PYTHON MINI-PROJECT

- ## TEAM MEMBERS:

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- ## QUESTION:

2. Store the following details of customers of a bank in a database – Customer name, address, account number, balance and the type of loan he has availed from the bank. Write the Python code to retrieve the table contents and count the number of customers who have taken personal loan, education loan, vehicle loan, property mortgage loan and credit card loan. Also count the number of customers who have not availed any loan.

Assist the bank management to learn the loan trends by using a pie chart to represent the percentage of each count including the count without any loan.

- **SOLUTION:**

Importing sqlite3 and pandas:

```
import sqlite3 as sql
import pandas as pd
```

Creating database and table:

```
con=sql.connect(r"C:\Users\ysyas\Desktop\Python\Bank_Final.db")
con.execute("CREATE TABLE IF NOT EXISTS Customers(Customer_name
VARCHAR(100),Address VARCHAR(100),Account_number INTEGER
PRIMARY KEY,Balance INTEGER,Loan_type VARCHAR(100))")
con.commit()
```

Opening a cursor and adding data into the table:

```
cur=con.cursor()
cur.execute("INSERT INTO Customers
VALUES('Yash','Pune',100,100000,'Personal Loan')")
cur.execute("INSERT INTO Customers
VALUES('Pokey','Mumbai',101,150000,'Personal Loan')")
cur.execute("INSERT INTO Customers
VALUES('Vishwa','Nagpur',102,250000,'Personal Loan')")
cur.execute("INSERT INTO Customers
VALUES('Reddy','Chennai',103,350000,'Personal Loan')")
cur.execute("INSERT INTO Customers
VALUES('Simran','Pune',104,450000,'Personal Loan')")
cur.execute("INSERT INTO Customers
VALUES('Banu','Nagpur',105,550000,'Personal Loan')")
cur.execute("INSERT INTO Customers
VALUES('Rama','Mumbai',106,50000,'Education Loan')")
cur.execute("INSERT INTO Customers
VALUES('Shashank','Pune',107,70000,'Education Loan')")
cur.execute("INSERT INTO Customers
VALUES('Nupur','Mumbai',108,80000,'Education Loan')")
cur.execute("INSERT INTO Customers
VALUES('Kale','Mumbai',109,111100,'Vehicle Loan')")
cur.execute("INSERT INTO Customers
VALUES('Soman','Pune',110,222200,'Vehicle Loan')")
```

```
cur.execute("INSERT INTO Customers
VALUES('Atharva','Chennai',111,333300,'Vehicle Loan')")
cur.execute("INSERT INTO Customers
VALUES('Roops','Nagpur',112,444400,'Vehicle Loan')")
cur.execute("INSERT INTO Customers
VALUES('Kontya','Mumbai',113,75900,'Property Mortage Loan')")
cur.execute("INSERT INTO Customers
VALUES('Mahi','Pune',114,111890,'Property Mortage Loan')")
cur.execute("INSERT INTO Customers
VALUES('Sachin','Mumbai',115,750000,'CreditCard Loan')")
cur.execute("INSERT INTO Customers
VALUES('Aarti','Nagpur',116,850000,'CreditCard Loan')")
cur.execute("INSERT INTO Customers
VALUES('Gunna','Nagpur',117,250000,'No Loan')")
cur.execute("INSERT INTO Customers
VALUES('Uma','Chennai',118,150000,'No Loan')")
cur.execute("INSERT INTO Customers
VALUES('Prachi','Pune',119,950000,'No Loan')")
con.commit()
```

Printing the records from the table:

```
cur=con.cursor()
cur.execute("Select * from Customers")
l=cur.fetchall()
for i in l:
    print(i)
```

Output:

```
('Yash', 'Pune', 100, 100000, 'Personal Loan')
('Pokey', 'Mumbai', 101, 150000, 'Personal Loan')
('Vishwa', 'Nagpur', 102, 250000, 'Personal Loan')
('Reddy', 'Chennai', 103, 350000, 'Personal Loan')
('Simran', 'Pune', 104, 450000, 'Personal Loan')
('Banu', 'Nagpur', 105, 550000, 'Personal Loan')
('Rama', 'Mumbai', 106, 50000, 'Education Loan')
('Shashank', 'Pune', 107, 70000, 'Education Loan')
('Nupur', 'Mumbai', 108, 80000, 'Education Loan')
('Kale', 'Mumbai', 109, 111100, 'Vehicle Loan')
('Soman', 'Pune', 110, 222200, 'Vehicle Loan')
('Atharva', 'Chennai', 111, 333300, 'Vehicle Loan')
('Roops', 'Nagpur', 112, 444400, 'Vehicle Loan')
('Kontya', 'Mumbai', 113, 75900, 'Property Mortage Loan')
('Mahi', 'Pune', 114, 111890, 'Property Mortage Loan')
('Sachin', 'Mumbai', 115, 750000, 'CreditCard Loan')
```

```
('Aarti', 'Nagpur', 116, 850000, 'CreditCard Loan')
('Gunna', 'Nagpur', 117, 250000, 'No Loan')
('Uma', 'Chennai', 118, 150000, 'No Loan')
('Prachi', 'Pune', 119, 950000, 'No Loan')
```

Using the sql query to get the data into the dataframe 'df':

```
df = pd.read_sql_query("SELECT * from Customers", con)
print(df.head(20))
```

Output:

```
Customer_name  Address  Account_number  Balance              Loan_type
0          Yash     Pune             100   100000        Personal Loan
1         Pokey   Mumbai             101   150000        Personal Loan
2        Vishwa   Nagpur             102   250000        Personal Loan
3         Reddy  Chennai             103   350000        Personal Loan
4        Simran     Pune             104   450000        Personal Loan
5          Banu   Nagpur             105   550000        Personal Loan
6          Rama   Mumbai             106    50000        Education Loan
7      Shashank     Pune             107    70000        Education Loan
8         Nupur   Mumbai             108    80000        Education Loan
9          Kale   Mumbai             109   111100         Vehicle Loan
10        Soman     Pune             110   222200         Vehicle Loan
11      Atharva  Chennai             111   333300         Vehicle Loan
12        Roops   Nagpur             112   444400         Vehicle Loan
13       Kontya   Mumbai             113    75900 Property Mortage Loan
14         Mahi     Pune             114   111890 Property Mortage Loan
15       Sachin   Mumbai             115   750000      CreditCard Loan
16        Aarti   Nagpur             116   850000      CreditCard Loan
17        Gunna   Nagpur             117   250000              No Loan
18          Uma  Chennai             118   150000              No Loan
19       Prachi     Pune             119   950000              No Loan
```

Saving the records from dataframe 'df' into a .csv file for further process:

```
df.to_csv("Customers_Final.csv",index="False")
```

Output:

	Customer_name	Address	Account_number	Balance	Loan_type
0	Yash	Pune	100	100000	Personal Loan
1	Pokey	Mumbai	101	150000	Personal Loan
2	Vishwa	Nagpur	102	250000	Personal Loan
3	Reddy	Chennai	103	350000	Personal Loan
4	Simran	Pune	104	450000	Personal Loan
5	Banu	Nagpur	105	550000	Personal Loan
6	Rama	Mumbai	106	50000	Education Loan
7	Shashank	Pune	107	70000	Education Loan
8	Nupur	Mumbai	108	80000	Education Loan
9	Kale	Mumbai	109	111100	Vehicle Loan
10	Soman	Pune	110	222200	Vehicle Loan
11	Atharva	Chennai	111	333300	Vehicle Loan
12	Roops	Nagpur	112	444400	Vehicle Loan
13	Kontya	Mumbai	113	75900	Property Mortage Loan
14	Mahi	Pune	114	111890	Property Mortage Loan
15	Sachin	Mumbai	115	750000	CreditCard Loan
16	Aarti	Nagpur	116	850000	CreditCard Loan
17	Gunna	Nagpur	117	250000	No Loan
18	Uma	Chennai	118	150000	No Loan
19	Prachi	Pune	119	950000	No Loan

Creating new dataframe 'df1' which has the data of 'Loan_type' and count for each 'Loan_type':

```
df1 = pd.read_sql_query('SELECT Loan_type,count(Account_number) from
Customers  group by Loan_type',con)
df1
```

Output:

	Loan_type	count(Account_number)
0	CreditCard Loan	2
1	Education Loan	3
2	No Loan	3
3	Personal Loan	6
4	Property Mortage Loan	2
5	Vehicle Loan	4

Plotting the graph using the dataframe 'df1':

```
loan_data = df1["Loan_type"]
c_data = df1["count(Account_number)"]
colors = ["#a2c8d0", "#007F7F", "#3232A2","#203470", "#E0FFFF","#B3CCCC"]
explode = (0.1, 0.1, 0.1, 0.3, 0.1, 0.1)
plt.pie(c_data, labels=loan_data, explode=explode ,colors=colors,
autopct='%1.1f%%', shadow=True, startangle=140,radius=3)
plt.savefig("Pie-chart.png", bbox_inches='tight')
```

Output:
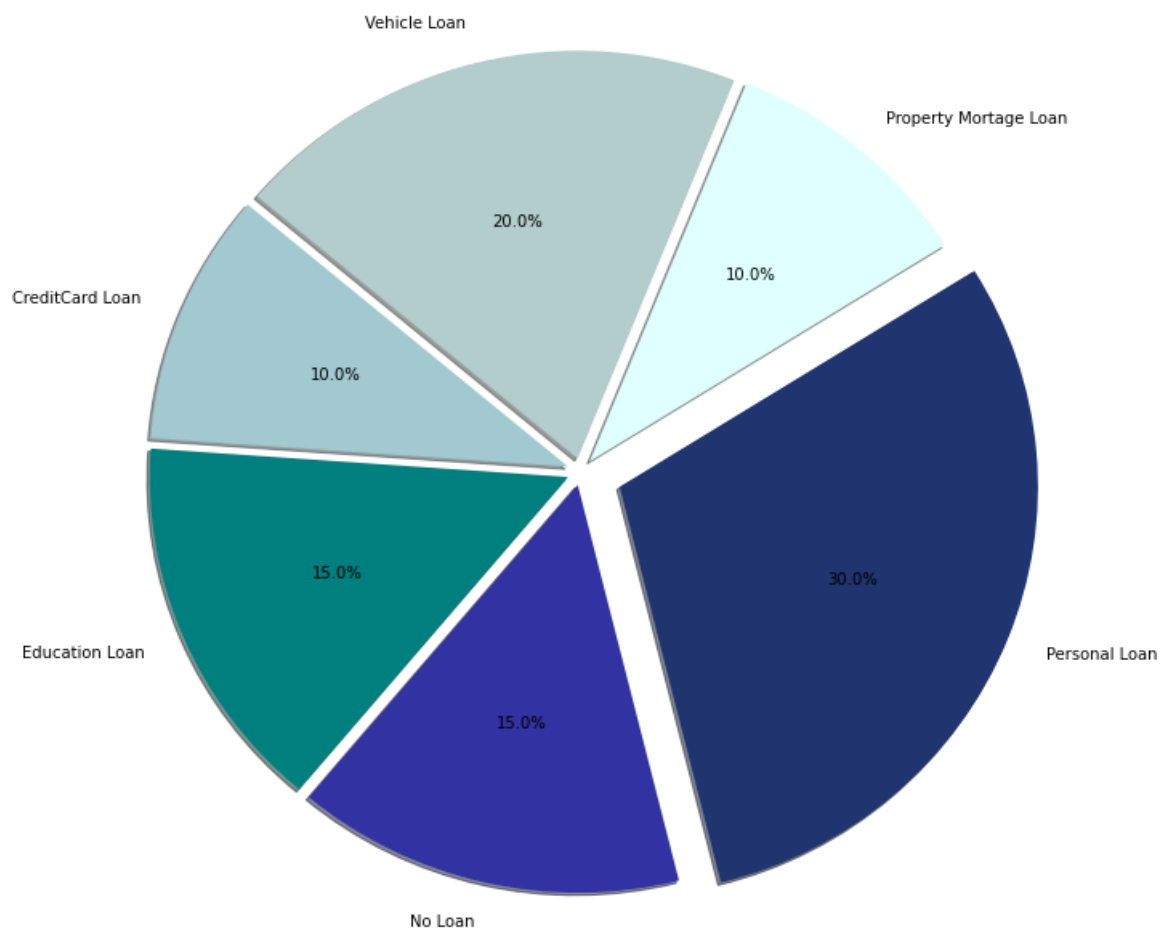
Database and table view in sqlite:

C:\Program Files (x86)\sqlite\sqlite3.exe

```
SQLite version 3.35.5 2021-04-19 18:32:05
Enter ".help" for usage hints.
Connected to a transient in-memory database.
Use ".open FILENAME" to reopen on a persistent database.
sqlite> .open Bank_Final
sqlite> .tables
sqlite> .open Bank_Final.db
sqlite> .tables
Customers
sqlite> SELECT * FROM Customers;
Yash|Pune|100|100000|Personal Loan
Pokey|Mumbai|101|150000|Personal Loan
Vishwa|Nagpur|102|250000|Personal Loan
Reddy|Chennai|103|350000|Personal Loan
Simran|Pune|104|450000|Personal Loan
Banu|Nagpur|105|550000|Personal Loan
Rama|Mumbai|106|50000|Education Loan
Shashank|Pune|107|70000|Education Loan
Nupur|Mumbai|108|80000|Education Loan
Kale|Mumbai|109|111100|Vehicle Loan
Soman|Pune|110|222200|Vehicle Loan
Atharva|Chennai|111|333300|Vehicle Loan
Roops|Nagpur|112|444400|Vehicle Loan
Kontya|Mumbai|113|75900|Property Mortage Loan
Mahi|Pune|114|111890|Property Mortage Loan
Sachin|Mumbai|115|750000|CreditCard Loan
Aarti|Nagpur|116|850000|CreditCard Loan
Gunna|Nagpur|117|250000|No Loan
Uma|Chennai|118|150000|No Loan
Prachi|Pune|119|950000|No Loan
sqlite>
```