Implementation-of-Decision-Tree-Regressor-Model-for-Predicting-the-Salary-of-the-Employee

AIM:

To write a program to implement the Decision Tree Regressor Model for Predicting the Salary of the Employee.

Equipments Required:

1. Hardware – PCs
2. Anaconda – Python 3.7 Installation / Jupyter notebook

Algorithm

1. Import the libraries and read the data frame using pandas.
2. Calculate the null values present in the dataset and apply label encoder.
3. Determine test and training data set and apply decison tree regression in dataset.
4. Calculate Mean square error,data prediction and r2.

Program:

```
/*
Program to implement the Decision Tree Regressor Model for Predicting the Salary of th
Developed by: THAMIZH KUMARAN S
RegisterNumber: 212223240166
*/
```

```
import pandas as pd
data=pd.read_csv("Salary.csv")
data.head()

data.info

data.isnull().sum()

from sklearn.preprocessing import LabelEncoder
le=LabelEncoder()
data["Position"]=le.fit_transform(data["Position"])
```

```
data.head()

x=data[["Position","Level"]]
y=data[["Salary"]]

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=2)

from sklearn.tree import DecisionTreeRegressor
dt=DecisionTreeRegressor()
dt.fit(x_train,y_train)
y_pred=dt.predict(x_test)

from sklearn import metrics
mse=metrics.mean_squared_error(y_test, y_pred)
mse

r2=metrics.r2_score(y_test,y_pred)
r2

dt.predict([[5,6]])
```

Output:

Data Head:

Out[3]:

	Position	Level	Salary
0	Business Analyst	1	45000
1	Junior Consultant	2	50000
2	Senior Consultant	3	60000
3	Manager	4	80000
4	Country Manager	5	110000

Data Info:

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 10 entries, 0 to 9
Data columns (total 3 columns):
 #   Column    Non-Null Count  Dtype
---  ------    --------------  -----
 0   Position  10 non-null     object
 1   Level     10 non-null     int64
 2   Salary    10 non-null     int64
dtypes: int64(2), object(1)
memory usage: 372.0+ bytes
```

isnull() sum():

```
Out[5]: Position    0
        Level       0
        Salary      0
        dtype: int64
```

Data Head for salary:

Out[6]:

	Position	Level	Salary
0	0	1	45000
1	4	2	50000
2	8	3	60000
3	5	4	80000
4	3	5	110000

Mean Squared Error :

```
Out[11]: 462500000.0
```

r2 Value:

```
Out[12]: 0.48611111111111116
```

Data prediction :

```
Out[13]: array([150000.])
```

Result:

Thus the program to implement the Decision Tree Regressor Model for Predicting the Salary of the Employee is written and verified using python programming.