CAR RESALE VALUE PREDICTION

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Choosing the model to be a Decision tree regressor:

```
from sklearn.ensemble import RandomForestRegressor


Rf = RandomForestRegressor(n_estimators = 10, random_state = 10)

Rf = make_pipeline(columns_trans, Rf)
Rf.fit(X_train, Y_train)
```

```
Pipeline(steps=[('columntransformer',
                 ColumnTransformer(remainder='passthrough',
                                   transformers=[('onehotencoder',
                                                  OneHotEncoder(categories=[array(['Ambassador CLASSIC 1500 DSL AC',
       'Ambassador Classic 2000 DSZ AC PS',
       'Ambassador Grand 1500 DSZ BSIII', ..., 'Volvo XC40 D4 R-Design',
       'Volvo XC60 Inscription D5 BSIV', 'Volvo XC90 T8 Excellence BSIV'],
      dtype=object),
                                                                                 array(['Ambassador'...
       '96.1Nm@ 3000rpm', '96Nm@ 2500rpm', '96Nm@ 3000rpm',
       '96Nm@ 3500rpm', '98Nm@ 1600-3000rpm', '99.04Nm@ 4500rpm',
       '99.07Nm@ 4500rpm', '99.1Nm@ 4500rpm', '99.8Nm@ 2700rpm',
       '99Nm@ 4500rpm'], dtype=object)]),
                                                  ['name', 'company', 'owner',
                                                   'transmission',
                                                   'seller_type', 'fuel',
                                                   'mileage', 'engine',
                                                   'max_power', 'torque'])])),
                ('randomforestregressor',
                 RandomForestRegressor(n_estimators=10, random_state=10))])
```

```
Rf_train_pred = Rf.predict(X_train)
Rf_test_pred = Rf.predict(X_test)

# R Square
r2_score = metrics.r2_score(Y_train, Rf_train_pred)
print(f"Training: R Square: {r2_score}")

# Cross Validation
```

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```
cross_val = cross_val_score(Rf ,X_train ,Y_train ,cv=5)
print(f"Training: Cross Validation: {cross_val}")

# R Square
r2_score = metrics.r2_score(Y_test, Rf_test_pred)
print(f"Testing: R Square: {r2_score}")

# Cross Validation
cross_val = cross_val_score(Rf ,X_test ,Y_test, cv=5)
print(f"Testing: Cross Validation: {cross_val}")
```

```
Training: R Square: 0.9908531474176401
Training: Cross Validation: [0.83380856 0.61103405 0.81106927 0.6959338  0.47796537]
Testing: R Square: 0.8363601069546148
Testing: Cross Validation: [ 0.50841947 -0.33550588  0.63038087  0.88286043  0.55295804]
```