```
In [2]: import numpy as np
        import pandas as pd
        import matplotlib.pyplot as plt
        from sklearn.preprocessing import StandardScaler
        from sklearn.model_selection import train_test_split
        from sklearn.metrics import accuracy_score,classification_report,confusion_mat
        from sklearn.neural_network import MLPClassifier
        from matplotlib.colors import ListedColormap
```

```
In [3]: a=pd.read_csv('suv dataset.csv')
        a
```

Out[3]:

	User ID	Gender	Age	EstimatedSalary	Purchased
0	15624510	Male	19	19000	0
1	15810944	Male	35	20000	0
2	15668575	Female	26	43000	0
3	15603246	Female	27	57000	0
4	15804002	Male	19	76000	0
...	...	...	...	...	...
395	15691863	Female	46	41000	1
396	15706071	Male	51	23000	1
397	15654296	Female	50	20000	1
398	15755018	Male	36	33000	0
399	15594041	Female	49	36000	1

400 rows × 5 columns

```
In [4]: a.head()
```

Out[4]:

	User ID	Gender	Age	EstimatedSalary	Purchased
0	15624510	Male	19	19000	0
1	15810944	Male	35	20000	0
2	15668575	Female	26	43000	0
3	15603246	Female	27	57000	0
4	15804002	Male	19	76000	0

```
In [5]: a.tail()
```

	User ID	Gender	Age	EstimatedSalary	Purchased
395	15691863	Female	46	41000	1
396	15706071	Male	51	23000	1
397	15654296	Female	50	20000	1
398	15755018	Male	36	33000	0
399	15594041	Female	49	36000	1

In [6]:
```python
a.shape
```

Out[6]: (400, 5)

In [11]:
```python
X=a[['Age','EstimatedSalary']]
Y=a['Purchased']
X_train,X_test,Y_train,Y_test=train_test_split(X,Y,test_size=0.2,random_state=
model=MLPClassifier(hidden_layer_sizes=(10,10),activation='relu',
                    solver='adam',max_iter=1000,random_state=42)
sc=StandardScaler()
X_train=sc.fit_transform(X_train)
X_test=sc.transform(X_test)
model.fit(X_train,Y_train)
y_pred=model.predict(X_test)
```

In [12]:
```python
accuracy=accuracy_score(Y_test,y_pred)
accuracy
```

Out[12]: 0.9375

In [13]:
```python
cr=classification_report(Y_test,y_pred)
print('\n Classification Report \n',cr)
```

```
 Classification Report
               precision    recall  f1-score   support

           0       0.98      0.92      0.95        52
           1       0.87      0.96      0.92        28

    accuracy                           0.94        80
   macro avg       0.93      0.94      0.93        80
weighted avg       0.94      0.94      0.94        80
```
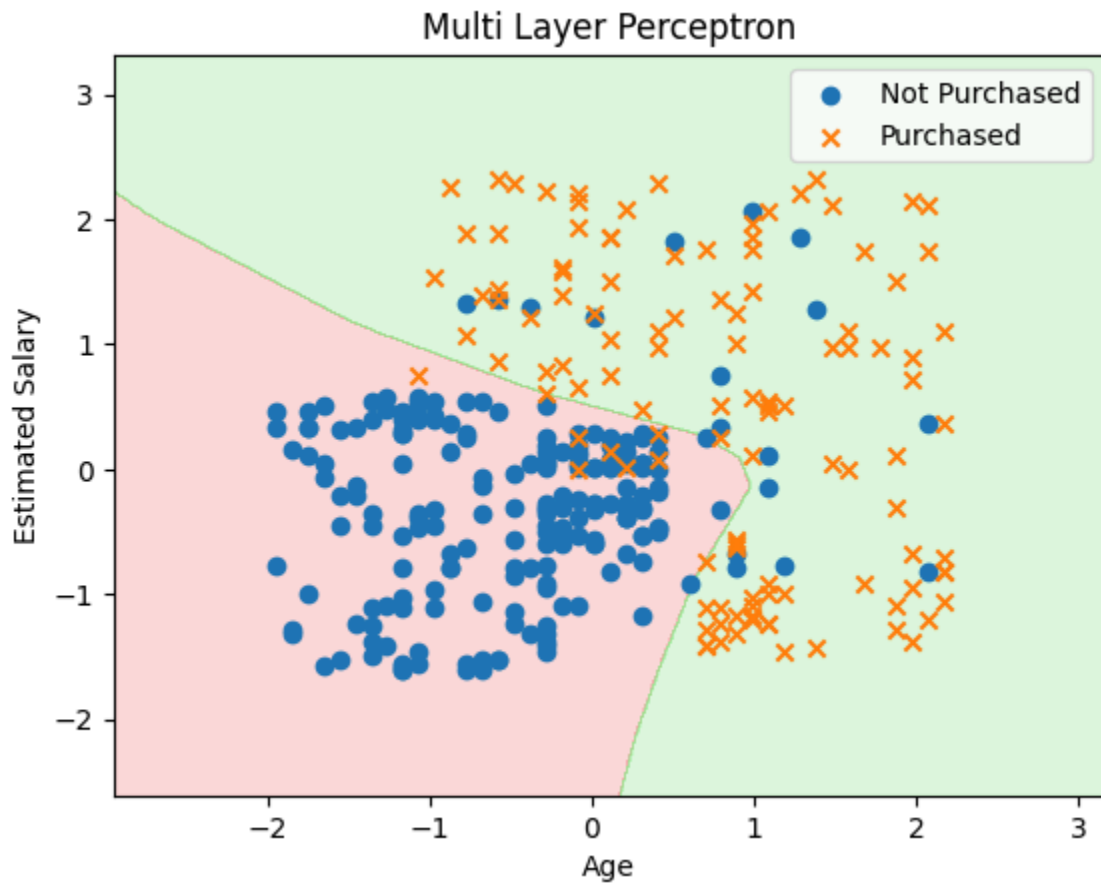
In [17]:
```python
X_set,Y_set=X_train,Y_train
X1,X2=np.meshgrid(np.arange(start=X_set[:,0].min()-1,stop=X_set[:,0].max()+1,s
                  np.arange(start=X_set[:,1].min()-1,stop=X_set[:,1].max()+1,s
plt.contourf(X1,X2,model.predict(np.array([X1.ravel(),X2.ravel()]).T).reshape(
             alpha=0.3,cmap=ListedColormap(('lightCoral','lightgreen')))
plt.scatter(X_set[Y_set==0,0],X_set[Y_set==0,1],label='Not Purchased',marker='
plt.scatter(X_set[Y_set==1,0],X_set[Y_set==1,1],label='Purchased',marker='x')
```

```
plt.title('Multi Layer Perceptron')
plt.xlabel('Age')
plt.ylabel('Estimated Salary')
plt.legend()
plt.show()
```


In [ ]: