

CYCLE TEST- II

2023-24 (Key)

Name of the student:

Grade: XII

Subject: IP

Date: 07.07.2023

Time: 90 min

Marks: 35

General Instructions:

This question paper is divided into 5 sections – A, B, C, D and E

- Section A, consists of 9 questions (1 – 9). Each question carries 1 mark.
- Section B, consists of 4 questions (10 – 13). Each question carries 2 marks.
- Section C, consists of 3 questions (14 – 16). Each question carries 3 marks.
- Section D, consists of 1 question (17). It carries 4 marks.
- Section E, consists of 1 question (18). It carries 5 marks.
- Internal choices have been given for question numbers – 11, 15, 18.

SECTION-A

9X1=9 Marks

1. Keerthana wants to display the last three rows of the dataframe df and she has written the following command: `df.tail()`
But the last 5 rows are being displayed. To rectify this problem, which of the following statements should be written?
a) `df.Tail(3)` b) `df.last(3)` **c) `df.tail(3)`** d) `df.rows(3)`
2. Which of the following would give the same output as `DF1+DF2` where DF1 and DF2 are dataframes?
a) `DF1.Add(DF2)` b) `DF2.Add(DF1)` c) `Addition (DF1,DF2)` d) `Add(DF1,DF2)`
3. Name the function to iterate over a dataframe vertically(columnwise).
a) `iterrows()` b) `itercolumns()` **c) `iteritems()`** d) `iter()`
4. Write a statement to change the value at 4th row, 3rd column in a DataFrame df.
a) `df.iloc[4,3]` b) **`df.iloc[3,2]`** c) `df.iloc[4,2]` d) `df.iloc[3,3]`
5. Which attribute is not used with DataFrames.
a) `size` **b) `type`** c) `empty` d) `columns`
6. CSV stands for:
a) Column Separated Value b) Class Separated Value
c) Comma Separated Values d) None of the above
7. The data of any CSV file can be shown in which of the following software?
a) MS Word b) Notepad
c) Spreadsheet **d) All of the above**
8. Which library is imported to draw charts in Python?
a) `csv` **b) `matplotlib`** c) `numpy` d) `pandas`
9. Mrs.Sunitha is working with line charts. She wants the chart to be displayed big. She wants 20 size as width, 12 size as height. Identify the correct statement from the following:
a) `matplotlib.pyplot.figure(figsize=(12,20))` **b) `matplotlib.pyplot.figure(figsize=(20,12))`**
c) `matplotlib.pyplot.figure(figsize=(12,20))` d) `matplotlib.pyplot.figure(figsize=(20,12))`

SECTION-B

4X2=8 Marks

10. What is a dataframe. Which package is required to import to work with dataframes.

Ans) A DataFrame is a 2 dimensional data structure, like a 2 dimensional array, or a table with rows and columns.

We need to import pandas.

11. Write a program to create the following Dataframe “States”, and to display the Dataframe.

	State	Capital
State1	Telangana	Hyderabad
State2	Maharastra	Mumbai
State3	Tamilnadu	Chennai

States

```
A) import pandas as pd
Dict={'State':['Telangana','Maharastra','Tamilnadu'],'Capital':['Hyderabad','Mumbai','Chennai']}
States=pd.DataFrame(Dict,index=['State1','State2','State3'])
print(States)
```

(OR)

Write a program to create the following Dataframe “Softwares”, and to display the Dataframe.
Also write output.

	Type	Software Name
0	PL	Java
1	Package	MS Office
2	Animation	Krita

```
Ans) import pandas as pd
list=[["PL","Java"],["Package","MS Office"],["Animation","Krita"]]
Softwares=pd.DataFrame(list,columns=['Type','Software Name'])
print(Softwares)
```

12. Consider the following dataframe “Trains” and write outputs.

	TNo	TrainName
Train1	12473	Prasanthi
Train2	77255	Nsp
Train3	34256	Falaknuma

- print(Trains.ndim)
- print(Trains.size)
- print(Trains.shape)
- print(Trains.T)

Ans)

(a) 2

(b) 6

(c) (3, 2)

(d)

	Train1	Train2	Train3
TNo	12473	77255	34256
TrainName	Prasanthi	Nsp	Falaknuma

13. Write a program to Create a Dataframe “Employee” as per the following and store the data frame as “Salary.csv” file in F Drive, MyDetails folder.

	ENo	Name	Salary
Employee 1	1	Karun	25000.0
Employee 2	2	Nagur	NaN
Employee 3	3	Sulochana	37000.0
Employee 4	4	NaN	41000.0

Answer)

```
import pandas as pd
import numpy as np
dict={'ENo':[1,2,3,4],'Name':['Karun','Nagur','Sulochana',np.NaN],'Salary':[25000,np.NaN,37000,41000]}
Employee=pd.DataFrame(dict,index=['Employee 1','Employee 2','Employee 3','Employee 4'])
Employee.to_csv("F:\\MyDetails\\Salary.csv")
```

14. Consider the given DataFrame 'Health'.

	Diseasename	Agent
0	Common cold	Virus
1	Chickenpox	Virus
2	Cholera	Bacteria
3	Tuberculosis	Bacteria

Write suitable Python statements for the following:

(i) Remove the row containing details of disease named Tuberculosis.

(ii) Add a new disease named 'Malaria' caused by 'Porotozoa'.

(iii) Display the last 2 rows.

Ans)

(i) `Health.drop('Tuberculosis',axis=0)`

(ii) `Health.loc[4]=['Malaria','Protozoa']`

`#Health.loc[4,:]=['Malaria','Protozoa']`

`# DF=DF.append({'Diseasename':'Malaria','Agent':'Protozoa'},ignore_index=True)`

(iii) `print(Health.iloc[3:5])`

`# print(Health.tail(2))`

`# print(Health.iloc[-2::])`

15. Consider the CSV File : "Performance.csv" in the address (location) E:\Student

	A	B	C
1	1	Tagore	75
2	2	Rani	82
3	3	Mohan	78
4	4	Suresh	89
5	5	Prasanna	95

Write a program to read data of the above CSV file to a DataFrame Object "MyData".

Ans)

`import pandas as pd`

`MyData = pd.read_csv("E:\\Student\\Performance.csv")`

(OR)

Write code to copy the following dataframe "Veg" into a CSV file "vegetables.csv" in address (location) D:\Business

	VegName	Price
Veg1	Brinjal	50
Veg2	Onion	30
Veg3	Potato	35

Answer:

`import pandas as pd`

`dict={'VegName':['Brinjal','Onion','Potato'],'Price':[50,30,35]}`

`DF=pd.DataFrame(dict, index=['Veg1','Veg2','Veg3'])`

`Df.to_csv("D:\\Business\\vegetables.csv")`

16. Write a program to display any 4 Vegetable names (on x-axis) and their costs (on y-axis) using line chart. Take your desired plotsize. Write heading labels for x-axis, y-axis and entire chart.

Ans)

`import matplotlib.pyplot as pl`

`pl.figure(figsize=(20,12))`

`VegName=['Brinjal','Onion','Ladies Finger','Drum Stick']`

`VegPrice=[35,25,40,10]`

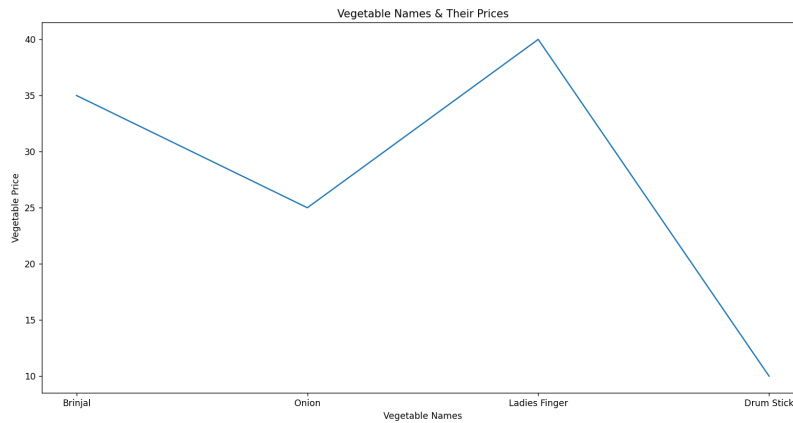
`pl.xlabel("Vegetable Names")`

`pl.ylabel("Vegetable Price")`

`pl.title("Vegetable Names & Their Prices")`

`pl.plot(VegName,VegPrice)`

`pl.show()`



SECTION-D

1X4=4 Marks

17. Write a program to display the following line chart. Take the data accordingly.



Answer:

```
import matplotlib.pyplot as pl
EName=['Rajesh','Sunitha','Naveen','Lakshmi']
ESal=[15000,20000,12000,18000]
pl.xlabel("Employee Names")
pl.ylabel("Employee Salary")
pl.title ("Employees and their salaries")
pl.plot(EName,ESal)
pl.grid(True)
pl.show()
```

SECTION-E

1X5=5 Marks

18. Write a program to create “Trains” Dataframe. Also, write suitable Python statements for the following:

	TNo	TrainName
Train1	12473	Prasanthi
Train2	77255	Nsp
Train3	34256	Falaknuma

- Add a column called “Train_Type” with the following data: ['Express', 'Express', 'Superfast'].
- Add a new train of name ‘Gouthami’ having TNo as “56478” and Train_Type is “Express”.
- Modify the train number “12473” as “15423”
- Rename the column ‘TNo’ to ‘TrainNo’.
- Delete the train, whose trainno is “77255”.

Answer)

- Trains["Train_Type"]=['Express','Express','Superfast']
- Trains.loc["Train4"]=[56478,'Gauthami','Express']
- Trains.at['Train1','TNo']=15423
- Trains=Trains.rename({'TNo':'TrainNo'},axis=1)
- Trains.drop(["Train2"],axis=0,inplace=True)

Full Program:

```
import pandas as pd
DTrain={'TNo':[12473,77255,34256],'TrainName':['Prasanthi','Nsp','Falaknuma']}
Trains=pd.DataFrame(DTrain,index=['Train1','Train2','Train3'])
print(Trains)
Trains["Train Type"]=['Express','Express','Superfast']
Trains.loc["Train4"]=[56478,'Gauthami','Express']
Trains.at["Train1",'TNo']=15423
Trains=Trains.rename({'TNo':'TrainNo'},axis=1)
Trains.drop(["Train2"],axis=0,inplace=True)
print(Trains)
```

Or

Consider the following dataframe “Test”

	One	Two
0	5	25
1	10	30
2	15	35
3	20	40

What will be the output produced by the following code?

- print("I am First : ",Test.loc[1]["Two"])
- print("I am Second : ",Test.iloc[2][0])
- print("I am Third : ",Test.at[3,"One"])
- print("I am Fourth : ",Test.iat[0,1])
- print("I am Fifth : ",Test.iloc[0+1][2-1])

Outputs:

I am First : 30
 I am Second : 15
 I am Third : 20
 I am Fourth : 25
 I am Fifth : 30

Program:

```
import pandas as pd
D={'One':[5,10,15,20],'Two':[25,30,35,40]}
Test=pd.DataFrame(D)
print(Test)
print("I am First : ",Test.loc[1]["Two"])
print("I am Second : ",Test.iloc[2][0])
print("I am Third : ",Test.at[3,"One"])
print("I am Fourth : ",Test.iat[0,1])
print("I am Fifth : ",Test.iloc[0+1][2-1])
```