

PM SHRI KENDRIYA VIDYALAYA
HEBBAL



INFORMATICS PRACTICES PROJECT
CAR RENTALS

-RUHAIM ANWAR

-U NIHANT REDDY

-SHASHANK R

12 'D'
ROLL NO-



CERTIFICATE

THIS IS TO CERTIFY RUHAIM ANWAR , U
NIHANT REDDY AND , SHASHANK.R OF CLASS
XII OF

PM SHRI KENDRIYA VIDYALAYA, HEBBAL
HAVE COMPLETED THEIR PROJECT UNDER MY
SUPERVISION. THEY HAVE TAKEN PROPER
CARE AND SHOWN UTMOST SINCERITY IN
COMPLETION OF THE PROJECT. I CERTIFY THAT
THIS PROJECT IS UP TO MY EXPECTATIONS
AND AS PER THE GUIDELINES ISSUED BY CBSE

INTERNAL
EXAMINER

EXTERNAL
EXAMINER





ACKNOWLEDGEMENT

I would like to express my special thanks of gratitude to my teacher MR RAMESHA who gave us the golden opportunity to do this wonderful project of informatic practices on CAR RENTALS. Who also helped me in completing the project. I came to know about so many new things I am really thankful to them. Secondly, I would also like to thank my parents and friends who helped me a lot in finalizing this project within the limited time frame.

RUHAIM ANWAR

U NIHANT REDDY

HASHANK R

INTRODUCTION

Python is a high-level, interpreted programming language that is widely used for its simplicity, readability, and versatility. Designed by **Guido van Rossum** and first released in 1991, Python emphasizes code readability with its clean and straightforward syntax. It's an excellent language for beginners while also being powerful enough for advanced applications.

KEY FEATURES OF PYTHON:

1. **Simple and Readable:** Easy to learn and understand, with English-like syntax.
2. **Interpreted:** Executes code line-by-line, simplifying debugging.
3. **Versatile:** Suitable for web development, data science, AI, automation, and more.
4. **Cross-Platform:** Works on Windows, macOS, and Linux seamlessly.

WHY PYTHON ??

- **Beginner-Friendly:** Great for those new to programming.
- **High Demand:** Python is one of the most sought-after languages in the job market.
- **Diverse Applications:**
 - **Web Development:** Frameworks like Flask and Django.
 - **Data Science:** Libraries like Pandas, NumPy, and Matplotlib.
 - **Machine Learning:** Tools like TensorFlow and PyTorch.
 - **Automation:** Automating repetitive tasks using scripts.
 - **Game Development:** Libraries like Pygame.

BASIC PYTHON SYNTAX

Here are a few examples to get started:

Printing to the Screen

```
print("Hello, World!")
```

Variables and Data Types

Variables and their types

```
x = 10      # Integer
```

```
y = 3.14   # Float
```

```
name = "Python" # String
```

```
is_easy = True # Boolean
```

```
print(x, y, name, is_easy)
```

PYTHON LIBRARIES :

1. **Pandas**: For data manipulation and analysis using DataFrames and tables.
2. **Matplotlib**: For creating visualizations like graphs and charts.
3. **NumPy**: For numerical computations and handling large arrays.
4. **SQLite3**: For database management and storage.

These libraries are used for data handling, visualization, and small-scale database projects.

SOURCE CODE

```
import mysql.connector

import matplotlib.pyplot as plt

# MySQL connection setup
def connect_to_db():
    return mysql.connector.connect(
        host="localhost",
        user="root",
        password="root", # Replace with your MySQL password if set
        database="car_rental"
    )

# Initialize database and tables
def initialize_database_and_tables():
```

```
connection = mysql.connector.connect(
    host="localhost",
    user="root",
    password="root" # Replace with your MySQL password if set
)
cursor = connection.cursor()

# Create database if it doesn't exist
cursor.execute("CREATE DATABASE IF NOT EXISTS car_rental")
cursor.execute("USE car_rental")

# Create Users table
cursor.execute("""
    CREATE TABLE IF NOT EXISTS Users (
        UserID VARCHAR(50) PRIMARY KEY,
        UserName VARCHAR(100),
        Password VARCHAR(100)
    )

```

```
''''')
```

```
# Create Cars table
```

```
cursor.execute('''
```

```
CREATE TABLE IF NOT EXISTS Cars (
```

```
CarNo INT PRIMARY KEY,
```

```
CarName VARCHAR(100),
```

```
Brand VARCHAR(100),
```

```
Branch VARCHAR(100),
```

```
FuelType VARCHAR(50),
```

```
Cost INT,
```

```
Category VARCHAR(100)
```

```
)
```

```
''''')
```

```
# Create CarsBooked table
```

```
cursor.execute('''
```

```
CREATE TABLE IF NOT EXISTS CarsBooked (
```



```
connection.commit()
```

```
cursor.close()
```

```
connection.close()
```

```
# Add a new user
```

```
def add_user():
```

```
    connection = connect_to_db()
```

```
    cursor = connection.cursor()
```

```
    uid = input("Enter User ID: ")
```

```
    uname = input("Enter User Name: ")
```

```
    pwd = input("Enter Password: ")
```

```
    cursor.execute("INSERT INTO Users (UserID, UserName, Password) VALUES  
(%s, %s, %s)", (uid, uname, pwd))
```

```
    connection.commit()
```

```
print("User added successfully!")
```

```
cursor.close()
```

```
connection.close()
```

```
# Add a new car
```

```
def add_new_car():
```

```
    connection = connect_to_db()
```

```
    cursor = connection.cursor()
```

```
    carno = int(input("Enter Car Number: "))
```

```
    carname = input("Enter Car Name: ")
```

```
    brand = input("Enter Car Brand: ")
```

```
    branch = input("Enter Branch: ")
```

```
    fueltype = input("Enter Fuel Type: ")
```

```
    cost = int(input("Enter Cost per Day: "))
```

```
    category = input("Enter Category: ")
```

```
    cursor.execute("""
```

```
INSERT INTO Cars (CarNo, CarName, Brand, Branch, FuelType, Cost,  
Category)
```

```
VALUES (%s, %s, %s, %s, %s, %s, %s)
```

```
""", (carno, carname, brand, branch, fueltype, cost, category))
```

```
connection.commit()
```

```
print("Car added successfully!")
```

```
cursor.close()
```

```
connection.close()
```

```
# Show all cars
```

```
def show_cars():
```

```
    connection = connect_to_db()
```

```
    cursor = connection.cursor()
```

```
    cursor.execute("SELECT * FROM Cars")
```

```
    results = cursor.fetchall()
```

```
print("Cars:")
```

```
for row in results:
```

```
    print(row)
```

```
cursor.close()
```

```
connection.close()
```

```
# Book a car
```

```
def book_car():
```

```
    connection = connect_to_db()
```

```
    cursor = connection.cursor()
```

```
    carname = input("Enter Car Name to book: ")
```

```
    cursor.execute("SELECT Cost FROM Cars WHERE CarName = %s",  
(carname,))
```

```
    car = cursor.fetchone()
```

```
    if not car:
```

```
        print("Car not found!")
```

```
cursor.close()
```

```
connection.close()
```

```
return
```

```
username = input("Enter Your User Name: ")
```

```
# Check if the user exists
```

```
cursor.execute("SELECT * FROM Users WHERE UserName = %s",  
(username,))
```

```
user = cursor.fetchone()
```

```
if not user:
```

```
    print("User not found! Please add the user.")
```

```
    add_user_choice = input("Enter 'y' to add the user or any other key to  
cancel: ").lower()
```

```
    if add_user_choice == 'y':
```

```
        add_user()
```

```
    else:
```

```
cursor.close()
```

```
connection.close()
```

```
return
```

```
date_of_booking = input("Enter Date of Booking (YYYY-MM-DD): ")
```

```
number_of_days = int(input("Enter Number of Days: "))
```

```
total_cost = car[0] * number_of_days
```

```
cursor.execute("""
```

```
    INSERT INTO CarsBooked (CarName, UserName, DateOfBooking,  
NumberOfDays, TotalCost)
```

```
    VALUES (%s, %s, %s, %s, %s)
```

```
    """, (carname, username, date_of_booking, number_of_days,  
total_cost))
```

```
connection.commit()
```

```
print(f"Car booked successfully! Total cost: {total_cost}")
```

```
cursor.close()
```

```
connection.close()
```

```
# Show charts
```

```
def show_charts():
```

```
    print("Select Chart Type:")
```

```
    print("1 - Pie Chart: Distribution of Car Categories")
```

```
    print("2 - Bar Chart: Cars and Their Rental Costs")
```

```
    print("3 - Line Chart: Total Cars Booked by Date")
```

```
    choice = int(input("Enter your choice: "))
```

```
    if choice == 1:
```

```
        pie_chart()
```

```
    elif choice == 2:
```

```
        bar_chart()
```

```
    elif choice == 3:
```

```
        line_chart()
```

```
    else:
```

```
        print("Invalid choice. Please try again.")
```

```
def pie_chart():  
    connection = connect_to_db()  
    cursor = connection.cursor()  
  
    query = "SELECT Category, COUNT(*) AS Count FROM Cars GROUP BY  
Category"  
    cursor.execute(query)  
    results = cursor.fetchall()  
  
    if results:  
        categories = [row[0] for row in results]  
        counts = [row[1] for row in results]  
  
        plt.pie(counts, labels=categories, autopct='%1.1f%%', startangle=140)  
        plt.title("Distribution of Car Categories")  
        plt.show()  
    else:
```

```
print("No data available for Pie Chart.")
```

```
cursor.close()
```

```
connection.close()
```

```
def bar_chart():
```

```
    connection = connect_to_db()
```

```
    cursor = connection.cursor()
```

```
    query = "SELECT CarName, Cost FROM Cars"
```

```
    cursor.execute(query)
```

```
    results = cursor.fetchall()
```

```
    if results:
```

```
        car_names = [row[0] for row in results]
```

```
        costs = [row[1] for row in results]
```

```
        plt.bar(car_names, costs, color='skyblue')
```

```
plt.xlabel("Car Names")  
plt.ylabel("Rental Cost (per day)")  
plt.title("Cars and Their Rental Costs")  
plt.xticks(rotation=45)  
plt.tight_layout()  
plt.show()
```

else:

```
print("No data available for Bar Chart.")
```

```
cursor.close()
```

```
connection.close()
```

```
def line_chart():
```

```
    connection = connect_to_db()
```

```
    cursor = connection.cursor()
```

```
    query = """
```

```
        SELECT DateOfBooking, COUNT(*) AS TotalBookings
```

```
FROM CarsBooked
```

```
GROUP BY DateOfBooking
```

```
ORDER BY DateOfBooking
```

```
''''
```

```
cursor.execute(query)
```

```
results = cursor.fetchall()
```

```
if results:
```

```
    dates = [row[0] for row in results]
```

```
    bookings = [row[1] for row in results]
```

```
plt.plot(dates, bookings, marker='o', linestyle='-', color='green')
```

```
plt.xlabel("Date of Booking")
```

```
plt.ylabel("Total Bookings")
```

```
plt.title("Total Cars Booked by Date")
```

```
plt.xticks(rotation=45)
```

```
plt.tight_layout()
```

```
plt.show()
```

```
else:
```

```
    print("No data available for Line Chart.")
```

```
cursor.close()
```

```
connection.close()
```

```
# Main Menu
```

```
def show_menu():
```

```
    print("-----  
-----")
```

```
    print("                SHETTY LUXURY CAR RENTALS                ")
```

```
    print("-----  
-----")
```

```
    print("Press 1 - Add a User")
```

```
    print("Press 2 - Add a New Car")
```

```
    print("Press 3 - Show all Cars")
```

```
    print("Press 4 - Book a Car")
```

```
print("Press 5 - View Charts")  
  
print("Press 6 - Exit")  
  
choice = input("Enter your choice: ")  
  
if choice.isdigit():  
    return int(choice)  
  
else:  
    print("Invalid input. Please enter a valid choice.")  
  
    return -1
```

Main Program Execution

```
if __name__ == "__main__":  
  
    initialize_database_and_tables()  
  
    while True:  
  
        ch = show_menu()  
  
        if ch == 1:  
  
            add_user()  
  
        elif ch == 2:
```

```
    add_new_car()

elif ch == 3:

    show_cars()

elif ch == 4:

    book_car()

elif ch == 5:

    show_charts()

elif ch == 6:

    print("Exitting.....DEVELOPED BY: RUHAIM, NIHANT, SHASHANK")

    print("Thank you for visiting Luxury Car Rentals")

    break

else:

    print("Invalid Option Selected")
```

OUTPUT

```
-----  
SHETTY LUXURY CAR RENTALS  
-----  
Press 1 - Add a User  
Press 2 - Add a New Car  
Press 3 - Show all Cars  
Press 4 - Book a Car  
Press 5 - View Charts  
Press 6 - Exit  
Enter your choice:
```

ADDING A USER-

```
-----  
SHETTY LUXURY CAR RENTALS  
-----  
Press 1 - Add a User  
Press 2 - Add a New Car  
Press 3 - Show all Cars  
Press 4 - Book a Car  
Press 5 - View Charts  
Press 6 - Exit  
Enter your choice: 1  
Enter User ID: 001  
Enter User Name: ruhaim  
Enter Password: ruhaim@123  
User added successfully!
```

ADDING A NEW CAR-

SHETTY LUXURY CAR RENTALS

Press 1 - Add a User

Press 2 - Add a New Car

Press 3 - Show all Cars

Press 4 - Book a Car

Press 5 - View Charts

Press 6 - Exit

Enter your choice: 2

Enter Car Number: 101

Enter Car Name: BMW X5 COMPETITION

Enter Car Brand: BMW

Enter Branch: HEBBAL

Enter Fuel Type: DIESEL

Enter Cost per Day: 10000

Enter Category: SUV

Car added successfully!

TO VIEW ALL CARS-

SHETTY LUXURY CAR RENTALS

Press 1 - Add a User

Press 2 - Add a New Car

Press 3 - Show all Cars

Press 4 - Book a Car

Press 5 - View Charts

Press 6 - Exit

Enter your choice: 3

Cars:

(101, 'BMW X5 COMPETITION', 'BMW', 'HEBBAL', 'DIESEL', 10000, 'SUV')

(102, 'AUDI Q5 TECH', 'AUDI', 'HEBBAL', 'PETROL', 8500, 'SUV')

(103, 'MERCEDES BENZ E220 D', 'MERCEDES BENZ', 'HEBBAL', 'DIESEL', 12000, 'SEDAN')

BOOKING A CAR-

SHETTY LUXURY CAR RENTALS

Press 1 - Add a User

Press 2 - Add a New Car

Press 3 - Show all Cars

Press 4 - Book a Car

Press 5 - View Charts

Press 6 - Exit

Enter your choice: 4

Enter Car Name to book: BMW X5 COMPETITION

Enter Your User Name: ruhaim

Enter Date of Booking (YYYY-MM-DD): 2024-12-18

Enter Number of Days: 10

Car booked successfully! Total cost: 100000

GRAPHICAL REPRESENTATION

Pie chart showing distribution of car categories

SHETTY LUXURY CAR RENTALS

Press 1 - Add a User

Press 2 - Add a New Car

Press 3 - Show all Cars

Press 4 - Book a Car

Press 5 - View Charts

Press 6 - Exit

Enter your choice: 5

Select Chart Type:

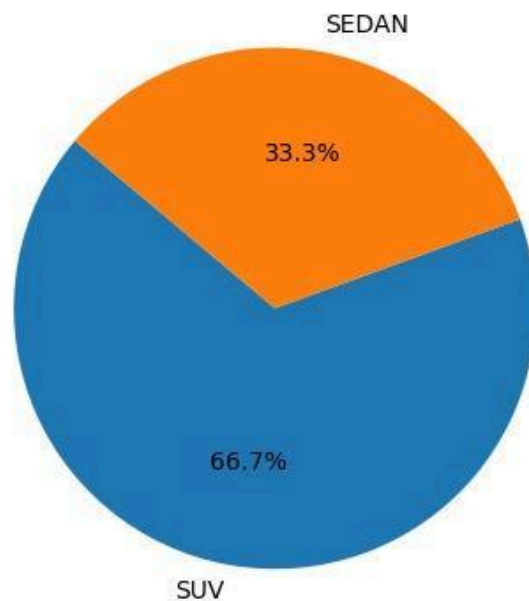
1 - Pie Chart: Distribution of Car Categories

2 - Bar Chart: Cars and Their Rental Costs

3 - Line Chart: Total Cars Booked by Date

Enter your choice: 1

Distribution of Car Categories



Bar graph representing cars and their rental costs

SHETTY LUXURY CAR RENTALS

Press 1 - Add a User

Press 2 - Add a New Car

Press 3 - Show all Cars

Press 4 - Book a Car

Press 5 - View Charts

Press 6 - Exit

Enter your choice: 5

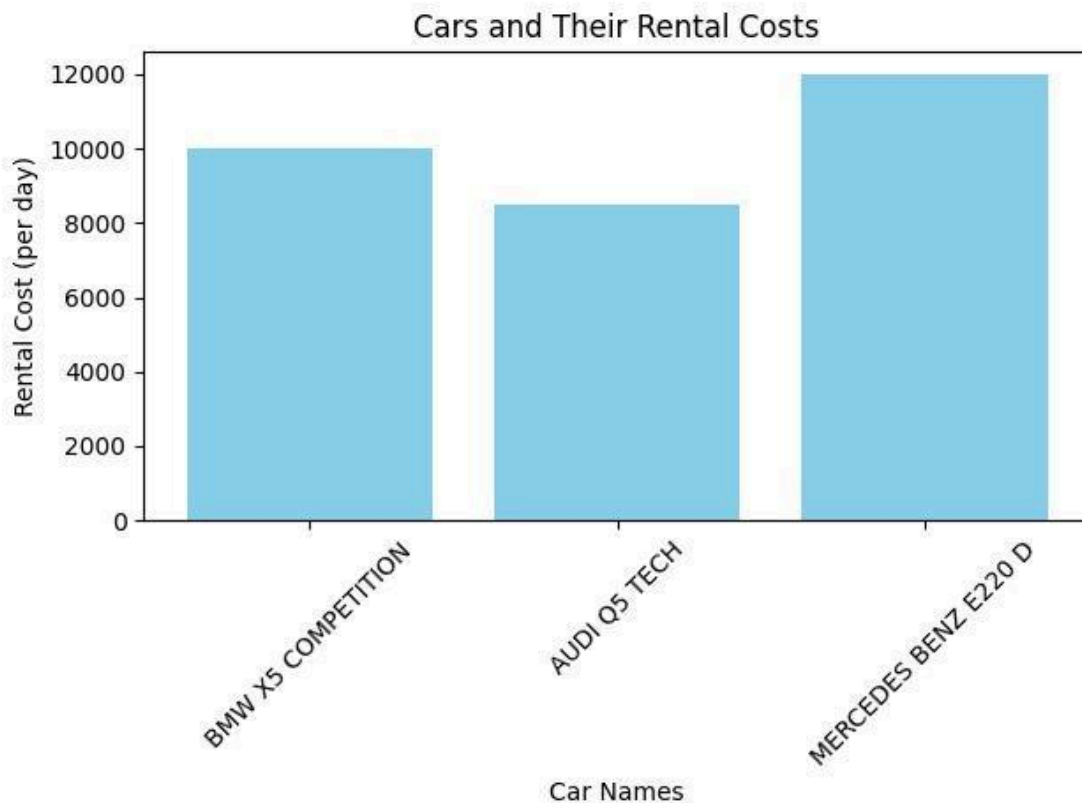
Select Chart Type:

1 - Pie Chart: Distribution of Car Categories

2 - Bar Chart: Cars and Their Rental Costs

3 - Line Chart: Total Cars Booked by Date

Enter your choice: 2



Line chart showing total cars booked by date

 SHETTY LUXURY CAR RENTALS

Press 1 - Add a User

Press 2 - Add a New Car

Press 3 - Show all Cars

Press 4 - Book a Car

Press 5 - View Charts

Press 6 - Exit

Enter your choice: 5

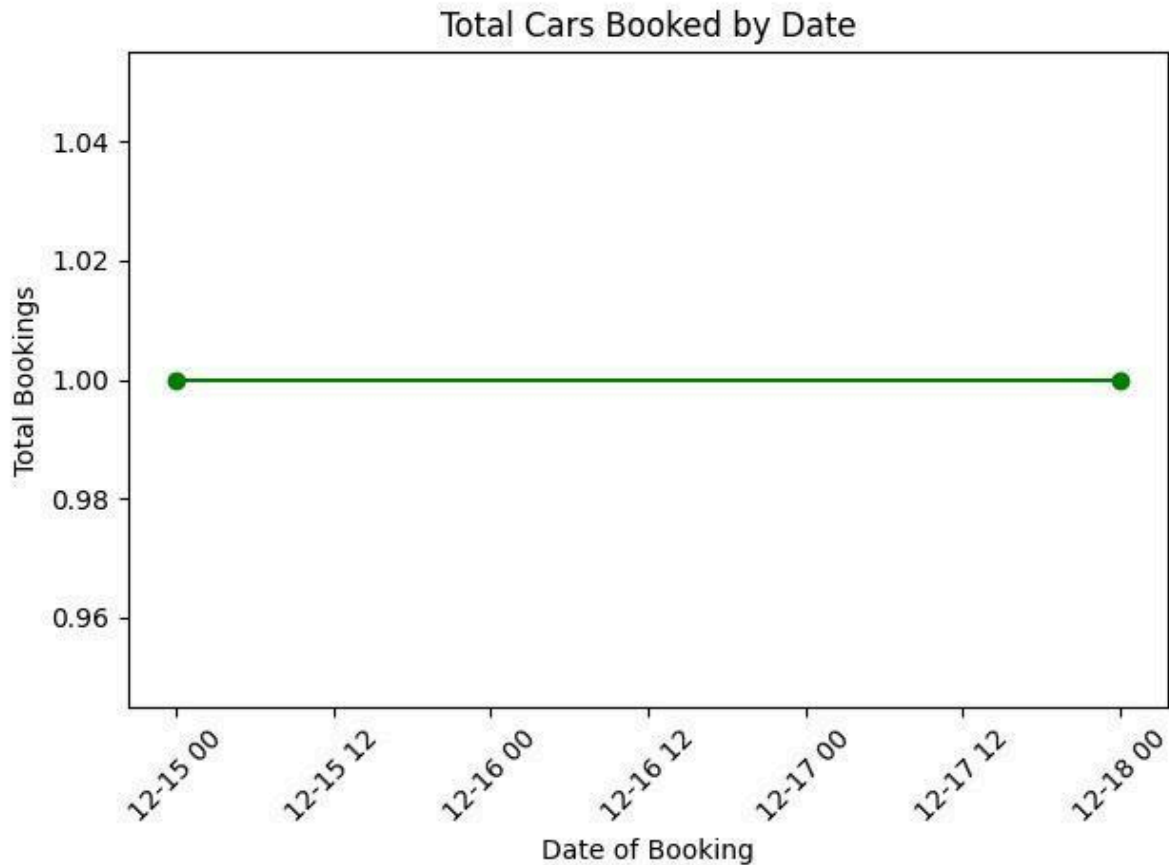
Select Chart Type:

1 - Pie Chart: Distribution of Car Categories

2 - Bar Chart: Cars and Their Rental Costs

3 - Line Chart: Total Cars Booked by Date

Enter your choice: 3



EXITING-

SHETTY LUXURY CAR RENTALS

Press 1 - Add a User

Press 2 - Add a New Car

Press 3 - Show all Cars

Press 4 - Book a Car

Press 5 - View Charts

Press 6 - Exit

Enter your choice: 6

Exiting.....DEVELOPED BY: RUHAIM, NIHANT, SHASHANK

Thank you for visting Shetty Luxury Car Rentals

|