DHP-Journal

Question 1

Create Student Table with appropriate constraints.
STUDENT(sno number primary key, sname text(20), age number, total_marks number)

Write python programs to perform following task:

1) **store the table data into a dataframe and display the dataframe.**
2) **List out top three records from the dataframe**
3) **Display all records from dataframe whose age is not less than 18. Display age of student whose sno is 5. (use loc() and iloc() function)**

Create Table

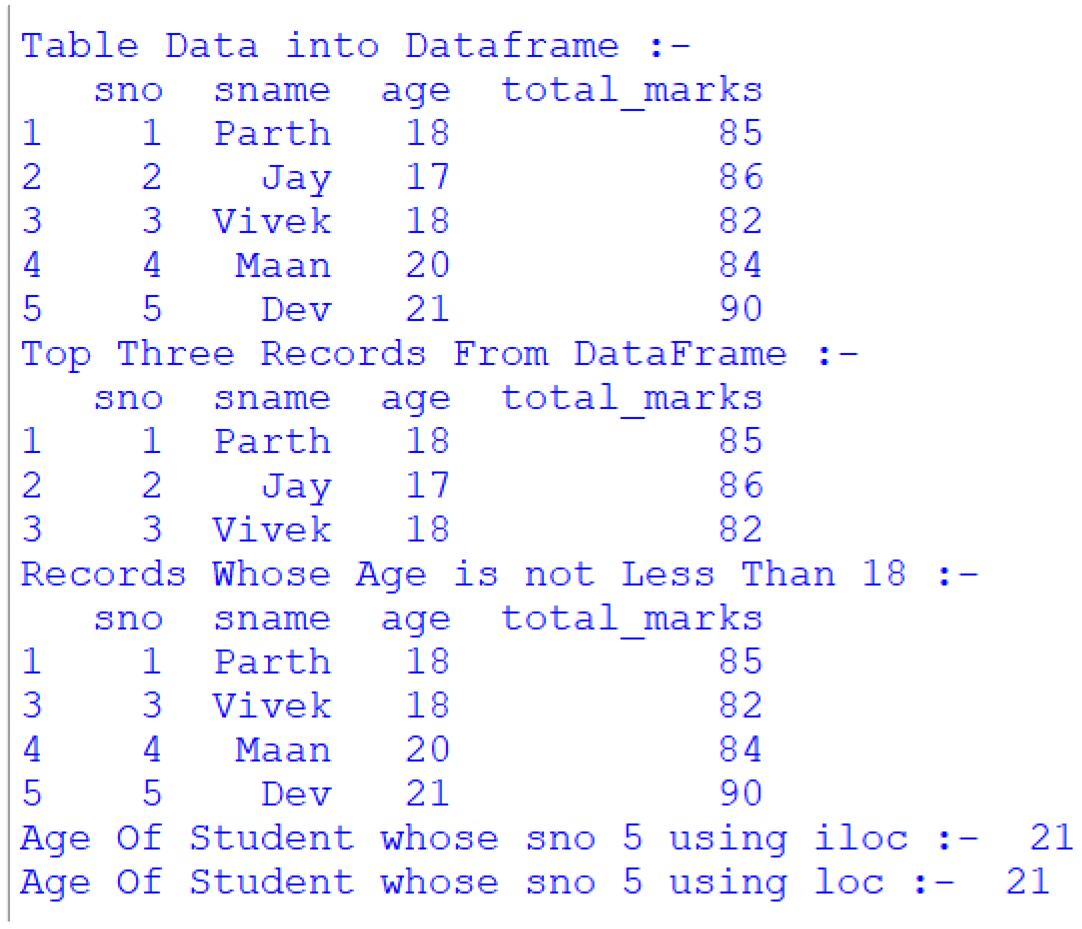
create table STUDENT(sno number primary key, sname text(20), age number, total_marks number);

Solution

```
import pandas as p
#Read Data Into DataFrame
student_data={'sno':[1,2,3,4,5],
        'sname':['Parth','Jay','Vivek','Maan','Dev'],
        'age':[18,17,18,20,21],
        'total_marks':[85,86,82,84,90]}
df=p.DataFrame(student_data,index=student_data['sno'])
print("Table Data into Dataframe :- ")
print(df)
#top three data from DataFrame
print('Top Three Records From DataFrame :- ')
print(df.head(3))
#Displaying Records Whose age is not less than 18
print('Records Whose Age is not Less Than 18 :- ')
print(df[df['age']>=18])
#Displaying Age Of Student whose sno is 5 using loc & iloc
print('Age Of Student whose sno 5 using iloc :- ',df.iloc[4]['age'])
print('Age Of Student whose sno 5 using loc :- ',df.loc[df['sno']==5,'age'].values[0])
```

Name :- Gheewala Jay Kanaiyalal
Class :- SYBCA
Division :- D
Roll No :-718

Output



```
Table Data into Dataframe :-
   sno  sname  age  total_marks
1    1  Parth   18           85
2    2    Jay   17           86
3    3  Vivek   18           82
4    4   Maan   20           84
5    5    Dev   21           90
Top Three Records From DataFrame :-
   sno  sname  age  total_marks
1    1  Parth   18           85
2    2    Jay   17           86
3    3  Vivek   18           82
Records Whose Age is not Less Than 18 :-
   sno  sname  age  total_marks
1    1  Parth   18           85
3    3  Vivek   18           82
4    4   Maan   20           84
5    5    Dev   21           90
Age Of Student whose sno 5 using iloc :-  21
Age Of Student whose sno 5 using loc :-  21
```

Question 2

Create following table and store any five records:
Employee(eno number primary key, Ename text(20),designation text(10),basic number , da number, gross_salary number)

Write python programs to perform following tasks:

1) **Store the table data into dataframe and display the dataframe.**
2) **Sort the dataframe based used on gross salary and List out bottom two record from the dataframe.**
3) **Display all records from dataframe whose gross Display gross salary is more than 25000 . 4) Display gross salary of employee whose eno is 4.**

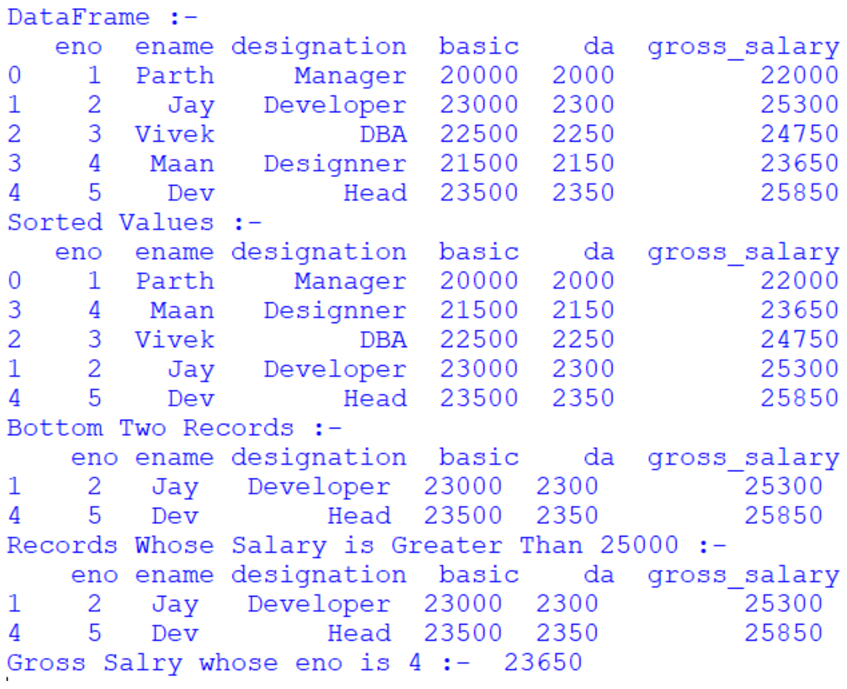
Create Table

```
create table Employee(eno number primary key, Ename text(20),designation text(10),basic
number , da number, gross_salary number);
```

Solution

```
import pandas as p
#Read Data Into DataFrame
employee_data={
        'eno':[1,2,3,4,5],
        'ename':['Parth','Jay','Vivek','Maan','Dev'],
        'designation':['Manager','Developer','DBA','Designner','Head'],
        'basic':[20000,23000,22500,21500,23500],
        'da':[2000,2300,2250,2150,2350],
        'gross_salary':[22000,25300,24750,23650,25850]
}
emp=p.DataFrame(employee_data)
print("DataFrame :- ")
print(emp)
#Sorting DataFrame By Gross Salary & Listing Out Bottom Two Records
sorted=emp.sort_values('gross_salary')
print("Sorted Values :-")
print(sorted)
print("Bottom Two Records :-\n",sorted.tail(2))
#Displaying Records Whose Salary is Greater Than 25000
print('Records Whose Salary is Greater Than 25000 :-\n',emp[emp['gross_salary']>=25000])
#Displaying Gross Salary Whose eno is 4
print('Gross Salry whose eno is 4 :- ',emp.loc[emp['eno']==4,'gross_salary'].values[0])
```

Output



```
DataFrame :-
   eno  ename designation  basic    da  gross_salary
0    1  Parth     Manager  20000  2000         22000
1    2    Jay   Developer  23000  2300         25300
2    3  Vivek         DBA  22500  2250         24750
3    4   Maan   Designner  21500  2150         23650
4    5    Dev        Head  23500  2350         25850
Sorted Values :-
   eno  ename designation  basic    da  gross_salary
0    1  Parth     Manager  20000  2000         22000
3    4   Maan   Designner  21500  2150         23650
2    3  Vivek         DBA  22500  2250         24750
1    2    Jay   Developer  23000  2300         25300
4    5    Dev        Head  23500  2350         25850
Bottom Two Records :-
    eno ename designation  basic    da  gross_salary
1    2   Jay   Developer  23000  2300         25300
4    5   Dev        Head  23500  2350         25850
Records Whose Salary is Greater Than 25000 :-
    eno ename designation  basic    da  gross_salary
1    2   Jay   Developer  23000  2300         25300
4    5   Dev        Head  23500  2350         25850
Gross Salry whose eno is 4 :-  23650
```

Question 3

Create CSV file for product selling for 6 months and add only 5 record for 5 different product.

Prod_name	JAN	FEB	MAR	APR	MAY	JUN

Create Python script for following program:

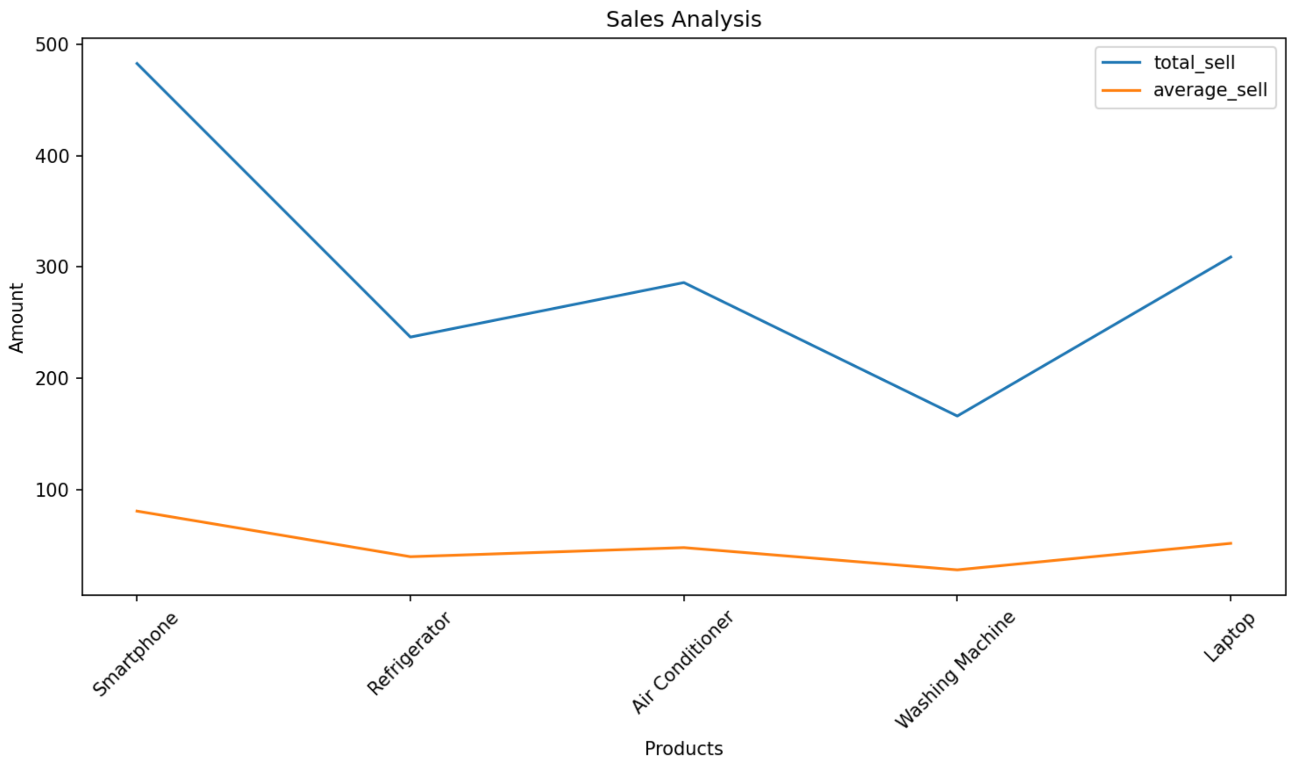
1) **Read data into DataFrame**
2) **Add columns and calculate total_sell, average_sell**
3) **Plot Total sell and average sell together on Line chart with proper legends, Titles and Lables.**
4) **Save the DataFrame to CSV named 'sell_analysis.csv'**

Solution

```
import pandas as p
import matplotlib.pyplot as plt
#Read Data into DataFrame
data={
    'Prod_name':['Smartphone','Refrigerator','Air Conditioner','Washing Machine','Laptop'],
    'JAN':[80,34,43,20,46],
    'FEB':[90,32,45,11,34],
    'MAR':[75,40,56,36,65],
    'APR':[95,34,54,23,45],
    'MAY':[56,43,56,67,43],
    'JUN':[87,54,32,9,76]
  }
df=p.DataFrame(data)
print(df)
#Calculate Total Sell And Average Sell
df['total_sell']=df.iloc[:,1:7].sum(axis=1)
df['average_sell']=df.iloc[:,1:7].mean(axis=1)
print(df)
#Line Chart
plt.figure(figsize=(10,6))
plt.plot(df['Prod_name'],df['total_sell'],label='total_sell')
plt.plot(df['Prod_name'],df['average_sell'],label='average_sell')
plt.xlabel('Products')
plt.ylabel('Amount')
plt.title('Sales Analysis')
plt.xticks(rotation=45)
plt.legend()
#DataFrame To CSV
df.to_csv('sell_analysis.csv',index=False)
#Show Chart
plt.tight_layout()
plt.show()
```

Output

```
Read Data Into DataFrame :-
          Prod_name  JAN  FEB  MAR  APR  MAY  JUN
0        Smartphone   80   90   75   95   56   87
1      Refrigerator   34   32   40   34   43   54
2   Air Conditioner   43   45   56   54   56   32
3   Washing Machine   20   11   36   23   67    9
4            Laptop   46   34   65   45   43   76
Average Sell and Total Sell :-
          Prod_name  JAN  FEB  MAR  APR  MAY  JUN  total_sell  average_sell
0        Smartphone   80   90   75   95   56   87         483     80.500000
1      Refrigerator   34   32   40   34   43   54         237     39.500000
2   Air Conditioner   43   45   56   54   56   32         286     47.666667
3   Washing Machine   20   11   36   23   67    9         166     27.666667
4            Laptop   46   34   65   45   43   76         309     51.500000
```



Name :- Gheewala Jay Kanaiyalal
Class :- SYBCA
Division :- D
Roll No :-718

sell_analysis.csv

```
Prod_name,JAN,FEB,MAR,APR,MAY,JUN,total_sell,average_sell

Smartphone,80,90,75,95,56,87,483,80.5

Refrigerator,34,32,40,34,43,54,237,39.5

Air Conditioner,43,45,56,54,56,32,286,47.666666666666664

Washing Machine,20,11,36,23,67,9,166,27.666666666666668

Laptop,46,34,65,45,43,76,309,51.5
```

Question 4

Write a phython script to do following on student (Rollno, Name, Sub 1, Sub 2, Sub 3, total) table:

1) **Insert atleast 5 to 10 records.**
2) **Update the specific record value.**
3) **Delete the record specific record.**
4) **Display student detail who got highest total marks**

Solution

```
import sqlite3
def insert():
    db=sqlite3.connect('student.db')
    cur=db.cursor()
    rollno=int(input("Enter RollNo :- "))
    name=input("Enter Name :- ")
    sub1=int(input("Enter Marks1 :- "))
    sub2=int(input("Enter Marks2 :- "))
    sub3=int(input("Enter Marks3 :- "))
    total=sub1+sub2+sub3
    cur.execute("insert into student values(?,?,?,?,?,?)",(rollno,name,sub1,sub2,sub3,total))
    db.commit()
    cur.close()
    db.close()

def update():
    db=sqlite3.connect('student.db')
    cur=db.cursor()
    up=int(input("Enter RollNo To Update :- "))
    name=input("Enter New Name :- ")
    sub1=int(input("Enter New Marks1 :- "))
    sub2=int(input("Enter New Marks2 :- "))
    sub3=int(input("Enter New Marks3 :- "))
    total=sub1+sub2+sub3
    cur.execute("update student set name=?,sub1=?,sub2=?,sub3=?,total=? where
rollno=?",(name,sub1,sub2,sub3,total,up))
    db.commit()
    cur.close()
    db.close()
```

```
def delete():
   db=sqlite3.connect('student.db')
   cur=db.cursor()
   d=input("Enter RollNo To Delete :- ")
   cur.execute("delete from student where rollno=?",(d))
   db.commit()
   cur.close()
   db.close()

def fetch():
   db=sqlite3.connect('student.db')
   cur=db.cursor()
   cur.execute("select * from student where total=(select max(total)from student)")
   d=cur.fetchone()
   print(d)
   db.commit()
   cur.close()
   db.close()

def main():
   ch=0
   while ch!=5:
      ch=int(input("\n1.Insert\n2.Update\n3.Delete\n4.Highest Marks\n5.Exit\nEnter
Choice:- "))
      if(ch==1):
         insert()
      elif(ch==2):
         update()
      elif(ch==3):
         delete()
      elif(ch==4):
         fetch()

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

Output

```
1.Insert

2.Update
```

```
3.Delete

4.Highest Marks

5.Exit

Enter Choice:- 1

Enter RollNo :- 1

Enter Name :- Jay

Enter Marks1 :- 87

Enter Marks2 :- 78

Enter Marks3 :- 90


1.Insert

2.Update

3.Delete

4.Highest Marks

5.Exit

Enter Choice:- 1

Enter RollNo :- 2

Enter Name :- Vivek

Enter Marks1 :- 99

Enter Marks2 :- 97

Enter Marks3 :- 97


1.Insert

2.Update

3.Delete

4.Highest Marks

5.Exit
```

```
Enter Choice:- 1

Enter RollNo :- 3

Enter Name :- Parth

Enter Marks1 :- 67

Enter Marks2 :- 87

Enter Marks3 :- 77


1.Insert

2.Update

3.Delete

4.Highest Marks

5.Exit

Enter Choice:- 2

Enter RollNo To Update :- 3

Enter New Name :- Parth1

Enter New Marks1 :- 65

Enter New Marks2 :- 65

Enter New Marks3 :- 65


1.Insert

2.Update

3.Delete

4.Highest Marks

5.Exit

Enter Choice:- 3

Enter RollNo To Delete :- 1
```

```
1.Insert

2.Update

3.Delete

4.Highest Marks

5.Exit

Enter Choice:- 4

(2, 'Vivek', 99, 97, 97, 293)


1.Insert

2.Update

3.Delete

4.Highest Marks

5.Exit

Enter Choice:- 5
```

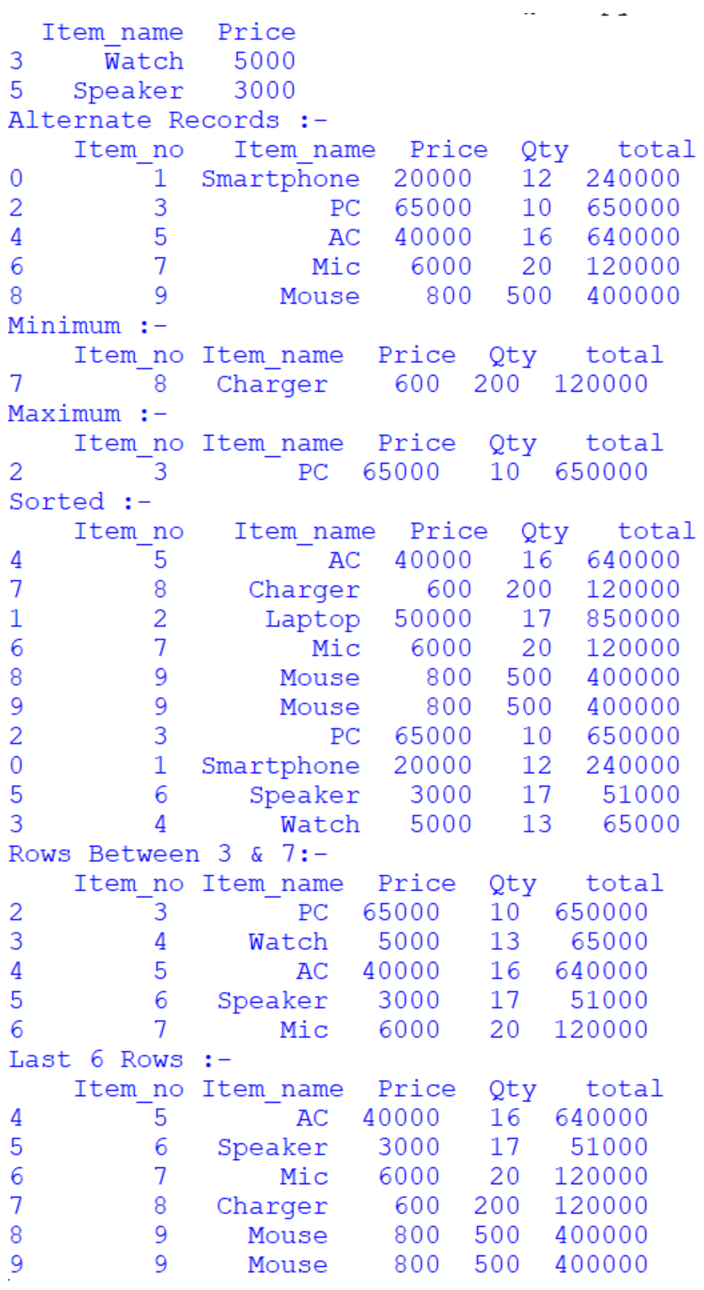
Question 5

Write Python Script to do followings on item.csv (Item_no, Item_name, Price, Qty, total)
1) **Write item's detail in the item.csv file.   Calculate total = price * Qty**
2) **Using data frame display item name and price whose price is between 1000 to 5000.**
3) **Display alternate records from item.csv file.**
4) **Display items whose price is minimum, maximum.**
5) **Sort the data according to item name wise.**
6) **Display items rows between 3th to 7th row.**
7) **Display last 6 rows.**

Solution

```
import pandas as p
data=p.read_csv('item.csv')
#Write CSV file
new_item={'Item_no':9,'Item_name':'Mouse','Price':800,'Qty':500}
new_item['total']=new_item['Price']*new_item['Qty']
data=data._append(new_item,ignore_index=True)
data.to_csv('item.csv',index=False)
#Display Item name and price whose price is between 1000 to 5000
filtered=data[(data['Price']>=1000) & (data['Price']<=5000)]
print(filtered[['Item_name','Price']])
#Alternate Records
print("Alternate Records :-\n",data.iloc[::2])
#Minimum & Maximum Price
min=data[data['Price']==data['Price'].min()]
max=data[data['Price']==data['Price'].max()]
print("Minimum :-\n",min)
print("Maximum :-\n",max)
#Sort
sorted=data.sort_values(by='Item_name')
print("Sorted :-\n",sorted)
#Display Rows Between 3 & 7
print("Rows Between 3 & 7:-\n",data.iloc[2:7])
#Last 6 Rows
print("Last 6 Rows :-\n",data.tail(6))
```

Output



```
  Item_name  Price
3     Watch   5000
5   Speaker   3000
Alternate Records :-
    Item_no   Item_name  Price  Qty   total
0         1  Smartphone  20000   12  240000
2         3          PC  65000   10  650000
4         5          AC  40000   16  640000
6         7         Mic   6000   20  120000
8         9       Mouse    800  500  400000
Minimum :-
    Item_no Item_name  Price  Qty   total
7         8   Charger    600  200  120000
Maximum :-
    Item_no Item_name  Price  Qty   total
2         3        PC  65000   10  650000
Sorted :-
    Item_no   Item_name  Price  Qty   total
4         5          AC  40000   16  640000
7         8     Charger    600  200  120000
1         2      Laptop  50000   17  850000
6         7         Mic   6000   20  120000
8         9       Mouse    800  500  400000
9         9       Mouse    800  500  400000
2         3          PC  65000   10  650000
0         1  Smartphone  20000   12  240000
5         6     Speaker   3000   17   51000
3         4       Watch   5000   13   65000
Rows Between 3 & 7:-
    Item_no Item_name  Price  Qty   total
2         3        PC  65000   10  650000
3         4     Watch   5000   13   65000
4         5        AC  40000   16  640000
5         6   Speaker   3000   17   51000
6         7       Mic   6000   20  120000
Last 6 Rows :-
    Item_no Item_name  Price  Qty   total
4         5        AC  40000   16  640000
5         6   Speaker   3000   17   51000
6         7       Mic   6000   20  120000
7         8   Charger    600  200  120000
8         9     Mouse    800  500  400000
9         9     Mouse    800  500  400000
```

Name :- Gheewala Jay Kanaiyalal
Class :- SYBCA
Division :- D
Roll No :-718

Question 6

Sales (sid, year, totalsales)
Create above table into a SQLite database with appropriate constraints.

1) Insert at least 5-10 records into the sales table

2) Export sales table data into sales.csv file.

3) Write a python scripts that read the sales.csv file and plot a bar chart that shows totalsales of the year. Also decorate the chart with appropriate title, lables, colours etc.

Solution

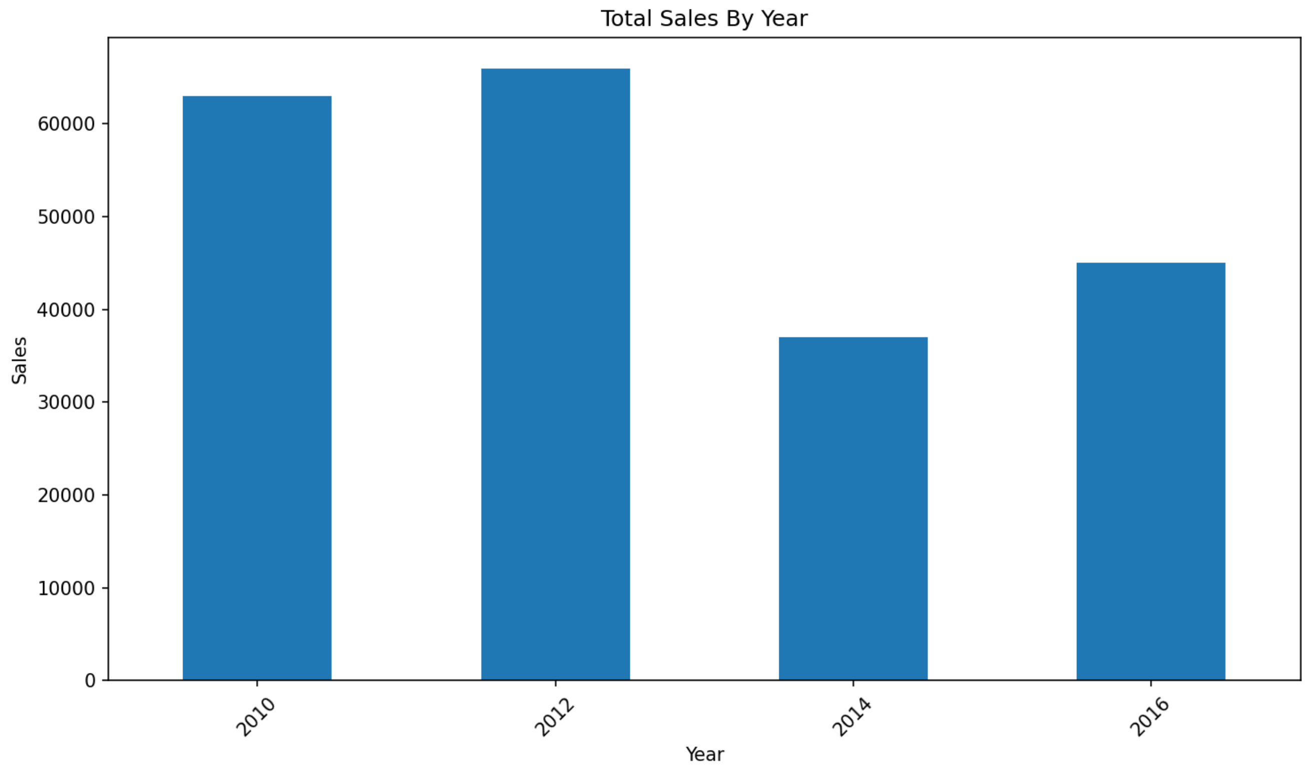
SQLite

```
sqlite> .open sales.db
sqlite> create table Sales(sid number primary key,year number,totalsales number);
sqlite> insert into Sales
values(1,2010,30000),(2,2012,34000),(3,2012,32000),(4,2014,37000),(5,2016,45000)
,(6,2010,33000);
sqlite> .mode csv
sqlite> .output sales.csv
sqlite> .header on
sqlite> select * from Sales;
```

Python

```
import pandas as p
import matplotlib.pyplot as plt
df=p.read_csv('sales.csv')
yearly_sales=df.groupby('year')['totalsales'].sum()
plt.figure(figsize=(10,6))
yearly_sales.plot(kind='bar')
plt.title('Total Sales By Year')
plt.xlabel('Year')
plt.ylabel('Sales')
plt.xticks(rotation=45)
plt.tight_layout()
plt.show()
```

Output



Name :- Gheewala Jay Kanaiyalal
Class :- SYBCA
Division :- D
Roll No :-718

Question 7

Create following table with appropriate constraints in Collage Database:
Employee (E_ID, Name, Dob, Designation, Salary)

a) **Dump Employee table structure and data in Emp.csv file.**
b) **Dump whole Database named College in Emp1.csv file.**

Solution

```
sqlite>.open Collage.db
sqlite>CREATE TABLE Employee (E_ID number primary key,Name text,Dob date,Designation
text, Salary real);
sqlite>INSERT INTO Employee VALUES
        (1,'Jay','25-Jun-2005','Developer',20000.0),
        (2,'Vivek','15-Apr-2005','Designer',23000.0),
        (3,'Parth','18-Aug-2004','Head',25000.0);
sqlite>.output emp.csv
sqlite>.dump Employee
sqlite>.output emp1.csv
sqlite>.dump
```

Output

emp.csv

```
PRAGMA foreign_keys=OFF;

BEGIN TRANSACTION;

CREATE TABLE Employee (E_ID number primary key,Name text,Dob date,Designation
text, Salary real);

INSERT INTO Employee VALUES(1,'Jay','25-Jun-2005','Developer',20000.0);

INSERT INTO Employee VALUES(2,'Vivek','15-Apr-2005','Designer',23000.0);

INSERT INTO Employee VALUES(3,'Parth','18-Aug-2004','Head',25000.0);

COMMIT;
```

emp1.csv

```
PRAGMA foreign_keys=OFF;

BEGIN TRANSACTION;
```

```
CREATE TABLE Employee (E_ID number primary key,Name text,Dob date,Designation
text, Salary real);

INSERT INTO Employee VALUES(1,'Jay','25-Jun-2005','Developer',20000.0);

INSERT INTO Employee VALUES(2,'Vivek','15-Apr-2005','Designer',23000.0);

INSERT INTO Employee VALUES(3,'Parth','18-Aug-2004','Head',25000.0);

COMMIT;
```

Question 8

Create following table with appropriate Constraints: Product (prod_id , prod_name , price, qty,total_amount)
1) Import Product.csv file data into Product table.
2) Export Product table data into prod.csv file

Solution

```
    sqlite> create table Product (prod_id number primary key, prod_name text, price real, qty
number,total_amount real);
    sqlite> .mode csv
    sqlite> .import product.csv Product
    sqlite> .output prod.csv
    sqlite> select * from Product;
```

Output

prod.csv

```
prod_id,prod_name,price,qty,total_amount

1,Smartphone,20000.0,12,240000.0

2,Laptop,50000.0,17,850000.0

3,PC,65000.0,10,650000.0

4,Watch,5000.0,13,65000.0

5,AC,40000.0,16,640000.0

6,Speaker,3000.0,17,51000.0

7,Mic,6000.0,20,120000.0

8,Charger,600.0,200,120000.0

9,Mouse,800.0,500,400000.0
```

Question 9

Employee(Eno number ,Ename text ,Desg text ,Salary number ,City text ,Email text)

Write a SQL trigger named emp_trigger that is designed to execute before inserting records into the emp table. The trigger should perform the following action:

1) **Check if the 'email' field in the newly inserted record follows a specific email address pattern. (example : abc@gmail.com)**

Solution

```
sqlite> create table Employee(Eno number primary key,Ename text,Desg text,Salary number,City text,Email text);
sqlite> create trigger emp_trigger before insert on Employee
  ...> begin
  ...>       select
  ...>             case
  ...>                   when new.Email not like '%@gmail.com' then
  ...>                         raise(abort,'Invalid Email')
  ...>             end;
  ...> end;
```

Output

```
sqlite> insert into Employee values (1,'Jay','Head',20000,'Surat','123');
Runtime error: Invalid Email (19)
sqlite> insert into Employee values (1,'Jay','Head',20000,'Surat','123@gmail.com');
1 Record Inserted;
```

Name :- Gheewala Jay Kanaiyalal
Class :- SYBCA
Division :- D
Roll No :-718