

**M.Marks-30**

**Time-3 Hours**

1. Write a program to create a dataframe a list containing dictionaries of the exam performances of five students- 8

| Name   | Eng | Acct | Eco | Bst | IP |
|--------|-----|------|-----|-----|----|
| Pankaj | 67  | 78   | 89  | 76  | 90 |
| Rekha  | 98  | 87   | 84  | 89  | 93 |
| Ajay   | 98  | 56   | 49  | 87  | 76 |
| Raju   | 34  | 51   | 76  | 54  | 67 |
| Suraj  | 78  | 54   | 45  | 63  | 61 |

Perform the following-

- Display the DataFrame
- Add the another column PE:[56,78,98,45,78]
- Display from 1<sup>st</sup> to 3<sup>rd</sup> rows
- Display the columns from Name to Eco.
- D display another column 'Total 'which will show the total marks of all subjects
- Display the rows in order of total

2. Table: Employee 7

| No | Name    | Salary | Zone   | Age | Grade | Dept |
|----|---------|--------|--------|-----|-------|------|
| 1  | Mukul   | 30000  | West   | 28  | A     | 10   |
| 2  | Kritika | 35000  | Centre | 30  | A     | 10   |
| 3  | Naveen  | 32000  | West   | 40  |       | 20   |
| 4  | Uday    | 38000  | North  | 38  | C     | 30   |
| 5  | Nupur   | 32000  | East   | 26  |       | 20   |
| 6  | Mokesh  | 37000  | South  | 28  | B     | 10   |
| 7  | Shelly  | 36000  | North  | 26  | A     | 30   |

Create the above table-Employee and insert all the rows. Based on this tables write SQL statements for the following queries: -

- To display 2<sup>nd</sup> to 4<sup>th</sup> letters from all names.
- Display the highest and lowest salaries of the employees .
- Display lowest salary all employees where names contain 5 characters.
- Display zone wise highest salary having highest salary above 35000.
- To display no of employees in each department where minimum salary is 30000.

3. Practical File 5

4. Project Work 5

5.Viva-Voce 5

## Solution

1.

```
import pandas as pd
result={'Name':['Pankaj','Rekha','Ajay','Raju','Suraj'],'Eng':[67,98,98,34,78], 'Acct':[78,87,56,51,54],
        'Eco':[89,84,49,76,45],
        'Bst':[76,89,87,54,63],
        'IP':[90,93,76,67,61]}
df=pd.DataFrame(result)
print(df)
df['PE']=[56,78,98,45,78]
print(df)
print(df[0:3])
print(df.rename(columns={"Bst":"BStudies"}))
print(df.iloc[:,0:4])
df['Total']=df['Eng']+df['Acct']+df['Eco']+df['Bst']+df['IP']+df['PE']
print(df)
print(df.sort_values(by=['Total']))
```

2.

```
create table Employee(No integer(4),Name varchar(28),Salary decimal(8,2),Zone varchar(15),Age
integer(4),Grade char(1),Dept integer(4));
insert into Employee values(1,'mukul',30000,'west',28,'A',30);
insert into Employee values(2,'kritika',35000,'centre',30,'A',10);
insert into Employee values(3,'haveen',32000,'west',40,null,10);
insert into Employee values(4,'uday',38000,'north',38,'A',30);
insert into Employee values(5,'nupur',32000,'east',26,null,20);
insert into Employee values(6,'mokesh',37000,'south',28,'B',10);
insert into Employee values(7,'shelly',36000,'north',26,'A',30);
```

```
Select substr(Name,2,3) from Employee;
```

```
Select Max(salary),Min(salary) from Employee;
```

```
Select min(salary) from Employee where length(name)=5;
```

```
Select zone,max(salary) from Employee group by zone having max(salary)>35000;
```

```
Select dept,count(*),min(salary) from Employee group by dept having min(salary)=30000;
```

**Marks-30**

**Time-3 Hours**

1. Write command to create a dataframe with following list of values

A=[[23,56,87,98],[78],[32,54],[43,65,90]]

Write command for the following-

- Display the DataFrame
- To count the number of non-NA values present each column and rows in the dataframe
- Replace all NaN values of 2<sup>nd</sup> column with 50 and 4<sup>th</sup> column with 70.
- To transpose the dataframe
- To fill missing values by copying value from above adjacent cell 8

2. Table: Employee 7

| No | Name    | Salary | Zone   | Age | Grade | Dept |
|----|---------|--------|--------|-----|-------|------|
| 1  | Mukul   | 30000  | West   | 28  | A     | 10   |
| 2  | Kritika | 35000  | Centre | 30  | A     | 10   |
| 3  | Naveen  | 32000  | West   | 40  |       | 20   |
| 4  | Uday    | 38000  | North  | 38  | C     | 30   |
| 5  | Nupur   | 32000  | East   | 26  |       | 20   |
| 6  | Mokesh  | 37000  | South  | 28  | B     | 10   |
| 7  | Shelly  | 36000  | North  | 26  | A     | 30   |

Create the above table-Employee and insert all the rows. Based on this tables write SQL statements for the following queries: -

- To display first three letters from all names.
- To display the total salary for all the employees who are from West zone.
- To count no of employees without any grade.
- To display zone wise highest salary and lowest salary.
- To display minimum age of employees in each zone whose name start with 'N'.

3. Practical File 5

4. Project Work 5

5. Viva-Voce 5

Solution:

1. 

```
import pandas as pd
A=[[23,56,87,98],[78],[32,54],[43,65,90]]
df=pd.DataFrame(A)
print(df)
print(df.count())
print(df.count(1))
print(df.fillna({1:50,3:70}))
print(df.T)
print(df.fillna(method='ffill'))
```
- 2.

```
create table Employee(No integer(4),Name varchar(28),Salary decimal(8,2),Zone
varchar(15),Age integer(4),Grade char(1),Dept integer(4));
```

```
insert into Employee values(1,'mukul',30000,'west',28,'A',30);
insert into Employee values(2,'kritika',35000,'centre',30,'A',10);
insert into Employee values(3,'naveen',32000,'west',40,null,10);
insert into Employee values(4,'uday',38000,'north',38,'A',30);
insert into Employee values(5,'nupur',32000,'east',26,null,20);
insert into Employee values(6,'mokesh',37000,'south',28,'B',10);
insert into Employee values(7,'shelly',36000,'north',26,'A',30);
```

```
Select left(Name,3) from Employee;
```

```
Select sum(Salary) from Employee where dept=10 and zone="west";
```

```
Select count(*)from Employee where grade is NULL;
```

```
Select zone,max(salary),min(salary) from Employee group by zone;
```

```
Select zone,min(age) from Employee where zone like"N%" group by zone ;
```

**M.Marks-30**

**Time-3 Hours**

1. Write a program in Python Pandas to create the following DataFrame batsman from a Dictionary:

| B_NO | Name          | Score1 | Score2 |
|------|---------------|--------|--------|
| 1    | Sunil Pillai  | 90     | 80     |
| 2    | Gaurav Sharma | 65     | 45     |
| 3    | Piyush Goel   | 70     | 90     |
| 4    | Kartik Thakur | 80     | 76     |

Perform the following operations on the DataFrame :

- 1)Display the DataFrame.
- 2)Add both the scores of a batsman and assign to column "Total"
- 3)Display the highest score in both Score1 and Score2 of the DataFrame.
- 4)Display the lowest score in Score2.
- 5)Display no of records present in each rows and columns.
- 6)Display sum of Score1 .

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2. Table: Employee

7

| No | Name    | Salary | Zone   | Age | Grade | Dept |
|----|---------|--------|--------|-----|-------|------|
| 1  | Mukul   | 30000  | West   | 28  | A     | 10   |
| 2  | Kritika | 35000  | Centre | 30  | A     | 10   |
| 3  | Naveen  | 32000  | West   | 40  |       | 20   |
| 4  | Uday    | 38000  | North  | 38  | C     | 30   |
| 5  | Nupur   | 32000  | East   | 26  |       | 20   |
| 6  | Mokesh  | 37000  | South  | 28  | B     | 10   |
| 7  | Shelly  | 36000  | North  | 26  | A     | 30   |

Create the above table-Employee and insert all the rows. Based on this tables write SQL statements for the following queries: -

- To display employee name and zone together.
- To display the average salary of all the employees whose names start with 'N'.
- To count zone wise no of employees where no of employees less than 2.
- To display department wise highest, lowest ,total and average salary.
- To display zone wise average salary where average salary is above 35000 in descending order of zone name.

3. Practical File

5

4. Project Work

5

5. Viva-Voce

5

Solution:

1.

```
import pandas as pd
d1={'B_NO':[1,2,3,4],'Name':['Sunil Pillai',"Gaurav Sharma","Piyush Goel","Kartik Thakur"],
    'Score1':[90,65,70,80],'Score2':[80,45,95,76]}
df=pd.DataFrame(d1)
print(df)
df['Total'] = df['Score1']+ df['Score2']
print(df)
print("Maximum scores are : " ,max(df['Score1']), max(df['Score2']))
print("Minimum score of Score2:",min(df['Score2']))
print("The number records present in each rows in the dataframe is",(df.count(axis=1)))
print("The number records present in each columns in the dataframe is",(df.count(axis=0)))
print("The sum of Score1 is",(df['Score1'].sum()))
```

2.

```
create table Employee(No integer(4),Name varchar(28),Salary decimal(8,2),Zone varchar(15),Age
integer(4),Grade char(1),Dept integer(4));
insert into Employee values(1,'mukul',30000,'west',28,'A',30);
insert into Employee values(2,'kritika',35000,'centre',30,'A',10);
insert into Employee values(3,'haveen',32000,'west',40,null,10);
insert into Employee values(4,'uday',38000,'north',38,'A',30);
insert into Employee values(5,'nupur',32000,'east',26,null,20);
insert into Employee values(6,'mokesh',37000,'south',28,'B',10);
insert into Employee values(7,'shelly',36000,'north',26,'A',30);
```

```
Select concat(Name,Zone) from Employee;
```

```
Select Avg(Salary) from Employee where Name like"N%";
```

```
Select zone,count(*) from Employee group by zone having count(*)>2;
```

```
Select dept,max(salary),min(salary),sum(salary),avg(salary)from Employee group by dept;
```

```
Select zone,avg(salary)from Employee group by zone having avg(salary)>35000 order by zone;
```