ARTIFICIAL INTELLIGENCE (18CSC305J) LAB

EXPERIMENT 11

Implementation of learning algorithms for an application

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Aim:

To Develop a model to implement learning algorithms for an application

Language: Python

Theory:

Decision Tree is a decision-making tool that uses a flowchart-like tree structure or is a model of decisions and all of their possible results, including outcomes, input costs and utility. It applies the learning algorithm

Problem Formulation and Algorithm:

- Import the required libraries.
- Import the data file in the program.
- Clean the data.
- Find the required features on which the model predicts.For eg. in our program we use -Rooms, Bathroom, Land Size, Latitude, Longitude from our data.
- We also have to find which field we have to predict. In our model we are predicting the price of the House.
- After that we import the libraries of the algorithm .Here we have imported Decision tree regression.
- We train our model with features and data then the predicted value is given by the model.

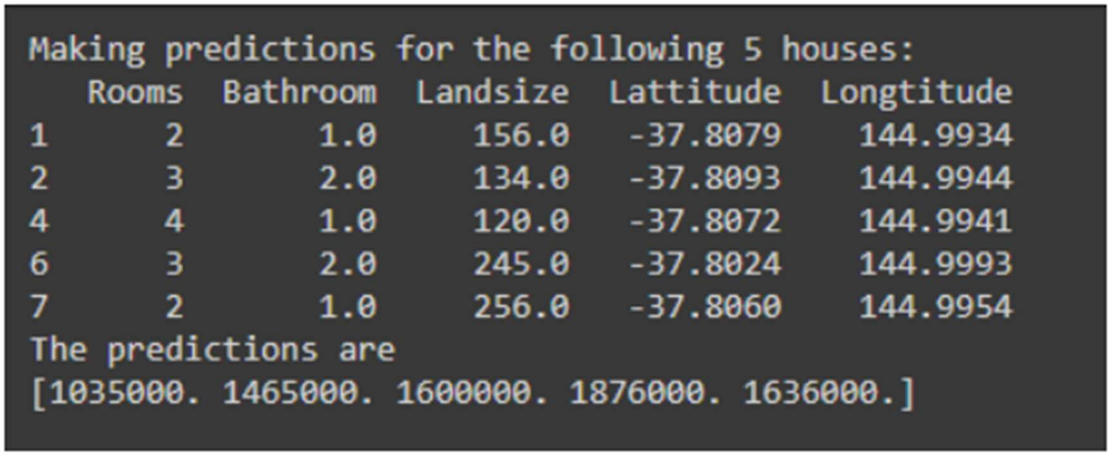
Source Code:

```
import pandas as pd
from sklearn.tree import DecisionTreeRegressor
melbourne_file_path = 'melb_data.csv'
melbourne_data = pd.read_csv(melbourne_file_path)
melbourne_data.columns
melbourne_data = melbourne_data.dropna(axis=0)
y = melbourne_data.Price
melbourne_features = ['Rooms', 'Bathroom', 'Landsize', 'Lattitude',
'Longtitude']
```

```
X = melbourne_data[melbourne_features]
X.describe()
X.head()

# Define model. Specify a number for random_state to ensure same results
 each run
melbourne_model = DecisionTreeRegressor(random_state=1)
# Fit model
melbourne_model.fit(X, y)
print("Making predictions for the following 5 houses:")
print(X.head())
print("The predictions are")
print(melbourne_model.predict(X.head()))
```

Output Screenshots:



```
Making predictions for the following 5 houses:
   Rooms  Bathroom  Landsize  Lattitude  Longtitude
1      2       1.0     156.0   -37.8079    144.9934
2      3       2.0     134.0   -37.8093    144.9944
4      4       1.0     120.0   -37.8072    144.9941
6      3       2.0     245.0   -37.8024    144.9993
7      2       1.0     256.0   -37.8060    144.9954
The predictions are
[1035000. 1465000. 1600000. 1876000. 1636000.]
```

Verification:

The predictions made are nearby the data which are input, so we can verify the data is correctly predicted as it lies along the dataset provided.

Result: Hence, successfully implemented the problem and verified the output and document result.