







Professional Readiness for

Innovation, Employability, and Entrepreneurship

PROJECT REPORT

Title : Car Resale Value Prediction

Team ID : PNT2022TMID43789

Team Lead : MOHAMED (820619104030)

MUSRAF ALI.I

Members : RAVISHANKAR.S.P (820619104048)

RUTHRA BALA.J (820619104049) PRAVEENKUMAR.J (820619104039)



TABLE OF CONTENTS

1. INTRODUCTION1
Project Overview
Purpose1
2. LITERATURE SURVEY2
Existing problem
References
Problem Statement Definition
3. IDEATION & PROPOSED SOLUTION4
Empathy Map Canvas4
Ideation & Brainstorming
Proposed Solution
Problem Solution fit
4. REQUIREMENT ANALYSIS9
Functional requirement9
Non-Functional requirements
5. PROJECT DESIGN10
Data Flow Diagrams10
Solution & Technical Architecture
User Stories11
6. PROJECT PLANNING & SCHEDULING12
Sprint Planning & Estimation
Sprint Delivery Schedule12
Project Tracker13
Burndown chat13
Reports from JIRA13
7. CODING & SOLUTIONING14
Home Page14
Data Entry Page16
Output Display Page
Model Selection & Hyperparameter Tuning34
Flask Integration46
8. TESTING49
Test Cases Scenarios
User Acceptance Testing
UAT Report49
9. RESULTS51
Performance Metrics
10. ADVANTAGES & DISADVANTAGES52
11. CONCLUSION53
12. FUTURE SCOPE54
13. APPENDIX55
Source Code
GitHub & Project Demo Link84

1.INTRODUCTION

Project Overview

This system "Car Resale Value Prediction" aims to build a regression model to predict used cars' resale value based on multiple aspects, including vehicle mileage, year of manufacturing, fuel consumption, transmission, road tax, fuel type, and engine size. This model can benefit sellers, buyers, and car manufacturers in the used cars market. Upon completion, it can output a relatively accurate price prediction based on the information that user's input. Various regression methods, including linear regression, polynomial regression, support vector regression, decision tree regression, and random forest regression, were applied in the research to achieve the highest accuracy.

This system was implemented as a web application where the user enters the details of the car to get an estimation of the car's resale value.

Purpose

Car resale value prediction helps the user to predict the resale value of the car depending upon various features like kilometers driven, fuel type, etc. The purpose of this system is of commercial interest to sellers/financer to be able to predict the resale value of cars with better accuracy. The most essential elements for forecast are brand and model, period use of vehicle, mileage of vehicle, gear type and fuel type utilized in the vehicle just as fuel utilization per mile profoundly influences cost of a vehicle because of continuous changes in the cost of a fuel. In view of the differing highlights and factors, and furthermore with the assistance of master information the vehicle resale value forecast has been done precisely.

2.LITERATURE SURVEY

Existing problem

With difficult economic conditions, it is likely that sales of second-hand imported (reconditioned) cars and used cars will increase. In many developed countries, it is common to lease a car rather than buying it outright. After the lease period is over, the buyer has the possibility to buy the car at its residual value, i.e., its expected resale value. Thus, it is of commercial interest to sellers/financers to be able to predict the salvage value (residual value) of cars with accuracy.

References

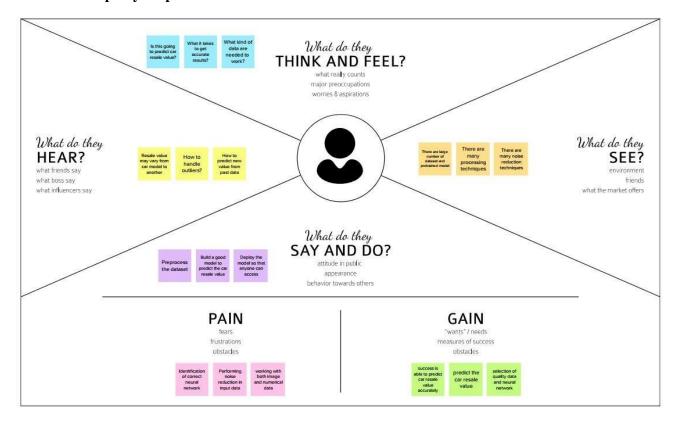
	ences	
Project Title	Author	Abstract
Price Prediction of Used Cars Using Machine Learning	Chuyang Jin	This work aims to build a model to predict used cars' reasonable prices based on multiple aspects. Various regression methods, including linear regression, polynomial regression, support vector regression, decision tree regression, and random forest regression, were applied in the work to obtain highest accuracy. Compared to previous research, the resulting model includes more aspects of used cars while also having a higher prediction accuracy.
of Prices for Used Car by using Regression Models	Prajak Chertchom, Thongchai Kaewkiriya, Suwat	In this work, a model to evaluate price based on big data analysis is proposed. It takes advantage of vehicle data and vehicle transaction data to analyze the price data for each type of vehicles. The work uses optimized Back Propagation neural network algorithm.
Using	Isakovic, Dino Keco,	In this work, several distinct attributes are analyzed for the reliable and accurate prediction. The work is to build a model to predict the resale price of cars in Bosnia and Herzegovina
	Praful Rane, Deep Pandya, Dhawal Kotak.	In this work, machine learning models that can accurately predict the price of a used car based on its features was built. They have implemented and evaluated various learning methods on dataset consisting of the sale prices of different models.

Problem Statement Definition

It is easy for any company to price their new cars based on the manufacturing and marketing cost it involves. But when it comes to a used car it is quite difficult to define a price because it involves it is influenced by various parameters like car brand, manufactured year etc. The goal of our system is to predict the best price for a used car in the based on the previous data related to sold cars using machine learning.

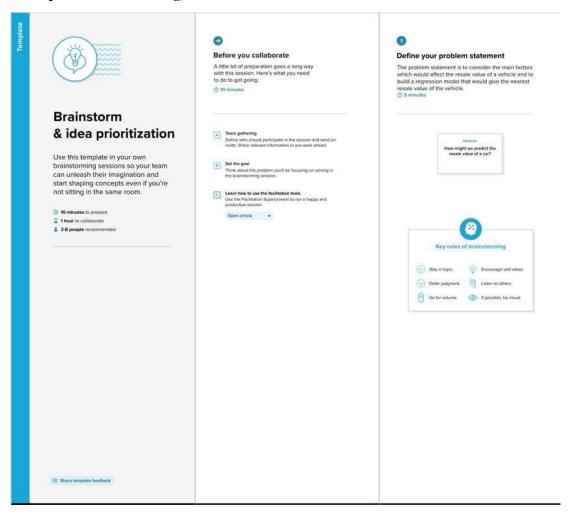
3.IDEATION & PROPOSED SOLUTION

Empathy Map Canvas

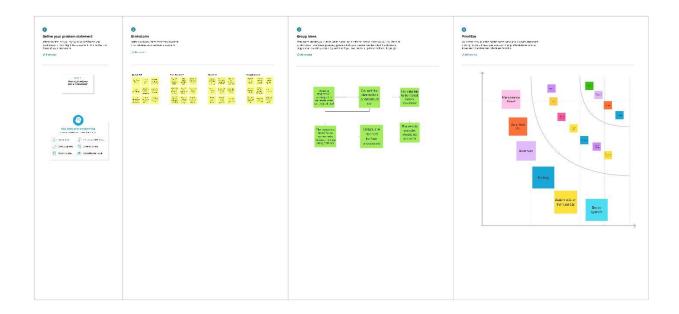


Ideation & Brainstorming

Step-1: Team Gathering, Collaboration and Select the Problem Statement



Step-2: Brainstorm, Idea Listing and Grouping



Proposed Solution

	Proposed Solution						
S. No:	Parameter	Description					
1.	Problem Statement (Problem to be solved)	With difficult economic conditions, it is likely that sales of second-hand imported (reconditioned) cars and used cars will increase. In many developed countries, it is common to lease a car rather than buying it outright. After the lease period is over, the buyer has the possibility to buy the car at its residual value, i.e., its expected resale value. Thus, it is of commercial interest to sellers/financers to be able to predict the salvage value (residual value) of cars with accuracy.					
2.	Idea / Solution description	In order to predict the resale value of the car, we proposed an intelligent, flexible, and effective system that is based on using regression algorithms. Considering the main factors which would affect the resale value of a vehicle a regression model is to be built that would give the nearest resale value of the vehicle. We will be using various regression algorithms and algorithm with the best accuracy will be taken as a solution, then it will be integrated to the webbased application where the user is notified with the status of his product.					
3.	Novelty / Uniqueness	Car resale value price data frequently resides in several locations from various sources, such as industries or private persons, to various source systems. The organization as a whole contributes to the data. This data becomes accessible and usable when it is combined into a single, central system, such as an enterprise data warehouse (EDW).					
4.	Social Impact / Customer Satisfaction	 Enhanced resale value accuracy Improved relationships with customers Leads to increased quality of products and it's related after sales service 					

5.	Business Model (Revenue Model)	This business plan addresses all relevant concerns by presenting a comprehensive account of a month-bymonth marketing strategy coupled with an extensive report on all aspects of the needs of a successful used car center.
6.	Scalability of the Solution	A variety of institutions must store, evaluate, and take action on the massive amounts of data being produced by the car resale industries as it expands quickly. India is a vast, culturally varied nation with a sizable population that is increasingly able to access centralized resale services.

Problem Solution fit

roblem Solution III						
1.Customer Segments + Car mechanic + Customer	6. Customer Limitation Proper information about the car is to be known by the customer to find the resale value.	5. Available Solution To predict the resale value of the car, we use an intelligent, flexible, and effective system with web application.				
2. Problems Customer should know the details of their car in web application.	 9. Problem root cause No Proper platform for car resale value prediction. No awareness of resale price of a used car. 	7. Behavior Customers are supposed to enter the car details in the web application to find the resale price of the car.				
3. Triggers to Act1) When customers decided to sell their car.2) When car mechanic decides to buy a used car.	10. Your Solution Using predictive modelling to predict the resale value of car	8. Channels ofBehaviour1. Online: car details to be entered in web application.				
4. Emotions Customers get an awareness of the resale price of their own car.		2. Offline: customers are supposed to collect the details of their car with the help of a car mechanic.				

4.REQUIREMENT ANALYSIS

Functional Requirements

Following are the functional requirements of the proposed solution.

FR	Functional Requirement	Sub Requirement (Story / Sub-Task)
No.	(Epic)	
FR-1	User Registration	Registration through Website
FR-2	User Confirmation	Confirmation via website
FR-3	Car Registration	Registering the car details
FR-4	Value Prediction	Predicting the car resale value

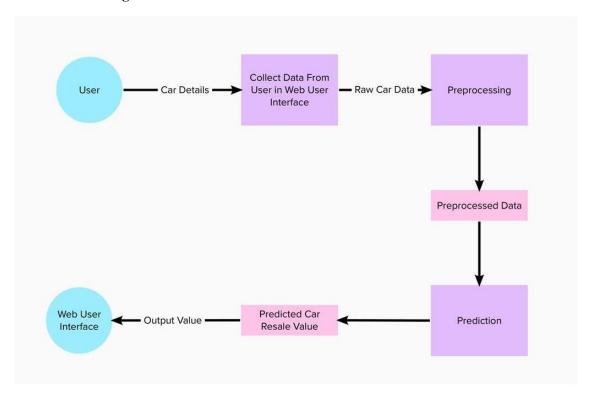
Non-Functional requirements

Following are the non-functional requirements of the proposed solution.

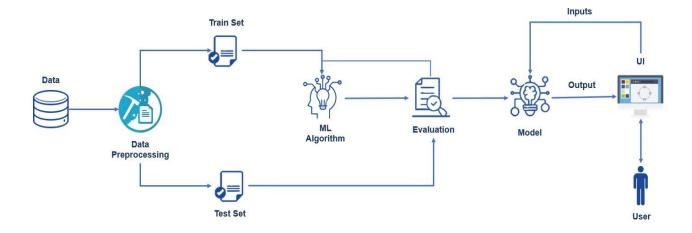
FR	Non-Functional Requirement	Description
No.		
NFR-1	Usability	Predicting the resale value
NFR-2	Security	Providing security to the website
NFR-3	Reliability	Providing high reliability by predicting values
		for different types of cars
NFR-4	Performance	Providing high performance by using some
		machine learning techniques
NFR-5	Availability	It is used for all types of cars
NFR-6	Scalability	Predicting values for different types of cars

5.PROJECT DESIGN

Data Flow Diagrams



Solution & Technical Architecture



User Stories

User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance criteria	Priority	Release
Customer (Desktop user)	Home Page	USN-1	As a user, I can view the home page of the web application.	I can view the homepage	Low	Sprint-1
Customer (Desktop user)	Data Entry	USN-2	As a user, I can enter my car details in the application.	I can enter the car details	Medium	Sprint-2
Customer (Desktop user)	View car Resale value	USN-3	As a user, I can view the resale value of my car.	I can view my car's resale value	Medium	Sprint-3
Customer (Desktop user)	Resale Value Prediction	USN-4	As a user, I expect the application to predict the resale value of my car.	I expect the application to predict my car resale price	High	Sprint-4

6.PROJECT PLANNING & SCHEDULING

Sprint Planning & Estimation

Title	Description	Date
Literature Survey and Information Gathering	Gathering Information by referring the technical papers, research publications etc.	3 September 2022
Prepare Empathy Map	To capture user pain and gains Prepare List of Problem Statement	10 September 2022
Ideation	Prioritize a top 3 ideas based on feasibility and Importance	17 September 2022
Proposed Solution	Solution include novelty, feasibility, business model, social impact and scalability of solution	_
Problem Solution Fit	Solution fit document	1 October 2022
Solution Architecture	Solution Architecture	1 October 2022
Customer Journey	To Understand User Interactions and experiences with application	8 October 2022
Functional Requirement	Prepare functional Requirement	12 October 2022
Data flow Diagrams	Data flow diagram	12 October 2022
Technology Architecture	Technology Architecture diagram	12 October 2022
Milestone & sprint delivery plan	Activity what we done &further plans	22 October 2022
	Develop and submit the developed code by testing it	24 October 2022 – 19 November 2022

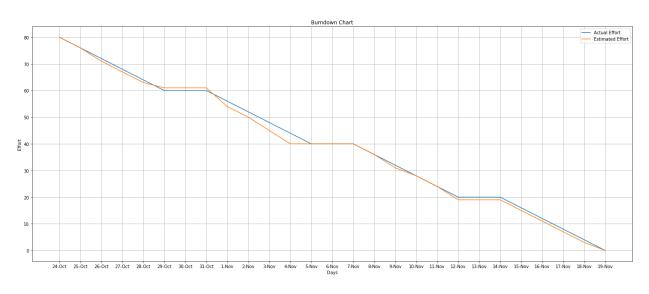
Sprint Delivery Schedule

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-1	Home Page	USN-1	As a user, I can view the home page of the web application.	20	Low	Praveenkum ar.J
Sprint-2	Data Entry	USN-2	As a user, I can enter my car details in the application.	20	Medium	Mohamed Musraf Ali.I
Sprint-3	Car resale value display	USN-3	As a user, I can view the resale value of my car.	20	Medium	Ruthra Bala.J
Sprint-4	Resale Value Prediction	USN-4	As a user, I expect the application to predict the resale value of my car.	20	Medium	Ravishanka r.S.P

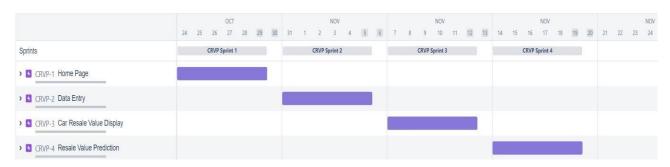
Project Tracker

Sprint	Total Story Points	Duration	Sprint Start Date	Sprint End Date (Planned)	Story Points Completed (as on Planned End Date)	Sprint Release Date (Actual)
Sprint-1	20	6 Days	24 Oct 2022	29 Oct 2022	20	29 Oct 2022
Sprint-2	20	6 Days	31 Oct 2022	05 Nov 2022	20	05 Nov 2022
Sprint-3	20	6 Days	07 Nov 2022	12 Nov 2022	20	12 Nov 2022
Sprint-4	20	6 Days	14 Nov 2022	19 Nov 2022	20	19 Nov 2022

Burndown Chart



Reports from JIRA



7. CODING & SOLUTIONING

Home Page

Displays the home page of the application.

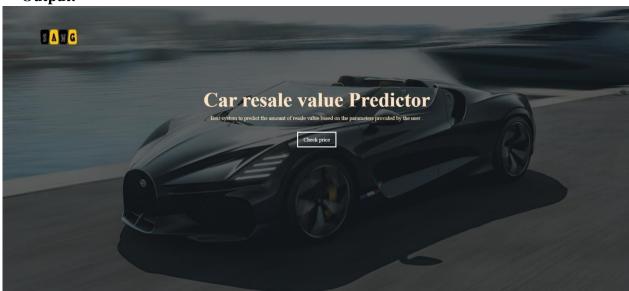
Code:

```
1) car.html
<!DOCTYPE html>
<html lang="en" dir="ltr">
 <head>
  <meta charset="utf-8">
  <title>Car Resale Value Predicting Application</title>
  link rel="icon" type="image/x-icon" href="../static/Images/favicon.ico">
  <link rel="stylesheet" href="../static/css/style.css">
  link
           rel="stylesheet"
    href="https://cdnjs.cloudflare.com/ajax/libs/fontawesome/4.7.0/css/font-
awesome.min.css">
 </head>
 <body>
  <section class="header">
   <nav>
    <a href="/"><img src="../static/Images/sang.png" width="100"
height="100"></a>
   </nav>
    <div class="text-box">
     <h1>Car resale value Predictor</h1>
      >Best system to predict the amount of resale value based on the parameters
provided by the user .
      <a href="./predict_page" class="visit-btn ">Check price</a>
</div>
  </section>
 </body>
</html>
2) style.css
*{
margin:
0;
padding:
0;
}
.header{ min-
height: 100vh;
```

```
width: 100%;
background-
image:
    linear-
gradient(rgba(25,30,30,0.7),rgba(25,30,30,0.7)),url(../Images/car1.p
ng); background-position: center; background-size: cover;
position: relative;
}
nav{
 display:flex; padding: 2%
6%; justify-content: space-
between; align-items:
center;
}
.nav-links{
flex: 1; text-
align: right;
.nav-links ul li{ list-
style: none; display:
inline-block;
padding: 8px 12px;
position: relative;
.nav-links ul li a{
color:white; text-
decoration: none; font-
size: 13px;
     .text-box{
text-align:
center;
position:
relative;
color:
#FFE4C4;
top:50%;
.text-box h1{
margin-top: 50px;
font-size: 55px;
.text-box p{
margin: 10px 0
40px; font-size:
15px;
} .visit-btn{
display: inline;
border: 3px solid
```

```
#fff;
padding:10px
14px; font-size:
15px;
background:
transparent; color:
white; text-
decoration:none;
}
```

Output:



Data Entry Page

Allows user to enter the details about the car for which the resale value is to be predicted.

Code:

1) value.html

```
<!DOCTYPE html>
<html lang="en" dir="ltr">
<head>
ktitle>Car Resale Value Predicting Application</title>
krel="icon" type="image/x-icon" href="../static/Images/favicon.ico">
<script src="https://kit.fontawesome.com/b9b6bac803.js"
crossorigin="anonymous"></script>
kink rel="stylesheet"
href="https://cdnjs.cloudflare.com/ajax/libs/fontawesome/4.7.0/css/fontawesome.min.css">
<style>
```

table, the total control of th	
padding: 10px	x;
}	••
<td>tyle></td>	tyle>
<body></body>	
<div class="container"></div>	
<h1>Get the Accurate Resale Value of Your Car<</h1>	
<form action="http://localhost:5000/predict" class="formation=" http:="" localhost:5000="" localhost:<="" predict"="" td=""><td></td></form>	
<pre> <pre> <pre> </pre> <pre> <pre> <pre> <pre> </pre> <pre> <pre> <pre> <pre> <pre> </pre> <pre> <pre> <pre> <pre> <pre> </pre> <pre> <pre> <pre> <pre> <pre> <pre> <pre> <pre> <pre> </pre> <pre> <</pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre>	
<pre></pre> <pre><label for="year" padding:10px="">Registration year : </label></pre>	ibel>
<pre><input autocomplete="off" id="year" maxlength="50" name="regyear" type="text"/></pre>	
	>
	>
<td>span></td>	span>
<	/div>
	rol">
Registration Month : 	abel>
<pre><input id="month" maxlength="50" name="regmonth" type='autocomplete="off"/'/></pre>	text"
	>
<td></td>	
<	
<div class="form-cont</td><td></td></tr><tr><td><label for=" power"="">Power of car in PS: </div>	
<pre><input id="power" maxlength="50" name="powerps" type='autocomplete="off"/'/></pre>	
	>
<pre></pre> <pre><i class="fas fa-exclamation-circle"></i></pre>	
<pre><input id="kilometer" maxlength="50" name="kms" off"="" type="</pre></td><td></td></tr><tr><td>autocomplete="/></pre>	./*·
<pre><i class="fas fa-check-circle"></i></pre>	
<pre><i class="fas fa-exclamation-circle"></i></pre>	
<pre></pre> <pre></pre>	pan>
<div> class="form-control"> <di< td=""><td>iv</td></di<></div>	iv

<pre></pre>
Manual
<input id="manual" name="geartype" type="radio" value="manual"/>
>
Automatic
<input <="" id="automatic" name="geartype" td="" type="radio" value="automatic"/>
/>
<pre>Not mentioned</pre>
<input id="not" name="geartype" type="radio" value="not-declared"/>
<pre><i class="fas fa-check-circle"></i></pre>

-rr
class="form-control">
CMBS— TOTH CONTOL >

ble style="width:50%">
Yes
<input id="yes" name="damage" type="radio" value="yes"/>
<input id="no" name="damage" type="radio" value="no"/>
Not Declared
<input id="notdec" name="damage" type="radio" value="not-declared"/>
<pre> <i class="fas fa_check_circle"></i></pre>

<pre></pre>
<pre><label for="model">Model Type : </label></pre>
<pre></pre> <pre> <pre> select name="model" id="model"> </pre></pre>
<option disabled="" hidden="" selected="" value="">Choose Model Name</option>
<pre><option value="golf">Golf </option></pre>
<pre>coption value="grand">Grand </pre>
<pre>coption value="fabia">Fabia </pre>
<pre>coption value="andere">Andere </pre>
<pre>coption value="passat">Passat </pre>
<pre>coption value="navara">Navara </pre>
<pre>coption value="ka">Ka </pre>
<pre>coption value="twingo">Twingo </pre>
<pre>coption value="a_klasse">A klasse </pre>
<pre></pre>
<pre><pre></pre></pre> <pre><pre><pre><pre><pre><pre><pre><</pre></pre></pre></pre></pre></pre></pre>
<pre>coption value="kadett">Kadett </pre>
<option value="kangoo">Kangoo </option>
<pre>coption value="corsa">Corsa </pre>
<pre>coption value="one">One </pre>
<option value="fortwo">Fortwo </option>
<pre>coption value="b_klasse">B Klasse </pre>
<pre>coption value="signum">Signum </pre>
<pre>coption value="astra">Astra </pre>
<pre>coption value="a8">A8 </pre>
<pre>coption value="jetta">Jetta </pre>
<pre>coption value="fiesta">Fiesta </pre>
<pre>coption value="c_klasse">C Klasse </pre>
<pre>coption value="micra">Micra </pre>
<pre>coption value="vito">Vito </pre>
<pre>coption value="sprinter">Sprinter </pre>

	<u> </u>	<u> -</u>
	<option value="es</td><td>scort">Escort </option>	
	_	=
	<u>=</u>	<u>=</u>
	<option td="" va<=""><td>lue="a1">A1 </td></option>	lue="a1">A1
	<option value="insign</td><td>nia">Insignia </option>	
	<ord><pre>contion value="continue"</pre></ord>	nbo">Combo
	<option td="" v<=""><td>value="tt">Tt </td></option>	value="tt">Tt
	<option td="" va<=""><td>lue="a6">A6 </td></option>	lue="a6">A6
	<option td="" value:<=""><td>="jazz">Jazz </td></option>	="jazz">Jazz
	<option value="ome</td><td>ega">Omega </option>	
	<option td="" val<=""><td>ue="slk">Slk </td></option>	ue="slk">Slk
	•	-
	-	-
//	-	value="100">100
	=	
Reihe		_
value="sportage">Sportage		
	<option td="" value<=""><td>="sorento">Sorento</td></option>	="sorento">Sorento
		value="v40">V40
	<option< td=""><td>value="v40">V40</td></option<>	value="v40">V40
	<option< td=""><td>value="v40">V40</td></option<>	value="v40">V40
	<option< td=""><td>value="v40">V40 <option <option< td=""></option<></option </td></option<>	value="v40">V40 <option <option< td=""></option<></option
value="5er">5er		value="v40">V40 <pre><option< pre=""></option<></pre>
value="5er">5er value="ibiza">Ibiza <pre></pre> option value="3er">3er		value="v40">V40 <pre><option< pre=""></option<></pre>
value="5er">5er value="ibiza">Ibiza <pre></pre> option value="3er">3er	on> <pre>coption con> con> con> con> consider and conside</pre>	value="v40">V40 <pre><option< pre=""></option<></pre>
<pre> </pre> <pre> <pre> </pre> <pre> <pre> </pre> <pre> <pre> </pre> <pre> <pre> </pre> <pre> <pre> </pre> <pre> <pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre>	on> <pre>coption con> e="mustang">Mustang</pre>	value="v40">V40 <pre>coption coption </pre> <pre> </pre> <pre></pre> <pre>value="eos">Eos</pre>
value="5er">5er . value="ibiza">Ibiza 3er <option value="3er">3er <option value="3er">3er <option value="3er">3er <option value="3er">3er <option></option></option></option></option></option>	<pre>coption copy copy copy copy copy copy copy copy</pre>	value="v40">V40 <pre></pre>
<pre> </pre> <pre> </pre> <pre> </pre> <pre> </pre> <pre> </pre> <pre> </pre> <pre> <pre> </pre> <pre> <pre> </pre> <pre> </pre> <pre> </pre> <pre> </pre> <pre> </pre> <pre> </pre> <pre> <pre> </pre> <pre> <pre> </pre> <pre> <pre> </pre> <pre> <pre> <pre> <pre> <pre> </pre> <pre> <pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre>	<pre>coption con> con> coption> coption> coption coption coption</pre>	value="v40">V40 <pre></pre>
<pre> </pre> <pre> <pre> </pre> <pre> <pre> </pre> <pre> <pre> </pre> <pre> <pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre>	<pre>coption con> con> coption> coption> coption coption coption coption> coption coption value=</pre>	value="v40">V40 <pre></pre>
value="5er">5er . value="ibiza">Ibiza 3er <option value="3er">3er <option value="10uran">10uran value="touran">10uran </option></option>	<pre>coption con> coption> coption> coption coption coption> coption coption> coption value= coption value=</pre>	value="v40">V40 <pre></pre>
value="5er">5er . value="ibiza">Ibiza 3er <option <="" option="" value=""> value="touran">Touran <td><pre>coption copy copy copy copy copy copy copy cop</pre></td><td>value="v40">V40 <option <="" <option="" option=""> value="eos">Eos <option <="getz">Getz </option> lue="a3">A3 </option> era">Almera </td></option>	<pre>coption copy copy copy copy copy copy copy cop</pre>	value="v40">V40 <option <="" <option="" option=""> value="eos">Eos <option <="getz">Getz </option> lue="a3">A3 </option> era">Almera
value="5er">5er . value="ibiza">Ibiza . <option value="3er">3er <option value="4er">4er">3er">3er <option value="4er">4er">4er">3er">3er <option value="4er">4er">4er">4er">4er">4er">4er">4er"</option></option></option></option>	<pre>coption coption coption value= coption value= coption value="alm coption value="mega"</pre>	value="v40">V40 <pre> <pre>coption</pre></pre>
value="5er">5er . value="ibiza">Ibiza 3er <option <="" option="" value=""> value="touran">Touran <td><pre>coption copy copy copy copy copy copy copy cop</pre></td><td>value="v40">V40 <pre> <pre>coption</pre></pre></td></option>	<pre>coption copy copy copy copy copy copy copy cop</pre>	value="v40">V40 <pre> <pre>coption</pre></pre>
value="5er">5er value="ibiza">Ibiza 3er <option value="4er">4er">4er">3er">3er <option value="5er">3er <option value="5er">3er <option value="5er">4er <option< td=""><td><pre>coption </pre> <pre>coption </pre></td></option<></option> <pre>coption coption ption> coption value= coption value="alm coption value="mega" copti</pre></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option>	<pre>coption </pre> <pre>coption </pre>	value="v40">V40 <pre> <pre></pre></pre>
value="5er">5er . value="ibiza">Ibiza 3er <option <="" option="" value=""> value="touran">Touran <td>coption con> coption> coption> coption> coption ption> coption value= coption value="alm coption value="mega coption value="mega coption value="coption value="c</td><td>value="v40">V40</td></option>	coption con> coption> coption> coption> coption ption> coption value= coption value="alm coption value="mega coption value="mega coption value="coption value="c	value="v40">V40
value="5er">5er value="ibiza">Ibiza 3er <option <="" option="" value=""> value="touran">Touran <td><pre>coption coption coption coption coption ption> coption value= coption value="alm coption value="mega coption value="mega coption value="mega coption value="coption value="copti</pre></td><td>value="v40">V40 <pre> <pre>coption</pre></pre></td></option>	<pre>coption coption coption coption coption ption> coption value= coption value="alm coption value="mega coption value="mega coption value="mega coption value="coption value="copti</pre>	value="v40">V40 <pre> <pre>coption</pre></pre>
value="5er">5er . value="ibiza">Ibiza 3er <option <="" option="" value=""> value="touran">Touran <td>con> con> coption> coption> coption> coption> coption value= coption value="mega coption value="mega coption value="mega coption value="mega coption value="mega coption value="coption value="coption value="zeroption value="zeroption" coption construction control cont</td><td>value="v40">V40</td></option>	con> con> coption> coption> coption> coption> coption value= coption value="mega coption value="mega coption value="mega coption value="mega coption value="mega coption value="coption value="coption value="zeroption value="zeroption" coption construction control cont	value="v40">V40
value="5er">5er . value="ibiza">Ibiza 3er <option value="4er">4er <option value="5er">3er <option value="5er">3er <option value="5er">3er <option value="5er">4er <option value="5er">4er</option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option>	<pre>coption coption coption coption coption coption coption value= coption value="mega" coption value="mega" coption value="mega" coption value= coption value= coption value= coption value= coption value= coption value= coption value="zemana" coption</pre>	value="v40">V40 <pre>coption</pre> <pre></pre>
value="5er">5er value="ibiza">Ibiza 3er <option value="4er">4option value="touran">Touran </option> value="touran">Touran value="touran">Touran	coption coption coption coption coption coption coption coption value= coption value="mega coption value="mega coption value="mega coption value= coption value="zere coption value="zere	value="v40">V40
value="5er">5er . value="ibiza">Ibiza 3er <option value="4er">4er <option value="5er">3er <option value="5er">3er <option value="5er">3er <option value="5er">4er <option value="5er">4er</option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option></option>	<pre>coption coption coption coption coption coption coption coption value= coption value="mega coption value= coption value=</pre>	value="v40">V40

		contion value-	'colt">Colt		
	<option td="" val<=""><td>ue="m_klasse"</td><td>>M Klasse </td></option>	ue="m_klasse"	>M Klasse		
	<optio< td=""><td>n value="tigua</td><td>n">Tiguan </td></optio<>	n value="tigua	n">Tiguan		
	<option< td=""><td>n value="i_reih</td><td>e">I Reihe </td></option<>	n value="i_reih	e">I Reihe		
	<option< td=""><td>n value="espac</td><td>ce">Espace </td></option<>	n value="espac	ce">Espace		
	-	-			
		<pre><option pre="" value<=""></option></pre>	="6er">6er		
	<optio< td=""><td>n value="modu</td><td>is">Modus </td></optio<>	n value="modu	is">Modus		
		<option< td=""><td>value="fox">Fox</td></option<>	value="fox">Fox		
	•••••		<option< td=""></option<>		
value="matiz">Matiz					
<option< td=""><td>value="beetle">B</td><td>eetle</td><td></td></option<>	value="beetle">B	eetle			
		. <option< td=""><td>value="c1">C1</td></option<>	value="c1">C1		
			<ontion< td=""></ontion<>		
value-"rio"\Rio \/or					
value 110 /Kio Vop	otion>		<option< td=""></option<>		
value="touareg">Touar	reg		<option< td=""></option<>		
value="touareg">Touar <option< td=""><td>reg value="logan">L</td><td>ogan</td><td><option <="" option=""></option></td></option<>	reg value="logan">L	ogan	<option <="" option=""></option>		
value="touareg">Touar <option< td=""><td>reg value="logan">L <</td><td>ogan option value</td><td><option e="spider">Spider</option </td></option<>	reg value="logan">L <	ogan option value	<option e="spider">Spider</option 		
value="touareg">Touar <option </option 	reg value="logan">L <c< td=""><td>ogan option value</td><td><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pr< td=""></pr<></td></c<>	ogan option value	<pre></pre> <pr< td=""></pr<>		
value="touareg">Touar <option value="cuore">Cuore</option 	reg value="logan">L 	ogan option value	<pre></pre> <pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><p< td=""></p<></pre>		
value="touareg">Touar <option< td=""><td>reg value="logan">L /option></td><td>ogan option valueMax</td><td><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre></td></option<>	reg value="logan">L /option>	ogan option valueMax	<pre></pre> <pre></pre> <pre></pre> <pre></pre> <pre></pre> <pre></pre> <pre></pre>		
value="touareg">Touar <option <="" option=""> value="cuore">Cuore <option td="" valu<=""><td>reg </td></option> value="logan">L </option> /option>	reg	ogan option valueMax	<pre></pre> <pre></pre> <pre></pre> <pre></pre> <pre></pre> <pre></pre> <pre></pre>		
value="touareg">Touar <option <="" option=""> value="cuore">Cuore <option <="" option="" value=""></option></option>	reg value="logan">L e="s_max">S	ogan option value Max . <option< td=""><td><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre><!--</td--></pre></pre></td></option<>	<pre></pre> <pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre><!--</td--></pre></pre>		
value="touareg">Touar <option <="" option=""> value="cuore">Cuore <option <="" option="" valu=""></option></option>	reg value="logan">L e="s_max">S	ogan option value	<pre></pre> <pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre><!--</td--></pre></pre>		
value="touareg">Touar <option <="" option=""> value="cuore">Cuore <option <="" option="" valu=""></option></option>	reg value="logan">L e="s_max">S <td>ogan option value Max . <option touareg"="" value="x_reihe . <option value</td><td><pre></pre></pre></pre></pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre><pre></pre><pre><pre><pre><pre><pre><pre></</td></tr><tr><td>value=">Touar <option <="" option=""> value="cuore">Cuore <option <="" option="" valu=""></option></option></option></td> <td>reg value="logan">L e="s_max">S</td> <td>ogan option value Max . <option galax<="" td="" value="x_reihe . <option value n value="><td><pre></pre> <pre></pre> <pre><</pre></td></option></td>	ogan option value Max . <option touareg"="" value="x_reihe . <option value</td><td><pre></pre></pre></pre></pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre><pre></pre><pre><pre><pre><pre><pre><pre></</td></tr><tr><td>value=">Touar <option <="" option=""> value="cuore">Cuore <option <="" option="" valu=""></option></option></option>	reg value="logan">L e="s_max">S	ogan option value Max . <option galax<="" td="" value="x_reihe . <option value n value="><td><pre></pre> <pre></pre> <pre><</pre></td></option>	<pre></pre> <pre><</pre>
value="touareg">Touar <option <="" option=""> value="cuore">Cuore <option value="cuore">Cuore</option></option>	reg value="logan">L e="s_max">S <td>ogan option value Max . <option .="" <option="" galax;="" td="" value="x_reihe . <option value a value=" value<=""><td><pre>//option </pre> <pre> <pre> </pre> <pre> <pre> <pre> </pre> <pre> <</pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></td></option></td>	ogan option value Max . <option .="" <option="" galax;="" td="" value="x_reihe . <option value a value=" value<=""><td><pre>//option </pre> <pre> <pre> </pre> <pre> <pre> <pre> </pre> <pre> <</pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></td></option>	<pre>//option </pre> <pre> <pre> </pre> <pre> <pre> <pre> </pre> <pre> <</pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre>		
value="touareg">Touar <option <="" option=""> value="cuore">Cuore <option <="" option="" valu=""></option></option>	reg value="logan">L e="s_max">S <td>ogan option value Max . <option .="" <option="" galax;="" td="" value="x_reihe . <option value a value=" value<=""><td><pre>//option </pre> <pre> <pre> </pre> <pre> <pre> <pre> </pre> <pre> <</pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></td></option></td>	ogan option value Max . <option .="" <option="" galax;="" td="" value="x_reihe . <option value a value=" value<=""><td><pre>//option </pre> <pre> <pre> </pre> <pre> <pre> <pre> </pre> <pre> <</pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></td></option>	<pre>//option </pre> <pre> <pre> </pre> <pre> <pre> <pre> </pre> <pre> <</pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre>		
value="touareg">Touar <option <="" option=""> value="cuore">Cuore <option value="cuore">Cuore</option></option>	reg value="logan">L	ogan option value Max . <option .="" <option="" galax;="" td="" value="x_reihe . <option value n value=" value<=""><td><pre></pre> <pre></pre> <pre><</pre></td></option>	<pre></pre> <pre><</pre>		
value="touareg">Touar <option <="" option=""> value="cuore">Cuore <option <="" option="" value=""></option></option>	reg value="logan">L	ogan option value Max . <option .="" <option="" galax="" ion="" spider"="" value="via</td><td><pre>//option //option> e=">Spider //option> //option> value="a2">A2 e">X Reihe </option> e="a5">A5 y">Galaxy e="c3">C3 no">Viano '>S Klasse			
value="touareg">Touar <option <="" option=""> value="cuore">Cuore <option <="" option="" value=""></option></option>	reg value="logan">L	ogan option value Max . <option .="" <option="" galax;="" ion="" spider"="" value="via</td><td><pre>//option //option> =">Spider //option> //option> value="a2">A2 ">X Reihe </option> e="a5">A5 y">Galaxy e="c3">C3 no">Viano '>S Klasse e">1 Reihe			
value="touareg">Touar <option <="" option=""> value="cuore">Cuore <option <="" option="" value=""></option></option>	reg value="logan">L	ogan option value Max . <option .="" <option="" avensis<="" galax="" ion="" s_klasse'="" td="" value="1_reihe value="><td><pre>//option <pre> </pre> <pre> </pre> <pre> <p< td=""></p<></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></td></option>	<pre>//option <pre> </pre> <pre> </pre> <pre> <p< td=""></p<></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre>		
value="touareg">Touar <option <="" option=""> value="cuore">Cuore <option <="" option="" value=""></option></option>	reg value="logan">L	ogan option value Max . <option .="" <="" <option="" avensisum="" galax;="" s_klasse"="" td="" tion="" value="avensisum value"><td><pre>//option //option> //option> //option> //option> value="a2">A2 ">X Reihe </pre></td></option> //option> //optio	<pre>//option //option> //option> //option> //option> value="a2">A2 ">X Reihe </pre>		

(anti-nambra afila 05 (/anti-na
<pre></pre>
<option value="kaefer">Kaefer </option>
<pre>coption value="santa">Santa </pre>
<option value="cooper">Cooper </option>
<pre></pre>
<option value="laguna">Laguna </option>
<option value="ptcruiser">Ptcruiser </option>
<pre>coption value="clk">Clk </pre>
<pre></pre>
<option value="transit">Transit </option>
<option value="juke">Juke </option>
<option value="qashqai">Qashqai </option>
<pre>coption value="carisma">Carisma </pre>
<option value="corolla">Corolla </option>
<pre>coption value="lanos">Lanos </pre>
<option value="phaeton">Phaeton </option>
<pre>coption value="boxster">Boxster </pre>
<pre></pre>
<pre>coption value="swift">Swift </pre>
<option value="rav">Rav </option>
<option value="kuga">Kuga</option>
<option< td=""></option<>
value="picanto">Picanto
<pre><option< td=""></option<></pre>
<u> </u>
value="stilo">Stilo <option< td=""></option<>
value="alhambra">Alhambra
<pre><</pre>
<pre></pre> option value="mx_reihe">Mx
Reihe <option< td=""></option<>
value="m_reihe">M Reihe
<pre><option value="roadster">Roadster </option></pre>
<option value="ypsilon">Ypsilon</option>
<option value="cayenne">Cayenne </option>
<pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre></pre> <pre></pre>
<pre>coption value="sirion">Sirion </pre>
<option value="crossfire">Crossfire </option>
<pre>coption value="6_reihe">6 Reihe </pre>
1

4-11-11-11-11-11-11-11-11-11-11-11-11-11
<pre>coption value="agila">Agila </pre>
<pre>coption value="duster">Duster </pre>
<option value="v50">V50 </option>
<option value="discovery">Discovery </option>
<pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre></pre> <pre></pre>
<pre><pre><pre><pre><pre><pre><pre><pre></pre></pre></pre></pre></pre></pre></pre></pre>
<pre>coption value="c5">C5 </pre>
<option value="aygo">Aygo </option>
<pre>coption value="carnival">Carnival </pre>
<pre>coption value="fusion">Fusion </pre>
<option value="bora">Bora </option>
<pre>coption value="forfour">Forfour </pre>
<pre></pre>
<pre>coption value="cl">Cl </pre>
<pre>coption value="tigra">Tigra </pre>
<pre>coption value="156">156 </pre>
<pre>coption value="300c">300c </pre>
<pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre></pre></pre>
<pre><pre><pre><pre><pre></pre></pre></pre></pre><pre><pre><pre><pre><pre><pre><pre><</pre></pre></pre></pre></pre></pre></pre></pre>
<pre><</pre>
<pre>coption value="spark">Spark </pre>
<pre></pre>
<pre></pre>
<option value="5_reihe">5 Reihe </option>
<option value="ducato">Ducato </option>
<pre>coption value="s_type">S Type</pre>
<pre></pre> <pre></pre> <pre>coption></pre> <pre></pre> <pre>coption value="x_trail">X</pre>
Trail <option< td=""></option<>
value="toledo">Toledo
<option value="altea">Altea</option>
<pre></pre>
value="voyager">Voyager
<pre><option< td=""></option<></pre>
<pre></pre> option> <pre><pre><pre>coption value="range_rover">Range</pre></pre></pre>
Rover <option< td=""></option<>
value="antara">Antara
option value="tucson">Tucson
<pre>coption value="q7">Q7 </pre>
<pre>coption value="citigo">Citigo </pre>

continuous llor maihally Cr. Daiha clantiany
<option value="wrangler">Wrangler </option>
<pre>coption value="lybra">Lybra </pre>
<option value="range_rover_sport">Range Rover Sport </option>
<option value="lancer">Lancer </option>
<pre>coption value="159">159 </pre>
<option value="freelander">Freelander </option>
<pre>coption value="captiva">Captiva </pre>
<pre></pre>
<pre>coption value="sandero">Sandero </pre>
<pre></pre>
<pre>coption value="900">900 </pre>
<option value="147">147 </option>
<option value="defender">Defender </option>
<pre>coption value="cherokee">Cherokee </pre>
<pre>coption value="clubman">Clubman </pre>
<pre></pre> <pre>coption value="samara">Samara </pre>
<pre><pre></pre><pre><pre><pre><pre><pre><pre><pre><</pre></pre></pre></pre></pre></pre></pre></pre>
<pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre></pre> <pre></pre>
<pre>coption value="601">601 </pre>
<option value="4_reihe">4 Reihe </option>
<pre></pre>
<option value="6_reihe">6 Reihe </option>
<option value="legacy">Legacy </option>
<option value="pajero">Pajero </option>
<pre>coption value="auris">Auris </pre>
<pre>coption value="s60">S60 </pre>
<pre></pre> option value="g_klasse">G
Klasse <option< td=""></option<>
value="lodgy">Lodgy
<pre><option value="850">850 </option></pre>
<pre><option value="serie_2">Serie 2 </option></pre> <pre><option value="6er">6er</option></pre>
<pre></pre> <pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre></pre>
value="charade">Charade
<pre><option value="croma">Croma </option></pre>
<pre><option value="outlander">Outlander </option></pre>
<pre>coption value="doblo">Doblo </pre>
Trible Color (option)

<pre>coption value="musa">Musa </pre>
<pre>coption value="amarok">Amarok </pre>
<pre></pre>
<pre>coption value="move">Move </pre>
<pre>coption value="v60">V60 </pre>
<pre>coption value="aveo">Aveo </pre>
<pre>coption value="200">200 </pre>
<pre>coption value="terios">Terios </pre>
<pre>coption value="rangerover">RangeRover </pre>
conting value—"00">00 c/onting
<pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre></pre> <pre></pre>
<pre></pre>
<pre>coption value="kappa">Kappa </pre>
<pre>coption value="serie_3">Serie 3 </pre>
<pre>coption value="48429">48429 </pre>
<pre>coption value="serie_1">Serie 1 </pre>
conting value-"discovery sport" Discovery Cnort /onting
<pre>coption value="discovery_sport">Discovery Sport </pre>
<pre></pre>
<pre></pre>
<pre></pre>
<pre></pre>
<pre></pre>
<pre></pre>

contion value—"handa" \ Uanda
<pre><pre></pre></pre> <pre></pre>
<pre></pre>
<pre>coption value="mini">Mini </pre>
<option value="smart">Smart </option>
<pre>coption value="hyundai">Hyundai </pre>
<option value="sonstige_autos">Sonstige Autos </option>
<option value="alfa_romeo">Alfa Romeo </option>
<option value="subaru">Subaru </option>
<pre>coption value="volvo">Volvo </pre>
<pre>coption value="mitsubishi">Mitsubishi </pre>
<pre>coption value="kia">Kia </pre>
<pre>coption value="suzuki">Suzuki </pre>
<pre>coption value="toyota">Toyota </pre>
<option value="daihatsu">Daihatsu </option>
<pre>coption value="trabant">Trabant </pre>
<pre></pre>
<option value="chrysler">Chrysler </option>
<option value="jaguar">Jaguar </option>
<option value="daewoo">Daewoo </option>
<option value="rover">Rover </option>
<option value="land_rover">Land Rover </option>
<pre>coption value="lada">Lada </pre>
<i class="fas fa-check-circle"></i>
<pre> <i class="fas fa-exclamation-circle"></i> </pre>
<pre></pre>
<pre></pre>
:
name="fuelType" id="fuel"> <option disabled="" selected<="" td="" value=""></option>
hidden>Choose Fuel Type
<pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre></pre></pre>
<pre></pre>
Diesel <option value="not-declared"> Not Declared </option>
Not Declared <option value="lpg">LPG </option>
value= lpg >Ll G
<pre></pre> <pre></pre> <pre>value="hybrid">Hybrid </pre> <pre></pre> <pre></pre> <pre></pre>
<pre><option value="others">Others </option></pre>
······································

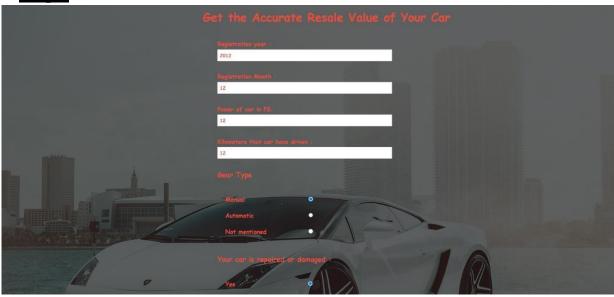
```
 <i class="fas fa-check-circle"></i>
 _____</div>
 ......<a>label for="vehicletype">Vehicle type: </label></a>
 ......<select name="vehicletype" id="vehicle">
 .. <option value="" disabled selected hidden>Choose Vehicle Type...</option>
 ......coption value="coupe">Coupe </option>
   <option value="suv">SUV </option>
   <option value="kleinwagen">Kleinwagen </option>
   <option value="limousine">Limousine </option>
 ......<option value="cabrio">Cabrio </option>
 ......coption value="bus">Bus </option>
 ......coption value="kombi">Kombi </option>
 ......<option value="andere">Andere </option>
 ......coption value="volkswagen">Volkswagen </option>
 ......</select>
 <i class="fas fa-check-circle"></i>
 ..... <i class="fas fa-exclamation-circle"></i>
 </div>
 ......<input type="submit" id="submit"></input>
 </div>
 </body>
 </html>
2) value.css
 *{ padding:0px;
 margin:0; box-
 sizing:border-box;
 font-family:
 cursive; font-
 weight: bold;
 color: #E74C3C;
 }
 body{
 background-image:
                                        linear-
 gradient(rgba(25,30,30,0.7),rgba(25,30,30,0.7)),url(../Images/car2.png);
 .....
                                    min-
 height:100vh;
 ......display:f
 lex; ......justify-
 content:center;
```

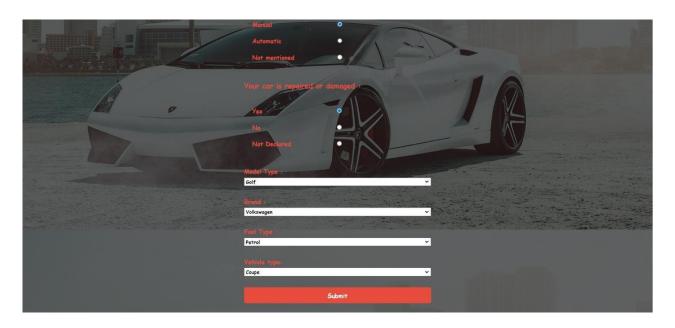
items:center;
}
.header{
text-align:center
#model{
width:500px
color: black
#brand{
width:500px
color: black
#fuel{
width:500px
color: black
<pre>#vehicle{</pre>
width:500px
color: black
.form{
padding:30px
40px; }
.form-control{
margin-bottom:10px
padding-bottom: 20px
position:relative
margin-left: 100px; }
.form-control label{
display:block
bottom:5px; }
COMPANIE PAR I

.form-control input{
border: 2px solid #f0f0f0; width:80%;
font-size :.8rem;
display:inline-table;
}
.form-control i{
right:20px;
top:35px;
visibility:hidden;
}
.form-control span{
left:0;
bottom:0;
visibility:hidden;
font-weight:bolder;
font-style:italic;
}
.form-control.success input{
border-
color:#2ecc71; }
.form-control.error input{
border-
color:#e743c3; }
.form-control.error span{
color:red;
visibility:visible; }
visionity. visione, j
.form-control.success i.fa-check-circle {
border-color:#2ecc71;
visibility:visible;
.form-control.error i.fa-exclamation-circle {

```
..... border-color:#e73c3c;
 ...... visibility:visible;
}
.form #submit{
.....background-color:#E74C3C;
border:none;
outline:none;
...... color:white;
...... width:500px;
......border-radius:4px;
cursor:pointer;
transition:all .5s;
..... font-size:1rem;
..... margin-left: 100px;
}
.form #submit:hover{
...... background-
color:#6441a5; }
.form-control #manual{
20%; }
```

Output





Output Display Page

The predicted resale car value is displayed in this page.

Code

```
1) predict.html
  <!DOCTYPE html>
  <html lang="en">
  <head>
    <meta charset="UTF-8">
    <meta http-equiv="X-UA-Compatible" content="IE=edge">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <link rel="stylesheet" href="../static/css/predict.css">
    <title>Car Resale Value Predicting Application</title>
    k rel="icon" type="image/x-icon" href="../static/Images/favicon.ico">
  </head>
  <body>
  <nav>
      <a href="/"><img src="../static/Images/sang.png" width="100"
  height="100"></a>
     </nav>
      <div class="text-box">
       <h1>The Predicted Car Resale Value is </h1>
  <h1>{{predict}}</h1>
      </div>
    </section>
  </body>
```

2) predict.css

```
.header{ min-
height: 100vh;
width: 100%;
 background-image:
                                                                       linear-
gradient(rgba(25,30,30,0.7),rgba(25,30,30,0.7)),url(../Images/car3.j
pg); background-position: center; background-size: cover;
position: relative;
}
.text-box{
text-align:
center;
position:
relative; color:
#FFE4C4;
top:50%;
.text-box h1{
margin-top: 50px;
font-size: 55px;
}
.text-box p{
margin: 10px 0
40px; font-size:
15px;
}
body{
    ..... margin: 0;
}
nav{
display:flex;
padding: 2%
6%;
justify-content: space-between; align-
items: center;
}
```

Output



Model Selection & Hyperparameter Tuning Code

```
import pandas as pd
import numpy as np
from sklearn.preprocessing import LabelEncoder
from sklearn.model_selection import train_test_split, GridSearchCV from
sklearn.metrics import mean_absolute_error, mean_squared_error, r2_score
import pickle
import wandb
```

#regression models

```
from sklearn.ensemble import BaggingRegressor, RandomForestRegressor, HistGradientBoostingRegressor, ExtraTreesRegressor from xgboost.sklearn import XGBRegressor from lightgbm import LGBMRegressor wandb.login(key='b75e0564aba32dce859c600444 18df71ce7389a8')
```

```
data = pd.read_csv('../input/naalaiya-thiran/Preprocessed/autos_preprocessed.csv', header=0, sep=',', encoding='Latin1')
labels = ['gearbox', 'notRepairedDamage', 'model', 'brand', 'fuelType', 'vehicleType']
```

```
np.save(str('classes'+i+'.npy'), mapper[i].classes_)
data.loc[:, i+'_labels'] = pd.Series(tr,
index=data.index)
labeled = data[['price',
'yearOfRegistration', 'powerPS', 'kilometer', 'monthOfRegistration']
+[x+"_labels" for x in labels]]
print(labeled.columns)
def find_scores(Y_actual, Y_pred, X_train):
  mae = mean_absolute_error(Y_actual, Y_pred)
mse = mean_squared_error(Y_actual, Y_pred)
  rmse = np.sqrt(mse)
                         rmsle
= np.log(rmse)
r2_score(Y_actual, Y_pred)
n, k = X_{train.shape}
  adj_r2\_score = 1 - ((1-r2)*(n-1)/(n-k-1))
  wandb.log({"mae": mae, "mse": mse, 'rmse':rmse, 'rmsle':rmsle, 'r2':r2,
'adj_r2':adj_r2_score})
def bagging_regressor():
config_defaults = {
          'n_estimators':100,
         'max_samples':0.4,
          'bootstrap':True,
          'random_state':42
  wandb.init(config=config_defaults)
config = wandb.config
X = labeled.iloc[:,1:].values
Y = labeled.iloc[:,0].values.reshape(-1,1)
  X_train, X_test, Y_train, Y_test = train_test_split(X, Y, test_size=0.4,
random_state=42)
  model = BaggingRegressor(
n_estimators=config.n_estimators,
bootstrap=config.bootstrap,
max_samples=config.max_samples,
   random_state = config.random_state)
  model.fit(X_train, Y_train)
  Y_pred = model.predict(X_test)
```

```
find_scores(Y_test, Y_pred, X_train)
bagging_regressor_configs = {
  "name": 'BaggingRegressor',
  "method": "grid",
  "metric": {
     "name": "adj r2",
    "goal": "maximize"
  },
  "parameters": {
    "n_estimators": {
       "values": [100, 200, 300]
     },
    "max_samples": {
       "values": [0.4,0.5, 0.6]
     }
  }
}
                   wandb.sweep(sweep=bagging_regressor_configs,
sweep_id =
project="car_resale_value")
wandb.agent(sweep_id=sweep_id, function=bagging_regressor)
def random_forest_regressor():
config_defaults = {
         'n estimators':100,
         'max_samples':0.4,
         'criterion': 'squared_error',
         'bootstrap': True,
         'random_state':42
  wandb.init(config=config_defaults)
config = wandb.config
X = labeled.iloc[:,1:].values
Y = labeled.iloc[:,0].values.reshape(-1,1)
  X_train, X_test, Y_train, Y_test = train_test_split(X, Y, test_size=0.4,
random_state=42)
  model = RandomForestRegressor(
n_estimators=config.n_estimators,
criterion = config.criterion,
bootstrap=config.bootstrap,
max_samples=config.max_samples,
```

```
random_state = config.random_state)
  model.fit(X_train, Y_train)
  Y_pred = model.predict(X_test)
  find_scores(Y_test, Y_pred, X_train)
random_forest_configs = {
"name": 'RandomForestRegressor',
  "method": "grid",
  "metric": {
     "name": "adj_r2",
    "goal": "maximize"
  },
  "parameters": {
    "n_estimators": {
       "values": [100, 200, 300]
    "max_samples": {
       "values": [0.4,0.5, 0.6]
     }
  }
}
sweep_id = wandb.sweep(sweep=random_forest_configs, project="car_resale_value")
wandb.agent(sweep id=sweep id, function=random forest regressor)
def hist_gradient_boost_regressor():
  config_defaults = {
         'loss': 'squared_error',
         'learning_rate': 0.1,
         'max iter':100,
          'random state':42
  wandb.init(config=config_defaults)
config = wandb.config
X = labeled.iloc[:,1:].values
Y = labeled.iloc[:,0].values.reshape(-1,1)
  X_train, X_test, Y_train, Y_test = train_test_split(X, Y, test_size=0.4,
random_state=42)
  model = HistGradientBoostingRegressor(
loss=config.loss,
```

```
learning_rate = config.learning_rate,
max_iter=config.max_iter,
random_state = config.random_state)
  model.fit(X_train, Y_train)
  Y_pred = model.predict(X_test)
  find_scores(Y_test, Y_pred, X_train)
hist_gradient_boost_configs = {
  "name": 'HistGradientBoostingRegressor',
  "method": "grid",
  "metric": {
    "name": "adj_r2",
    "goal": "maximize"
  },
  "parameters": {
    "loss": {
       "values": ['squared_error', 'absolute_error']
     },
    "learning_rate": {
       "values": [0.01, 0.03, 0.05, 0.07]
     },
    "max_iter": {
       "values": [100,200,300]
    "random_state": {
       "values": [42]
     }
  }
}
sweep_id =
                   wandb.sweep(sweep=hist_gradient_boost_configs,
project="car_resale_value")
wandb.agent(sweep_id=sweep_id, function=hist_gradient_boost_regressor)
def extra_tree_regressor():
  config_defaults = {
         'criterion': 'squared_error',
          'max_samples':0.4,
         'bootstrap': True,
         'random_state':42
  wandb.init(config=config_defaults)
config = wandb.config
```

```
X = labeled.iloc[:,1:].values
Y = labeled.iloc[:,0].values.reshape(-1,1)
  X_train, X_test, Y_train, Y_test = train_test_split(X, Y, test_size=0.4,
random_state=42)
  model = ExtraTreesRegressor(
criterion=config.criterion,
bootstrap = config.bootstrap,
max_samples=config.max_samples,
   random_state = config.random_state)
  model.fit(X_train, Y_train)
  Y_pred = model.predict(X_test)
  find_scores(Y_test, Y_pred, X_train)
extra_tree_configs = {
  "name": 'ExtraTreesRegressor',
  "method": "grid",
  "metric": {
    "name": "adj_r2",
    "goal": "maximize"
  },
  "parameters": {
    "criterion": {
       "values": ['squared_error', 'absolute_error']
    "max_samples": {
       "values": [0.4,0.5,
    [0.6]
  }
}
sweep_id = wandb.sweep(sweep=extra_tree_configs, project="car_resale_value")
wandb.agent(sweep_id=sweep_id, function=extra_tree_regressor)
def XGB_regressor():
config_defaults = {
         'learning_rate':0.1,
         'n_estimators': 500,
          'booster': 'gbtree',
         'eta':0.01,
         'random_state':42
```

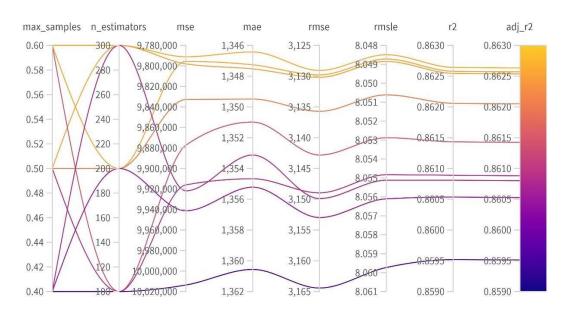
```
}
  wandb.init(config=config_defaults)
config = wandb.config
X = labeled.iloc[:,1:].values
Y = labeled.iloc[:,0].values.reshape(-1,1)
  X_train, X_test, Y_train, Y_test = train_test_split(X, Y, test_size=0.4,
random_state=42)
  model = XGBRegressor(
learning_rate=config.learning_rate,
n_estimators = config.n_estimators,
   random state = config.random state)
  model.fit(X_train, Y_train)
  Y_pred = model.predict(X_test)
  find_scores(Y_test, Y_pred, X_train)
extra_tree_configs = {
"name": 'XGBRegressor',
  "method": "grid",
  "metric": {
     "name": "adj_r2",
     "goal": "maximize"
  },
  "parameters": {
     "learning_rate": {
       "values": [0.01, 0.03, 0.05, 0.07]
    },
    "n_estimators": {
       "values": [100,200,300]
     },
    "booster": {
       "values": ['gbtree', 'gblinear']
     },
    "eta": {
       "values": [0.01, 0.03, 0.05, 0.07]
  }
}
sweep_id = wandb.sweep(sweep=extra_tree_configs, project="car_resale_value")
wandb.agent(sweep_id=sweep_id, function=XGB_regressor)
```

```
def LGBM_regressor():
config_defaults = {
          'objective': 'root_mean_squared_error',
          'reg_sqrt': True,
         'metric':'rmse',
         'random_state':42
  wandb.init(config=config_defaults)
config = wandb.config
X = labeled.iloc[:,1:].values
Y = labeled.iloc[:,0].values.reshape(-1,1)
  X_train, X_test, Y_train, Y_test = train_test_split(X, Y, test_size=0.4,
random_state=42)
  model = LGBMRegressor(
learning rate=config.learning rate,
n estimators = config.n estimators,
   random_state = config.random_state)
  model.fit(X_train, Y_train)
  Y_pred = model.predict(X_test)
  find_scores(Y_test, Y_pred, X_train)
lgbm_configs = {
  "name":'LGBMRegressor',
  "method": "grid",
  "metric": {
    "name": "adj_r2",
    "goal": "maximize"
  },
  "parameters": {
    "learning_rate": {
       "values": [0.01, 0.03, 0.05, 0.07]
    "objective": {
       "values": ['root_mean_squared_error']
     "boosting_type": {
       "values": ['gbdt','dart','goss','rf']
     "reg_sqrt": {
```

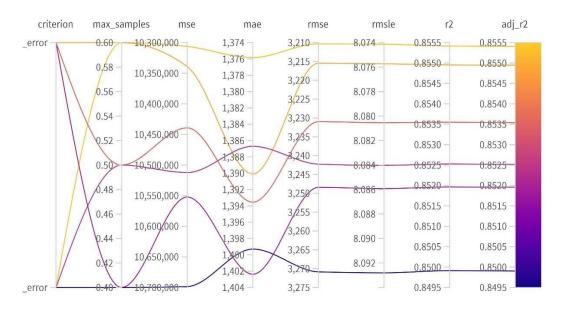
```
"values": [True]
},
"metric": {
    "values": ['rmse']
},
"n_estimators": {
    "values": [100,200,300]
},
"random_state": {
    "values": [42]
}
}
sweep_id = wandb.sweep(sweep=lgbm_configs, project="car_resale_value")
wandb.agent(sweep_id=sweep_id, function=LGBM_regressor)
```

Output:

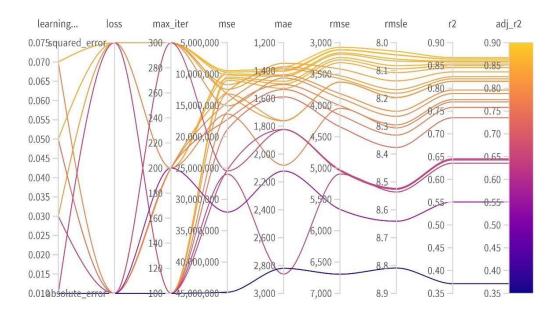
1) Bagging Regressor



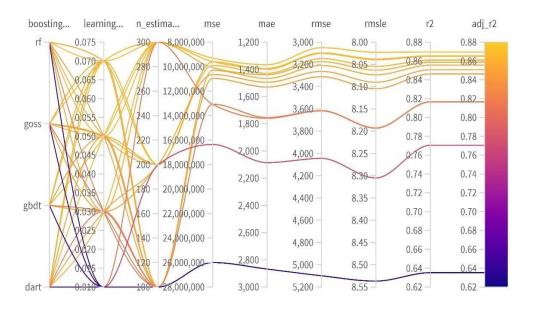
2) Extra Tree Regressor



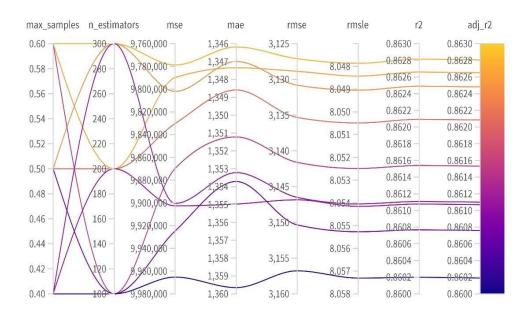
3) HOG Boosting Regressor



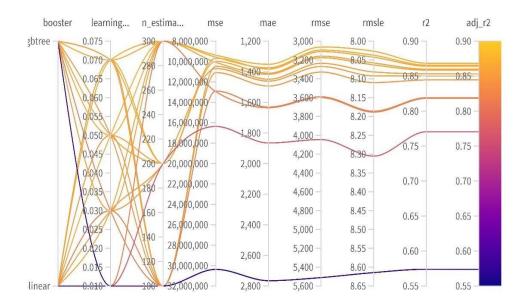
4) LGBM Regressor



5) Random Forest Regressor

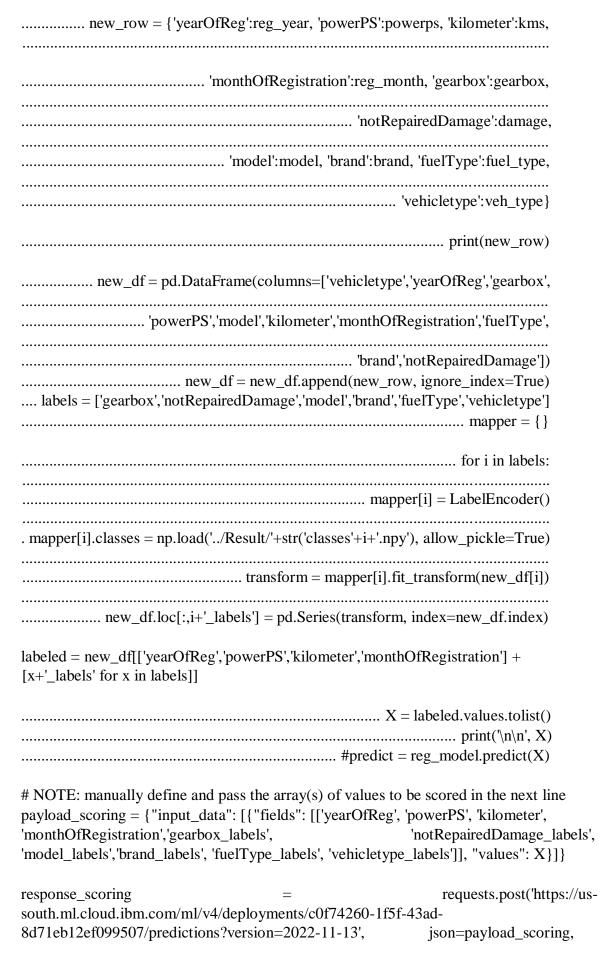


6) XGB Regressor



Flask Integration # Import Libraries import pandas as pd import numpy as np from flask import Flask, render_template, Response, request import pickle from sklearn.preprocessing import LabelEncoder import requests # NOTE: you must manually set API_KEY below using information retrieved from your IBM Cloud account. API_KEY = "04ZW6LlrLwAfofEU2VHPt69RKCWVc9U1o5LXkAU_66qA" requests.post('https://iam.cloud.ibm.com/identity/token', token_response data={"apikey":API_KEY, "grant_type": 'urn:ibm:params:oauth:grant-type:apikey'}) mltoken = token response.json()["access token"] header = {'Content-Type': 'application/json', 'Authorization': 'Bearer ' + mltoken} app = Flask(_name_)#initiate flask app def load model(file='../Result/resale model.sav'):#load the saved model return pickle.load(open(file, 'rb')) @app.route('/') def index():#main page return render template('car.html') @app.route('/predict_page') def predict_page():#predicting page return render_template('value.html') @app.route('/predict', methods=['GET','POST']) def predict(): reg_year = int(request.args.get('regyear')) powerps = float(request.args.get('powerps'))kms= float(request.args.get('kms'))reg_month = int(request.args.get('regmonth')) gearbox = request.args.get('geartype') damage = request.args.get('damage') model = request.args.get('model') brand = request.args.get('brand')fuel_type = request.args.get('fuelType')

......veh_type = request.args.get('vehicletype')



headers={'Authorization':	'Bearer	•	+	mltoken})
	pre	dictions =	response_sco	oring.json()
	-	print(r	esponse_sco	ring.json())
	predict = prediction	ns[ˈpredic	tions'][0]['va	lues'][0][0]
		print("Fir	nal prediction	:",predict)
ro	eturn render_temp	late('predi	ct.html',predi	ct=predict)
ifname_=='_main_':				
	reg_model = lo	oad_model	()#load the sa	aved model
ap	p.run(host='localh	ost', debug	z=True, threa	ded=False)

8.TESTING

Test Cases Scenarios

1	Verify user is able to see home page?
2	Verify user is able to navigate to data entry page?
3	Verify user is able to see data entry page?
4	Verify user is able to enter values in the fields?
5	Verify user is able to navigate to output display page?
6	Verify user is able to view the output display page?
7	Verify user is able to view the car resale value output in the output display page?

User Acceptance Testing

Test case ID	Feature Type	Component	Test Scenario	Pre-Requisite	Steps To Execute	Test Data	Expected Result	Actual Result	Status Comments	TC for Automation(Y/N)	BUG ID	Executed By
HomePage_TC_001	Ü	Home Page	Verify all the UI elements in Horne page rendered properly		1.Enter URL and click go 2.Verify all the UI elements displayed or not	E	All the UI elements rendered properly	Working as expected	Pass	N		Harish M
HomePage_IC_002	Functional	Home Page	Verify the Data Entry page can be reachable.		1.Enter URL and click go 2.Verify all the UI elements displayed or not. 3.Press the Check Price button. 1.Enter URL and click go.	8	User should navigate to Data Entry Page All the UI elements rendered properly	Working as expected	Pass	Ň		Rajesh T R
DataEntryPage_TC_001	Ül	Data Entry Page	Verify all the UI elements in Data Entry page rendered properly		2. Verify all the UI elements displayed or not. 3. Press the Check Price button in the home page 4. Verify all the UI elements displayed or not	50000	8. 18. 70	Working as expected	Pass	N		Vengatesan
DataEntryl¹age_TC_002	Functional	Data Entry Page	Verify user is able to enter all values		1. Enter URL and click go 2 Verify all the Uelements displayed or not. 3 Press the Check Price button in the home page 6. Verify all the U elements displayed or not 5. Verify if all values can be entered	2012 12 12 12 Manual Yes Golf Volkswagen Petrol Coupe	User should be able to enter all values in data entry page	Working as expected	Pass	N		Sam Sundar .
DataEntryPage_TC_003	Functional	Data Entry Page	Verifiy the Output Display page can be reachable.		1.Enter URL and click go 2.Verify all the UI elements displayed or not. 3.Press the Check Price button in the home page 4. Verify all the UI elements displayed or not 5. Verify if all values can be entered 6. Press the submit button 6. Press the submit button	8	User should navigate to Output Display Page	Working as expected	Pass	N		Rajesh T R
utputDisplayPage_TC_001	UI	Output Display Page	Verify all the UI elements in Output Display page rendered properly		1.Enter URL and click go 2.Verify all the UI elements displayed or not. 3. Press the Chack Price button in the home page 4. Verify all the UI elements displayed or not 5. Verify if all values can be entered 6. Press the submit Button 7. Verify all the UI elements displayed or not.	2	All the UI elements rendered properly	Working as expected	Pass	N		Harish M
utputDisplayPage_TC_002	Functional	Output Display Page	Verify user is able to get predicted result		1. Enter URL and click go 2. Verify all the U. elements displayed or not. 3. Press the Ches Price button in the home page 4. Verify all the U. elements displayed or not. 5. Verify if all values can be entired 6. Press the submit Button 7. Verify all the U. elements displayed or not. 8. Verify if the predicted value is displayed or not. 8. Verify if the predicted value is displayed or not.	28	Predited Car Resale Value is displayed on the page	Working as expected	Pass	N		Ven <mark>gatesa</mark> n f

UAT Report

Defect Analysis

This report shows the number of resolved or closed bugs at each severity level, and how they were resolved

Resolution	Severity 1	Severity 2	Severity 3	Severity 4	Subtotal
By Design	2	3	1	1	7
Duplicate	1	0	3	0	4

External	2	0	0	1	3
Fixed	2	2	1	2	7
Not Reproduced	0	0	1	0	1
Skipped	0	0	1	1	2
Won't Fix	0	2	2	1	5
Totals	7	7	9	6	29

Test Case Analysis

This report shows the number of test cases that have passed, failed, and untested

Section	Total Cases	Not Tested	Fail	Pass
Home Page	5	0	0	5
Data Entry Page	15	0	0	15
Output Page	4	0	0	4
Hyper Parameter Tuning	3	0	0	3
Final Model Building	2	0	0	2
Flask Application	10	0	0	10
Train Model on IBM	3	0	0	3
Final Report Output	4	0	0	4

9.RESULTS

Performance Metrics

S No.	Name	Description
1.	Metrics	Regression Model: LGBM Regressor
		MAE : 1327.55
		MSE: 9492244.28
		RMSE : 3080.95
		RMSLE : 8.03
		R2 Score : 0.8668
		Adjusted R2 Score: 0.8668
2.	Tune the Model	Hyperparameter Tuning:
		1) Learning Rate: [0.01, 0.03, 0.05, 0.07]
		2) Boosting Type: ['gbdt','dart','goss','rf']
		3) Number of Estimators: [100,200,300]
		Validation Method: Grid Search Cross Validation
		Best Parameters:
		1) Learning Rate – 0.07
		2) Boosting Type – 'gbdt'
		3) Number of Estimators - 300

10. ADVANTAGES & DISADVANTAGES

Advantages

- Application is easy to use
- User Friendly
- No Cost
- No need to commission any agent to get car resale value estimate

Disadvantages

- User needs to fill every asked detail of the car
- Doesn't work for cars from different distributions
- Not always accurate

11. CONCLUSION

The increased prices of new cars and the financial incapability of the customers to buy them, used Car sales are on a global increase. Therefore, there is an urgent need for a Car Resale Value Prediction system which effectively determines the worthiness of the car in terms of cost. The proposed system is a web application that will help users to determine the accurate price of used cars.

12. FUTURE SCOPE

In future, large historical data of car price can be used to train the model, and which can help improve the estimation of the machine learning model. Moreover, we can build an application for mobile phone platforms like android, iOS for interacting with users. For better performance, we plan to judiciously design deep learning neural networks.

13. APPENDIX

Source Code

User Interface

```
car.html
<!DOCTYPE html>
<html lang="en" dir="ltr">
 <head>
  <meta charset="utf-8">
  <title>Car Resale Value Predicting Application</title>
  k rel="icon" type="image/x-icon" href="../static/Images/favicon.ico">
  <link rel="stylesheet" href="../static/css/style.css">
  k rel="stylesheet"
href="https://cdnjs.cloudflare.com/ajax/libs/fontawesome/4.7.0/css/font-awesome.min.css">
 </head>
 <body>
  <section class="header">
   <nav>
    <a href="/"><img src="../static/Images/sang.png" width="100" height="100"></a>
   </nav>
    <div class="text-box">
      <h1>Car resale value Predictor</h1>
     >Best system to predict the amount of resale value based on the parameters provided
by the user .
      <a href="./predict_page" class="visit-btn ">Check price</a>
</div>
  </section>
 </body>
</html>
style.css
*{
margin:
0;
padding:
0;
.header{ min-height:
100vh; width: 100%;
background-image:
linear-
```

```
gradient(rgba(25,30,30,0.7),rgba(25,30,30,0.7)),url(../Images/car1.png); background-
position: center;
 background-size:
cover; position:
relative; } nav{
 display:flex; padding: 2%
6%; justify-content: space-
                align-items:
between;
center; } .nav-links{ flex: 1;
text-align: right; } .nav-links
          list-style:
ul
     li{
                       none;
display:
                inline-block;
padding:
              8px
                       12px;
position: relative; } .nav-
links ul li a{ color:white;
text-decoration: none; font-
size: 13px; } .text-box{ text-
align: center; position:
relative; color: #FFE4C4;
top:50%; } .text-box h1{
margin-top: 50px; font-size:
55px; } .text-box p{ margin:
10px 0 40px;
                   font-size:
15px; } .visit-btn{ display:
inline; border: 3px solid
                       14px;
#fff; padding:10px
font-size:
                       15px;
background:
                 transparent;
color:
        white:
                        text-
decoration:none;
}
value.html
<!DOCTYPE html>
<html lang="en" dir="ltr">
<head>
<link rel="stylesheet" href="../static/css/value.css">
<title>Car Resale Value Predicting Application</title>
k rel="icon" type="image/x-icon" href="../static/Images/favicon.ico">
<script src="https://kit.fontawesome.com/b9b6bac803.js"</pre>
crossorigin="anonymous"></script> < link rel="stylesheet"
href="https://cdnjs.cloudflare.com/ajax/libs/font-awesome/4.7.0/css/fontawesome.min.css">
<style>
    table, th, td
{
        padding: 10px;
       </style>
```

```
</head>
<body>
<div class="container">
      <div class="header">
      <h1>Get the Accurate Resale Value of Your Car</h1>
      <form action="http://localhost:5000/predict" class="form">
      <div class="form-control">
      <label for="year" padding:10px>Registration year : </label>
      <input id="year" maxlength="50" name="regyear" type="text" autocomplete="off"/>
      <i class="fas fa-check-circle"></i>
      <i class="fas fa-exclamation-circle"></i>
      <span></span>
      </div>
      <div class="form-control">
      <label for="month">Registration Month : </label>
      <input id="month" maxlength="50" name="regmonth" type="text" autocomplete="off"/>
      <i class="fas fa-check-circle"></i>
      <i class="fas fa-exclamation-circle"></i>
      <span></span>
      </div>
      <div class="form-control">
      <label for="power">Power of car in PS: </label>
      <input id="power" maxlength="50" name="powerps" type="text" autocomplete="off"/>
      <i class="fas fa-check-circle"></i>
      <i class="fas fa-exclamation-circle"></i>
      <span></span>
      </div>
      <div class="form-control">
      <label for="kilometer">Kilometers that car have driven : </label>
      <input id="kilometer" maxlength="50" name="kms" type="text"</pre>
       autocomplete="off"/>
      <i class="fas fa-check-circle"></i>
      <i class="fas fa-exclamation-circle"></i>
      <span></span>
      </div>
      <div class="form-control">
             <h3>Gear Type</h3>
```

Manual

```
<input type="radio" name="geartype" value="manual" id="manual"
/>
           Automatic
  <input type="radio" name="geartype" value="automatic" id="automatic" />
           Not mentioned
                <input type="radio" name="geartype" value="not-declared" id="not"
/>
           <i class="fas fa-check-circle"></i>
     <i class="fas fa-exclamation-circle"></i>
     <span></span>
     </div>
     <div class="form-control">
           <h3>Your car is repaired or damaged :</h3>
           Yes
  <input type="radio" name="damage" value="yes" id="yes"/>
                 No 
                       <input type="radio" name="damage" value="no"
id="no"/>
                Not Declared
                    <input type="radio" name="damage" value="not-declared"
id="notdec"/>
                <i class="fas fa-check-circle"></i>
     <i class="fas fa-exclamation-circle"></i>
     <span></span>
     </div>
     <div class="form-control">
     <label for="model">Model Type : </label>
```

```
<select name="model" id="model">
<option value="" disabled selected hidden>Choose Model Name...
<option value="golf">Golf </option>
<option value="grand">Grand </option>
<option value="fabia">Fabia </option>
<option value="3er">3er </option>
<option value="2_reihe">2 Reihe </option>
<option value="andere">Andere </option>
<option value="c_max">C Max </option>
<option value="3_reihe">3 Reihe </option>
<option value="passat">Passat </option>
<option value="navara">Navara </option>
<option value="ka">Ka </option>
<option value="polo">Polo </option>
<option value="twingo">Twingo </option>
<option value="a klasse">A klasse </option>
<option value="scirocco">Scirocco </option>
<option value="5er">5er </option>
<option value="meriva">Meriva </option>
<option value="arosa">Arosa </option>
<option value="c4">C4 </option>
<option value="civic">Civic </option>
<option value="transporter">Transporter </option>
<option value="punto">Punto </option>
<option value="e_klasse">E Klasse </option>
<option value="clio">Clio </option>
<option value="kadett">Kadett </option>
<option value="kangoo">Kangoo </option>
<option value="corsa">Corsa </option>
<option value="one">One </option>
<option value="fortwo">Fortwo </option>
<option value="1er">1er </option>
<option value="b_klasse">B Klasse </option>
<option value="signum">Signum </option>
<option value="astra">Astra </option>
<option value="a8">A8 </option>
<option value="jetta">Jetta </option>
<option value="fiesta">Fiesta </option>
<option value="c_klasse">C Klasse </option>
<option value="micra">Micra </option>
<option value="vito">Vito </option>
<option value="sprinter">Sprinter </option>
<option value="156">156 </option>
<option value="escort">Escort </option>
<option value="forester">Forester </option>
```

<option value="xc_reihe">Xc Reihe </option>

```
<option value="scenic">Scenic </option>
```

- <option value="a4">A4 </option>
- <option value="a1">A1 </option>
- <option value="insignia">Insignia </option>
- <option value="combo">Combo </option>
- <option value="focus">Focus </option>
- <option value="tt">Tt </option>
- <option value="a6">A6 </option>
- <option value="jazz">Jazz </option>
- <option value="omega">Omega </option>
- <option value="slk">Slk </option>
- <option value="7er">7er </option>
- <option value="80">80 </option>
- <option value="147">147 </option>
- <option value="glk">Glk </option>
- <option value="100">100 </option>
- <option value="z_reihe">Z Reihe </option>
- <option value="sportage">Sportage </option>
- <option value="sorento">Sorento </option>
- <option value="v40">V40 </option>
- <option value="5er">5er </option>
- <option value="ibiza">Ibiza </option>
- <option value="3er">3er </option>
- <option value="mustang">Mustang </option>
- <option value="eos">Eos </option>
- <option value="touran">Touran </option>
- <option value="getz">Getz </option>
- <option value="a3">A3 </option>
- <option value="almera">Almera </option>
- <option value="megane">Megane </option>
- <option value="7er">7er </option>
- <option value="1er">1er </option>
- <option value="lupo">Lupo </option>
- <option value="r19">R19 </option>
- <option value="zafira">Zafira </option>
- <option value="caddy">Caddy </option>
- <option value="2_reihe">2 Reihe </option>
- <option value="mondeo">Mondeo </option>
- <option value="cordoba">Cordoba </option>
- <option value="colt">Colt </option>
- <option value="impreza">Impreza </option>
- <option value="vectra">Vectra </option>
- <option value="berlingo">Berlingo </option>
- <option value="80">80 </option>
- <option value="m_klasse">M Klasse </option>
- <option value="tiguan">Tiguan </option>

```
<option value="i_reihe">I Reihe </option>
```

- <option value="espace">Espace </option>
- <option value="sharan">Sharan </option>
- <option value="6_reihe">6 Reihe </option>
- <option value="panda">Panda </option>
- <option value="up">Up </option>
- <option value="seicento">Seicento </option>
- <option value="ceed">Ceed </option>
- <option value="5_reihe">5 Reihe </option>
- <option value="yeti">Yeti </option>
- <option value="octavia">Octavia </option>
- <option value="mii">Mii </option>
- <option value="rx_reihe">Rx Reihe </option>
- <option value="6er">6er </option>
- <option value="modus">Modus </option>
- <option value="fox">Fox </option>
- <option value="matiz">Matiz </option>
- <option value="beetle">Beetle </option>
- <option value="c1">C1 </option>
- <option value="rio">Rio </option>
- <option value="touareg">Touareg </option>
- <option value="logan">Logan </option>
- <option value="spider">Spider </option>
- <option value="cuore">Cuore </option>
- <option value="s_max">S Max </option>
- <option value="a2">A2 </option>
- <option value="x_reihe">X Reihe </option>
- <option value="a5">A5 </option>
- <option value="galaxy">Galaxy </option>
- <option value="c3">C3 </option>
- <option value="viano">Viano </option>
- <option value="s_klasse">S Klasse </option>
- <option value="1_reihe">1 Reihe </option>
- <option value="avensis">Avensis </option>
- <option value="sl">Sl </option>
- <option value="roomster">Roomster </option>
- <option value="q5">Q5 </option>
- <option value="kaefer">Kaefer </option>
- <option value="santa">Santa </option>
- <option value="cooper">Cooper </option>
- <option value="leon">Leon </option>
- <option value="4_reihe">4 Reihe </option>
- <option value="500">500 </option>
- <option value="laguna">Laguna </option>
- <option value="ptcruiser">Ptcruiser </option>
- <option value="clk">Clk </option>

```
<option value="primera">Primera </option>
```

- <option value="exeo">Exeo </option>
- <option value="159">159 </option>
- <option value="transit">Transit </option>
- <option value="juke">Juke </option>
- <option value="qashqai">Qashqai </option>
- <option value="carisma">Carisma </option>
- <option value="accord">Accord </option>
- <option value="corolla">Corolla </option>
- <option value="lanos">Lanos </option>
- <option value="phaeton">Phaeton </option>
- <option value="boxster">Boxster </option>
- <option value="verso">Verso </option>
- <option value="swift">Swift </option>
- <option value="rav">Rav </option>
- <option value="kuga">Kuga </option>
- <option value="picanto">Picanto </option>
- <option value="kalos">Kalos </option>
- <option value="superb">Superb </option>
- <option value="stilo">Stilo </option>
- <option value="alhambra">Alhambra </option>
- <option value="911">911 </option>
- <option value="mx_reihe">Mx Reihe </option>
- <option value="m reihe">M Reihe </option>
- <option value="roadster">Roadster </option>
- <option value="ypsilon">Ypsilon </option>
- <option value="cayenne">Cayenne </option>
- <option value="galant">Galant </option>
- <option value="justy">Justy </option>
- <option value="90">90 </option>
- <option value="sirion">Sirion </option>
- <option value="crossfire">Crossfire </option>
- <option value="6_reihe">6 Reihe </option>
- <option value="agila">Agila </option>
- <option value="duster">Duster </option>
- <option value="cr_reihe">Cr Reihe </option>
- <option value="v50">V50 </option>
- <option value="discovery">Discovery </option>
- <option value="c_reihe">C Reihe </option>
- <option value="v_klasse">V Klasse </option>
- <option value="yaris">Yaris </option> <option</pre>
- <option value="aygo">Aygo </option>
- <option value="cc">Cc </option>
- <option value="carnival">Carnival </option>
- <option value="fusion">Fusion </option>
- <option value="bora">Bora </option>

```
<option value="forfour">Forfour </option>
<option value="100">100 </option>
<option value="cl">Cl </option>
<option value="tigra">Tigra </option>
<option value="156">156 </option>
<option value="300c">300c </option>
<option value="100">100 </option>
<option value="147">147 </option>
<option value="q3">Q3 </option>
<option value="spark">Spark </option>
<option value="v70">V70 </option>
<option value="x_type">X Type </option>
<option value="5 reihe">5 Reihe </option>
<option value="ducato">Ducato </option>
<option value="s_type">S Type </option>
<option value="x trail">X Trail </option>
<option value="toledo">Toledo </option>
<option value="altea">Altea </option>
<option value="7er">7er </option>
<option value="voyager">Voyager </option>
<option value="calibra">Calibra </option>
<option value="bravo">Bravo </option>
<option value="range_rover">Range Rover </option>
<option value="antara">Antara </option>
<option value="tucson">Tucson </option>
<option value="q7">Q7 </option>
<option value="citigo">Citigo </option>
<option value="jimny">Jimny </option>
<option value="cx_reihe">Cx Reihe </option>
<option value="wrangler">Wrangler </option>
<option value="lybra">Lybra </option>
<option value="range_rover_sport">Range Rover Sport </option>
<option value="lancer">Lancer </option>
<option value="159">159 </option>
<option value="freelander">Freelander </option>
<option value="captiva">Captiva </option>
<option value="c2">C2 </option>
<option value="500">500 </option>
<option value="range_rover_evoque">Range Rover Evoque </option>
<option value="sandero">Sandero </option>
<option value="note">Note </option>
<option value="900">900 </option>
<option value="147">147 </option>
<option value="defender">Defender </option>
<option value="cherokee">Cherokee </option>
<option value="clubman">Clubman </option>
```

```
<option value="samara">Samara </option>
```

- <option value="2_reihe">2 Reihe </option>
- <option value="1er">1er </option>
- <option value="3er">3er </option>
- <option value="601">601 </option>
- <option value="3_reihe">3 Reihe </option>
- <option value="4_reihe">4 Reihe </option>
- <option value="5er">5er </option>
- <option value="6_reihe">6 Reihe </option>
- <option value="legacy">Legacy </option>
- <option value="pajero">Pajero </option>
- <option value="auris">Auris </option>
- <option value="niva">Niva </option>
- <option value="5_reihe">5 Reihe </option>
- <option value="s60">S60 </option>
- <option value="nubira">Nubira </option>
- <option value="vivaro">Vivaro </option>
- <option value="g_klasse">G Klasse </option>
- <option value="lodgy">Lodgy </option>
- <option value="850">850 </option>
- <option value="serie_2">Serie 2 </option>
- <option value="6er">6er </option>
- <option value="charade">Charade </option>
- <option value="croma">Croma </option>
- <option value="outlander">Outlander </option>
- <option value="gl">Gl </option>
- <option value="doblo">Doblo </option>
- <option value="musa">Musa </option>
- <option value="amarok">Amarok </option>
- <option value="156">156 </option>
- <option value="move">Move </option>
- <option value="9000">9000 </option>
- <option value="v60">V60 </option>
- <option value="145">145 </option>
- <option value="aveo">Aveo </option>
- <option value="200">200 </option>
- <option value="300c">300c </option>
- <option value="b_max">B Max </option>
- <option value="delta">Delta </option>
- <option value="terios">Terios </option>
- <option value="rangerover">RangeRover </option>
- <option value="90">90 </option>
- <option value="materia">Materia </option>
- <option value="kalina">Kalina </option>
- <option value="elefantino">Elefantino </option>
- <option value="i3">I3 </option>

```
<option value="kappa">Kappa </option>
<option value="serie_3">Serie 3 </option>
<option value="48429">48429 </option>
<option value="serie_1">Serie 1 </option>
<option value="discovery_sport">Discovery Sport </option>
</select>
<i class="fas fa-check-circle"></i>
<i class="fas fa-exclamation-circle"></i>
<span></span>
</div>
<div class="form-control">
<label for="brand">Brand :</label>
<select name="brand" id="brand">
<option value="" disabled selected hidden>Choose Brand Name...
<option value="volkswagen">Volkswagen </option>
<option value="audi">Audi </option>
<option value="jeep">Jeep </option>
<option value="skoda">Skoda </option>
<option value="bmw">Bmw </option>
<option value="peugeot">Peugeot </option>
<option value="ford">Ford </option>
<option value="mazda">Mazda </option>
<option value="nissan">Nissan </option>
<option value="renault">Renault </option>
<option value="mercedes_benz">Mercedes Benz </option>
<option value="opel">Opel </option>
<option value="seat">Seat </option>
<option value="citroen">Citroen </option>
<option value="honda">Honda </option>
<option value="fiat">Fiat </option>
<option value="mini">Mini </option>
<option value="smart">Smart </option>
<option value="hyundai">Hyundai </option>
<option value="sonstige_autos">Sonstige Autos </option>
<option value="alfa_romeo">Alfa Romeo </option>
<option value="subaru">Subaru </option>
<option value="volvo">Volvo </option>
<option value="mitsubishi">Mitsubishi </option>
<option value="kia">Kia </option>
<option value="suzuki">Suzuki </option>
<option value="lancia">Lancia </option>
<option value="porsche">Porsche </option>
<option value="toyota">Toyota </option>
<option value="chevrolet">Chevrolet </option>
<option value="dacia">Dacia </option>
<option value="daihatsu">Daihatsu </option>
```

```
<option value="trabant">Trabant </option>
<option value="saab">Saab </option>
<option value="chrysler">Chrysler </option>
<option value="jaguar">Jaguar </option>
<option value="daewoo">Daewoo </option>
<option value="rover">Rover </option>
<option value="land_rover">Land Rover </option>
<option value="lada">Lada </option>
</select>
<i class="fas fa-check-circle"></i>
<i class="fas fa-exclamation-circle"></i>
<span></span>
</div>
<div class="form-control">
<label for="fuelType">Fuel Type :</label>
<select name="fuelType" id="fuel">
<option value="" disabled selected hidden>Choose Fuel Type...
<option value="petrol"> Petrol </option>
<option value="diesel"> Diesel </option>
<option value="not-declared"> Not Declared </option>
<option value="lpg">LPG </option>
<option value="cng">CNG </option>
<option value="hybrid">Hybrid </option>
<option value="others">Others </option>
<option value="electric">Electric </option>
</select>
<i class="fas fa-check-circle"></i>
<i class="fas fa-exclamation-circle"></i>
<span></span>
</div>
<div class="form-control">
<label for="vehicletype">Vehicle type: </label>
<select name="vehicletype" id="vehicle" >
<option value="" disabled selected hidden>Choose Vehicle Type...
<option value="coupe">Coupe </option>
<option value="suv">SUV </option>
<option value="kleinwagen">Kleinwagen </option>
<option value="limousine">Limousine </option>
<option value="cabrio">Cabrio </option>
<option value="bus">Bus </option>
<option value="kombi">Kombi </option>
<option value="andere">Andere </option>
<option value="volkswagen">Volkswagen </option>
</select>
<i class="fas fa-check-circle"></i>
<i class="fas fa-exclamation-circle"></i>
```

```
<span></span>
       </div>
       <input type="submit" id="submit"></input>
       </form>
</div>
</body>
</html>
value.css *{
padding:0px;
margin:0; box-
sizing:border-box;
font-family:
cursive; font-
weight: bold;
color: #E74C3C;
}
body{
       background-image: linear-
gradient(rgba(25, 30, 30, 0.7), rgba(25, 30, 30, 0.7)), url(../Images/car2.png);\\
    min-height:100vh;
    display:flex; justify-
content:center;
       align-items:center;
}
.header{
    color:Black; text-
align:center;
       padding:10px 0px 10px 100px;
}
#model{
    width:500px;
    color: black;
}
#brand{
    width:500px;
    color: black;
}
#fuel{
    width:500px;
    color: black;
}
```

```
#vehicle{
    width:500px;
    color: black;
}
.form{
       padding:30px 40px;
}
. for m\text{-}control \{
    margin-bottom:10px;
    padding-bottom: 20px;
    position:relative;
       margin-left: 100px;
}
.form-control label{
    display:block;
                           margin-
bottom:5px;
}
.form-control input{
    border: 2px solid
            width:80%;
#f0f0f0;
       font-size :.8rem;
       padding:5px;
       display:inline-table;
}
.form-control i{
    position:absolute;
    right:20px;
    top:35px;
       visibility:hidden;
}
.form-control span{
    position:absolute
    left:0;
    bottom:0;
    visibility:hidden;
                           font-
                    font-style:italic;
weight:bolder;
       font-size:1rem;
}
.form-control.success input{
```

```
border-color:#2ecc71;
}
.form-control.error input{
       border-color:#e743c3;
}
.form-control.error span{
       color:red;
       visibility:visible;
}
.form-control.success i.fa-check-circle { border-
color:#2ecc71;
       visibility:visible;
}
.form-control.error i.fa-exclamation-circle {
                                                border-
color:#e73c3c;
       visibility:visible;
.form #submit{
    background-
color:#E74C3C;
                   border:none;
    outline:none; color:white;
    width:500px; border-
radius:4px;
    padding:10px;
    cursor:pointer;
    transition:all .5s;
                          font-
size:1rem;
       margin-left: 100px;
}
.form #submit:hover{
                          background-
color:#6441a5;
.form-control #manual{
       padding-bottom: 20%;
}
predict.html
<!DOCTYPE html>
<html lang="en">
```

```
<head>
  <meta charset="UTF-8">
  <meta http-equiv="X-UA-Compatible" content="IE=edge">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <link rel="stylesheet" href="../static/css/predict.css">
  <title>Car Resale Value Predicting Application</title>
  k rel="icon" type="image/x-icon" href="../static/Images/favicon.ico">
</head>
<body>
       <section class="header">
   <nav>
     <a href="/"><img src="../static/Images/sang.png" width="100" height="100"></a>
</nav>
     <div class="text-box">
      <h1>The Predicted Car Resale Value is </h1>
               < h1 > \{ \{ predict \} \} < / h1 >
     </div>
  </section>
</body>
</html>
predict.css .header{
min-height: 100vh;
width: 100%;
background-image:
linear-
gradient(rgba(25,30,30,0.7),rgba(25,30,30,0.7)),url(../Images/car3.j
pg); background-position: center; background-size: cover;
position: relative;
}
.text-box{
text-align:
center;
position:
relative; color:
#FFE4C4;
top:50%;
.text-box
           h1{
margin-top:
50px;
          font-
size: 55px;
}
```

```
.text-box p{
margin: 10px 0
40px; font-size:
15px;
}
body{
       margin: 0;
}
nav{
 display:flex; padding: 2%
6%; justify-content: space-
between; align-items:
center;
}
app.py # Import
Libraries import
pandas as pd
import numpy
as np
from flask import Flask, render_template, Response, request
import pickle
from sklearn.preprocessing import LabelEncoder
import requests
# NOTE: you must manually set API_KEY below using information retrieved from your IBM
Cloud account.
API_KEY = "04ZW6LlrLwAfofEU2VHPt69RKCWVc9U1o5LXkAU_66qA"
token_response = requests.post('https://iam.cloud.ibm.com/identity/token',
data={"apikey":API_KEY, "grant_type": 'urn:ibm:params:oauth:grant-type:apikey'})
mltoken = token_response.json()["access_token"]
header = {'Content-Type': 'application/json', 'Authorization': 'Bearer ' + mltoken}
app = Flask(__name__)#initiate flask app
def load_model(file='../Result/resale_model.sav'):#load the saved model
    return pickle.load(open(file, 'rb'))
@app.route('/') def
index():#main page
       return render_template('car.html')
@app.route('/predict_page') def
predict_page():#predicting page
```

```
return render template('value.html')
@app.route('/predict', methods=['GET','POST'])
def predict():
    reg_year = int(request.args.get('regyear'))
    powerps = float(request.args.get('powerps'))
    kms= float(request.args.get('kms'))
    reg_month = int(request.args.get('regmonth'))
    gearbox = request.args.get('geartype')
    damage = request.args.get('damage')
    model = request.args.get('model')
    brand = request.args.get('brand')
    fuel_type =
request.args.get('fuelType')
       veh_type = request.args.get('vehicletype')
       new_row = {'yearOfReg':reg_year, 'powerPS':powerps, 'kilometer':kms,
                              'monthOfRegistration':reg_month, 'gearbox':gearbox,
                              'notRepairedDamage':damage,
                              'model':model, 'brand':brand, 'fuelType':fuel_type,
                              'vehicletype':veh_type}
       print(new_row)
       new_df = pd.DataFrame(columns=['vehicletype','yearOfReg','gearbox',
               'powerPS', 'model', 'kilometer', 'monthOfRegistration', 'fuelType',
               'brand', 'notRepairedDamage'])
       new df = new df.append(new row, ignore index=True)
    labels = ['gearbox', 'notRepairedDamage', 'model', 'brand', 'fuelType', 'vehicletype']
    mapper = \{ \}
       for i in labels:
               mapper[i] = LabelEncoder()
               mapper[i].classes = np.load('../Result/'+str('classes'+i+'.npy'), allow_pickle=True)
               transform = mapper[i].fit_transform(new_df[i])
               new_df.loc[:,i+'_labels'] = pd.Series(transform, index=new_df.index)
    labeled = new_df[['yearOfReg','powerPS','kilometer','monthOfRegistration'] +
[x+' labels' for x in labels]]
    X = labeled.values.tolist()
    print(' \mid n \mid n', X)
       #predict = reg_model.predict(X)
    # NOTE: manually define and pass the array(s) of values to be scored in the next line
    payload_scoring = {"input_data": [{"fields": [['yearOfReg', 'powerPS', 'kilometer',
```

```
'monthOfRegistration', 'gearbox_labels', 'notRepairedDamage_labels',
'model_labels', 'brand_labels', 'fuelType_labels', 'vehicletype_labels']], "values": X}]}
    response_scoring =
requests.post('https://ussouth.ml.cloud.ibm.com/ml/v4/deployments/c0f74260-1f5f-43ad-
8d71eb12ef099507/predictions?version=2022-11-13', json=payload_scoring,
headers={'Authorization': 'Bearer ' + mltoken})
    predictions = response scoring.json()
    print(response_scoring.json())
    predict = predictions['predictions'][0]['values'][0][0]
    print("Final prediction :",predict)
       return render_template('predict.html',predict=predict)
if __name_=='_main_':
    reg model = load model()#load the saved model
    app.run(host='localhost', debug=True, threaded=False)
car_resale_value_prediction_modellin
g.py import pandas as pd import
numpy as np
from sklearn.preprocessing import LabelEncoder
from sklearn.model selection import train test split, GridSearchCV
from sklearn.metrics import mean_absolute_error, mean_squared_error, r2_score
import pickle
import wandb
#regression models
from sklearn.ensemble import BaggingRegressor, RandomForestRegressor,
HistGradientBoostingRegressor, ExtraTreesRegressor
from xgboost.sklearn import XGBRegressor
from lightgbm import LGBMRegressor
wandb.login(key='b75e0564aba32dce859c60044418df71ce7389a8')
data = pd.read_csv('../input/naalaiya-thiran/Preprocessed/autos_preprocessed.csv', header=0,
sep=',', encoding='Latin1')
labels = ['gearbox', 'notRepairedDamage', 'model', 'brand', 'fuelType', 'vehicleType']
mapper = \{\}
for i in
labels:
  mapper[i] = LabelEncoder()
mapper[i].fit(data[i])
mapper[i].transform(data[i])
np.save(str('classes'+i+'.npy'), mapper[i].classes_)
```

```
data.loc[:, i+'_labels'] = pd.Series(tr,
index=data.index)
labeled = data[['price', 'yearOfRegistration', 'powerPS', 'kilometer', 'monthOfRegistration']
+[x+"_labels" for x in labels]]
print(labeled.columns)
def find_scores(Y_actual, Y_pred, X_train):
  mae = mean_absolute_error(Y_actual, Y_pred)
mse = mean_squared_error(Y_actual, Y_pred)
  rmse = np.sqrt(mse)
                        rmsle
= np.log(rmse)
                r2 =
r2_score(Y_actual, Y_pred)
n, k = X_{train.shape}
  adj_r2\_score = 1 - ((1-r2)*(n-1)/(n-k-1))
  wandb.log({"mae": mae, "mse": mse, 'rmse':rmse, 'rmsle':rmsle, 'r2':r2,
'adj_r2':adj_r2_score})
def bagging_regressor():
config_defaults = {
          'n estimators':100,
          'max_samples':0.4,
          'bootstrap':True,
          'random state':42
  wandb.init(config=config_defaults)
config = wandb.config
X = labeled.iloc[:,1:].values
Y = labeled.iloc[:,0].values.reshape(-1,1)
  X_train, X_test, Y_train, Y_test = train_test_split(X, Y, test_size=0.4, random_state=42)
  model = BaggingRegressor(
n_estimators=config.n_estimators,
bootstrap=config.bootstrap,
max_samples=config.max_samples,
   random_state = config.random_state)
  model.fit(X_train, Y_train)
  Y_pred = model.predict(X_test)
  find_scores(Y_test, Y_pred, X_train)
```

```
bagging_regressor_configs = {
  "name": 'BaggingRegressor',
  "method": "grid",
  "metric": {
     "name": "adj_r2",
     "goal": "maximize"
  "parameters": {
     "n_estimators": {
       "values": [100, 200, 300]
     },
     "max_samples": {
       "values": [0.4,0.5, 0.6]
     }
  }
}
sweep_id = wandb.sweep(sweep=bagging_regressor_configs, project="car_resale_value")
wandb.agent(sweep_id=sweep_id, function=bagging_regressor)
def random_forest_regressor():
config_defaults = {
         'n_estimators':100,
         'max_samples':0.4,
         'criterion': 'squared_error',
         'bootstrap': True,
         'random_state':42
       }
  wandb.init(config=config_defaults)
config = wandb.config
X = labeled.iloc[:,1:].values
Y = labeled.iloc[:,0].values.reshape(-1,1)
  X_train, X_test, Y_train, Y_test = train_test_split(X, Y, test_size=0.4, random_state=42)
  model = RandomForestRegressor(
n estimators=config.n estimators,
criterion = config.criterion,
bootstrap=config.bootstrap,
max_samples=config.max_samples,
   random_state = config.random_state)
  model.fit(X_train, Y_train)
  Y_pred = model.predict(X_test)
```

```
find_scores(Y_test, Y_pred, X_train)
random_forest_configs = {
"name": 'RandomForestRegressor',
  "method": "grid",
  "metric": {
     "name": "adj_r2",
     "goal": "maximize"
  "parameters": {
     "n_estimators": {
       "values": [100, 200, 300]
     },
     "max_samples": {
       "values": [0.4,0.5, 0.6]
     }
  }
}
sweep_id = wandb.sweep(sweep=random_forest_configs, project="car_resale_value")
wandb.agent(sweep_id=sweep_id, function=random_forest_regressor)
def hist_gradient_boost_regressor():
  config_defaults = {
          'loss': 'squared_error',
          'learning rate': 0.1,
          'max_iter':100,
          'random_state':42
  wandb.init(config=config_defaults)
config = wandb.config
X = labeled.iloc[:,1:].values
Y = labeled.iloc[:,0].values.reshape(-1,1)
  X_train, X_test, Y_train, Y_test = train_test_split(X, Y, test_size=0.4, random_state=42)
  model = HistGradientBoostingRegressor(
loss=config.loss,
   learning_rate = config.learning_rate,
max_iter=config.max_iter,
   random_state = config.random_state)
  model.fit(X_train, Y_train)
```

```
Y_pred = model.predict(X_test)
  find_scores(Y_test, Y_pred, X_train)
hist_gradient_boost_configs = {
  "name": 'HistGradientBoostingRegressor',
  "method": "grid",
  "metric": {
     "name": "adj_r2",
     "goal": "maximize"
  },
  "parameters": {
     "loss": {
       "values": ['squared_error', 'absolute_error']
     },
     "learning_rate": {
       "values": [0.01, 0.03, 0.05, 0.07]
     },
     "max iter": {
       "values": [100,200,300]
     },
     "random_state": {
       "values": [42]
     }
  }
}
sweep_id = wandb.sweep(sweep=hist_gradient_boost_configs, project="car_resale_value")
wandb.agent(sweep_id=sweep_id, function=hist_gradient_boost_regressor)
def extra_tree_regressor():
  config_defaults = {
          'criterion': 'squared_error',
          'max_samples':0.4,
          'bootstrap': True,
          'random_state':42
  wandb.init(config=config_defaults)
config = wandb.config
X = labeled.iloc[:,1:].values
Y = labeled.iloc[:,0].values.reshape(-1,1)
  X_train, X_test, Y_train, Y_test = train_test_split(X, Y, test_size=0.4, random_state=42)
```

```
model = ExtraTreesRegressor(
criterion=config.criterion,
bootstrap = config.bootstrap,
max_samples=config.max_samples,
   random_state = config.random_state)
  model.fit(X_train, Y_train)
  Y_pred = model.predict(X_test)
  find_scores(Y_test, Y_pred, X_train)
extra_tree_configs = {
  "name": 'ExtraTreesRegressor',
  "method": "grid",
  "metric": {
     "name": "adj_r2",
     "goal": "maximize"
  },
  "parameters": {
     "criterion": {
       "values": ['squared_error', 'absolute_error']
     },
     "max_samples": {
       "values": [0.4,0.5, 0.6]
     }
  }
}
sweep_id = wandb.sweep(sweep=extra_tree_configs, project="car_resale_value")
wandb.agent(sweep_id=sweep_id, function=extra_tree_regressor)
def XGB_regressor():
config_defaults = {
          'learning_rate':0.1,
          'n_estimators': 500,
          'booster':'gbtree',
          'eta':0.01,
          'random_state':42
  wandb.init(config=config_defaults)
config = wandb.config
X = labeled.iloc[:,1:].values
Y = labeled.iloc[:,0].values.reshape(-1,1)
```

```
X_train, X_test, Y_train, Y_test = train_test_split(X, Y, test_size=0.4, random_state=42)
  model = XGBRegressor(
learning_rate=config.learning_rate,
n_estimators = config.n_estimators,
   random state = config.random state)
  model.fit(X train, Y train)
  Y_pred = model.predict(X_test)
  find_scores(Y_test, Y_pred, X_train)
extra tree configs = {
"name": 'XGBRegressor',
  "method": "grid",
  "metric": {
     "name": "adj_r2",
     "goal": "maximize"
  },
  "parameters": {
     "learning_rate": {
       "values": [0.01, 0.03, 0.05, 0.07]
     "n estimators": {
       "values": [100,200,300]
     },
     "booster": {
       "values": ['gbtree', 'gblinear']
     },
    "eta": {
       "values": [0.01, 0.03, 0.05, 0.07]
     }
}
sweep_id = wandb.sweep(sweep=extra_tree_configs, project="car_resale_value")
wandb.agent(sweep_id=sweep_id, function=XGB_regressor)
def LGBM_regressor():
config_defaults = {
          'objective': 'root_mean_squared_error',
          'reg_sqrt': True,
          'metric': 'rmse',
          'random_state':42
       }
```

```
wandb.init(config=config_defaults)
config = wandb.config
X = labeled.iloc[:,1:].values
Y = labeled.iloc[:,0].values.reshape(-1,1)
  X_train, X_test, Y_train, Y_test = train_test_split(X, Y, test_size=0.4, random_state=42)
  model = LGBMRegressor(
learning_rate=config.learning_rate,
n_estimators = config.n_estimators,
   random_state = config.random_state)
  model.fit(X_train, Y_train)
  Y_pred = model.predict(X_test)
  find_scores(Y_test, Y_pred, X_train)
lgbm_configs = {
  "name": 'LGBMRegressor',
  "method": "grid",
  "metric": {
     "name": "adj_r2",
     "goal": "maximize"
  },
  "parameters": {
     "learning_rate": {
       "values": [0.01, 0.03, 0.05, 0.07]
     },
     "objective": {
       "values": ['root_mean_squared_error']
     "boosting_type": {
       "values": ['gbdt','dart','goss','rf']
     "reg_sqrt": {
       "values": [True]
     "metric": {
       "values": ['rmse']
     "n_estimators": {
       "values": [100,200,300]
     },
     "random_state": {
```

```
"values": [42]
    }
  }
}
sweep_id = wandb.sweep(sweep=lgbm_configs, project="car_resale_value")
wandb.agent(sweep_id=sweep_id, function=LGBM_regressor)
car_resale_value_prediction_LGBM.py
import pandas as pd import numpy as np from
sklearn.preprocessing import LabelEncoder
from sklearn.model_selection import
train_test_split
from sklearn.metrics import mean_absolute_error, mean_squared_error, r2_score
import pickle
#regression model
from lightgbm import LGBMRegressor
import os, types import pandas
as pd from botocore.client
import Config
import ibm_boto3
def__iter_(self): return 0
#@hidden cell
# The following code accesses a file in your IBM Cloud Object Storage. It includes your
credentials.
# You might want to remove those credentials before you share the notebook.
cos_client = ibm_boto3.client(service_name='s3',
  ibm_api_key_id='8DImq73hywb09uzAo_T_TsAZI_ocZgFLuhQdwmfUJZTX',
  ibm auth endpoint="https://iam.cloud.ibm.com/oidc/token",
config=Config(signature_version='oauth'),
  endpoint_url='https://s3.private.us.cloud-object-storage.appdomain.cloud')
bucket = 'carresalevalueprediction-donotdelete-pr-whcxr42j79mqcv'
object_key = 'autos_preprocessed.csv'
body =
cos_client.get_object(Bucket=bucket,Key=object_key)['Body'] # add
missing iter method, so pandas accepts body as file-like object
if not hasattr(body, "__iter__"): body.__iter__= types.MethodType( __iter__, body )
data = pd.read\_csv(body)
data.head()
```

```
labels = ['gearbox', 'notRepairedDamage', 'model', 'brand', 'fuelType', 'vehicleType']
mapper = \{\}
for i in
labels:
  mapper[i] = LabelEncoder()
mapper[i].fit(data[i])
mapper[i].transform(data[i])
np.save(str('classes'+i+'.npy'), mapper[i].classes_)
data.loc[:, i+'_labels'] = pd.Series(tr,
index=data.index)
labeled = data[['price', 'yearOfRegistration', 'powerPS', 'kilometer', 'monthOfRegistration']
+[x+"_labels" for x in labels]]
print(labeled.columns)
def find_scores(Y_actual, Y_pred, X_train):
  scores = dict()
  mae = mean_absolute_error(Y_actual, Y_pred)
mse = mean\_squared\_error(Y\_actual, Y\_pred)
  rmse = np.sqrt(mse)
                         rmsle
= np.log(rmse)
                r2 =
r2_score(Y_actual, Y_pred)
n, k = X train.shape
  adj_r2\_score = 1 - ((1-r2)*(n-1)/(n-k-1))
  scores['mae']=mae
scores['mse']=mse
scores['rmse']=rmse
scores['rmsle']=rmsle
scores['r2']=r2
  scores['adj_r2_score']=adj_r2_score
  return scores
X = labeled.iloc[:,1:].values
Y = labeled.iloc[:,0].values.reshape(-1,1)
X_train, X_test, Y_train, Y_test = train_test_split(X, Y, test_size=0.4, random_state=42)
model =
LGBMRegressor(boosting_type="gbdt",learning_rate=0.07,metric="rmse",n_estimators=300,
obj ective="root_mean_squared_error",random_state=42,reg_sqrt=True)
model.fit(X_train, Y_train)
```

```
Y_pred = model.predict(X_test)
find_scores(Y_test, Y_pred, X_train)
pickle.dump(model, open('resale_model.sav', 'wb'))
get_ipython().system('pip install -U ibm-watson-machine-learning')
from ibm_watson_machine_learning import APIClient
import ison
wml_credentials = {
  "apikey": "Qo9j8ni7qMJ8j1C8VFDRFHbuGRAhYWcTlkVqnYg1AGkE",
  "url": "https://us-south.ml.cloud.ibm.com"
}
wml_client = APIClient(wml_credentials)
wml client.spaces.list()
SPACE_ID= "bf7bc386-40bf-4d85-91e6-eedd2c53f245"
wml_client.set.default_space(SPACE_ID)
wml_client.software_specifications.list(100)
import sklearn
sklearn.__version___
MODEL_NAME = 'CRVP'
DEPLOYMENT_NAME = 'CRVP'
DEMO_MODEL = model
software_spec_uid = wml_client.software_specifications.get_id_by_name('runtime-22.1-
py3.9') model\_props = {
                        wml_client.repository.ModelMetaNames.NAME:
                   wml_client.repository.ModelMetaNames.TYPE: 'scikit-learn_1.0',
MODEL_NAME,
  wml_client.repository.ModelMetaNames.SOFTWARE_SPEC_UID: software_spec_uid
}
model_details = wml_client.repository.store_model(
  model=DEMO MODEL,
  meta_props=model_props,
training_data=X_train,
  training target=Y train
)
```

```
model_details
model_id =
wml_client.repository.get_model_id(model_details)
model_id deployment_props = {
   wml_client.deployments.ConfigurationMetaNames.NAME:DEPLOYMENT_NAME,
   wml_client.deployments.ConfigurationMetaNames.ONLINE: {}
}
deployment = wml_client.deployments.create(
   artifact_uid=model_id,
   meta_props=deployment_props
)
```

GitHub & Project Demo Link:

- https://github.com/IBM-EPBL/IBM-Project-31190-1660197371
- https://drive.google.com/file/d/1ougdlqhjUD-Pf1i61o2OMO76BBI_obOz/view