

## **Project Name: Agent Based Second-Hand Car Price Estimation Application**

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## **Data Collection**

We used the Python selenium library to collect data. First of all, we saved the information of the vehicles on the dod.com.tr website one by one in a txt file with selenium. Then we converted this txt file to csv file. Then, we added the dollar exchange rate and the date the data was drawn as columns to this data. Finally, since the damage record status is different for each vehicle, we added the word 'sağlam' to the columns where the vehicles are not damaged.

## **Data Overview**

In our data set, which contains 1440 rows and 25 features related to various types of automobiles, there are no columns with missing data except the columns below. The numbers of missing data in the columns with missing data are as follows:

- Top Speed = **16** missing data.
- Luggage Volume = **62** missing data.
- 0-100 = **1439** missing data.
- Max Torque = **20** missing data.
- Cylinder = **12** missing data.
- Tank = **12** missing data.
- Valve = **482** missing data.

**Input:** All the columns we will use to estimate the car price are listed below. (Except for the **price** column.) Our aim is to capture price-related correlations by using these columns.

**Output:** The input **price** information we obtain as a result of establishing certain correlations by taking into account all the features of the car.

### **Explanation of the columns in the car dataset**

Column Name	Meaning	Example Value
Model	The model of the car	A3, Passat, Caravelle
Brand	The brand of the car	Audi, Volkswagen
Price	The price of the car	1.278.000 TL, 1.460.000 TL
Foreign Currency	The currency in which the price is listed	30.03 Dollar, 31.10 Dollar
Date of Currency	The date on which the exchange rate was updated	11.01.2022, 11.01.2023
Gear	The type of transmission of the car	Automatic, Tiptronic
Fuel	The type of fuel used by the car	Gasoline, Diesel
Engine Displacement	The engine displacement of the car	1.5 t, 1.6 tt
Transmission	The transmission type of the car	Önden çekiş, 4x4
Horsepower	The horsepower of the car's engine	150 Hp, 120 Hp

Mortgage	Whether or not the car has a mortgage	No
Confiscation	Whether or not the car has been confiscated	No
Inspection	The inspection date of the car	23.06.2021, 29.06.2022
Year	The year of manufacture of the car	2020, 2019
Km	The kilometer reading of the car	93.228 km, 84.000 km
Area of Use	The area of use of the car	Sedan, Cityvan
Colour	The color of the car	Metallic Gl., Grey
Top Speed	The maximum speed the car can reach	224 Km/h, 205 Km/h
Luggage Volume	The luggage volume of the car	425 Lt, 586 Lt
0-100	The time it takes for the car to accelerate from 0 to 100 km/h	No, No
Max Torque	The maximum torque the car's engine can produce	200, 175
Cylinder	The number of cylinders in the car's engine	4, 6, 8

Tank	The capacity of the car's fuel tank	40 Lt, 100 Lt
Consumption	The average fuel consumption of the car per 100 km	6.2 (₺İ) / 4.3 (₺D), 4.3 (₺İ) / 4 (₺D)
Valve	The number of valves in the car's engine	8, 12

#### **Additional Notes:**

- The Date of Currency column shows the date on which the foreign currency price was updated.
- The Kilometer (Km) column shows the reading of the car's odometer.
- The Area of Use column shows the type of car (e.g., sedan, hatchback, SUV).
- The Colour column shows the exterior color of the car.
- The Luggage Volume column shows the volume of the car's luggage compartment in liters.
- The 0-100 column shows the time it takes for the car to accelerate from 0 to 100 km/h in seconds.
- The Max Torque column shows the maximum torque the car's engine can produce in newton meters (Nm).
- The Cylinder column shows how many cylinders the car's engine has.
- The Tank column shows the capacity of the car's fuel tank in liters.
- The Consumption column shows the average fuel consumption of the car per 100 kilometers in liters.