In [ ]:
```
import numpy as nm
import matplotlib.pyplot as mtp
import pandas as pd
```

In [ ]:
```
data_set = pd.read_csv("datasets/Mall_Customers.csv")
```

In [ ]:
```
x= data_set.iloc[:,[2,3]].values
y = data_set.iloc[:,4].values
```

In [ ]:
```
from sklearn.model_selection import train_test_split
```

In [ ]:
```
x_train,x_test,y_train,y_test = train_test_split(x,y,test_size =0.25,random_state =
```

In [ ]:
```
x_train
```

Out[ ]:
```
array([[ 27, 255],
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```

```
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```

```
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```

```
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       [ 68,  48],
       [ 33, 113],
       [ 49,  65],
       [ 27,  40],
       [ 36,  87]], dtype=int64)
```

In [ ]:
```
from sklearn.preprocessing import StandardScaler
```

In [ ]:
```
st_x = StandardScaler()
x_train = st_x.fit_transform(x_train)
x_test = st_x.transform(x_test)
```

In [ ]:
```
x_train
```

Out[ ]:
```
array([[-0.76895498,  1.90031564],
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```

```
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```

```
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[ 1.77949894, -0.60824497],
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[-0.61450323, -0.87745635],
[-0.0739221 , -0.17995413],
[ 0.08052966, -0.55929744],
[-0.53727735,  2.05939509],
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```

```
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       [ 0.9300143 , -0.42469175],
       [-0.76895498, -0.73061378],
       [-0.0739221 , -0.15548037]])
```

In [ ]:
```
from sklearn.linear_model import LogisticRegression
```

In [ ]:
```
classifier = LogisticRegression(random_state=0)
classifier.fit(x_train,y_train)
```

Out[ ]:
```
LogisticRegression(random_state=0)
```

In [ ]:
```
LogisticRegression(C=1.0,class_weight=None, dual=False,fit_intercept=True,intercept
                   l1_ratio=None,max_iter=100,multi_class='warn',n_jobs=None,penalt
                   solver='warn',tol=0.0001,verbose=0,warm_start=False)
```

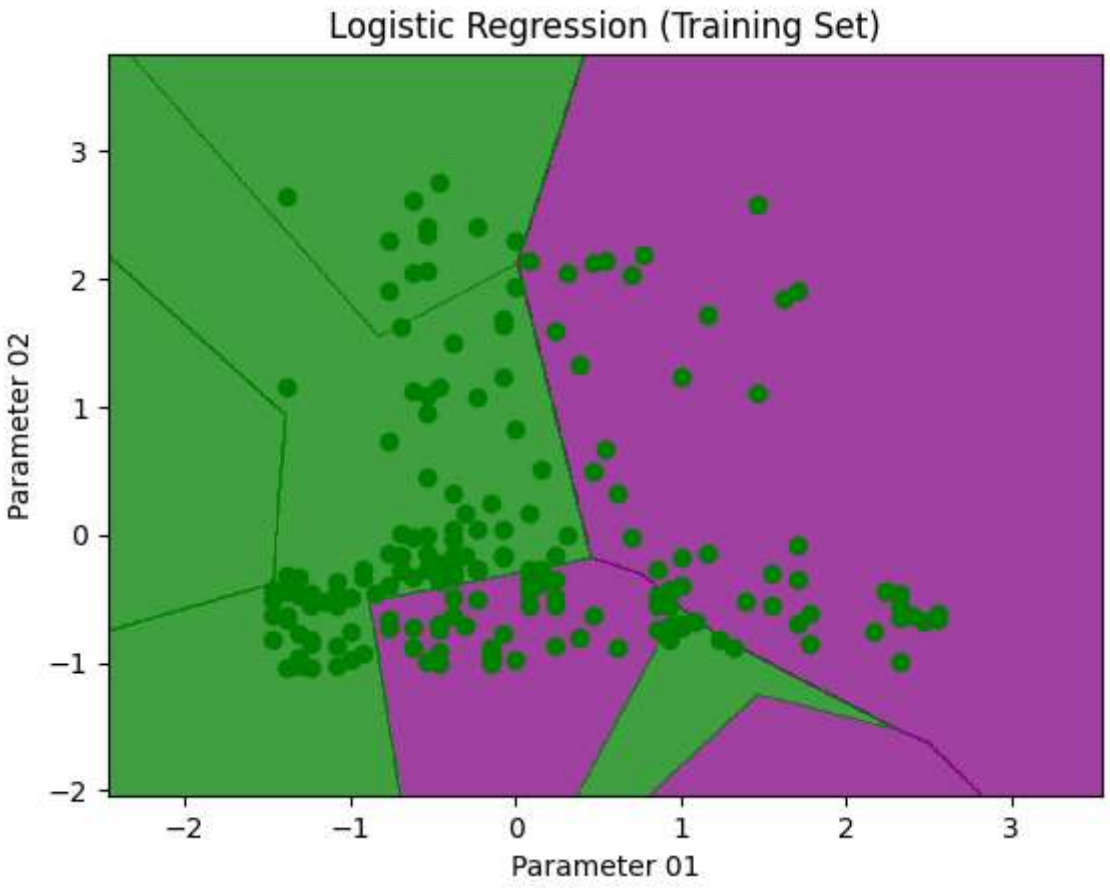
Out[ ]:
```
LogisticRegression(multi_class='warn', random_state=0, solver='warn')
```

In [ ]:
```
y_pred = classifier.predict(x_test)
```

In [ ]:
```
from sklearn.metrics import confusion_matrix
cm = confusion_matrix(y_test,y_pred)
```

In [ ]:
```
from matplotlib.colors import ListedColormap
x_set,y_set = x_train,y_train

x1,x2 = nm.meshgrid(nm.arange(start = x_set[:,0].min() - 1, stop = x_set[:,0].max()
nm.arange(start = x_set[:,1].min() - 1,stop = x_set[:,1].max() + 1, step = 0.01))

mtp.contourf(x1,x2,classifier.predict(nm.array([x1.ravel(),x2.ravel()]).T).reshape(
             alpha = 0.75,cmap = ListedColormap(('purple','green')))

mtp.xlim(x1.min(),x1.max())
mtp.ylim(x2.min(),x2.max())
```

```
for i,j in enumerate(nm.unique(y_set)):
    mtp.scatter(x_set[y_set == j,0], x_set[y_set == j,1],
                color = ListedColormap(('purple','green'))(i),label = j)


mtp.title("Logistic Regression (Training Set)")
mtp.xlabel("Parameter 01")
mtp.ylabel("Parameter 02")
mtp.show()
```



In [ ]:
```
x_set,y_set = x_test,y_test

x1,x2 = nm.meshgrid(nm.arange(start = x_set[:,0].min() - 1,stop = x_set[:,0].max()
                    nm.arange(start = x_set[:,1].min() - 1, stop = x_set[:,1].max()

mtp.contourf(x1,x2,classifier.predict(nm.array([x1.ravel(),x2.ravel()]).T).reshape(
            alpha = 0.75,cmap = ListedColormap(('red','green')))

mtp.xlim(x1.min(),x1.max())
mtp.ylim(x2.min(),x2.max())

for i, j in enumerate(nm.unique(y_set)):
    mtp.scatter(x_set[y_set == j,0],x_set[y_set == j,1],
                color = ListedColormap(('red','green'))(i),label = j)

mtp.title("Logistic Regression (Test Set)")
mtp.xlabel("Parameter 01")
```

```
mtp.ylabel("Parameter 02")
mtp.show()
```