Principal Component Analysis

In [2]:

```
import numpy as np
import matplotlib.pyplot as plt
import pandas as pd
```

In [4]:

```
dataset=pd.read_csv('C:/Users/ISHITA SWAMI/Desktop/Wine.csv')
X=dataset.iloc[:,:-1].values
Y=dataset.iloc[:,-1].values
```

In [5]:

```
from sklearn.model_selection import train_test_split
X_train,X_test,Y_train,Y_test=train_test_split(X,Y,test_size=0.2,random_state=0)
```

In [6]:

```
from sklearn.preprocessing import StandardScaler
sc=StandardScaler()
X_train=sc.fit_transform(X_train)
X_test=sc.transform(X_test)
```

In [7]:

```
from sklearn.decomposition import PCA
pca = PCA(n_components = 2)
X_train = pca.fit_transform(X_train)
X_test = pca.transform(X_test)
```

In [9]:

```
from sklearn.linear_model import LogisticRegression
classifier = LogisticRegression(random_state = 0)
classifier.fit(X_train, Y_train)
```

Out[9]:

```
LogisticRegression(random_state=0)
```

In [11]:

```
from sklearn.metrics import confusion_matrix, accuracy_score
Y_pred = classifier.predict(X_test)
cm = confusion_matrix(Y_test, Y_pred)
print(cm)
accuracy_score(Y_test, Y_pred)
```

```
[[14  0  0]
 [ 1 15  0]
 [ 0  0  6]]
```

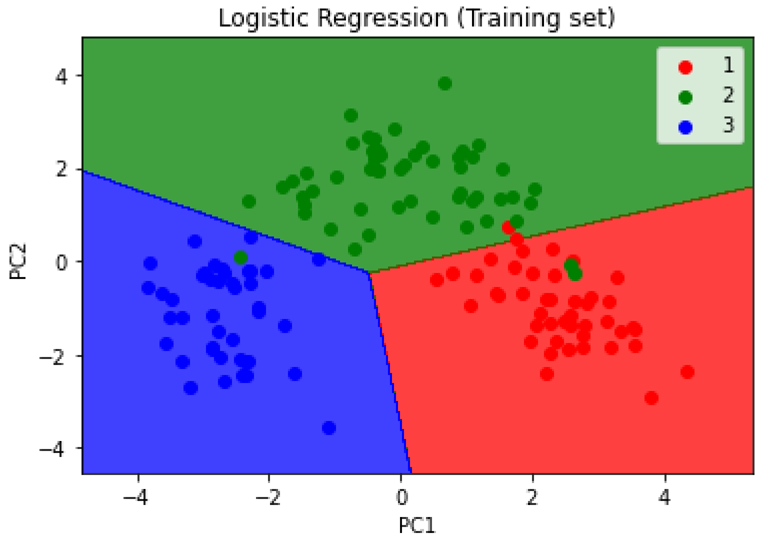
Out[11]:

```
0.9722222222222222
```

In [14]:

```
from matplotlib.colors import ListedColormap
X_set, Y_set = X_train, Y_train
X1, X2 = np.meshgrid(np.arange(start = X_set[:, 0].min() - 1, stop = X_set[:, 0].max() + 1,
                     np.arange(start = X_set[:, 1].min() - 1, stop = X_set[:, 1].max() + 1,
plt.contourf(X1, X2, classifier.predict(np.array([X1.ravel(), X2.ravel()]).T).reshape(X1.sh
             alpha = 0.75, cmap = ListedColormap(('red', 'green', 'blue')))
plt.xlim(X1.min(), X1.max())
plt.ylim(X2.min(), X2.max())
for i, j in enumerate(np.unique(Y_set)):
    plt.scatter(X_set[Y_set == j, 0], X_set[Y_set == j, 1],
                c = ListedColormap(('red', 'green', 'blue'))(i), label = j)
plt.title('Logistic Regression (Training set)')
plt.xlabel('PC1')
plt.ylabel('PC2')
plt.legend()
plt.show()
```

```
*c* argument looks like a single numeric RGB or RGBA sequence, which should
be avoided as value-mapping will have precedence in case its length matches
with *x* & *y*.  Please use the *color* keyword-argument or provide a 2-D ar
ray with a single row if you intend to specify the same RGB or RGBA value fo
r all points.
*c* argument looks like a single numeric RGB or RGBA sequence, which should
be avoided as value-mapping will have precedence in case its length matches
with *x* & *y*.  Please use the *color* keyword-argument or provide a 2-D ar
ray with a single row if you intend to specify the same RGB or RGBA value fo
r all points.
*c* argument looks like a single numeric RGB or RGBA sequence, which should
be avoided as value-mapping will have precedence in case its length matches
with *x* & *y*.  Please use the *color* keyword-argument or provide a 2-D ar
ray with a single row if you intend to specify the same RGB or RGBA value fo
r all points.
```



In [ ]:

```

```