In [34]:

```
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
```

In [35]:

```
df=pd.read_csv('HR_comma_sep.csv')
```

In [36]:

```
df
```

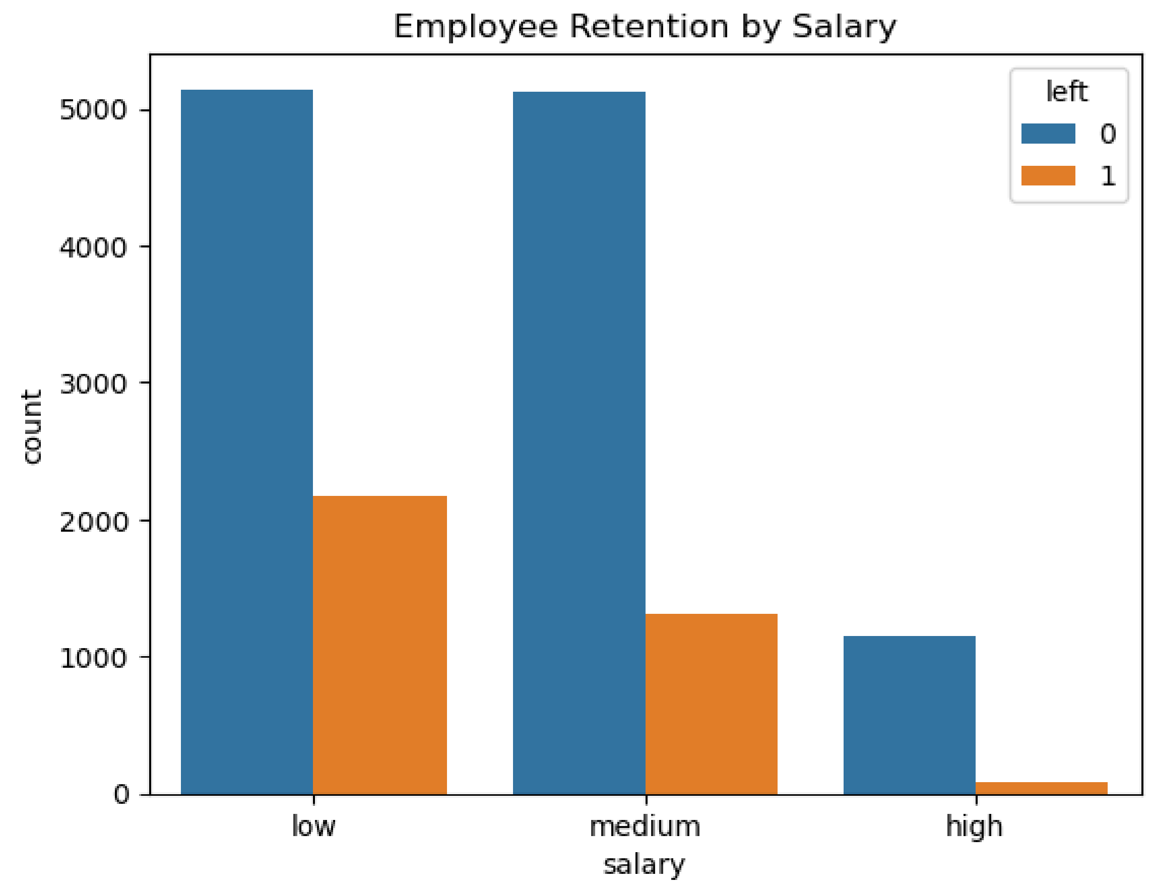
Out[36]:

	satisfaction_level	last_evaluation	number_project	average_montly_hours	time_spend_company	Work_accident	left	promotion_last_5years	Department	salary
0	0.38	0.53	2	157	3	0	1	0	sales	low
1	0.80	0.86	5	262	6	0	1	0	sales	medium
2	0.11	0.88	7	272	4	0	1	0	sales	medium
3	0.72	0.87	5	223	5	0	1	0	sales	low
4	0.37	0.52	2	159	3	0	1	0	sales	low
...	...	...	...	...	...	...	...	...	...	...
14994	0.40	0.57	2	151	3	0	1	0	support	low
14995	0.37	0.48	2	160	3	0	1	0	support	low
14996	0.37	0.53	2	143	3	0	1	0	support	low
14997	0.11	0.96	6	280	4	0	1	0	support	low
14998	0.37	0.52	2	158	3	0	1	0	support	low

14999 rows × 10 columns

In [37]:

```
sns.countplot(data=df, x='salary', hue='left')
plt.title('Employee Retention by Salary')
plt.show()
```

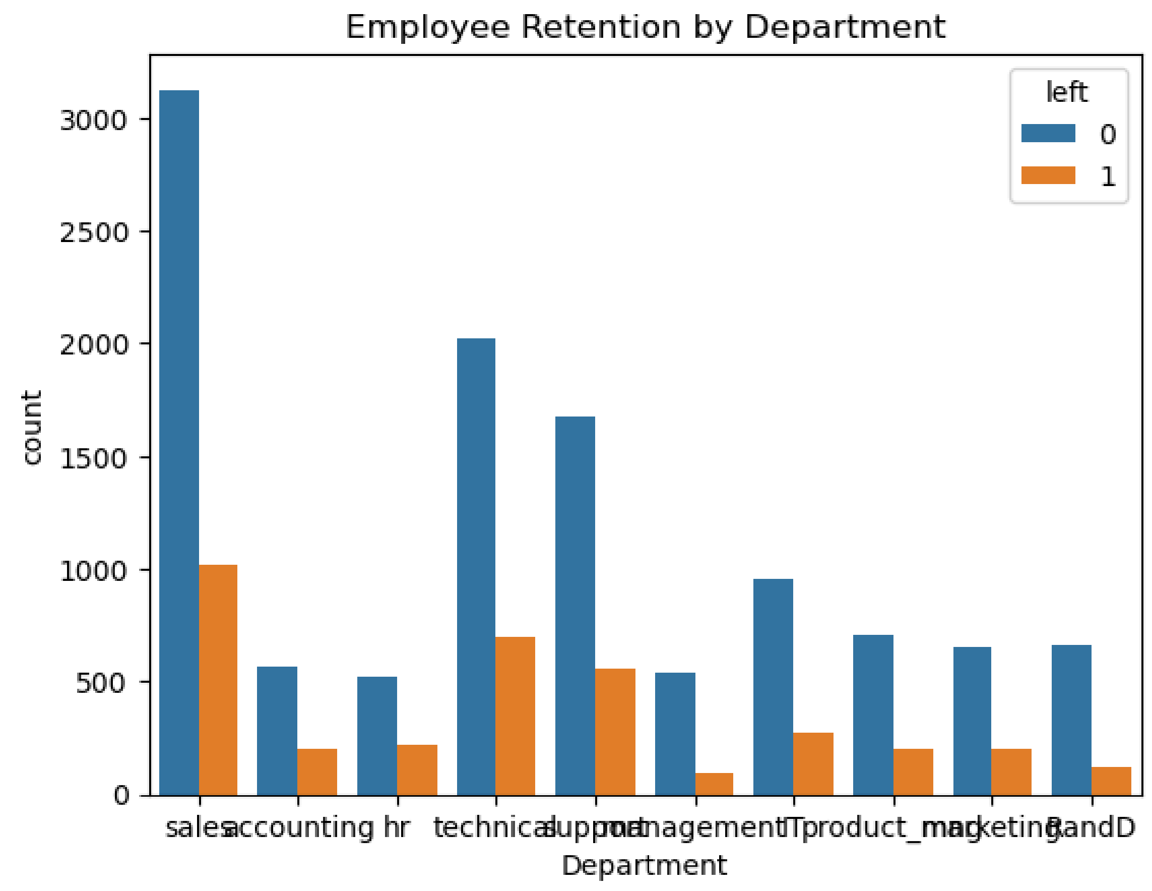


In [38]:

```
sns.countplot(data=df, x='Department', hue='left')
plt.title('Employee Retention by Department')
```

Out[38]:

```
Text(0.5, 1.0, 'Employee Retention by Department')
```



In [39]:

```
dummies=pd.get_dummies(df, columns=['salary', 'Department'],drop_first=True)
x = dummies.drop('left', axis=1)
y = dummies['left']
```

In [40]:

```
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=42)
```

In [41]:

```
from sklearn.linear_model import LogisticRegression
model = LogisticRegression()
model.fit(X_train, y_train)
```

```
C:\Users\Sai Sushma Iska\anaconda3\Lib\site-packages\sklearn\linear_model\_logistic.py:469: ConvergenceWarning: lbfgs failed to converge (status=1):
STOP: TOTAL NO. of ITERATIONS REACHED LIMIT.

Increase the number of iterations (max_iter) or scale the data as shown in:
    https://scikit-learn.org/stable/modules/preprocessing.html
Please also refer to the documentation for alternative solver options:
    https://scikit-learn.org/stable/modules/linear_model.html#logistic-regression
  n_iter_i = _check_optimize_result(
```

Out[41]:

```
▾ LogisticRegression
LogisticRegression()
```

In [42]:

```
model.coef_
```

Out[42]:

```
array([[-4.23634451,  0.09606613, -0.31368911,  0.0048988 ,  0.25582806,
        -1.67509694, -0.66649209,  1.40749887,  0.89836866, -0.58791319,
         0.07049445,  0.38173725, -0.66582516,  0.08680533,  0.00565143,
         0.0081988 ,  0.22590221,  0.26028137]])
```

In [43]:

```
model.intercept_
```

Out[43]:

```
array([-0.60908758])
```

In [44]:

```
y_predict = model.predict(X_test)
from sklearn.metrics import accuracy_score
accuracy = accuracy_score(y_test, y_pred)
print(f"Accuracy of the Logistic Regression model: {accuracy:.4f}")
```

```
Accuracy of the Logistic Regression model: 0.7983
```