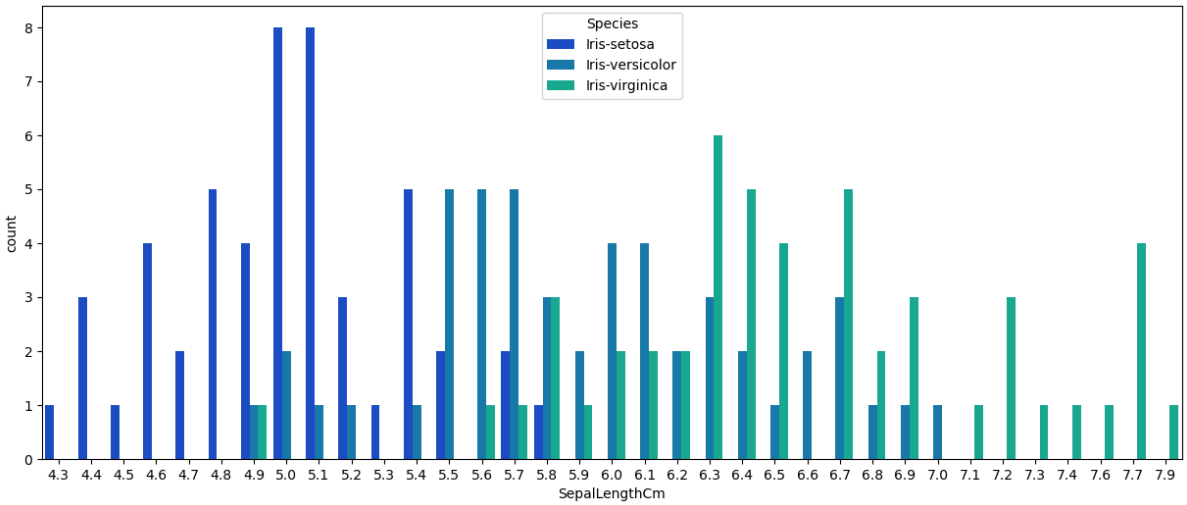
```
0
```

In [12]:
```
sns.FacetGrid(irisdf,hue='Species',height=4).map(plt.scatter,"SepalWidthCm" , "Peta
```

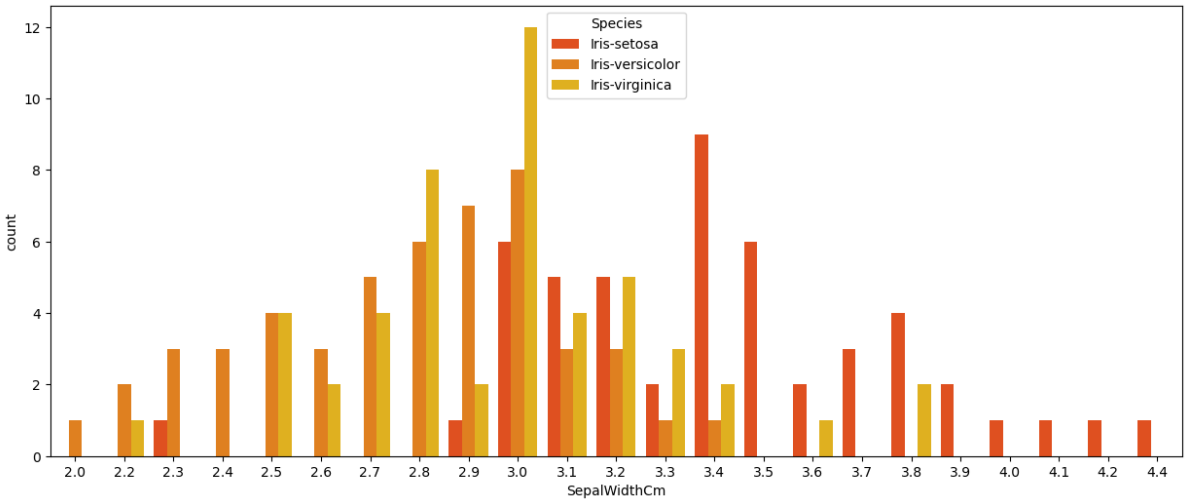
Out[12]:
```
<seaborn.axisgrid.FacetGrid at 0x23c093c2e20>
```



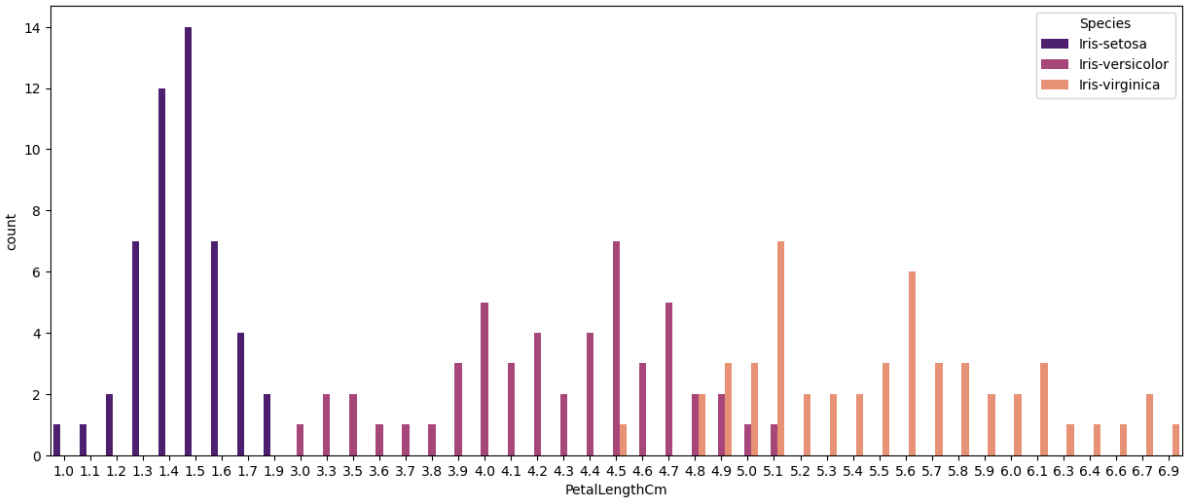
In [13]:
```
plt.figure(figsize =(15,6))
sns.countplot(x='SepalLengthCm', data=irisdf, hue= irisdf['Species'], palette= 'wir
plt.show()
```



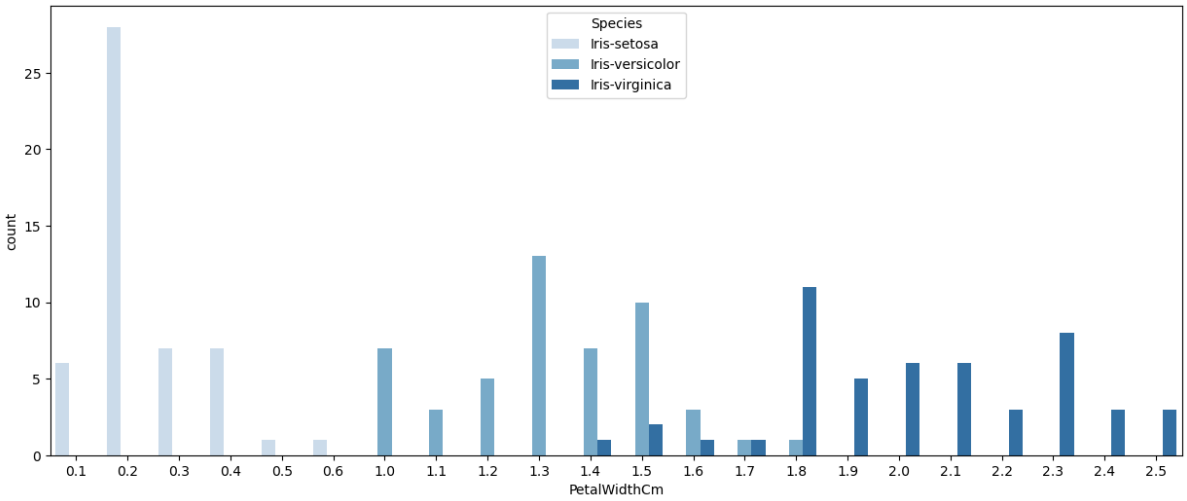
In [14]:
```
plt.figure(figsize =(15,6))
sns.countplot(x='SepalWidthCm', data=irisdf, hue= irisdf['Species'], palette= 'autu
plt.show()
```



In [15]:
```
plt.figure(figsize =(15,6))
sns.countplot(x='PetalLengthCm', data=irisdf, hue= irisdf['Species'], palette= 'mag
plt.show()
```



In [16]:
```
plt.figure(figsize =(15,6))
sns.countplot(x='PetalWidthCm', data=irisdf, hue= irisdf['Species'], palette= 'Blue
plt.show()
```



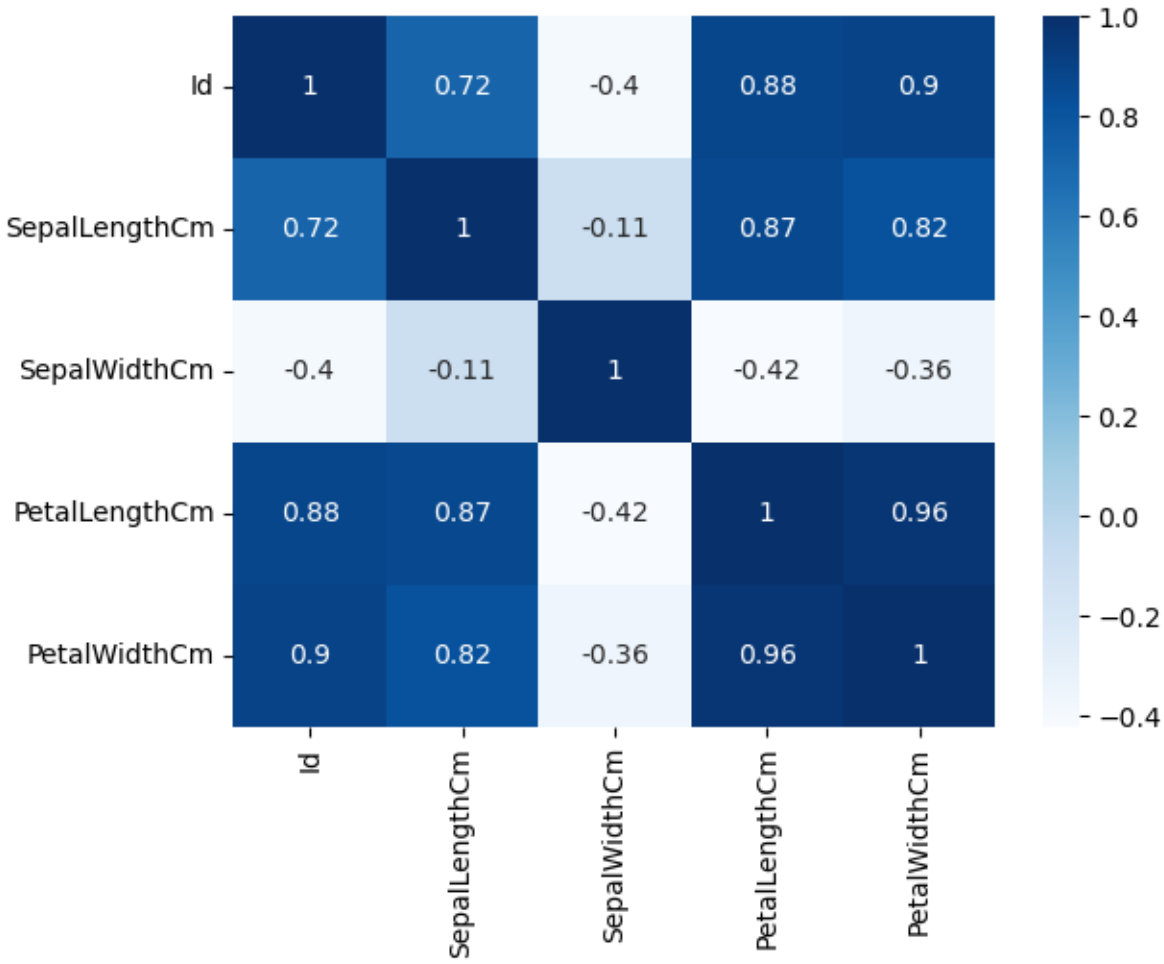
In [17]:
```
irisdf.corr()
```

Out[17]:

	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 [18]:
```
corr = irisdf.corr()
sns.heatmap(corr,annot=True,cmap='Blues')
```

Out[18]:
```
<AxesSubplot:>
```



In [19]:
```
flower_mapping= {'Iris-setosa': 0, 'Iris-versicolor' : 1, 'Iris-virginica' :2}
irisdf['Species'] = irisdf ['Species'].map (flower_mapping)
```

In [20]:
```
irisdf.head()
```

Out[20]:

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

In [21]:
```
irisdf.tail()
```

Out[21]:

	Id	SepalLengthCm	SepalWidthCm	PetalLengthCm	PetalWidthCm	Species
145	146	6.7	3.0	5.2	2.3	2
146	147	6.3	2.5	5.0	1.9	2
147	148	6.5	3.0	5.2	2.0	2
148	149	6.2	3.4	5.4	2.3	2
149	150	5.9	3.0	5.1	1.8	2

In [22]:
```
x=irisdf[['SepalLengthCm', 'SepalWidthCm', 'PetalLengthCm','PetalWidthCm']].values
y=irisdf[['Species']].values
```

In [23]:
```
from sklearn.linear_model import LinearRegression
model= LinearRegression()
```

In [24]:
```
model.fit(x,y)
```

Out[24]:
```
LinearRegression()
```