Database Application in Python

Group 5

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```
# 1. Displaying distinct Names of Shipping Partners

import mysql.connector

try:
    connection = mysql.connector.connect(
        host='127.0.0.1',
        database='elmain_boston',
        user='root',
        password='IE6700',
        auth_plugin='caching_sha2_password'
    )

    if connection.is_connected():
        db_Info = connection.get_server_info()
        print("Connected to MySQL Server version ", db_Info)
        cursor = connection.cursor()
        cursor.execute("select database();")
        record = cursor.fetchone()
        print("You're connected to database: ", record)

        # Perform SQL query to select distinct shipping partners
        sql_select_Query = "SELECT DISTINCT Shipping_Partner FROM 
shipping"
        cursor.execute(sql_select_Query)
        records = cursor.fetchall()

        print("Distinct Shipping Partner:\n")
        for row in records:
            print('Shipping_Partner =', row[0], "\n")

except mysql.connector.Error as err:
    print("Error: ", err)

finally:
    if connection.is_connected():
        connection.close()
        print("MySQL connection is closed.")
```

```
Connected to MySQL Server version  8.0.40
You're connected to database:  ('elmain_boston',)
Distinct Shipping Partner:

Shipping_Partner = FedEx
Shipping_Partner = UPS

Shipping_Partner = USPS

Shipping_Partner = DHL

Shipping_Partner = Amazon Logistics

MySQL connection is closed.
```

```python
# 2. Displaying Name of the designer who designed the product P0006

import mysql.connector

try:
    connection = mysql.connector.connect(
        host='127.0.0.1',
        database='elmain_boston',
        user='root',
        password='IE6700',
        auth_plugin='caching_sha2_password'
    )

    if connection.is_connected():
        db_Info = connection.get_server_info()
        print("Connected to MySQL Server version ", db_Info)
        cursor = connection.cursor()
        cursor.execute("select database();")
        record = cursor.fetchone()
        print("You're connected to database: ", record)

        # Perform SQL query to select Designer name who desined the
product with product id P0006
        sql_select_Query = "SELECT D.Designer_Name FROM Designer D,
Product P WHERE D.Designer_ID = P.Designer_ID AND P.Product_ID
='P0006'"
        cursor.execute(sql_select_Query)
        records = cursor.fetchall()

        print("Designer of Product P0006:\n")
        for row in records:
            print('Designer Name =', row[0], "\n")

except mysql.connector.Error as err:
    print("Error: ", err)

finally:
    if connection.is_connected():
        connection.close()
        print("MySQL connection is closed.")
```

```
Connected to MySQL Server version  8.0.40
You're connected to database:  ('elmain_boston',)
Designer of Product P0006:

Designer Name = Avery Clark

MySQL connection is closed.
```

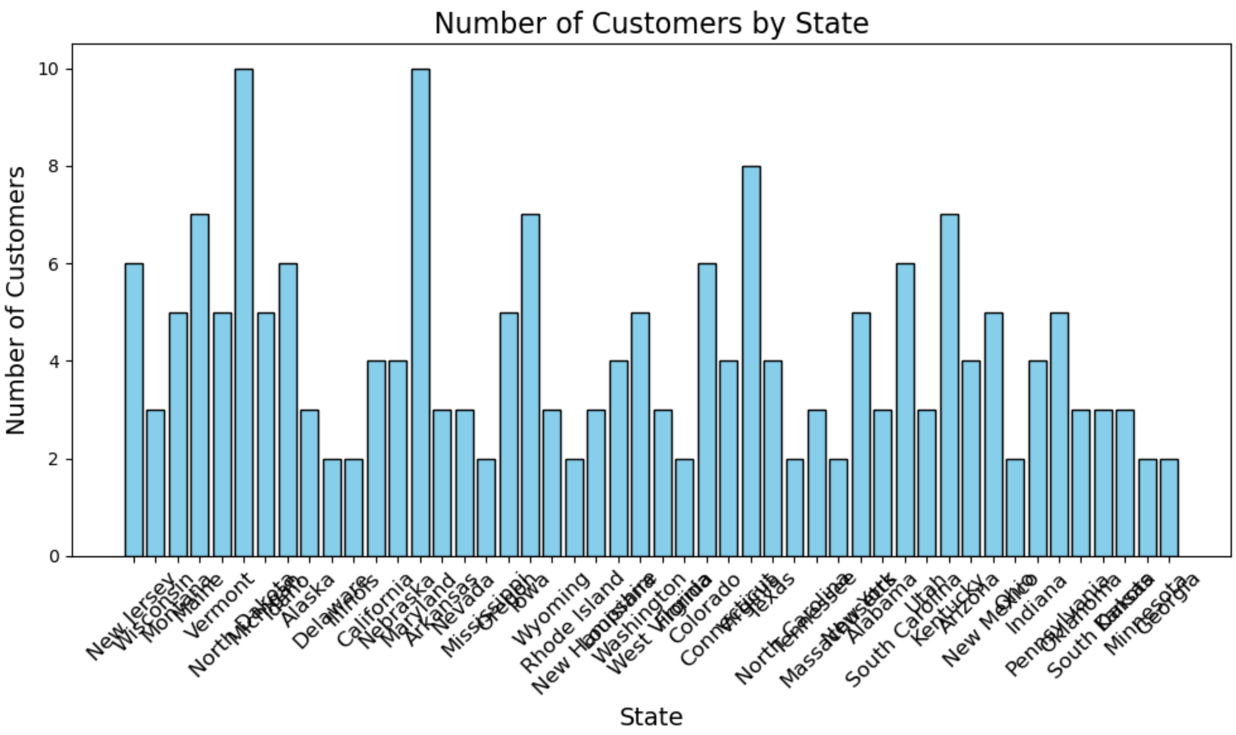
```
# 3. Displaying Tailors Name who have experience greater than the
average experience

import mysql.connector

try:
    connection = mysql.connector.connect(
        host='127.0.0.1',
        database='elmain_boston',
        user='root',
        password='IE6700',
        auth_plugin='caching_sha2_password'
    )

    if connection.is_connected():
        db_Info = connection.get_server_info()
        print("Connected to MySQL Server version ", db_Info)
        cursor = connection.cursor()
        cursor.execute("select database();")
        record = cursor.fetchone()
        print("You're connected to database: ", record)

        # Perform SQL query to Display Tailors who have experience
greater than the average experience
        sql_select_Query = "SELECT Tailor_Name, Experience, State FROM
Tailor t1 WHERE Experience > ( SELECT AVG(Experience) FROM Tailor t2
WHERE t2.State = t1.State)"
        cursor.execute(sql_select_Query)
        records = cursor.fetchall()

        print("Tailors who have experience greater than the average
experience:\n")
        for row in records:
            print('Tailor Name =', row[0], "\n")

except mysql.connector.Error as err:
    print("Error: ", err)

finally:
    if connection.is_connected():
        connection.close()
        print("MySQL connection is closed.")

Connected to MySQL Server version  8.0.40
You're connected to database:  ('elmain_boston',)
Tailors who have experience greater than the average experience:

Tailor Name = Jamel

Tailor Name = Salvatore

Tailor Name = Burnice

Tailor Name = Brisa

Tailor Name = Kurt

Tailor Name = Hilario

Tailor Name = Serena

Tailor Name = Bobbie

Tailor Name = Ila

Tailor Name = Alexandro

Tailor Name = Sim

Tailor Name = Jaron

MySQL connection is closed.

# 4. Displaying State name and number of customers in that State
import pandas as pd
import mysql.connector


try:
    connection = mysql.connector.connect(
        host='127.0.0.1',
        database='elmain_boston',
        user='root',
        password='IE6700',
        auth_plugin='caching_sha2_password'
    )

    if connection.is_connected():
        db_Info = connection.get_server_info()
        print("Connected to MySQL Server version ", db_Info)
        cursor = connection.cursor()
        cursor.execute("select database();")
        record1 = cursor.fetchone()
        print("You're connected to database: ", record1)

        # Perform SQL query to Display Tailors who have experience
greater than the average experience
        sql_select_Query = "SELECT State, COUNT(Customer_ID) AS
Number_of_Customers FROM customer GROUP BY State;"
        cursor.execute(sql_select_Query)
        record1 = cursor.fetchall()

        print("Tailors who have experience greater than the average
experience:\n")
        for row in record1:
            print( "State:", row[0], ", No.of customers:", row[1], "\
n")

except mysql.connector.Error as err:
    print("Error: ", err)

finally:
    if connection.is_connected():
        connection.close()
```

```
Connected to MySQL Server version  8.0.40
You're connected to database:  ('elmain_boston',)
Tailors who have experience greater than the average experience:

State: New Jersey , No.of customers: 6

State: Wisconsin , No.of customers: 3

State: Montana , No.of customers: 5

State: Maine , No.of customers: 7

State: Vermont , No.of customers: 5

State: North Dakota , No.of customers: 10

State: Michigan , No.of customers: 5

State: Idaho , No.of customers: 6

State: Alaska , No.of customers: 3

State: Delaware , No.of customers: 2

State: Illinois , No.of customers: 2
```

```
State: California , No.of customers: 4

State: Nebraska , No.of customers: 4

State: Maryland , No.of customers: 10

State: Arkansas , No.of customers: 3

State: Nevada , No.of customers: 3

State: Mississippi , No.of customers: 2

State: Oregon , No.of customers: 5

State: Iowa , No.of customers: 7

State: Wyoming , No.of customers: 3

State: Rhode Island , No.of customers: 2

State: New Hampshire , No.of customers: 3

State: Louisiana , No.of customers: 4

State: Washington , No.of customers: 5

State: West Virginia , No.of customers: 3

State: Florida , No.of customers: 2

State: Colorado , No.of customers: 6

State: Connecticut , No.of customers: 4

State: Virginia , No.of customers: 8

State: Texas , No.of customers: 4

State: North Carolina , No.of customers: 2

State: Tennessee , No.of customers: 3

State: Massachusetts , No.of customers: 2

State: New York , No.of customers: 5

State: Alabama , No.of customers: 3

State: South Carolina , No.of customers: 6

State: Utah , No.of customers: 3
```

```
State: Kentucky , No.of customers: 7

State: Arizona , No.of customers: 4

State: New Mexico , No.of customers: 5

State: Ohio , No.of customers: 2

State: Indiana , No.of customers: 4

State: Pennsylvania , No.of customers: 5

State: Oklahoma , No.of customers: 3

State: South Dakota , No.of customers: 3

State: Kansas , No.of customers: 3

State: Minnesota , No.of customers: 2

State: Georgia , No.of customers: 2
```

```python
# 4.1 Plotting bar chart to display Number of customers in a State

import matplotlib.pyplot as plt

states = [row[0] for row in record1]
customer_counts = [row[1] for row in record1]

# Create the bar chart
plt.figure(figsize=(10, 6))
plt.bar(states, customer_counts, color='skyblue', edgecolor='black')
plt.title("Number of Customers by State", fontsize=16)
plt.xlabel("State", fontsize=14)
plt.ylabel("Number of Customers", fontsize=14)
plt.xticks(rotation=45, fontsize=12)
plt.tight_layout()
plt.show()
```



```
# 5. Displaying CustomerId and Age of the customer

import pandas as pd
import mysql.connector


try:
    connection = mysql.connector.connect(
        host='127.0.0.1',
        database='elmain_boston',
        user='root',
        password='IE6700',
        auth_plugin='caching_sha2_password'
    )

    if connection.is_connected():
        db_Info = connection.get_server_info()
        print("Connected to MySQL Server version ", db_Info)
        cursor = connection.cursor()
        cursor.execute("select database();")
        record = cursor.fetchone()
        print("You're connected to database: ", record)

        # Perform SQL query to Display CustomerID and Age
        sql_select_Query = "SELECT
Customer_ID,FLOOR(DATEDIFF(CURDATE(), Date_of_Birth) / 365) AS Age
FROM Customer"
```

```
        cursor.execute(sql_select_Query)
        record2 = cursor.fetchall()

        print("Tailors who have experience greater than the average 
experience:\n")
        for row in record2:
            print( "CustomerID:", row[0], ", Age:", row[1], "\n")

except mysql.connector.Error as err:
    print("Error: ", err)

finally:
    if connection.is_connected():
        connection.close()
```

```
Connected to MySQL Server version  8.0.40
You're connected to database:  ('elmain_boston',)
Tailors who have experience greater than the average experience:

CustomerID: 1 , Age: 30

CustomerID: 2 , Age: 71

CustomerID: 3 , Age: 66

CustomerID: 4 , Age: 40

CustomerID: 5 , Age: 62

CustomerID: 6 , Age: 69

CustomerID: 7 , Age: 20

CustomerID: 8 , Age: 57

CustomerID: 9 , Age: 29

CustomerID: 10 , Age: 62

CustomerID: 11 , Age: 28

CustomerID: 12 , Age: 26

CustomerID: 13 , Age: 36

CustomerID: 14 , Age: 36

CustomerID: 15 , Age: 48

CustomerID: 16 , Age: 37
```

```
CustomerID: 17 , Age: 79
CustomerID: 18 , Age: 34
CustomerID: 19 , Age: 20
CustomerID: 20 , Age: 78
CustomerID: 21 , Age: 31
CustomerID: 22 , Age: 68
CustomerID: 23 , Age: 26
CustomerID: 24 , Age: 46
CustomerID: 25 , Age: 81
CustomerID: 26 , Age: 80
CustomerID: 27 , Age: 78
CustomerID: 28 , Age: 20
CustomerID: 29 , Age: 77
CustomerID: 30 , Age: 66
CustomerID: 31 , Age: 71
CustomerID: 32 , Age: 65
CustomerID: 33 , Age: 80
CustomerID: 34 , Age: 42
CustomerID: 35 , Age: 61
CustomerID: 36 , Age: 31
CustomerID: 37 , Age: 33
CustomerID: 38 , Age: 71
CustomerID: 39 , Age: 40
CustomerID: 40 , Age: 28
CustomerID: 41 , Age: 54
CustomerID: 42 , Age: 31
```

```
CustomerID: 43 , Age: 78

CustomerID: 44 , Age: 63

CustomerID: 45 , Age: 78

CustomerID: 46 , Age: 67

CustomerID: 47 , Age: 30

CustomerID: 48 , Age: 48

CustomerID: 49 , Age: 21

CustomerID: 50 , Age: 71

CustomerID: 51 , Age: 23

CustomerID: 52 , Age: 49

CustomerID: 53 , Age: 35

CustomerID: 54 , Age: 71

CustomerID: 55 , Age: 50

CustomerID: 56 , Age: 43

CustomerID: 57 , Age: 70

CustomerID: 58 , Age: 27

CustomerID: 59 , Age: 76

CustomerID: 60 , Age: 64

CustomerID: 61 , Age: 25

CustomerID: 62 , Age: 18

CustomerID: 63 , Age: 61

CustomerID: 64 , Age: 46

CustomerID: 65 , Age: 80

CustomerID: 66 , Age: 20

CustomerID: 67 , Age: 29

CustomerID: 68 , Age: 28
```

```
CustomerID: 69 , Age: 37
CustomerID: 70 , Age: 69
CustomerID: 71 , Age: 49
CustomerID: 72 , Age: 47
CustomerID: 73 , Age: 23
CustomerID: 74 , Age: 24
CustomerID: 75 , Age: 77
CustomerID: 76 , Age: 41
CustomerID: 77 , Age: 37
CustomerID: 78 , Age: 31
CustomerID: 79 , Age: 79
CustomerID: 80 , Age: 33
CustomerID: 81 , Age: 59
CustomerID: 82 , Age: 23
CustomerID: 83 , Age: 42
CustomerID: 84 , Age: 24
CustomerID: 85 , Age: 20
CustomerID: 86 , Age: 57
CustomerID: 87 , Age: 46
CustomerID: 88 , Age: 38
CustomerID: 89 , Age: 54
CustomerID: 90 , Age: 25
CustomerID: 91 , Age: 79
CustomerID: 92 , Age: 43
CustomerID: 93 , Age: 46
CustomerID: 94 , Age: 40
```

```
CustomerID: 95 , Age: 71
CustomerID: 96 , Age: 33
CustomerID: 97 , Age: 37
CustomerID: 98 , Age: 67
CustomerID: 99 , Age: 26
CustomerID: 100 , Age: 44
CustomerID: 101 , Age: 33
CustomerID: 102 , Age: 49
CustomerID: 103 , Age: 58
CustomerID: 104 , Age: 65
CustomerID: 105 , Age: 31
CustomerID: 106 , Age: 63
CustomerID: 107 , Age: 81
CustomerID: 108 , Age: 20
CustomerID: 109 , Age: 75
CustomerID: 110 , Age: 78
CustomerID: 111 , Age: 77
CustomerID: 112 , Age: 78
CustomerID: 113 , Age: 36
CustomerID: 114 , Age: 79
CustomerID: 115 , Age: 80
CustomerID: 116 , Age: 63
CustomerID: 117 , Age: 43
CustomerID: 118 , Age: 37
CustomerID: 119 , Age: 52
CustomerID: 120 , Age: 41
```

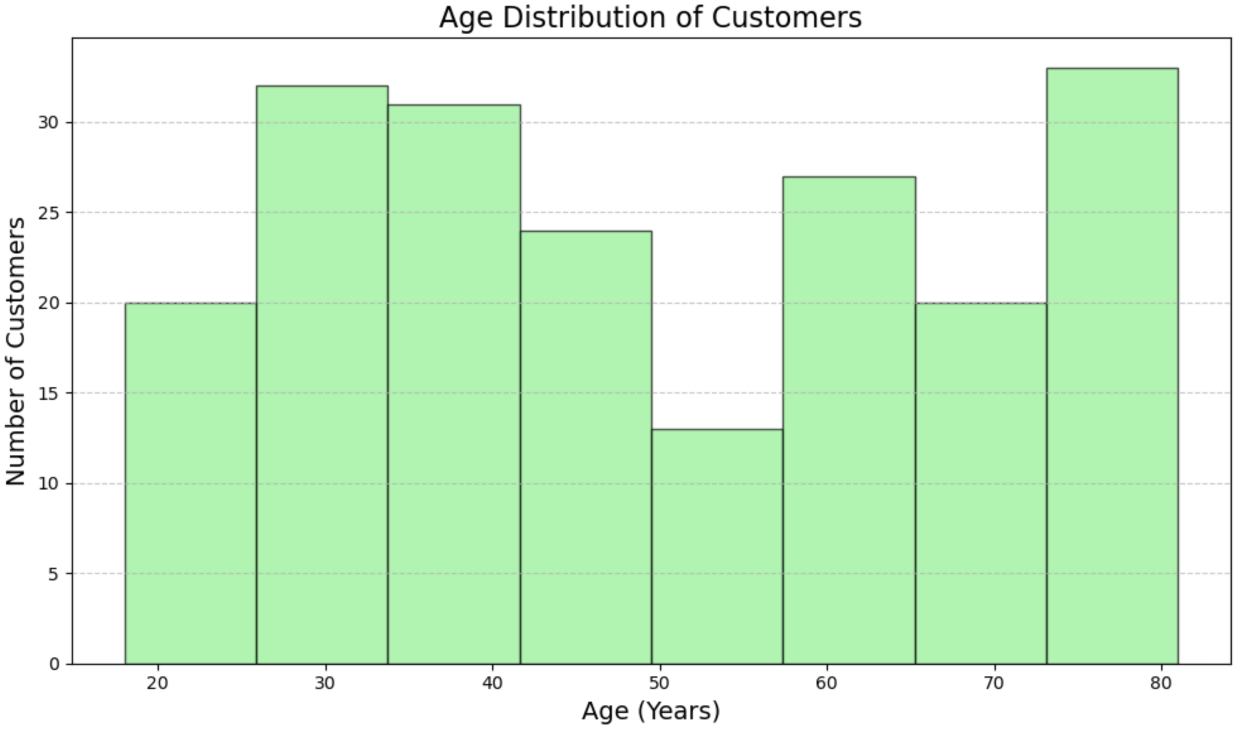
```
CustomerID: 121 , Age: 64
CustomerID: 122 , Age: 75
CustomerID: 123 , Age: 42
CustomerID: 124 , Age: 77
CustomerID: 125 , Age: 32
CustomerID: 126 , Age: 61
CustomerID: 127 , Age: 35
CustomerID: 128 , Age: 54
CustomerID: 129 , Age: 50
CustomerID: 130 , Age: 35
CustomerID: 131 , Age: 36
CustomerID: 132 , Age: 22
CustomerID: 133 , Age: 40
CustomerID: 134 , Age: 51
CustomerID: 135 , Age: 31
CustomerID: 136 , Age: 25
CustomerID: 137 , Age: 68
CustomerID: 138 , Age: 62
CustomerID: 139 , Age: 76
CustomerID: 140 , Age: 76
CustomerID: 141 , Age: 53
CustomerID: 142 , Age: 63
CustomerID: 143 , Age: 33
CustomerID: 144 , Age: 39
CustomerID: 145 , Age: 68
CustomerID: 146 , Age: 30
```

```
CustomerID: 147 , Age: 46

CustomerID: 148 , Age: 59

CustomerID: 149 , Age: 29

CustomerID: 150 , Age: 31

CustomerID: 151 , Age: 27

CustomerID: 152 , Age: 78

CustomerID: 153 , Age: 69

CustomerID: 154 , Age: 40

CustomerID: 155 , Age: 70

CustomerID: 156 , Age: 43

CustomerID: 157 , Age: 77

CustomerID: 158 , Age: 64

CustomerID: 159 , Age: 39

CustomerID: 160 , Age: 64

CustomerID: 161 , Age: 30

CustomerID: 162 , Age: 60

CustomerID: 163 , Age: 37

CustomerID: 164 , Age: 74

CustomerID: 165 , Age: 80

CustomerID: 166 , Age: 58

CustomerID: 167 , Age: 66

CustomerID: 168 , Age: 34

CustomerID: 169 , Age: 20

CustomerID: 170 , Age: 58

CustomerID: 171 , Age: 25

CustomerID: 172 , Age: 26
```

```
CustomerID: 173 , Age: 40

CustomerID: 174 , Age: 56

CustomerID: 175 , Age: 38

CustomerID: 176 , Age: 76

CustomerID: 177 , Age: 80

CustomerID: 178 , Age: 51

CustomerID: 179 , Age: 61

CustomerID: 180 , Age: 57

CustomerID: 181 , Age: 42

CustomerID: 182 , Age: 26

CustomerID: 183 , Age: 42

CustomerID: 184 , Age: 41

CustomerID: 185 , Age: 36

CustomerID: 186 , Age: 49

CustomerID: 187 , Age: 44

CustomerID: 188 , Age: 59

CustomerID: 189 , Age: 49

CustomerID: 190 , Age: 70

CustomerID: 191 , Age: 81

CustomerID: 192 , Age: 60

CustomerID: 193 , Age: 27

CustomerID: 194 , Age: 32

CustomerID: 195 , Age: 37

CustomerID: 196 , Age: 76

CustomerID: 197 , Age: 62

CustomerID: 198 , Age: 18
```

```
CustomerID: 199 , Age: 62

CustomerID: 200 , Age: 34
```

```python
# 5.1 Plotting Histogram to display Customer Age Distribution

import matplotlib.pyplot as plt

ages = [row[1] for row in record2]
plt.figure(figsize=(10, 6))
plt.hist(ages, bins=8, color='lightgreen', edgecolor='black',
alpha=0.7)
plt.title("Age Distribution of Customers", fontsize=16)
plt.xlabel("Age (Years)", fontsize=14)
plt.ylabel("Number of Customers", fontsize=14)
plt.grid(axis='y', linestyle='--', alpha=0.7)
plt.tight_layout()
plt.show()
```


Age Distribution of Customers
Number of Customers
Age (Years)