

## SOURCE CODE:

```
<!DOCTYPE html>
<html lang="en" dir="ltr">
  <head>
    <meta charset="utf-8">
    <title>Car resale value </title>
    <link rel="stylesheet" href="../static/css/style.css">
    <link rel="stylesheet" href="https://cdn.jsdelivr.net/npm/font-awesome/4.7.0/css/font-awesome.min.css">
  </head>
  <body>
    <section class="header">
      <nav>
        <a href="/"></a>

      </nav>
      <div class="text-box">
        <h1>Car resale value Predictor</h1>
        <p>Best system to predict the amount of resale valuebased on the parameters
provided by the user .</p>
        <a href="value.html" class="visit-btn ">Check price</a>
      </div>
    </section>

  </body>
</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 Predicted Value</title>
</head>
<body>
  <section class="header">
    <nav>
      <a href="/"></a>
    </nav>
    <div class="text-box">
      <h1>The Predicted Car Resale Value is </h1>
      <h1>{{ Predicted car price is : 10 Lakhs }}</h1>
    </div>
  </section>

</body>
```

```

<!DOCTYPE html>
<html lang="en" dir="ltr">
<head>
<link rel="stylesheet" href="../static/css/value.css">
<title>Car resale value</title>

</head>
<body>
  <section class="form">
    <form action="http://localhost:5000/predict" method="GET">
      <table border="0" align="center">
        <tbody>
          <tr>
            <td><h1>Get the Accurate Resale Value of Your Car</h1>
            </td>
          </tr>
          <tr>
            <td><label for="year" padding:10px>Registration year : </label></td>
            <td><input id="year" maxlength="50" name="regyear" type="text"
/>
            <br>
            <br>
            </td>
          </tr>

          <tr>
            <td><label for="month">Registration Month : </label></td>
            <td><input id="month" maxlength="50" name="regmonth" type="text" />
            <br>
            <br>
            </td>
          </tr>

          <tr>
            <td><label for="power">Power of car in PS: </label></td>
            <td><input id="power" maxlength="50" name="powerps" type="text" />
            <br>
            <br>
            </td>
          </tr>

          <tr>
            <td><label for="kilometer">Kilometers that car have driven :
</label></td>
            <td><input id="kilometer" maxlength="50" name="kms" type="text" />
            <br>
            <br>
            </td>
          </tr>

          <tr>
            <td>

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```
<td><label for="geartype">Gear type : </label></td>
<td><input type="radio" name="geartype" value="manual"/>Manual
<input type="radio" name="geartype" value="automatic"/>Automatic
<input type="radio" name="geartype" value="not-declared"/> Notdeclared
<br>
<br>
</td>
</tr>
```

```
<tr>
<td><label for="damage">Your car is repaired or damaged : </label></td>
<td><input type="radio" name="damage" value="yes"/> Yes
<input type="radio" name="damage" value="no"/> No
<input type="radio" name="damage" value="not-declared"/> Notdeclared
<br>
<br>
</td>
</tr>
```

```
<tr>
<td><label for="model">Model Type : </label></td>
<td>
<select name="model" id="model">
<option value="" disabled selected hidden>Choose ModelName...</option>
<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">I 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="epsilon">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 value="c5">C5 </option>

<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>
<br>
<br>
</td>
</tr>
```

```
<tr>
<td><label for="brand">Brand :</label></td>
<td>
<select name="brand" id="brand">
<option value="" disabled selected hidden>Choose BrandName...</option>
<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>
<br><br>
</td></tr>
<tr>
<td><label for="fuelType">Fuel Type :</label></td>
<td>
<select name="fuelType" id="brand">
<option value="" disabled selected hidden>Choose FuelType...</option>
<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>
<br>
<br>
</td>
</tr>
<tr>
<td><label for="vehicletype">Vehicle type:</label></td>
<td>
<select name="vehicletype" id="vehicle" >
<option value="" disabled selected hidden>Choose VehicleType...</option>
<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>
<br>
<br>
</td>
</tr>
</tbody>
</table>
<button><a href="predict.html" >Submit</a></button>
</form>
</section>
</body>
</html>

```

## Integrated Flask:

```
# 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 = "Qo9j8ni7qMJ8j1C8VFDRFHbuGRAhYWcTlkVqnYg1AGkE"
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("\n\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}]}
X}}}
```

```
response_scoring = requests.post('https://us-south.ml.cloud.ibm.com/ml/v4/deployments/7f67cbcd-6222-413b-9901-b2a72807ac82/predictions?version=2022-10-30', 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)
```