Informatics Practices – XII
Practical Based Practices Questions

Q1 As a part of data analysis, a company wants to record the raw material used (in millions of tons) in the years from 2018 to 2021 as given below:

Year	2018	2019	2020	2021
Raw material used (in millions of tons)	12	15	10	18

Write a python code to create a Series object using years as indices and the amount of of raw material used as data. Finally, display the elements of the Series Object.

Q2 Write a python code to accept the city names and temperature recorded in degree Celsius in two lists (Say, List1 and List2). Further create a Series object using elements of List1 and List2 as data and indices respectively. Sort and display the elements of Series object based on

- Descending order of temperature
- Ascending order of city names

Q3 Write a python code to assign data in two Series objects as shown below:

S1 = [15, 45, 62, 78, 59]

S2 = [8, 12, 5, 9, 7]

Perform the following arithmetic on the above Series:

SumSeries = (S1*S2) / (S1 + S2)

Finally, Display the data of "SumSeries" object.

Q4 Write a Python code to create a Series using 10 integer numbers. Display only the even numbers among the given set of numbers.

Q5 Write a Python code to create a DataFrame by using the specification given below:

	Eng	Maths	Science
First	87	92	76
Second	79	98	78
Third	84	65	73

In the above structure, First, Second, Third and Eng, Maths, Science are the row and column indices respectively. Display the following information from the above DataFrame:

I. Number of rows in the DataFrame
II. Number of values in each column of the DataFrame
III. First two rows of the DataFrame
IV. Last two rows of the DataFrame

Q6 Write a Python code to create a DataFrame to record the sales of a company under different quarters in the years 2020 and 2021. Use the quarters (Qtr1,Qtr2,Qtr3 and Qtr4) as row indices. Display the following :

1. Entire DataFrame
2. The sale value of both the year in quarter Qtr3
3. The sale values of all the quarters in the year 2021

Q7 Write a Python code to create a (3x3) DataFrame containing integer numbers. Display the DataFrame after removing 3rd row and 3rd column of the DataFrame.

Q8 Write a Pyhton code to create a DataFrame containing integer numbers. Display the entire elements of the DataFrame. Also display the number of rows and the number of columns in the DataFrame.

Q10 Write a Python code to create a DataFrame containing marks in Eng1, Eng2 and Total Marks secured by three students of a class. Display the original DataFrame. Also display the marks in Eng1, Eng2 and total marks of the students who have secured 80% and above.

Q11 Write a Python code to create a 3x3 DataFrame using row indices 1,2,3 and column indices 'A', 'B', 'C' containing integer numbers. Transpose the DataFrame and display original and transposed DataFrames.

Q12 Write a Python code to create a DataFrame with the following Details

Name	Class	Stream	Percentage
Prakash	XI A	Maths	90
Soham	XI B	Computer	95
Priyanka	XI C	Arts	88
Deepak	XI D	Commerce	85

- Extract data from the above DataFrame column wise
- Extract data from the above DataFrame Row wise
- Number of dimensions of above DataFrame
- Number of elements of the Above DataFrame

- Shape of the above DataFrame
- Transpose the above DataFrame
- To Display only percentage column of the above DataFrame
- To display columns of the above DataFrame
- To display rows of the above DataFrame
- To add new column Division with the following Values[1,2,1,2]
- Add new row to the above Data Frame ['Sunil', 'XI E', 'Physics', 87]
- Delete row 2 of the above DataFrame

Q13 Write a python code to plot a line graph to depict the number of patients admitted in a hospital for the first six months. The details are given below:

Month = [1, 2, 3, 4, 5, 6]

Patients = [225, 240, 182, 280, 175, 210]

The code also includes the following:

i) x-label y-label

ii) Title

Q14 A function is defined as: y=f(x) where f(x) = x^2+5

Write a code in python to plot two different line graphs representing one for the variable (x) and for f(x) (i.e., y = x^2+5). The details are given below.

x= [1, 4, 7, 10, 12, 16]

y = x^2+5

The code also includes the following:

(i) two different markers and colours for the lines

(ii) x-label and y-label

(iii) Title

Q15 A school has made a drive to collect fund for the under privilege people. The students of class 11 participated in this event. The amount collected by each section is given below:

Class	XI-A	XI-B	XI-C	XI-D	XI-E
Amount	12500	8500	6800	8000	9500

Write a code in python to draw a bar chart. The code also includes the following:

i) use magenta colour to represent the bar

ii) x-label and y-label

iii) Title

Q16 The medal tally in an Olympic is given below:

Medal	United States	China	India
Gold	45	41	35

Sliver	40	38	32
Bronze	27	15	20

Write a code in Python to plot a bar chart representing the medals won by these countries.

The code also include the following:

i) Maintain a Gap between the country's name

ii) X-label and Y-label

iii) Title

iv) to display legend

Q17 In term examination, the marks obtained in Informatics Practices by 50 students are given below:

Marks = [52,52,65,88,90,76,68,95,88,76,55,60,72,74,80,90,85,78,79,80,81, 83,85,86,89,90,91,92,93,94,95,96,97,98,98,99,100,98,100,97,95,94,93,96,89,98,91,92,93,95]

Write a code to python to plot a histogram from the above Data.

The code also includes the following:

i) bins = [40,50,60,70,80,90,100]

ii) Bar color set to magenta and edge colour set to black

iii) x-label and y-label   iv) Title

Q18 In the annual Examination, The performance of the some students of a class in various subjects are given below:

Name	English	Maths	Hindi	Science	Social Science
Rishi	95	95	90	94	95
Waseem	95	76	79	77	89
Kulpreet	78	81	75	76	88
Mathews	88	63	67	77	80
Shiksha	95	55	51	59	80
Mohin	82	55	63	56	74
Tushar	73	49	54	60	77
Pragati	80	50	51	54	76
Smith	92	43	41	48	69
Gurpreet	60	43	55	52	71
Sameer	60	45	58	79	74
Angad	62	43	51	48	54
Angelina	78	33	74	72	81

Write a code in python to do the following:

i) create DataFrame using the above table

ii) draw a line plot.

iii) set x-label as 'Subjects'

iv) set y-label as 'Marks'

v) Set title as 'Performance Analysis'

vi) Save line plot with name 'Performance Analysis'

vii) Save DataFrame to comma seprated file with name 'performance.csv'

MYSQL

1. Write down the SQL command to create database with name Reliance.

2. Write a command to open the Database Reliance

3. Using Reliance Database Create Table 'Store' with the following fields or columns:

Field	Type	Null	Key	Default	Extra
Store_id	Integer	No	Primary	Null	Auto_increment
Store _Name	Varchar(40)	Yes		Null	
City_Name	Varchar(40)	Yes			
N_Employee	Integer	yes			
Date_open	Date				

4. To add new field Sale float(8,2)

5. To modify the field store_name Varchar(50)

6. To rename the field City_Name to City varchar(40) and display the structure of the table Store.

7. By using the table 'Store' to add the following records to the store table

Store_ID	Store_Name	City	N_Employee	Date_open	Sale
101	Planet Fashion	Mumbai	24	2018-10-16	45000.00
102	Trends	Delhi	18	2019-07-14	62000.00
103	Super Fashion	Mumbai	22	2020-06-24	32000.00
104	Rage	Delhi	20	2020-02-06	48000.00
105	Fashion Mart	Delhi	14	2018-04-09	64000.00
106	Vogue	Mumbai	18	2018-03-01	52000.00

Refer the above table Answer following SQL queries and predict the output

i) To display the details of table 'Store' that have 'Fashion' anywhere in their Store_Name.

ii) To display Store_id, City and Date_Open of store that were open after 2018-03-01.

iii) To display Store_Name, City and Date_Open of those stores which have 'u' as Second character in their name.

iv) To display store_id, Store_name, city and N_employee located in the city, only if number of employee is more than 20.

v) To increase the number of employee by 4 where the number is less than 20.

vi) To increase the sale of the table 'Store' by 10%.

vii) To display the first 4 letter of Store_Name

viii) To display the last 4 letter of Store_Name

ix) To remove the leading blanks of Store_Name

x) To display the monthname of Date_open

xi) To display the Minimum sale of Store table

xii) To display the highest Sale of Store table

xiii) To display the average sale of Store table

xiv) To Display the total sale of store table

xv) To count the distinct city of store table

xvi) To display the monthdays of those records whose number of employees is less than 20

xvii) To display the store_id,Store_name of those stores whose Monthofopening is 'April'

xviii) To display the records and count on city name

xix) To display store_id,Store_Name,Sale of those records whose city name is Delhi

xx) To arrange all the records in descending order according to Number of employees.

8. Predict the output of the following queries, performed on MYSQL platform

1. Select Substr('information', -6, 3);

2. Select Right('CB/T012/XII/2023' ,8);

3. Select Left('Computer Science',0);

4. Select MID('TERM ONE EXAM', 5, 3);

5. Select Instr('Hello World', 'O');

6. Select Ucase('Mr. India');

7. Select Ucase('Amazing WORLD');

8. Select TRIM('Trailing' '@' 'FROM '   'Hand'   'set'   );

9. Select LENGTH('!!WELCOME INDIA!!');

10. SELECT ROUND(123.12345,3),ROUND(342.9234,-1);

11. SELECT YEAR('1950/01/26'),MONTH('1950/01/26'),MONTHNAME('1950/01/26'), DAY('1950/01/26');

9. Name the MYSQL function to perform the following tasks on MYSQL platform:

1. To display the name of weekday of your birthday in the format 'YYYY-MM-DD'

2. To display the current time in the format 'HH-MM-SS'

3. To display the current date in the format 'YYYY-MM-DD'

4. To display the name of the month for your birth date in the format 'YYYY-MM-DD'.

5. To display you name in capital letters.

10. Write a queries to perform the given task when two tables are in relation

Database: Reliance

Table1: Employee

E_ID	E_Name	Salary	Age	Dept_no	Grade
11	Somnath	65000	42	D/01	A1
12	Kailash	72000	45	D/02	B1
13	Mohit	56000	31	D/01	A2
14	Ajay	45000	28	D/03	A1

| 15 | Pritam | 58000 | 40 | D/02 | B1 |

Table2: Department

Dept_No	D_Name	E_ID
D/01	Inspection	11
D/02	Maintenance	12
D/03	Report	15

1. To display E_ID,E_Name,Salary and corresponding D_Name of all the employees whose age is between 40 and 45.

2.To display all the records of both the relation using Cartesian Product.

3. To display D_Name and corresponding E_Name from the tables Department and Employee.

4. To display E_Name, Salary, Grade and income tax to calculated as 30%.