In [1]:
```
import numpy as np
import matplotlib.pyplot as plt
import pandas as pd
```

In [2]:
```
dataset = pd.read_csv('Social_Network_Ads.csv')
X = dataset.iloc[:, [2, 3]].values
y = dataset.iloc[:, 4].values
```

In [3]:
```
from sklearn.model_selection import train_test_split
X_train, X_test, y_train, y_test = train_test_split(X, y, test_size = 0.25, ran
```

In [4]:
```
from sklearn.preprocessing import StandardScaler
sc = StandardScaler()
X_train = sc.fit_transform(X_train)
X_test = sc.transform(X_test)
```

In [5]:
```
from sklearn.linear_model import LogisticRegression
log_reg = LogisticRegression(random_state = 0)
log_reg.fit(X_train, y_train)
```

Out[5]:
```
LogisticRegression(random_state=0)
```

In [6]:
```
y_pred = log_reg.predict(X_test)
```

In [7]:
```
from sklearn.metrics import confusion_matrix
cm = confusion_matrix(y_test, y_pred)
```

In [11]:
```
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
                     np.arange(start = X_set[:, 1].min() - 1, stop = X_set[:, 1
plt.contourf(X1, X2, log_reg.predict(np.array([X1.ravel(), X2.ravel()]).T).resh
             alpha = 0.75, cmap = ListedColormap(('white', 'black')))
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(('white', 'black'))(i), label = j)
plt.title('Logistic Regression (Training set)')
plt.xlabel('Age')
plt.ylabel('Estimated Salary')
plt.legend()
plt.show()
```

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

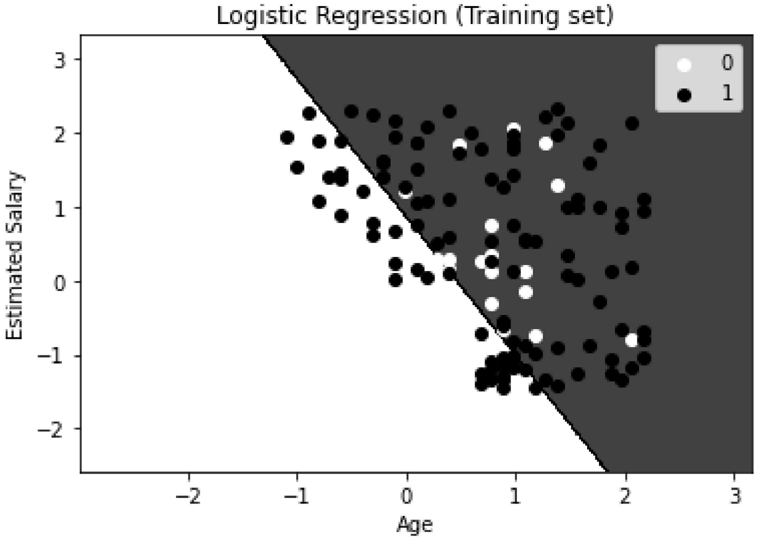

In [12]:

```
from matplotlib.colors import ListedColormap
X_set, y_set = X_test, y_test
X1, X2 = np.meshgrid(np.arange(start = X_set[:, 0].min() - 1, stop = X_set[:, 0
                     np.arange(start = X_set[:, 1].min() - 1, stop = X_set[:, 1
plt.contourf(X1, X2, log_reg.predict(np.array([X1.ravel(), X2.ravel()]).T).resh
             alpha = 0.75, cmap = ListedColormap(('white', 'black')))
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(('white', 'black'))(i), label = j)
plt.title('Logistic Regression (Test set)')
plt.xlabel('Age')
plt.ylabel('Estimated Salary')
plt.legend()
plt.show()
```

```
*c* argument looks like a single numeric RGB or RGBA sequence, which should b
e avoided as value-mapping will have precedence in case its length matches wi
th *x* & *y*.  Please use the *color* keyword-argument or provide a 2D array
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points.
```

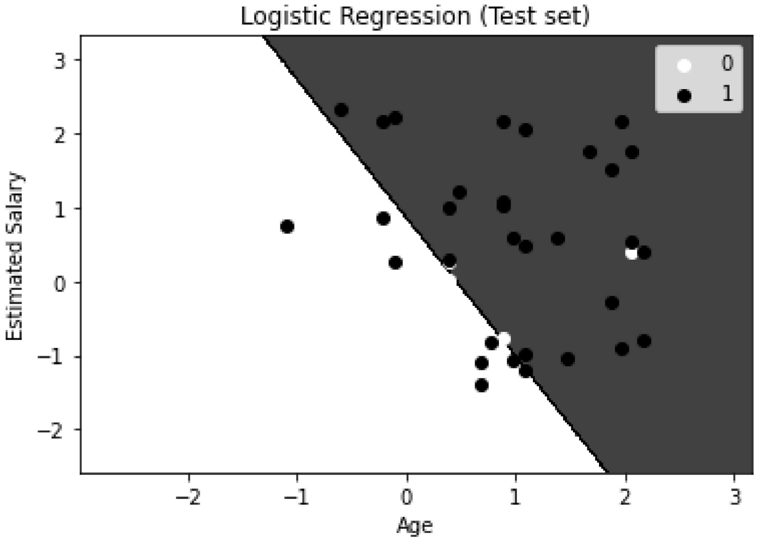

In [14]:

```
accuracy = accuracy_score(y_test, y_pred)
print("Accuracy :", accuracy)
precision = precision_score(y_test, y_pred)
print("Precision :", precision)
recall = recall_score(y_test, y_pred)
print("Recall :", recall)
F1_score = f1_score(y_test, y_pred)
print("F1-score :", F1_score)
```

```
Accuracy : 0.89
Precision : 0.8888888888888888
Recall : 0.75
F1-score : 0.8135593220338982
```

In [ ]: