KENDRIYA VIDYALAYA SILVASSA
CLASS – XII (INFORMATICS PRACTIES)
HOLIDAY HOMEWORK (AUTUMN BREAK)

PANDAS

1) **Name some common data structures of python's pandas library**
2) **Name the function to iterate over a dataframe horizonatally.**
3) **Name the function to iterate over a dataframe vertically.**
4) **What is CSV file?**
5) **Fill in the blanks :**
6) **The command used to display the title for x-axis to a graph is**
   a. plt.xtitle()
   b. plt.xaxis()
   c. plt.xlabel()
   d. plt.xaxistitle()
7) **Given a Pandas series called p_series, the command which will display the last** 4rowsis .
   a. print(p_series.Tail(4))
   b. print (p_series.Tails(4))
   c. print (p_series.tail(4))
   d. print(p_series.Tails(4))

8) Given the following DataFrames DS1 and DS2:

DS1

A	B
CAT	10
DOG	20
COW	30

DS2

X	Y
OWL	10
CROW	20
SWAN	30

Write a command to find the sum of columns B and Y.

8) **Using Python Matplotlib histograms can be used to count how many values fall** into each interval. Each interval is known as
   a. hist
   b. class
   c. bin
   d. label

9) To represent data column wise in a DataFrame the axisis…….

10) In Pandas the function used to check for null values in a DataFrame is.....

11) Consider the Data Frame below and answer the questions that follow.

	Name	Weight	Height
A_1	Pawan	50	153
A_2	Piyush	60	165
A_3	Prem	40	150
A_4	Prakash	70	145
A_5	Prateek	55	160

a. Which command will produce the following output to extract only a part of

Piyush	**60**
Prem	**40**
Prakash	**70**

dataframe?

b. What is the correct syntax to display the record of Piyush?
i. df_data[df_data['Name']='Piyush']
ii. df_data[df_data['Name']=='Piyush']
iii. df_data[df_data.Name=='Piyush']
iv. df_data['Name']=='Piyush'

c. What output of the command
>>> df_data.max()

d. How do you display only the index of the dataframe df_data?

e. What is the shape of the dataframe df_data?

12) Consider a given Series , M1:

index

	Marks
Term1	45
Term2	65
Term3	24
Term4	89

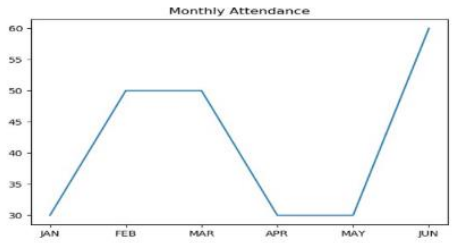
Write a program in Python Pandas to create the series similar to creating a Dataframe.

13) Consider the commands below:

>>> import pandas as pd
>>> lst=[10,20]
>>> ds=pd.Series([10,20])
Here lst is a list and ds is a series. Both have same values 10 and 20. What will be the output of the following commands. Justify your answer.
a. print (lst * 2)
b. print (ds * 2)

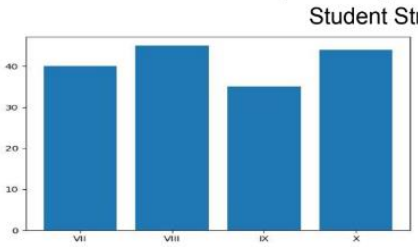
14)

Write a code to plot the Monthly Attendance of students in class as shown in the figure given below:



OR

Draw a bar chart as below representing the number of students in each class.



15) Select the correct statement to set the location of legend to upper left side of a plot.

a) plt.legend(loc= 'upper left')
b) plt.legend(loc=2)
c) plt.legend()
d) Both a) and b)

16) Which of the following can take -1 as in argument?

a) loc b) iloc c) Both a) and b) d) None of the above

17)

Given the following Series S1 and S2:

S1	
A	10
B	30
D	40

S2	
A	10
B	30
C	20

Write the command to find the sum of series S1 and S2 without having NaN values.

18) _____ function is used to save a plot.

a) savefigure() b) savefig() c) saveplot() d) save()

19) Rashi has written the following code to delete the row for "Science" from a DataFrameResultDF. Unfortunately it has some mistakes in it. Help Rashi to correct the code.
ResultDF=ResultDf.drop('Science',axis=1)

20) Consider the following DataFrame **ResultDF** and answer any four questions from (i)- (v)

	Arnab	Ramit	Sam	Riya	Mallika
Maths	75	46	74	45	67
Science	67	34	56	67	43
English	66	45	55	63	70
Hindi	67	56	76	33	45
Soc Sc	59	44	36	72	44

(I) Write down the command that will give the following output.

	Arnab	Mallika
Maths	75	67
English	66	70
Hindi	67	45
Soc Sc	59	44

a) ResultDF=ResultDF.drop('Science',axis=0)
ResultDF=ResultDF.drop('Ramit','Sam','Riya',axis=1)
print(ResultDF)
b) ResultDF=ResultDF.drop('Ramit','Sam','Riya',axis=0)
ResultDF=ResultDF.drop('Science',axis=1)
print(ResultDF)
c) ResultDF=ResultDF.drop('Science',axes=0)
ResultDF=ResultDF.drop('Ramit','Sam','Riya',axes=1)
print(ResultDF)
d) ResultDF=ResultDF.pop('Ramit','Sam','Riya',axis=1)
ResultDF=ResultDF.pop('Science',axis=0)
print(ResultDF)

II) Identify the correct set of statement/s from the given optionsto display names of all students who got more than 90 marksin Maths:
a) print(ResultDF.loc['Maths']>90)
b) print(ResultDF.loc[:'Maths']>90)
c) print(ResultDF.iloc['Maths']>90)
d) None of the above

III) Write a statement to count the number of values in a row.
a) print(ResultDF.count())
b) print(ResultDF.count)
c) print(ResultDF.count(axis=0)
d) print(ResultDF.count(axis=1)

IV) Which of the following command will display the row labels of the DataFrame?
a) print(ResultDF.index())
b) print(ResultDF.index)
c) print(ResultDF.rows)
d) print(ResultDF.Index)

V) Mrs. Sen, the Class teacher wants to add a new row which displays the "Total Marks" for each student. Help her choose the command to doso:
a) ResultDF.loc['TotalMarks']=[ResultDF['Arnab'].sum(),
ResultDF['Ramit'].sum(),ResultDF['Sam'].sum(),
ResultDF['Riya'].sum(),ResultDF['Mallika'].sum()]
b) ResultDF.loc['TotalMarks']=[ResultDF.sum()]
c) ResultDF.iloc['TotalMarks']=[ResultDF['Arnab'].sum(),
ResultDF['Ramit'].sum(),ResultDF['Sam'].sum(),
ResultDF['Riya'].sum(),ResultDF['Mallika'].sum()]
d) None of the above

21) Consider the given dictionary dict1.

dict1={'India': 'New Delhi', 'UK': 'London', 'Japan': 'Tokyo'}

Write a program in python pandas to create a series Country using dictionary dict1 and also write the content of the series Country when displayed.

22)Consider the following Series object series4, having indexes as Jan, Feb, Mar and Apr

Month	Days
Jan	31
Feb	28
Mar	31
Apr	30

i) Write command to assign the series name as "Months"

ii) Write command to display the months having < 31 days

23) Consider the following DataFrame, student:

	Rollno	Name	Class	Marks
S1	1	Akash	XI	250
S2	2	Divya	XII	300
S3	3	Radha	XI	347
S4	4	Ekta	XII	390
S5	5	Palak	XII	400

Write commands to:

(i) Add a new column 'Grade' to theDataFrame.

(ii) To display the records of Class XIIstudents.

24) Write the output foe the following code:

```
import matplotlib.pyplot as plt
x=[4,8,3]
y=[1,6,9]
plt.plot(x,y)
plt.title('Details')
plt.ylabel('Y axis')
plt.xlabel('X axis')
plt.show()
```

25)

Write the code in Pandas to create the following DataFrames. 5

	df1			df2	
	mark1	mark2		mark1	mark2
0	10	20	0	10	15
1	40	45	1	20	25
2	15	30	2	25	30
3	40	70	3	50	30

Write the commandsto do the following operations on the DataFrames given below:

i) To subtract df2 from df1

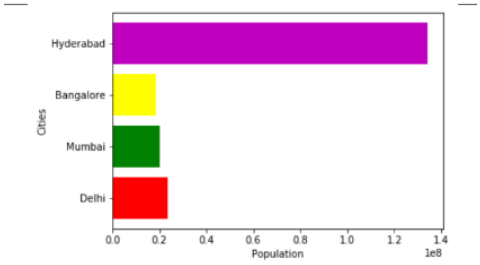
ii) To rename column mark1 as "marks1" in both the DataFrames df1 and df2

iii) To change index label of df1 from 0 to "zero" and 1 to "one"

26)

Draw the following bar graph representing the population of cities:

Cities	Popolation	Colour used in graph
Delhi	23456123	Red
Mumbai	20083104	Green
Bangalore	18456183	Yellow
Hyderabad	134111093	magenta



SQL

1) Predict the output of the following :
    a. SELECT SUBSTR('ABCDEFG',-5,3);
    b. SELECT LEFT('COMPUTER SCIENCE',7);
    c. SELECT INSTR ('Very good', 'good');
    d. SELECT MID('Quadratically',5,6);
    e. SELECT RIGHT ('Command', 3);
2) Explain the purpose of the following functions.
    a. SUBSTR() b. LEFT()
3) Write output of the following
    a. select round(783.34,-2)
    b. select round(456.335,2);
4) Anjali writes the following commands with respect to a table employee having fields, empno, name, department, commission.
   Command1: Select count (*) from employee;
   Command2: Select count(commission) from employee;
   She gets the output as 4 for the first command but gets an output 3 for the second command. Explain the output with justification.

5) Given Table Course:

CID	CNAME	FEES	STARTDATE	TID
C201	AGDCA	12000	2018-07-02	101
C202	ADCA	15000	2018-07-15	103
C203	DCA	10000	2018-10-01	102
C204	DDTP	9000	2018-09-15	104
C205	DHN	20000	2018-08-01	101
C206	O LEVEL	18000	2018-07-25	105

Find out the output for given SQL command:
i) SELECT TID, COUNT (*), MIN(FEES) FROM COURSE GROUP BY TID HAVING COUNT (*) > 1;
ii) SELECT FEES, DAY(STARTDATE) FROM COURSE;
iii) Based on the table given above, write queries for the following task:
    i) Display TID and lowest course fee for each TID.
    ii) Display course details of courses staring in July month.

6) A school "ABC" maintains the following MySQL table named 'student' having following structure to store the details of their students:

Field	Type	Null	Key	Default	Extra
rollno	int(11)	NO	PRI	NULL	
name	varchar(20)	YES		NULL	
dob	date	YES		NULL	
stream	varchar(20)	YES		NULL	
gender	char(1)	YES		NULL	
marks	float	YES		NULL	

Write the SQL query to achieve the following tasks.
i. To display the first three characters of the column stream in UPPER case.
ii. To display the year of birth as "YEAR"
iii. To locate the position of the sub-string "sci" in the column stream.

7) ANITA is working with functions of MySQL. Explain her following:
    i. What is the difference between MONTH() and MonthName() function?
    j. Which function returns the weekday for date.?
    k. What is the output of SELECT MONTHNAME ('2008-02-03')?
8) Predict output for the following SQL queries:
    i) select concat (rtrim ('TERM2 '), 'EXAM');
    ii) select length (rtrim (' TERM2EXAM '));
    iii) select length (trim (' TERM2EXAM '));
9) TABLE STUDENT Write SQL queries for (i) to (iv), which are based on the table: STUDENT

RollNo	Name	Class	DOB	Gender	City	Marks
1	Nanda	X	06-06-1995	M	Agra	551
2	Saurabh	XII	07-05-1993	M	Mumbai	462
3	Sanal	XI	06-05-1994	F	Delhi	400
4	Trisla	XII	08-08-1995	F	Mumbai	450
5	Store	XII	08-10-1995	M	Delhi	369
6	Marisla	XI	12-12-1994	F	Dubai	250
7	Neha	X	08-12-1995	F	Moscow	377
8	Nishant	X	12-06-1995	M	Moscow	489

(i) To display the records from table student in descending alphabetical order as per the name of the student..
(ii) To display Class, Dob and City whose marks is between 450 and 551.

(iii) To display highest marks scored from each city along with the city name.

(iv) To display class and total number of students in each class which are less than 3.

10) Ratna an IT student is confused about finding the outputs of the SQL queries.Help her find the outputs :

Table: food

scode	pname	sname	City	price
S1001	bread	britannia	Cochin	50
S1002	jam	kissan	Trivandrum	40
S1003	chocolate	nestle	kollam	30
S1004	Cake	britannia	Thrissur	20
S1005	icecream	amul	Trivandrum	40
S1006	biscuit	britannia	NULL	20
S1007	butter	amul	Cochin	30
S10078	cheese	amul	kollam	35

(a) select sname, min(price)+max(price) from food group by sname;
(b) select count(city) from food;
(c) select length(pname) from food where city is NULL;
(d) select count(distinct(sname)) from food;

11) Predict the output of the following queries:

i. Select round(6.5675,2);

ii. Select mid('PRE_BOARD_EXAM',4,6);

iii. Briefly explain the purpose of the following SQL functions: i. NOW() ii. RTRIM( )

12) Help suman in predicting the output of the following queries:

i) select length(mid('NETWORKING',2,3)); ii) select DAYOFYEAR('2012-02-08');

13)

A relation Vehicles is given below :

V_no	Type	Company	Price	Qty
AW125	Wagon	Maruti	250000	25
J0083	Jeep	Mahindra	4000000	15
S9090	SUV	Mitsubishi	2500000	18
M0892	Mini van	Datsun	1500000	26
W9760	SUV	Maruti	2500000	18
R2409	Mini van	Mahindra	350000	15

Write SQL commands to:
a. Display the average price of each type of vehicle having quantity more than 20.
b. Count the type of vehicles manufactured by each company.

Find out the Output

a. select Company, count(*) from Vehicles group by company.
b. select V_no,Type,Price from Vehicles where Price>350000.

14) Consider the table Garment and write the query:

Table: GARMENT

G CODE	G NAME	SIZE	COLOUR	PRICE
111	T Shirt	XL	Red	1400.00
112	Jeans	L	Blue	1600.00
113	Skirt	M	Black	1100.00
114	Ladies Jacket	XL	Blue	4000.00
115	Trousers	L	Brown	1500.00
116	Ladies Toop	L	Pink	1200.00

i. Display the Minimum price of the Garment.

ii. Count and display the number of GARMENT from each SIZE where number of GARMENTS are more than 1.

iii. Display the sum of price of each color garment

iv. Select INSTR("Button to Clicked","o");

v.Select MONTHNAME("2017-03-09");

vi. Select RIGHT("Informatics",6);

15) (i) What is DBMS? (ii)What are it's advantages? (iii)Write 2 names of DBMS Software?

16) Akash wants to find the following data from mysql using functions. What commands he will write to

(i) find the name of the day of the current date.

(ii)display your name in capital letter.

(iii)to display the name of the month in which you were born.

17) Consider a table SALESMAN with the following data:

SNO	SNAME	SALARY	BONUS	DOJ
A01	AKASH	25000	106.25	2019-10-14
A02	ANKITA	15000	67.33	2012-08-23
B02	BINAYA	12500	52.41	2015-02-03
B03	NEESHA	35000	NULL	2012-10-08
C07	LALITA	10600	45.78	2021-03-17

Write SQL queries using SQL functions to perform the following operations:

a) Display salesman name and bonus after rounding off to zero decimal places. 15

b) Display the position of occurrence of the string “TA” in salesman names.
c) Display the four characters from salesman name starting from second character.
d) Display the month name for the date of join of salesman
18) Predict the output of the following queries:
i. Select substr(‘abcdefg’,3,4) ii. Select mod(11,4)
iii. Briefly explain the purpose of following SQL functions i. Round() ii. Pow()
19) Write SQL commands for the following table MOVIE:

NO	TITLE	TYPE	RATING	SEATS_LEFT	PRICE
1	SANJU	BIOPIC	A	4	250
2	RAID	ACTION	B	2	175
3	RACE3	ACTION	C	7	245
4	HAAMI	COMEDY	A	3	130

(I)select TYPE,COUNT(*) from MOVIE group by TYPE;
(ii)select TITLE,max(PRICE),min(PRICE) from MOVIE;
(iii)select TITLE,TYPE,SEATS_LEFT from MOVIE order by SEATS_LEFT desc;
(iv)select * from MOVIE where TYPE='ACTION' and PRICE>200;

OR

Based on the above given table named ‘MOVIE’, Satyam has executed following queries:

(I) select count(distinct RATING) from MOVIE;
(ii)select TITLE,max(PRICE) from MOVIE goup by RATING having

20)

ECode	Name	DOJ	DOB
11	Rahe Shyam	13-Sep-2004	23-Aug-1981
12	Chander Nath	22-Feb-2010	12-Jul-1987
13	Fizza	14-Jun-2009	14-Oct-1983
14	Ameen Ahmed	19-Dec-2005	13-Mar-1983

Predict the output:

i. select max(year(DOB)) from emp;
ii. select min(year(DOJ)) from emp;

Or,

Write the queries for the following

i. Find the Eldest employee
ii. Find the Employee who joined most recently

Class : XII B

1) Numbers quantification

and its applications

2) Probability

3) Linear programming

Explain the topic along with required information , Solve sums and write its applications in day to day life