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# Importing necessary libraries
import pandas as pd
from sklearn.model_selection import train_test_split
from sklearn.linear_model import LinearRegression
from sklearn.metrics import mean_squared_error

# Load the dataset
data = pd.read_csv("laptop.csv")

# Data Preprocessing
# Drop any rows with missing values
data.dropna(inplace=True)

# Encoding categorical variables if any
data = pd.get_dummies(data)

# Splitting the data into features and target variable
X = data.drop('Price', axis=1)
y = data['Price']

# Splitting the data into training and testing sets
X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.2, random_state=42)

# Model Development
# Instantiate the model
model = LinearRegression()

# Fit the model to the training data
model.fit(X_train, y_train)

# Making predictions
y_pred = model.predict(X_test)

# Model Evaluation
# Calculating Mean Squared Error
mse = mean_squared_error(y_test, y_pred)
print("Mean Squared Error:", mse)

```

Mean Squared Error: 1.313990016390534e+24

Let's address each question based on the model:

#Which features have the most significant impact on laptop prices?

To determine which features have the most significant impact, we can analyze the coefficients of the linear regression model. Features with higher absolute coefficients contribute more to the predicted laptop prices.

#Can the model accurately predict the prices of laptops from lesser-known brands?

We can assess the model's ability to predict prices for lesser-known brands by evaluating its performance. If the model's predictions for these laptops are accurate, it indicates that the model can generalize well to lesser-known brands.

#Does the brand of the laptop significantly influence its price?

We can examine the coefficients of brand-related variables in the linear regression model to determine if brand significantly influences laptop prices.

Higher coefficients for brand variables suggest a stronger influence on price.

#How well does the model perform on laptops with high-end specifications compared to budget laptops?

We can stratify the test data based on specifications such as processor speed, RAM, screen size, etc. and evaluate the model's performance separately for high-end and budget laptops.

Comparing performance metrics like mean squared error (MSE)

for each category will provide insights into the model's performance on different specifications.

#What are the limitations and challenges in predicting laptop prices accurately?

Some limitations and challenges include:

Limited availability of comprehensive and accurate data, especially for newer or lesser-known models.

Difficulty in capturing subjective factors such as brand perception and user preferences.

Rapidly changing market trends and technology advancements that can impact pricing.

Challenges in accounting for competitive pricing strategies and promotions in the market.

#How does the model perform when predicting the prices of newly released laptops not present in the training data?

To assess the model's performance on newly released laptops,

we need access to a separate dataset containing information about these laptops.

We can then use the trained model to make predictions for these laptops and evaluate its performance.

If the model performs well, it suggests that it can generalize to newly released laptops based on learned patterns.

Disk: 24.39 GB/107.72 GB