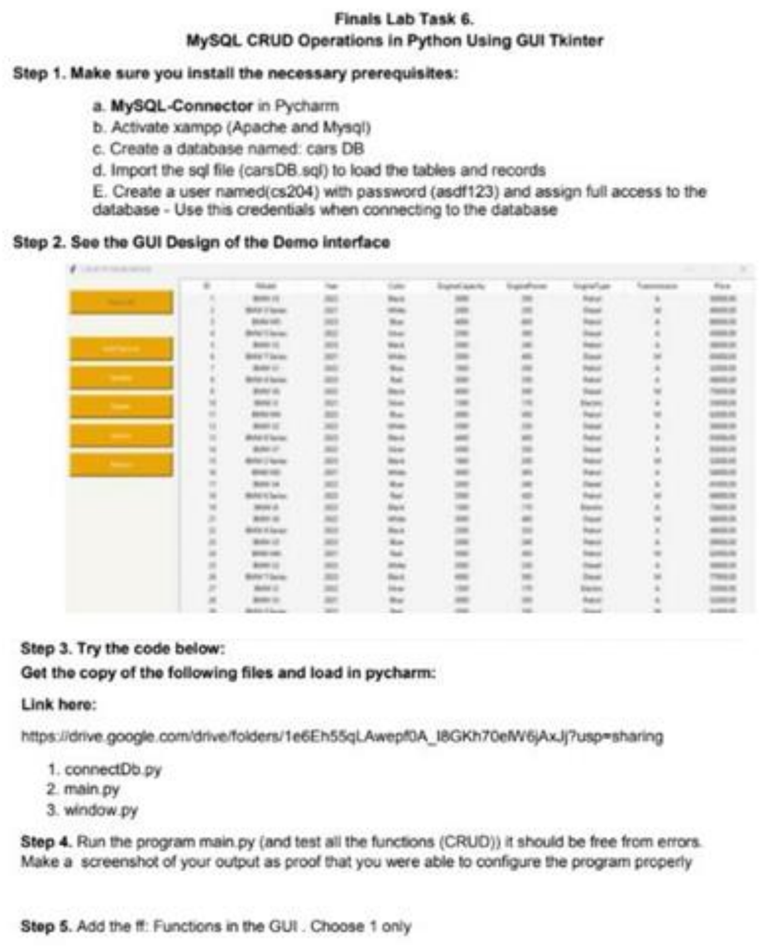
Bonillo, Loren    C204

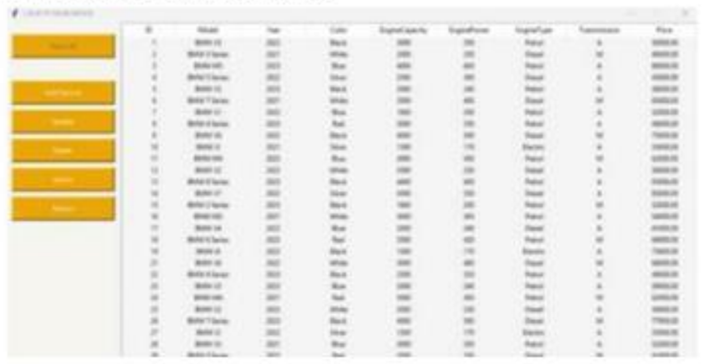


**Finals Lab Task 6.**
**MySQL CRUD Operations in Python Using GUI Tkinter**

**Step 1. Make sure you install the necessary prerequisites:**

a. **MySQL-Connector** in Pycharm
b. Activate xampp (Apache and Mysql)
c. Create a database named: cars DB
d. Import the sql file (carsDB.sql) to load the tables and records
E. Create a user named(cs204) with password (asdf123) and assign full access to the database - Use this credentials when connecting to the database

**Step 2. See the GUI Design of the Demo interface**

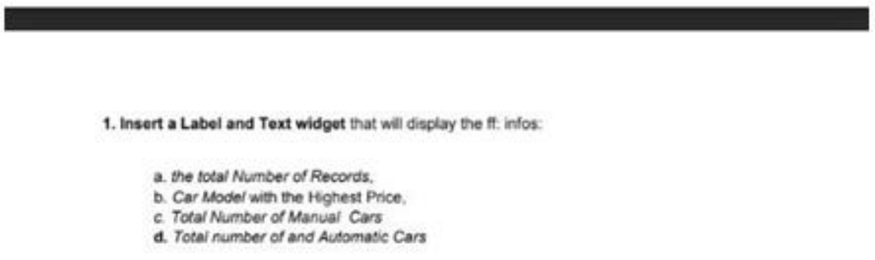


**Step 3. Try the code below:**
**Get the copy of the following files and load in pycharm:**
**Link here:**
https://drive.google.com/drive/folders/1e6Eh55qLAwepf0A_I8GKh70eW6jAxJj?usp=sharing

1. connectDb.py
2. main.py
3. window.py

**Step 4.** Run the program main.py (and test all the functions (CRUD)) it should be free from errors. Make a screenshot of your output as proof that you were able to configure the program properly

**Step 5.** Add the ff: Functions in the GUI . Choose 1 only



1. **Insert a Label and Text widget** that will display the ff: infos:

a. *the total Number of Records,*
b. *Car Model* with the Highest Price,
c. *Total Number of Manual Cars*
d. *Total number of and Automatic Cars*

***Source Code:***

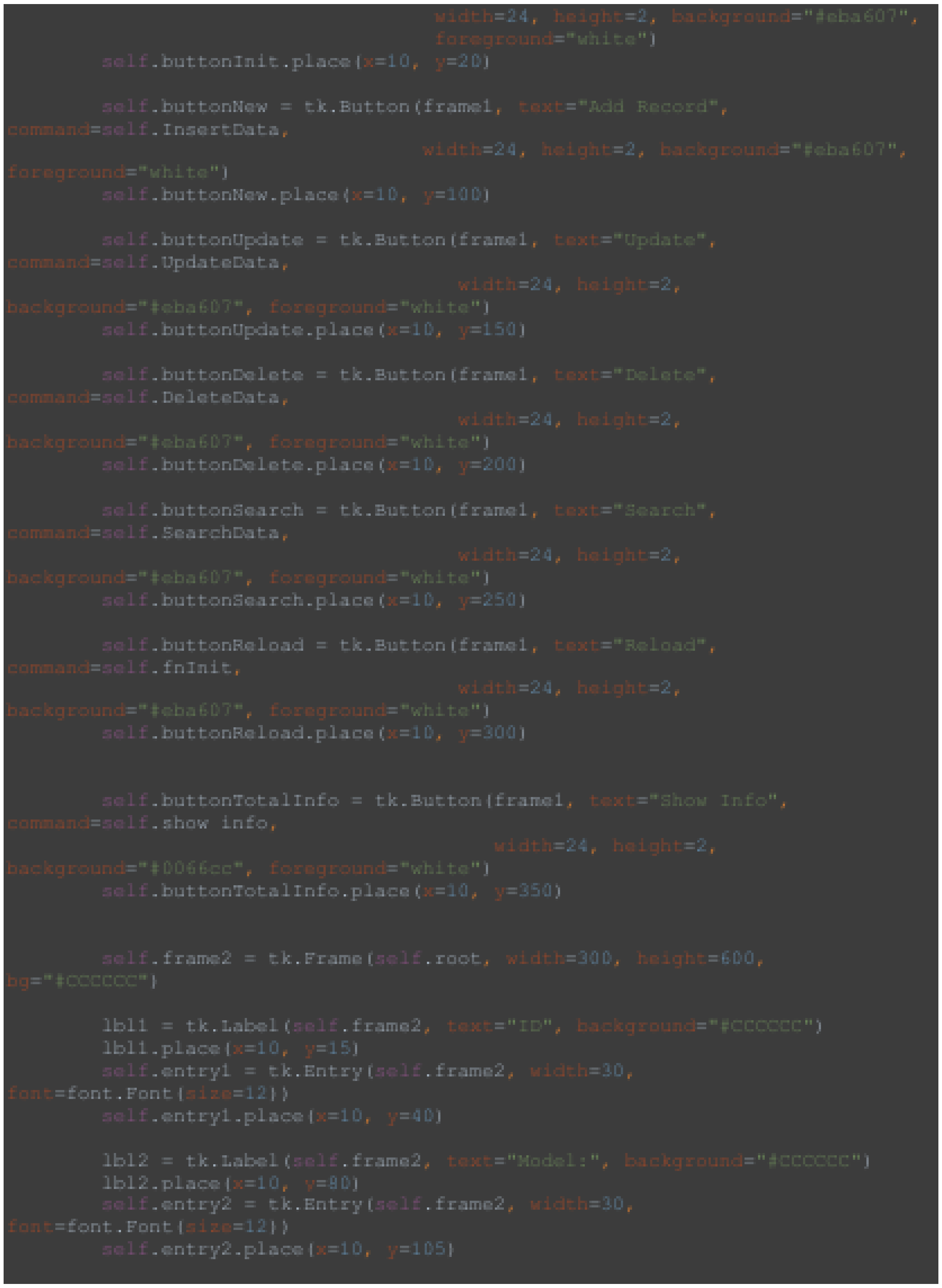
**(connectDB.py)**

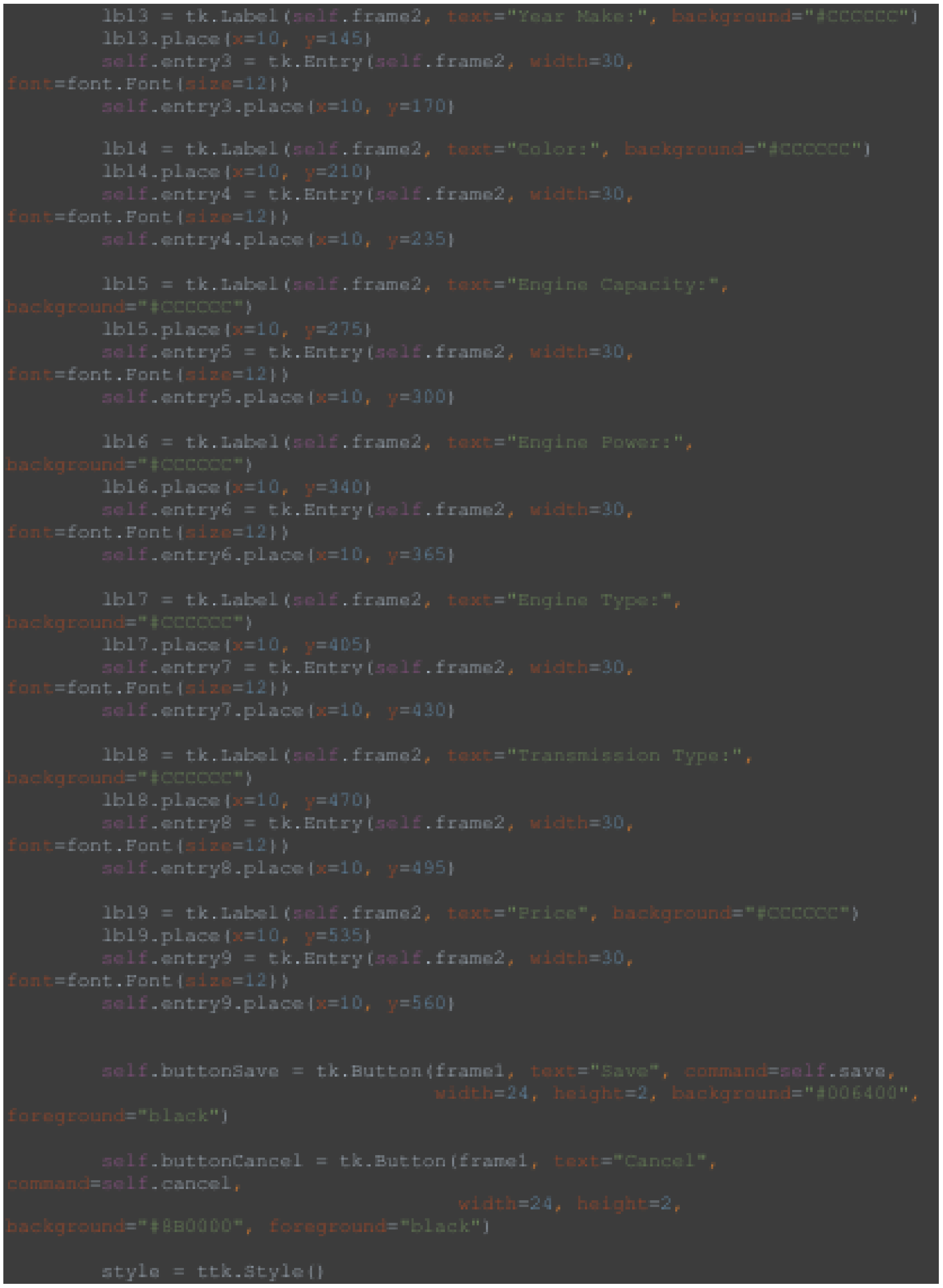
```python
import mysql.connector
from tkinter import messagebox

class ConnectDB:
    def __init__(self, host, user, password, database):
        self.host = host
        self.user = user
        self.password = password
        self.database = database
        self.connectDB = None

    def connect(self):
        try:
            self.connectDB = mysql.connector.connect(
                host=self.host,
                user=self.user,
                password=self.password,
                database=self.database,
                ssl_disabled=True
            )
            print("Successfully connected to the database!")
        except mysql.connector.Error as error:
            print("Something went wrong connecting to the database: ", error)

    def disconnect(self):
        if self.connectDB:
            self.connectDB.close()
            print("Successfully disconnected from the database!")

    def execute_insert(self, table, id, model, year, color, capacity, power,
type, transmission, price):
        sql = f"INSERT INTO {table}(id, model, year, color, engineCapacity,
enginePower, engineType, transmission, price) VALUES({id},'{model}',
'{year}', '{color}', {capacity},{power}, '{type}','{transmission}',{price})"
        self.commit_to_db(sql)

    def execute_delete(self, table, id):
        sql = f"DELETE FROM {table} WHERE id = {id}"
        self.commit_to_db(sql)

    def execute_update(self, table, id, model, year, color, capacity, power,
engineType, transmission, price):
        sql = f"UPDATE {table} SET model='{model}', year='{year}',
color='{color}', engineCapacity={capacity}, enginePower={power},
engineType='{engineType}',transmission='{transmission}', price={price} WHERE
id={id}"
        self.commit_to_db(sql)

    def commit_to_db(self, sql):
        cursor = self.connectDB.cursor()
        try:
            cursor.execute(sql)
            self.connectDB.commit()
```

```
            print("Query successfully executed")
            messagebox.showinfo("Successfully", "Query successfully executed.
Good Work!")
        except mysql.connector.Error as error:
            self.connectDB.rollback()
            print("Error executing the query:", error)
            messagebox.showerror("Error", "Duplicate ID entry or invalid
input, please try again!")

    def execute select(self, table):
        sql = f"SELECT * FROM {table}"
        cursor = self.connectDB.cursor()
        try:
            cursor.execute(sql)
            rows = cursor.fetchall()
            return rows
        except mysql.connector.Error as error:
            print("Error executing the query:", error)
            return []
```

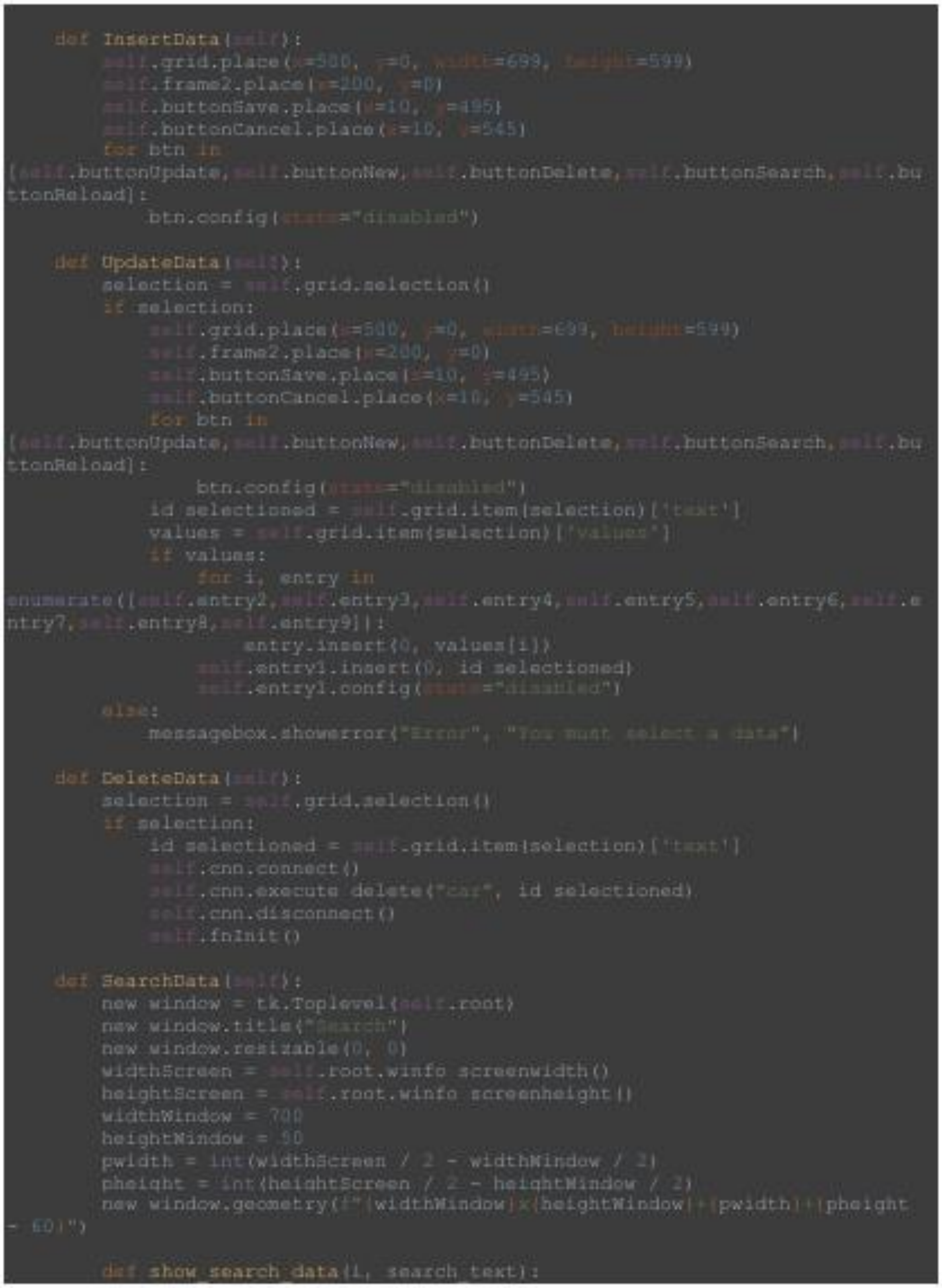
**(window.py)**

```
import tkinter as tk
from tkinter import font
from tkinter import ttk
from connectDB import *
from tkinter import messagebox

class Window:
    cnn = ConnectDB(host="localhost", user="cs204", password="asdf123",
database="cars db")

    def   init  (self, root):
        self.root = root
        self.settings()
        self.create widgets()

    def settings(self):
        self.root.title("CRUD PYTHON MYSQL - BMWCars")
        self.root.resizable(0, 0)

        widthScreen = self.root.winfo screenwidth()
        heightScreen = self.root.winfo screenheight()
        widthWindow = 1200
        heightWindow = 600
        pwidth = int(widthScreen / 2 - widthWindow / 2)
        pheight = int(heightScreen / 2 - heightWindow / 2)
        self.root.geometry(f"{widthWindow}x{heightWindow}+{pwidth}+{pheight -
30}")

    def create widgets(self):
        frame1 = tk.Frame(self.root, width=200, height=600, bg="#f7f5f0")
        frame1.place(x=0, y=0)

        self.buttonInit = tk.Button(frame1, text="Show All",
command=self.fnInit,
```


```
                                    width=24, height=2, background="#eba607",
                                    foreground="white")
        self.buttonInit.place(x=10, y=20)

        self.buttonNew = tk.Button(frame1, text="Add Record",
command=self.InsertData,
                                   width=24, height=2, background="#eba607",
foreground="white")
        self.buttonNew.place(x=10, y=100)

        self.buttonUpdate = tk.Button(frame1, text="Update",
command=self.UpdateData,
                                      width=24, height=2,
background="#eba607", foreground="white")
        self.buttonUpdate.place(x=10, y=150)

        self.buttonDelete = tk.Button(frame1, text="Delete",
command=self.DeleteData,
                                      width=24, height=2,
background="#eba607", foreground="white")
        self.buttonDelete.place(x=10, y=200)

        self.buttonSearch = tk.Button(frame1, text="Search",
command=self.SearchData,
                                      width=24, height=2,
background="#eba607", foreground="white")
        self.buttonSearch.place(x=10, y=250)

        self.buttonReload = tk.Button(frame1, text="Reload",
command=self.fnInit,
                                      width=24, height=2,
background="#eba607", foreground="white")
        self.buttonReload.place(x=10, y=300)


        self.buttonTotalInfo = tk.Button(frame1, text="Show Info",
command=self.show info,
                                         width=24, height=2,
background="#0066cc", foreground="white")
        self.buttonTotalInfo.place(x=10, y=350)


        self.frame2 = tk.Frame(self.root, width=300, height=600,
bg="#CCCCCC")

        lbl1 = tk.Label(self.frame2, text="ID", background="#CCCCCC")
        lbl1.place(x=10, y=15)
        self.entry1 = tk.Entry(self.frame2, width=30,
font=font.Font(size=12))
        self.entry1.place(x=10, y=40)

        lbl2 = tk.Label(self.frame2, text="Model:", background="#CCCCCC")
        lbl2.place(x=10, y=80)
        self.entry2 = tk.Entry(self.frame2, width=30,
font=font.Font(size=12))
        self.entry2.place(x=10, y=105)
```



```
        lbl3 = tk.Label(self.frame2, text="Year Make:", background="#CCCCCC")
        lbl3.place(x=10, y=145)
        self.entry3 = tk.Entry(self.frame2, width=30,
font=font.Font(size=12))
        self.entry3.place(x=10, y=170)

        lbl4 = tk.Label(self.frame2, text="Color:", background="#CCCCCC")
        lbl4.place(x=10, y=210)
        self.entry4 = tk.Entry(self.frame2, width=30,
font=font.Font(size=12))
        self.entry4.place(x=10, y=235)

        lbl5 = tk.Label(self.frame2, text="Engine Capacity:",
background="#CCCCCC")
        lbl5.place(x=10, y=275)
        self.entry5 = tk.Entry(self.frame2, width=30,
font=font.Font(size=12))
        self.entry5.place(x=10, y=300)

        lbl6 = tk.Label(self.frame2, text="Engine Power:",
background="#CCCCCC")
        lbl6.place(x=10, y=340)
        self.entry6 = tk.Entry(self.frame2, width=30,
font=font.Font(size=12))
        self.entry6.place(x=10, y=365)

        lbl7 = tk.Label(self.frame2, text="Engine Type:",
background="#CCCCCC")
        lbl7.place(x=10, y=405)
        self.entry7 = tk.Entry(self.frame2, width=30,
font=font.Font(size=12))
        self.entry7.place(x=10, y=430)

        lbl8 = tk.Label(self.frame2, text="Transmission Type:",
background="#CCCCCC")
        lbl8.place(x=10, y=470)
        self.entry8 = tk.Entry(self.frame2, width=30,
font=font.Font(size=12))
        self.entry8.place(x=10, y=495)

        lbl9 = tk.Label(self.frame2, text="Price", background="#CCCCCC")
        lbl9.place(x=10, y=535)
        self.entry9 = tk.Entry(self.frame2, width=30,
font=font.Font(size=12))
        self.entry9.place(x=10, y=560)


        self.buttonSave = tk.Button(frame1, text="Save", command=self.save,
                                    width=24, height=2, background="#006400",
foreground="black")

        self.buttonCancel = tk.Button(frame1, text="Cancel",
command=self.cancel,
                                      width=24, height=2,
background="#8B0000", foreground="black")

        style = ttk.Style()
        style.configure("Custom.Treeview", background="whitesmoke",
                        foreground="black")


        self.grid = ttk.Treeview(self.root, columns=("col1", "col2", "col3",
"col4"
                                                      , "col5", "col6",
"col7", "col8"),
                                 style="Custom.Treeview")
        self.grid.column("#0", width=50, anchor=tk.CENTER)
        for i in range(1, 9):
            self.grid.column(f"col{i}", width=70, anchor=tk.CENTER)

        self.grid.heading("#0", text="ID")
        self.grid.heading("col1", text="Model")
        self.grid.heading("col2", text="Year")
        self.grid.heading("col3", text="Color")
        self.grid.heading("col4", text="EngineCapacity")
        self.grid.heading("col5", text="EnginePower")
        self.grid.heading("col6", text="EngineType")
        self.grid.heading("col7", text="Transmission")
        self.grid.heading("col8", text="Price")

        self.grid.place(x=200, y=0, width=999, height=599)


    def show_info(self):
        self.cnn.connect()
        data = self.cnn.execute_select("car")
        total_records = len(data)
        highest_price_car = max(data, key=lambda x: x[8]) if data else None
        highest_price_model = highest_price_car[1] if highest_price_car else
"N/A"
        manual_count = sum(1 for row in data if row[7].upper() == "M")
        automatic_count = sum(1 for row in data if row[7].upper() == "A")
        self.cnn.disconnect()

        messagebox.showinfo("Car Info",
                            f"Total Records: {total_records}\n"
                            f"Car with Highest Price:
{highest_price_model}\n"
                            f"Total Manual Cars: {manual_count}\n"
                            f"Total Automatic Cars: {automatic_count}")

    def fnInit(self):
        self.grid.delete(*self.grid.get_children())
        self.cnn.connect()
        data = self.cnn.execute_select("car")
        for row in data:
            self.grid.insert("", tk.END, text=row[0],
                             values=row[1:])
        self.cnn.disconnect()
        self.buttonInit.config(state="disabled")

    def cancel(self):
        self.buttonSave.place_forget()
        self.buttonCancel.place_forget()
        self.grid.place(x=200, y=0, width=999, height=599)
        self.entry1.config(state="normal")
        for entry in [self.entry1,self.entry2,self.entry3,self.entry4,

self.entry5,self.entry6,self.entry7,self.entry8,self.entry9]:
            entry.delete(0, "end")
        for btn in
[self.buttonUpdate,self.buttonNew,self.buttonDelete,self.buttonSearch,self.bu
ttonReload]:
            btn.config(state="normal")

    def save(self):
        txtid = txtmodel = txtyear = txtcolor = txttype = txttrans = ""
        txtcapacity = txtpower = 0
        txtprice = 0.0

        try:
            txtid = int(self.entry1.get())
            txtmodel = self.entry2.get()
            txtyear = self.entry3.get()
            txtcolor = self.entry4.get()
            txtcapacity = int(self.entry5.get())
            txtpower = int(self.entry6.get())
            txttype = self.entry7.get()
            txttrans = self.entry8.get()
            txtprice = float(self.entry9.get())
        except ValueError:
            messagebox.showerror("Error", "All fields must be filled
correctly.")
            return
        finally:
            for entry in [self.entry1,self.entry2,self.entry3,self.entry4,

self.entry5,self.entry6,self.entry7,self.entry8,self.entry9]:
                entry.delete(0, "end")

        self.cnn.connect()
        if self.entry1.cget("state") == "normal":
            self.cnn.execute_insert("car", txtid, txtmodel, txtyear,
txtcolor,
                                    txtcapacity, txtpower, txttype, txttrans,
txtprice)
        else:
            self.cnn.execute_update("car", txtid, txtmodel, txtyear,
txtcolor,
                                    txtcapacity, txtpower, txttype, txttrans,
txtprice)
        self.cnn.disconnect()
        self.fnInit()
        self.buttonSave.place_forget()
        self.buttonCancel.place_forget()

        for btn in
[self.buttonUpdate,self.buttonNew,self.buttonDelete,self.buttonSearch,self.bu
ttonReload]:
            btn.config(state="normal")
        self.entry1.config(state="normal")
```



```
    def InsertData(self):
        self.grid.place(x=500, y=0, width=699, height=599)
        self.frame2.place(x=200, y=0)
        self.buttonSave.place(x=10, y=495)
        self.buttonCancel.place(x=10, y=545)
        for btn in
[self.buttonUpdate,self.buttonNew,self.buttonDelete,self.buttonSearch,self.bu
ttonReload]:
            btn.config(state="disabled")

    def UpdateData(self):
        selection = self.grid.selection()
        if selection:
            self.grid.place(x=500, y=0, width=699, height=599)
            self.frame2.place(x=200, y=0)
            self.buttonSave.place(x=10, y=495)
            self.buttonCancel.place(x=10, y=545)
            for btn in
[self.buttonUpdate,self.buttonNew,self.buttonDelete,self.buttonSearch,self.bu
ttonReload]:
                btn.config(state="disabled")
            id selectioned = self.grid.item(selection)['text']
            values = self.grid.item(selection)['values']
            if values:
                for i, entry in
enumerate([self.entry2,self.entry3,self.entry4,self.entry5,self.entry6,self.e
ntry7,self.entry8,self.entry9]):
                    entry.insert(0, values[i])
                self.entry1.insert(0, id selectioned)
                self.entry1.config(state="disabled")
        else:
            messagebox.showerror("Error", "You must select a data")

    def DeleteData(self):
        selection = self.grid.selection()
        if selection:
            id selectioned = self.grid.item(selection)['text']
            self.cnn.connect()
            self.cnn.execute delete("car", id selectioned)
            self.cnn.disconnect()
            self.fnInit()

    def SearchData(self):
        new window = tk.Toplevel(self.root)
        new window.title("Search")
        new window.resizable(0, 0)
        widthScreen = self.root.winfo screenwidth()
        heightScreen = self.root.winfo screenheight()
        widthWindow = 700
        heightWindow = 50
        pwidth = int(widthScreen / 2 - widthWindow / 2)
        pheight = int(heightScreen / 2 - heightWindow / 2)
        new window.geometry(f"{widthWindow}x{heightWindow}+{pwidth}+{pheight
- 60}")

        def show_search_data(i, search_text):
```

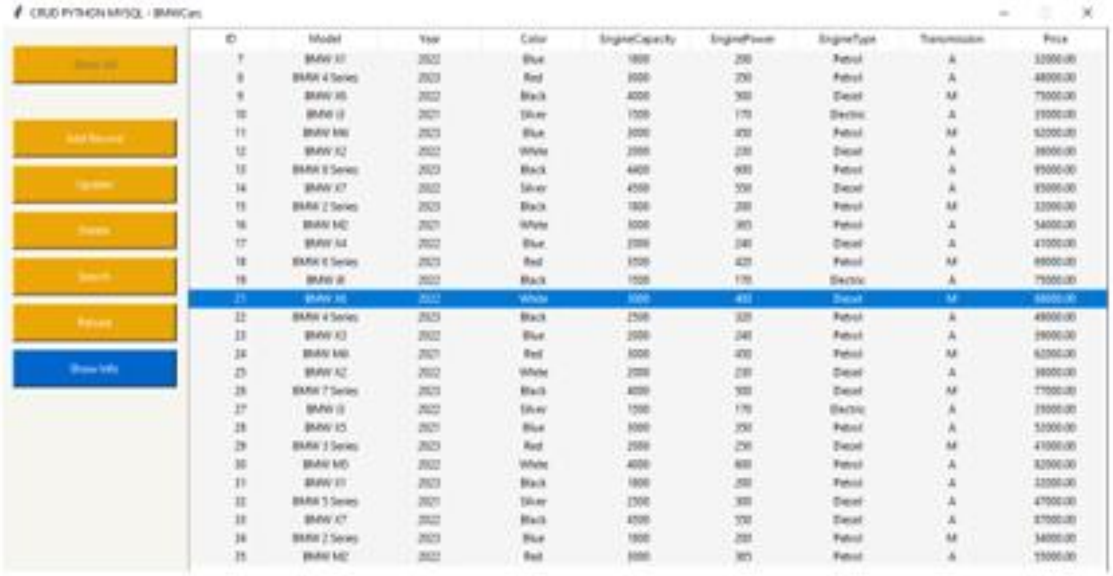
```python
            found_items = []
            all_items_values = []
            self.cnn.connect()
            data = self.cnn.execute_select("car")
            self.cnn.disconnect()
            all_items_values = list(data)
            for j in range(len(all_items_values)):
                if search_text.lower() ==
str(all_items_values[j][i]).lower():
                    found_items.append(all_items_values[j])
            self.grid.delete(*self.grid.get_children())
            for data in found_items:
                self.grid.insert('', tk.END, text=data[0], values=data[1:])
            new_window.destroy()

        def get_selected_option(search_text):
            selected_option = radio_var.get()
            if selected_option == "option1":
                show_search_data(0, search_text)
            elif selected_option == "option2":
                show_search_data(1, search_text)
            elif selected_option == "option3":
                show_search_data(2, search_text)
            elif selected_option == "option4":
                show_search_data(8, search_text)
            else:
                show_search_data(0, search_text)

        radio_var = tk.StringVar()
        ttk.Radiobutton(new_window, text="Id", variable=radio_var,
value="option1").place(x=30, y=12)
        ttk.Radiobutton(new_window, text="Model", variable=radio_var,
value="option2").place(x=80, y=12)
        ttk.Radiobutton(new_window, text="Year", variable=radio_var,
value="option3").place(x=160, y=12)
        ttk.Radiobutton(new_window, text="Price", variable=radio_var,
value="option4").place(x=240, y=12)
        entry_search = tk.Entry(new_window, width=30,
font=font.Font(size=10))
        entry_search.place(x=320, y=14)
        ttk.Button(new_window, text="Get Selected Option", command=lambda:
get_selected_option(entry_search.get())).place(x=550, y=11)
```

**(main.py)**

```python
import tkinter as tk
import window

def main():
    root = tk.Tk()
    crud = window.Window(root)
    root.mainloop()

if __name__ == "__main__":
    main()
```

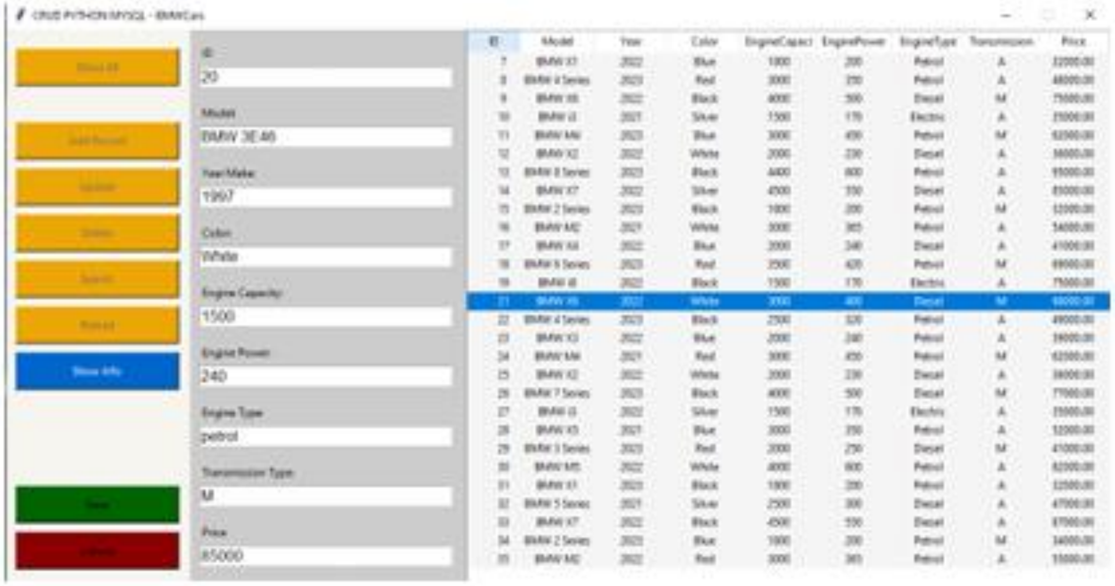
***Sample Output:***

**Show All:**



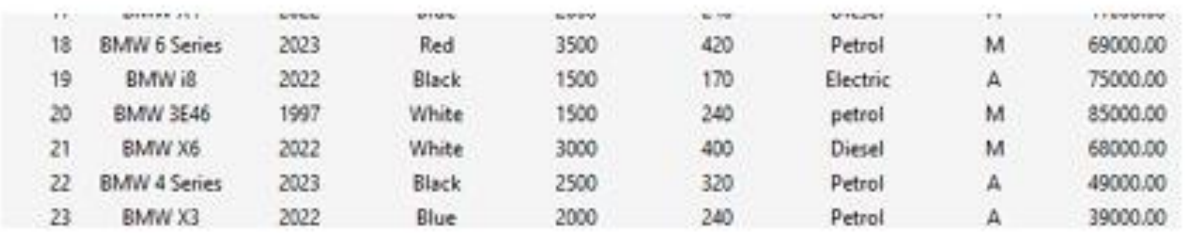
| ID | Model | Year | Color | EngineCapacity | EnginePower | EngineType | Transmission | Price |
|---|---|---|---|---|---|---|---|---|
| 7 | BMW X1 | 2022 | Blue | 1800 | 200 | Petrol | A | 32000.00 |
| 8 | BMW 4 Series | 2023 | Red | 3000 | 250 | Petrol | A | 48000.00 |
| 9 | BMW X6 | 2022 | Black | 4000 | 300 | Diesel | M | 75000.00 |
| 10 | BMW i3 | 2021 | Silver | 1500 | 170 | Electric | A | 35000.00 |
| 11 | BMW M4 | 2023 | Blue | 3000 | 450 | Petrol | M | 62000.00 |
| 12 | BMW X2 | 2022 | White | 2000 | 230 | Diesel | A | 38000.00 |
| 13 | BMW 8 Series | 2023 | Black | 4400 | 600 | Petrol | A | 95000.00 |
| 14 | BMW X7 | 2022 | Silver | 4500 | 550 | Diesel | A | 85000.00 |
| 15 | BMW 2 Series | 2023 | Black | 1800 | 200 | Petrol | M | 32000.00 |
| 16 | BMW M2 | 2021 | White | 3000 | 365 | Petrol | A | 54000.00 |
| 17 | BMW X4 | 2022 | Blue | 2000 | 240 | Diesel | A | 41000.00 |
| 18 | BMW 6 Series | 2023 | Red | 3500 | 420 | Petrol | M | 69000.00 |
| 19 | BMW i8 | 2022 | Black | 1500 | 170 | Electric | A | 75000.00 |
| 21 | BMW X6 | 2022 | White | 3000 | 400 | Diesel | M | 68000.00 |
| 22 | BMW 4 Series | 2023 | Black | 2500 | 320 | Petrol | A | 49000.00 |
| 23 | BMW X3 | 2022 | Blue | 2000 | 240 | Petrol | A | 39000.00 |
| 24 | BMW M4 | 2021 | Red | 3000 | 450 | Petrol | M | 62000.00 |
| 25 | BMW X2 | 2022 | White | 2000 | 230 | Diesel | A | 38000.00 |
| 26 | BMW 7 Series | 2023 | Black | 4000 | 500 | Diesel | M | 77000.00 |
| 27 | BMW i3 | 2022 | Silver | 1500 | 170 | Electric | A | 35000.00 |
| 28 | BMW X5 | 2021 | Blue | 3000 | 350 | Petrol | A | 52000.00 |
| 29 | BMW 3 Series | 2023 | Red | 2000 | 250 | Diesel | M | 41000.00 |
| 30 | BMW M5 | 2022 | White | 4000 | 600 | Petrol | A | 82000.00 |
| 31 | BMW X1 | 2023 | Black | 1800 | 200 | Petrol | A | 32000.00 |
| 32 | BMW 5 Series | 2021 | Silver | 2500 | 300 | Diesel | A | 47000.00 |
| 33 | BMW X7 | 2022 | Black | 4500 | 550 | Diesel | A | 87000.00 |
| 34 | BMW 2 Series | 2023 | Blue | 1800 | 200 | Petrol | M | 34000.00 |
| 35 | BMW M2 | 2022 | Red | 3000 | 365 | Petrol | A | 55000.00 |

**Add:**



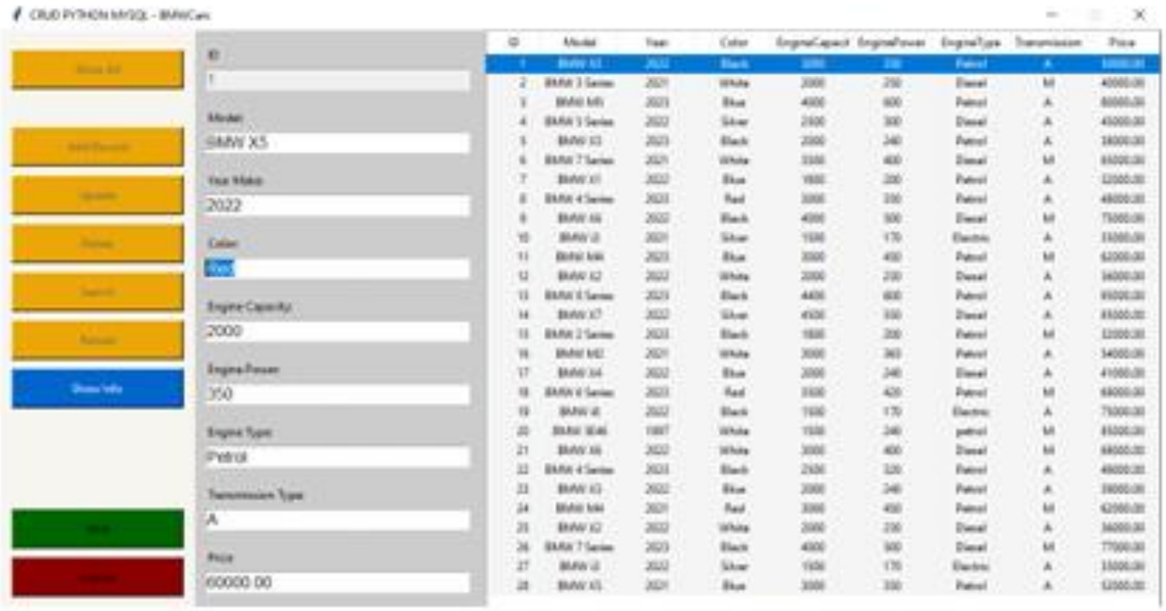
|  |  |
|---|---|
| ID | 20 |
| Model | BMW 3E46 |
| Year Make | 1997 |
| Color | White |
| Engine Capacity | 1500 |
| Engine Power | 240 |
| Engine Type | petrol |
| Transmission Type | M |
| Price | 85000 |

| ID | Model | Year | Color | EngineCapaci | EnginePower | EngineType | Transmission | Price |
|---|---|---|---|---|---|---|---|---|
| 7 | BMW X1 | 2022 | Blue | 1800 | 200 | Petrol | A | 32000.00 |
| 8 | BMW 4 Series | 2023 | Red | 3000 | 250 | Petrol | A | 48000.00 |
| 9 | BMW X6 | 2022 | Black | 4000 | 300 | Diesel | M | 75000.00 |
| 10 | BMW i3 | 2021 | Silver | 1500 | 170 | Electric | A | 35000.00 |
| 11 | BMW M4 | 2023 | Blue | 3000 | 450 | Petrol | M | 62000.00 |
| 12 | BMW X2 | 2022 | White | 2000 | 230 | Diesel | A | 38000.00 |
| 13 | BMW 8 Series | 2023 | Black | 4400 | 600 | Petrol | A | 95000.00 |
| 14 | BMW X7 | 2022 | Silver | 4500 | 550 | Diesel | A | 85000.00 |
| 15 | BMW 2 Series | 2023 | Black | 1800 | 200 | Petrol | M | 32000.00 |
| 16 | BMW M2 | 2021 | White | 3000 | 365 | Petrol | A | 54000.00 |
| 17 | BMW X4 | 2022 | Blue | 2000 | 240 | Diesel | A | 41000.00 |
| 18 | BMW 6 Series | 2023 | Red | 3500 | 420 | Petrol | M | 69000.00 |
| 19 | BMW i8 | 2022 | Black | 1500 | 170 | Electric | A | 75000.00 |
| 21 | BMW X6 | 2022 | White | 3000 | 400 | Diesel | M | 68000.00 |
| 22 | BMW 4 Series | 2023 | Black | 2500 | 320 | Petrol | A | 49000.00 |
| 23 | BMW X3 | 2022 | Blue | 2000 | 240 | Petrol | A | 39000.00 |
| 24 | BMW M4 | 2021 | Red | 3000 | 450 | Petrol | M | 62000.00 |
| 25 | BMW X2 | 2022 | White | 2000 | 230 | Diesel | A | 38000.00 |
| 26 | BMW 7 Series | 2023 | Black | 4000 | 500 | Diesel | M | 77000.00 |
| 27 | BMW i3 | 2022 | Silver | 1500 | 170 | Electric | A | 35000.00 |
| 28 | BMW X5 | 2021 | Blue | 3000 | 350 | Petrol | A | 52000.00 |
| 29 | BMW 3 Series | 2023 | Red | 2000 | 250 | Diesel | M | 41000.00 |
| 30 | BMW M5 | 2022 | White | 4000 | 600 | Petrol | A | 82000.00 |
| 31 | BMW X1 | 2023 | Black | 1800 | 200 | Petrol | A | 32000.00 |
| 32 | BMW 5 Series | 2021 | Silver | 2500 | 300 | Diesel | A | 47000.00 |
| 33 | BMW X7 | 2022 | Black | 4500 | 550 | Diesel | A | 87000.00 |
| 34 | BMW 2 Series | 2023 | Blue | 1800 | 200 | Petrol | M | 34000.00 |
| 35 | BMW M2 | 2022 | Red | 3000 | 365 | Petrol | A | 55000.00 |



| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 18 | BMW 6 Series | 2023 | Red | 3500 | 420 | Petrol | M | 69000.00 |
| 19 | BMW i8 | 2022 | Black | 1500 | 170 | Electric | A | 75000.00 |
| 20 | BMW 3E46 | 1997 | White | 1500 | 240 | petrol | M | 85000.00 |
| 21 | BMW X6 | 2022 | White | 3000 | 400 | Diesel | M | 68000.00 |
| 22 | BMW 4 Series | 2023 | Black | 2500 | 320 | Petrol | A | 49000.00 |
| 23 | BMW X3 | 2022 | Blue | 2000 | 240 | Petrol | A | 39000.00 |

**Update:**



ID
1

Model
BMW X5

Year Make
2022

Color
Red

Engine Capacity
2000

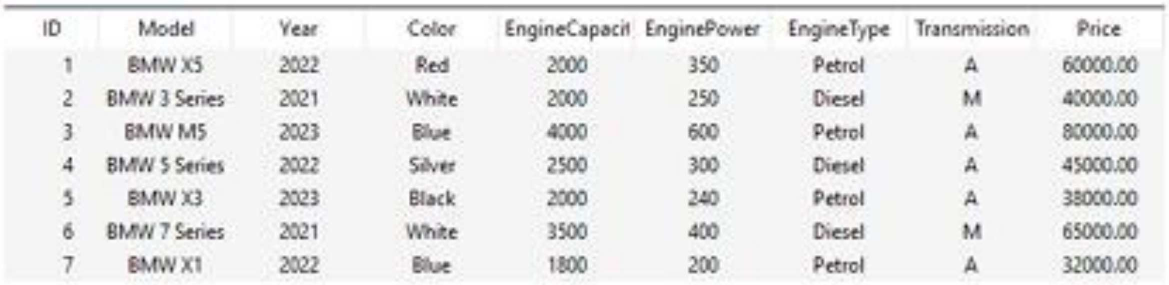
Engine Power
350

Engine Type
Petrol

Transmission Type
A

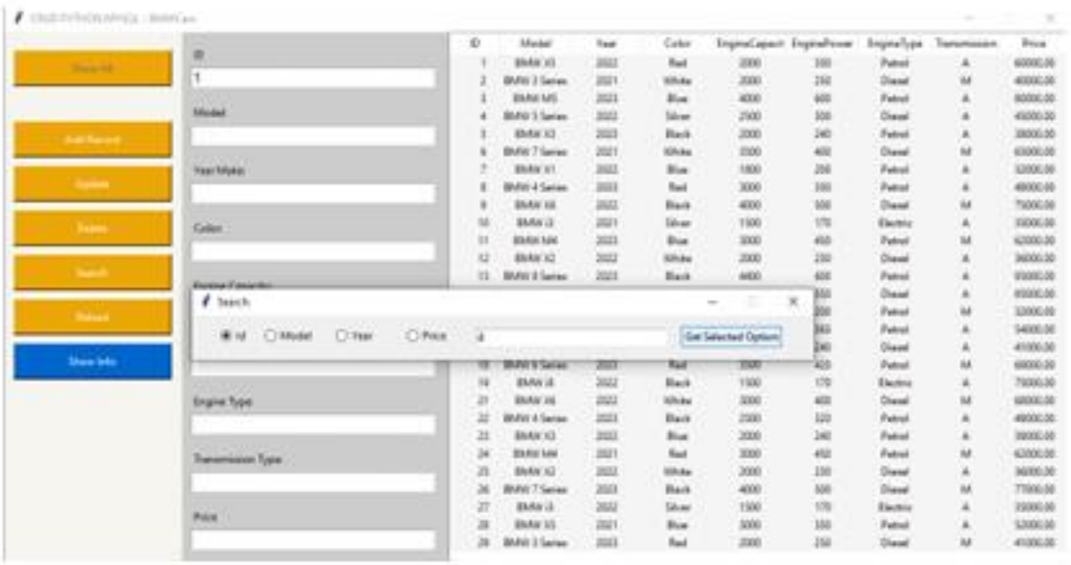
Price
60000.00

| ID | Model | Year | Color | EngineCapacit | EnginePower | EngineType | Transmission | Price |
|---|---|---|---|---|---|---|---|---|
| 1 | BMW X5 | 2022 | Black | [illegible] | [illegible] | Petrol | A | [illegible] |
| 2 | BMW 3 Series | 2021 | White | 2000 | 250 | Diesel | M | 40000.00 |
| 3 | BMW M5 | 2023 | Blue | 4000 | 600 | Petrol | A | 80000.00 |
| 4 | BMW 5 Series | 2022 | Silver | 2500 | 300 | Diesel | A | 45000.00 |
| 5 | BMW X3 | 2023 | Black | 2000 | 240 | Petrol | A | 38000.00 |
| 6 | BMW 7 Series | 2021 | White | 3500 | 400 | Diesel | M | 65000.00 |
| 7 | BMW X1 | 2022 | Blue | 1800 | 200 | Petrol | A | 32000.00 |
| 8 | BMW 4 Series | 2023 | Red | 3000 | 330 | Petrol | A | 48000.00 |
| 9 | BMW X6 | 2022 | Black | 4000 | 500 | Diesel | M | 75000.00 |
| 10 | BMW i3 | 2021 | Silver | 1500 | 170 | Electric | A | 35000.00 |
| 11 | BMW M4 | 2023 | Blue | 3000 | 450 | Petrol | M | 62000.00 |
| 12 | BMW X2 | 2022 | White | 2000 | 230 | Diesel | A | 36000.00 |
| 13 | BMW 8 Series | 2023 | Black | 4400 | 600 | Petrol | A | 85000.00 |
| 14 | BMW X7 | 2022 | Silver | 4500 | 330 | Diesel | A | 85000.00 |
| 15 | BMW 2 Series | 2023 | Black | 1800 | 200 | Petrol | M | 32000.00 |
| 16 | BMW M2 | 2021 | White | 3000 | 365 | Petrol | A | 54000.00 |
| 17 | BMW X4 | 2022 | Blue | 2000 | 240 | Diesel | A | 41000.00 |
| 18 | BMW 6 Series | 2023 | Red | 3500 | 420 | Petrol | M | 69000.00 |
| 19 | BMW i8 | 2022 | Black | 1500 | 170 | Electric | A | 75000.00 |
| 20 | BMW 3E46 | 1997 | White | 1500 | 240 | petrol | M | 85000.00 |
| 21 | BMW X6 | 2022 | White | 3000 | 400 | Diesel | M | 68000.00 |
| 22 | BMW 4 Series | 2023 | Black | 2500 | 320 | Petrol | A | 49000.00 |
| 23 | BMW X3 | 2022 | Blue | 2000 | 240 | Petrol | A | 39000.00 |
| 24 | BMW M4 | 2021 | Red | 3000 | 450 | Petrol | M | 62000.00 |
| 25 | BMW X2 | 2022 | White | 2000 | 230 | Diesel | A | 36000.00 |
| 26 | BMW 7 Series | 2023 | Black | 4000 | 500 | Diesel | M | 77000.00 |
| 27 | BMW i3 | 2022 | Silver | 1500 | 170 | Electric | A | 35000.00 |
| 28 | BMW X5 | 2021 | Blue | 3000 | 330 | Petrol | A | 52000.00 |



| ID | Model | Year | Color | EngineCapacit | EnginePower | EngineType | Transmission | Price |
|---|---|---|---|---|---|---|---|---|
| 1 | BMW X5 | 2022 | Red | 2000 | 350 | Petrol | A | 60000.00 |
| 2 | BMW 3 Series | 2021 | White | 2000 | 250 | Diesel | M | 40000.00 |
| 3 | BMW M5 | 2023 | Blue | 4000 | 600 | Petrol | A | 80000.00 |
| 4 | BMW 5 Series | 2022 | Silver | 2500 | 300 | Diesel | A | 45000.00 |
| 5 | BMW X3 | 2023 | Black | 2000 | 240 | Petrol | A | 38000.00 |
| 6 | BMW 7 Series | 2021 | White | 3500 | 400 | Diesel | M | 65000.00 |
| 7 | BMW X1 | 2022 | Blue | 1800 | 200 | Petrol | A | 32000.00 |

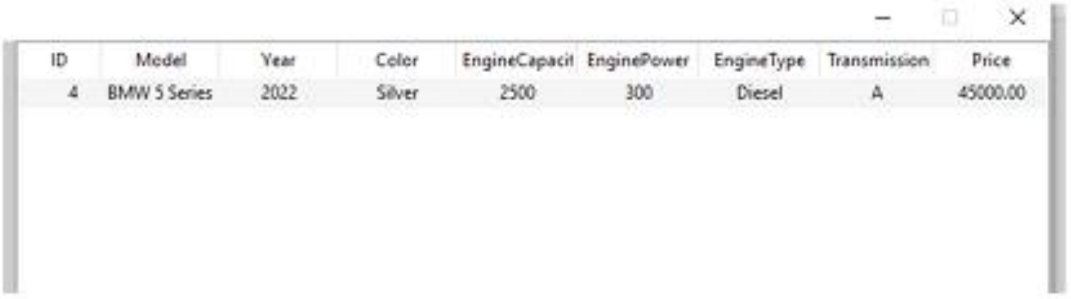
**Search:**



ID: 1

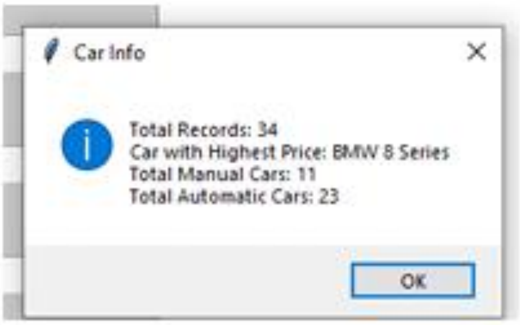
Search: [✓ Id] Model Year Price 4

| ID | Model | Year | Color | EngineCapacit | EnginePower | EngineType | Transmission | Price |
|---|---|---|---|---|---|---|---|---|
| 1 | BMW X5 | 2022 | Red | 2000 | 300 | Petrol | A | 60000.00 |
| 2 | BMW 3 Series | 2021 | White | 2000 | 250 | Diesel | M | 40000.00 |
| 3 | BMW M5 | 2023 | Blue | 4000 | 600 | Petrol | A | 80000.00 |
| 4 | BMW 5 Series | 2022 | Silver | 2500 | 300 | Diesel | A | 45000.00 |
| 5 | BMW X3 | 2023 | Black | 2000 | 240 | Petrol | A | 38000.00 |
| 6 | BMW 7 Series | 2021 | White | 3500 | 400 | Diesel | M | 63000.00 |
| 7 | BMW X1 | 2022 | Blue | 1800 | 200 | Petrol | A | 32000.00 |
| 8 | BMW 4 Series | 2023 | Red | 3000 | 350 | Petrol | A | 48000.00 |
| 9 | BMW X6 | 2022 | Black | 4000 | 500 | Diesel | M | 75000.00 |
| 10 | BMW i3 | 2021 | Silver | 1500 | 170 | Electric | A | 35000.00 |
| 11 | BMW M4 | 2023 | Blue | 3000 | 450 | Petrol | M | 62000.00 |
| 12 | BMW X2 | 2022 | White | 2000 | 230 | Diesel | A | 36000.00 |
| 13 | BMW 8 Series | 2023 | Black | 4400 | 600 | Petrol | A | 95000.00 |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | 350 | Diesel | A | 85000.00 |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | 200 | Petrol | M | 32000.00 |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | 365 | Petrol | A | 54000.00 |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | 240 | Diesel | A | 41000.00 |
| 18 | BMW 6 Series | 2023 | Red | 3500 | 420 | Petrol | M | 68000.00 |
| 19 | BMW i8 | 2022 | Black | 1500 | 170 | Electric | A | 75000.00 |
| 21 | BMW X6 | 2022 | White | 3000 | 400 | Diesel | M | 68000.00 |
| 22 | BMW 4 Series | 2023 | Black | 2500 | 320 | Petrol | A | 49000.00 |
| 23 | BMW X3 | 2022 | Blue | 2000 | 240 | Petrol | A | 39000.00 |
| 24 | BMW M4 | 2021 | Red | 3000 | 450 | Petrol | M | 62000.00 |
| 25 | BMW X2 | 2022 | White | 2000 | 230 | Diesel | A | 36000.00 |
| 26 | BMW 7 Series | 2023 | Black | 4000 | 500 | Diesel | M | 77000.00 |
| 27 | BMW i3 | 2022 | Silver | 1500 | 170 | Electric | A | 35000.00 |
| 28 | BMW X5 | 2021 | Blue | 3000 | 350 | Petrol | A | 52000.00 |
| 29 | BMW 3 Series | 2023 | Red | 2000 | 250 | Diesel | M | 41000.00 |



| ID | Model | Year | Color | EngineCapacit | EnginePower | EngineType | Transmission | Price |
|---|---|---|---|---|---|---|---|---|
| 4 | BMW 5 Series | 2022 | Silver | 2500 | 300 | Diesel | A | 45000.00 |

**Show Info:**



Total Records: 34
Car with Highest Price: BMW 8 Series
Total Manual Cars: 11
Total Automatic Cars: 23