

## INFORMATICS PRACTICES (065)

### CASE STUDY BASED QUESTIONS

**Q.1.** Mr. Ankit is working in an organisation as data analyst. He uses Python Pandas and Matplotlib for the same. He got a dataset of the passengers for the year 2010 to 2012 for January, March and December. His manager wants certain information from him, but he is facing some problems. Help him by answering few questions given below:

	Year	Month	Passengers
0	2010	Jan	25
1	2010	Mar	50
2	2012	Jan	35
3	2010	Dec	55
4	2012	Dec	65

Code to create the above data frame:

```
import pandas as _____ #Statement 1
data={"Year": [2010,2010,2012,2010,2012], "Month": ["Jan", "Mar", "Jan", "Dec", "Dec"], "Passengers": [25,50,35,55,65]}
df=pd._____ (data) #Statement 2
print(df)
```

i. Choose the right code from the following for statement 1.

- i. pd
- ii. df
- iii. data
- iv. p

Answer: (i) pd

ii. Choose the right code from the following for the statement 2.

- i. Dataframe
- ii. DataFrame
- iii. Series

iv. Dictionary

Answer: (ii) DataFrame

- iii. Choose the correct statement/ method for the required output:  
(5,3)

- i. df.index
- ii. df.shape()
- iii. df.shape
- iv. df.size

Answer: (iii) df.shape

- iv. He wants to print the details of "January" month along with the number of passengers, Identify the correct statement:

**Month Passengers**

0	Jan	25
2	Jan	35

- i. df.loc[['Month', 'Passengers']] [df['Month']=='Jan']
- ii. df[['Month', 'Passengers']] [df['Month']=='Jan']
- iii. df.iloc[['Month', 'Passengers']] [df['Month']=='Jan']
- iv. df(['Month', 'Passengers']) [df['Month']=='Jan']

Answer: (ii) df[['Month', 'Passengers']] [df['Month']=='Jan']

- v. Mr. Ankit wants to change the index of the Data Frame and the output for the same is given below. Identify the correct statement to change the index.

**Year Month Passengers**

Air India	2010	Jan	25
Indigo	2010	Mar	50
Spicejet	2012	Jan	35
Jet	2010	Dec	55
Emirates	2012	Dec	65

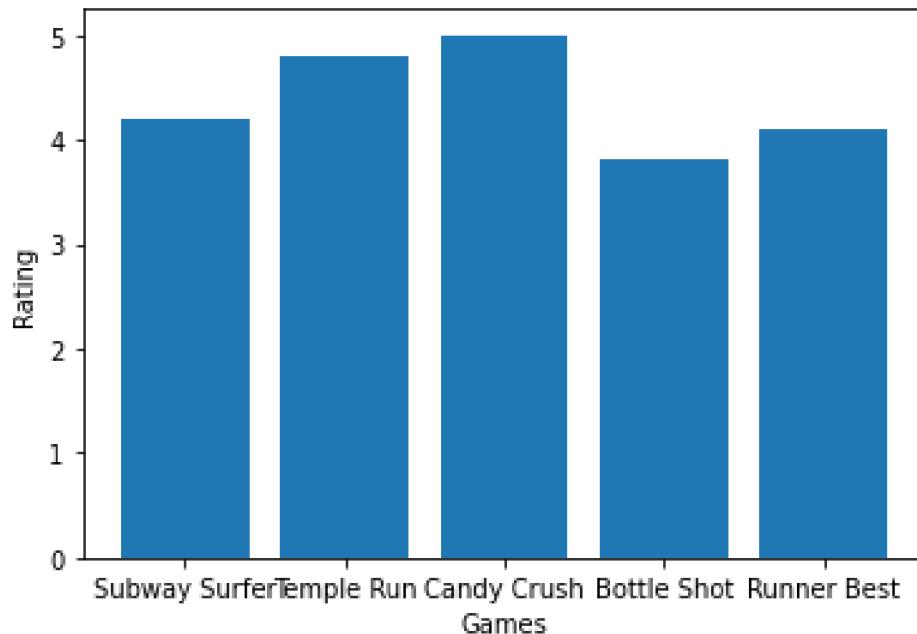
- i. df.index=[]["Air India","Indigo","Spicejet","Jet","Emirates"]
- ii. df.index=["Air India","Indigo","Spicejet","Jet","Emirates"]

iii. df.index=["Air India","Indigo","Spicejet","Jet","Emirates"]  
iv. df.index()=[ "Air India", "Indigo", "Spicejet", "Jet", "Emirates"]

Answer: (iii) df.index=[ "Air India", "Indigo", "Spicejet", "Jet", "Emirates"]

## Q.2.

Mr. Sharma is working in a game development industry and he was comparing the given chart on the basis of the rating of the various games available on the play store.



He is trying to write a code to plot the graph. Help Mr. Sharma to fill in the blanks of the code and get the desired output.

```
import _____ #Statement 1
Games=["Subway Surfer","Temple Run", "Candy Crush", "Bottle Shot", "Runner Best"]
Rating=[4.2,4.8,5.0,3.8,4.1]
plt._____ (Games,Rating) #Statement 2
plt.xlabel("Games")
plt._____ ("Rating") #Statement 3
plt._____ #Statement 4
```

- i. Choose the right code from the following for statement 1.

- i. matplotlib as plt
- ii. pyplot as plt

- iii. `matplotlib.pyplot as plt`
- iv. `matplotlib.pyplot as plt`

v. Answer. (iii) `matplotlib.pyplot as plt`

ii. Identify the name of the function that should be used in statement 2 to plot the above graph.

- i. `line()`
- ii. `bar()`
- iii. `hist()`
- iv. `barh()`

Answer:(ii) `bar()`

iii. Choose the correct option for the statement 3.

- i. `title("Rating")`
- ii. `ytitle("Rating")`
- iii. `ylabel("Rating")`
- iv. `yaxis("Rating")`

Answer: (iii) `ylabel("Rating")`

iv. Choose the right function/method from the following for the statement 4.

- i. `display()`
- ii. `print()`
- iii. `bar()`
- iv. `show()`

Answer: (iv) `show()`

v. In case Mr. Sharma wants to change the above plot to the any other shape, which statement, should he change.

- i. Statement 1
- ii. Statement 2
- iii. Statement 3
- iv. Statement 4

Answer: Statement 2

**Q.3.** A School in Delhi uses database management system to store student details. The school maintains a database 'school\_record' under which there are two tables.

**Student Table :** Maintains general details about every student enrolled in school.

**StuLibrary Table :** To store details of issued books. BookID is the unique identification number issued to each book. Minimum issue duration of a book is one Day.

Student	
Field	Type
StuID	numeric
StuName	varchar(20)
StuAddress	varchar(50)
StuFatherName	varchar(20)
StuContact	numeric
StuAadhar	numeric
StuClass	varchar(5)
StuSection	varchar(1)

StuLibrary	
Field	Type
BookID	numeric
StuID	numeric
Issued_date	Date
Return_date	Date

- i. Identify the SQL Query which displays the data of StuLibrary table in ascending order of Student ID.
- Select \* from StuLibrary Order By BookID
  - Select \* from StuLibrary Order By StuID
  - Select \* from StuLibrary Order By StuID ASC
  - Select \* from StuLibrary Order By StuID DESC

Choose the correct option:

- Both Query i) and iv) will display the desired data.
- Both Query i) and ii) will display the desired data.
- Both Query iii) and iv) will display the desired data.
- Both Query ii) and iii) will display the desired data.

- ii. The Primary Key for StuLibrary Table is/are .....
- BookID
  - BookID,StuID
  - BookID,Issued\_date
  - Issued\_date
- iii. Which of the following SQL Query will fetch ID of those issued books which have not been returned?
- SELECT BookID from StuLibrary where BookID is NULL;

- b. SELECT BookID from StuLibrary where StuID is NULL;  
 c. SELECT BookID from StuLibrary where Issued\_date is NULL;  
 d. SELECT BookID from StuLibrary where Return\_date is NULL;
- iv. The Alternate Key for Student Table will be .....  
 a. StuName  
 b. StuContact  
 c. StuAadhar  
 d. StuClass
- v. Which of the following SQL Query will display dates on which number of issued books is greater than 5?  
 a. SELECT Issued\_date from StuLibrary GROUP BY Issued\_date where COUNT(\*)>5;  
 b. SELECT Issued\_date from StuLibrary GROUP BY Return\_date having count(\*)>5  
 c. SELECT Issued\_date from StuLibrary GROUP BY Issued\_date having count(\*)>5  
 d. SELECT Issued\_date from StuLibrary GROUP BY Return\_date where COUNT(\*)>5

**Solutions:**

- I. d) Both Query ii) and iii) will display the desired data.
- II. c) BookID, Issued\_date
- III. d) SELECT BookID from StuLibrary where Return\_date is NULL;
- IV. c) StuAadhar
- V. c) SELECT Issued\_date from StuLibrary GROUP BY Issued\_date having count(\*)>5

Q. 4.

Tejasvi Sethi, a car dealer has stored the details of all cars in her showroom in a table called CARMARKET. The table CARMARKET has attributes CARCODE which is a primary key, CARNAME, COMPANY, COLOR, COST (in lakh rupees) of the car and DOM which is the Date of Manufacture of the car.

Answer any four questions based on the table CARMARKET from the below mentioned questions.

Table: CARMARKET

CARCODE	CARNAME	COMPANY	COLOR	COST	DOM
C01	BALENO	SUZUKI	BLUE	5.90	2019-11-07
CO2	INDIGO	TATA	SILVER	12.90	2020-10-15
C03	GLC	MERCEDES	WHITE	62.38	2020-01-20
C04	A6	AUDI	RED	58.55	2018-12-29

C05	INNOVA	TOYOTA	BLACK	32.82	2017-11-10
C06	WAGON-R	SUZUKI	WHITE	12.11	2016-11-11
C07	BREZZA	SUZUKI	GOLDEN	9.80	2016-10-03

Choose the correct SQL query to do the following (for parts 1 to 4)

- i. Display the carname along with the charges rounded off to 1 digit afterdecimal place.
  - a. Select carname,round(cost) from carmarket;
  - b. Select carname,round.cost(1) from carmarket;
  - c. Select carname,round.cost() from carmarket;
  - d. Select carname, round(cost,1) from carmarket;

**CORRECT ANSWER – d**

- ii. Display the carname, color and position of the character ‘E’ in the color ofall the cars.
  - a. select carname,color from carmarket where color like “%E%”;
  - b. select carname,color,instr(color,'E') from carmarket;
  - c. select carname,color from carmarket where color = “%E%”;
  - d. select carname,color,substr(color,1,’E’) from carmarket;

**CORRECT ANSWER – b**

- iii. Display the carname ,name of the company in lower case of all cars whoseyear (of dom) is 2020.
  - a. select carname,lcase(company) from carmarket where year(dom) = 2020;
  - b. select carname,lcase(company) from carmarket where yearof(dom) like'2020%';
  - c. select carname,lower(company) from carmarket where dom from'2020-01-01' to '2020-12-31';
  - d. select carname,lower(company) from carmarket where yearfrom(dom) =2020;

**CORRECT ANSWER - a**

- iv. Display the number of cars manufactured each year.
  - a select count(\*),year(dom) from carmarket where year(dom) = distinct;
  - b. select count(\*),year(dom) from carmarket group by year(dom);
  - c. select count(carmarket),year(dom) from carmarket group by year(dom);
  - d select count(distinct \*),year(dom) from carmarket group by year(dom);

**CORRECT ANSWER - b**

- v. What is the cardinality and degree of the table CARMARKET?

- a. Cardinality = 8 and Degree = 6
- b. Cardinality = 6 and Degree = 7
- c. Cardinality = 7 and Degree = 6
- d. Cardinality = 7 and Degree = 8

**CORRECT ANSWER – c**

**Q.5.**

**Samarth is the hardware engineer of “Happy School”. He has been given the task of installing a network in the school lab which has around 40 computers.**

- i. Suggest the most suitable type of network topology he should use in order to maximise speed and make each computer independent of network breakdowns.
  - a. Bus Topology
  - b. Star Topology
  - c. Ring Topology
  - d. Mesh Topology

**answer : b**

- ii. In order to allow data transfer from server to only the intended computers which network device is required in the lab to connect the computers?
  - a. Switch
  - b. Hub
  - c. Router
  - d. Gateway

**answer : a**

- iii. After setting up the lab and internet in the lab, Samarth is now required to enable videos and animations to be played on the web browser for students of multimedia class. Which browser tool /service can be used for the same?
  - a. Plug ins
  - b. Add ons
  - c. Control Panel
  - d. Download Settings

**answer: b**

- iv. During an international exchange programme the students need to connect to a classroom in Russia using Skype. Samarth helps the students to connect. Which type of network service is being used ?

- a. Instant messaging
- b. Email messaging
- c. VoIP
- d. WWW

**answer: c**

- v. Samarth has asked students of class 7 to identify different parts of URL. Help the students to choose the correct option for label 1 and 2.



- a. 1- Domain Name  
2-Protocol
- b. 1- Protocol  
2-Domain Name
- c. 1. Domain name  
2. subdomain
- d. 1-Protocol  
2-subdomain

**answer : b**

**Q.6.** Answer the following based on the series given below.

```
import pandas as pd
list1=[1,2,3,4,5,6,7,8]
list2=['swimming','tt','skating','kho kho', 'bb', 'chess', 'football',"cricket"]
school=pd.Series(list1,index=list2)
school.name=("little")
print (school*2)                      #statement 1
print (school.tail(3))                 # statement 2
print (school["tt"])                  # statement 3
print (school[2:4])                   # statement 4
```

i. Choose the correct name of the series object given above.

- a) list1
- b) list2
- c) school
- d) little

ii. Choose the correct output for the statement:

```
print (school.tail(3))      # statement 2
```

a.

- swimming 1
- tt 2
- skating 3

b.

- chess 6
- football 7
- cricket 8

c. 4

d.

- kho kho 4
- bb 5
- chess 6
- football 7
- cricket 8

iii. Choose the correct output for the statement:

```
print (school["tt"]).           # statement 3
```

- a. 2
- b. 3
- c. tt 2
- d. true

iv. Identify the correct output for:

```
print (school[2:4])          # statement 4.  
a.  
skating  3  
kho kho  4  
b.  
tt      2  
skating 3  
kho kho 4  
c.  
skating 3  
kho kho 4  
bb      5  
d.  
skating 3  
kho kho 4  
bb      5  
chess    6  
football 7  
cricket  8
```

v. The correct output of the statetment:

```
print (school*2)          # statement 1 will be .  
a.  
swimming 3  
tt        4  
skating   5  
kho kho   6  
bb        7  
chess     8  
football  9
```

cricket      10  
b.  
swimming    2  
tt            4  
skating      6  
kho kho     8  
bb            10  
chess        12  
football     14  
cricket      16

c.  
swimming   False  
tt           False  
skating      True  
kho kho     True  
bb           True  
chess       True  
football     True  
cricket      True

d.  
swimming   1  
tt           4  
skating      9  
kho kho     16  
bb           25  
chess       36  
football     49  
cricket      64

**Solution:**

i. d) little

ii. b)

**chess 6**

**football 7**

**cricket 8**

iii. a) 2

iv. a)

**skating 3**

**kho kho 4**

v. b)

**swimming 2**

**tt 4**

**skating 6**

**kho kho 8**

**bb 10**

**chess 12**

**football 14**

**cricket 16**

## Q.7.

Smridh has recently changed his school so he is not aware of the people, but someone is posting negative , demeaning comments on his social media profile. He is also getting repeated mails from unknown people. Everytime he goes online, he finds someone chasing him online.

i. Smridh is a victim of ..... :

- a. Eavesdropping
- b. Stolen identity
- c. Phishing
- d. Cyber stalking

Answer(d)

ii. The action that Smridh should take :

- a. He should ONLY share with his friends
- b. He should NOT share with anyone as it can cause serious problem
- c. He should immediately report to the police
- d. He should bring to the notice of his parents and school authorities.

Answer : (d)

iii. ..... is a set of moral principles that governs the behaviour of a group or individual and regulates the use of computers.

- a. Copyright
- b. Computer ethics
- c. Property rights
- d. Privacy law

Answer: (b)

iv. Smridh needs to protect his personal information or data from unintentional and intentional attacks and disclosure which is termed as .....

- a. Digital right
- b. Copyright
- c. Privacy
- d. Intellectual property

Answer : (c)

- v. The act of fraudulently acquiring someone's personal and private information, such as online account names, login information and passwords is called as .....  
a. Phishing  
b. Fraud  
c. Scam  
d. Plagiarism

Answer : (a)

Q.8.

A Departmental store ‘Iconic’ is planning to automate its system so that they can store all the records on computer. They contacted a Software Company to make the software for the same. The company suggested that there is need of a front end and back-end software. The major challenge was to keep the record of all the items available in the store. To overcome the problem, the software company has shown the glimpses of the database and table required to resolve their problem:

Database Name: Iconic

Table Name: Garment

Attributes of the table: Gcode – Numeric, Gname – Character 25, Size - Character 5, Colour – Character 10, Price – Numeric

Consider the following records in ‘Garment’ table and answer the given questions:

**Table: GARMENT**

<b>GCODE</b>	<b>GNAME</b>	<b>SIZE</b>	<b>COLOUR</b>	<b>PRICE</b>
111	Tshirt	XL	Red	1400.00
112	Jeans	L	Blue	1600.00
113	Skirt	M	Black	1100.00
114	Jacket	XL	Blue	4000.00
115	Trousers	L	Brown	1500.00
116	LadiesTop	L	Pink	1200.00

i. Choose the command that will give the output as:

COLOUR
Blu
Bla
Blu
Bro

- a. Select left(COLOUR,3) from GARMENT where COLOUR like "B%";
- b. Select COLOUR from GARMENT where COLOUR not like "%B%";
- c. Select mid(COLOUR,3) from GARMENT where COLOUR like "B%";
- d. Select COLOUR from GARMENT where COLOUR = 'B%';

Answer: a

ii. Choose the correct command for the following purpose.

To delete the record with GCode as 116

- a. Delete \* from GARMENT where GCode='116';
- b. Delete from GARTMENTS where GCode =116;
- c. Delete from GARTMENT where GCode =116;
- d. Delete from GARTMENT where GCode is '116';

Answer: b

iii. Give the output of :

**Select GName, Price from GARMENT**

**order by Price Desc;**

a.

GNAME	PRICE
Tshirt	1400.00
Jeans	1600.00
Skirt	1100.00
Jacket	4000.00
Trousers	1500.00
LadiesTop	1200.00

b.

GNAME	PRICE
Skirt	1100.00
LadiesTop	1200.00
Tshirt	1400.00
Trousers	1500.00
Jeans	1600.00
Jacket	4000.00

c.

GNAME	PRICE
Jacket	4000.00
Jeans	1600.00
Trousers	1500.00
Tshirt	1400.00
LadiesTop	1200.00
Skirt	1100.00

d.

GNAME	PRICE
Jacket	4000.00
Jeans	1600.00
LadiesTop	1200.00
Skirt	1100.00
Trousers	1500.00
Tshirt	1400.00

Answer: c

iv. Choose the correct command for the following purpose.

**To change the colour of GARMENT with code as 116 to “Orange”.**

- a. Update GARMENTS set COLOUR=”Orange” where Gcode=116;
- b. Update GARMENT set COLOUR =”Orange” where Gcode=116;
- c. Update GARMENT set COLOUR =”Orange” where Gcode is ”116”;
- d. Update GARMENT where Gcode=116 set COLOUR =Orange;

Answer: b

v. What is the degree and cardinality of ‘GARMENT’ table?

- a. Degree=5 & Cardinality=6
- b. Degree=6 & Cardinality=5
- c. Degree=5 & Cardinality=7
- d. Degree=7 & Cardinality=5

Answer: a

- vi. Suggest a free software for managing the database
- Oracle
  - MySQL
  - Sybase
  - Microsoft SQL Server

Answer: b

Q.9.

Sanyukta is the event incharge in a school. One of her students gave her a suggestion to use Python Pandas and Matplotlib for analysing and visualising the data, respectively. She has created a Data frame “SportsDay” to keep track of the number of First, Second and Third prizes won by different houses in various events.

	House	First	Second	Third
0	Chenab	5	7	6
1	Ganges	10	5	4
2	Jamuna	8	13	15
3	Jhelum	12	9	12
4	Ravi	5	11	10
5	Satluj	10	5	3

Write Python commands to do the following:

- i. Display the house names where the number of Second Prizes are in the range of 12 to 20.
- `df['Name'][ (df['Second'] >=12) and (df['Second'] <=20) ]`
  - `df[Name][ (df['Second'] >=12) & (df['Second'] <=20) ]`
  - `df['Name'][ (df['Second'] >=12) & (df['Second'] <=20) ]`
  - `df[(df['Second'] >=12) & (df['Second'] <=20) ]`

Answer: c. `df['Name'][ (df['Second'] >=12) & (df['Second'] <=20) ]`

- ii. Display all the records in the reverse order.
- `print(df[::-1])`
  - `print(df.iloc[::-1])`
  - `print(df[-1:]+df[:-1])`
  - `print(df.reverse())`

Answer: b. `print(df.iloc[::-1])`

iii. Display the bottom 3 records.

- a. `df.last(3)`
- b. `df.bottom(3)`
- c. `df.next(3)`
- d. `df.tail(3)`

Answer: d. `df.tail(3)`

iv. Choose the correct output for the given statements:

```
x=df.columns[:1]
print(x)
```

- a. 0
- b. Name
- c. First
- d. Error

Answer: b. Name

v. Which command will give the output 24:

- a. `print(df.size)`
- b. `print(df.shape)`
- c. `print(df.index)`
- d. `print(df.axes)`

Answer: a. `df.size`

## Q.10.

The school offers Wi-Fi to the students of Class XII. For communication, the network security-staff of the school is having a registered URL "**schoolwifi.edu**". On 17<sup>th</sup> September 2017, emails were received by all the students regarding expiry of their passwords. Instructions were also given renew their password within 24 hours by clicking on particular URL provided.

On the bases of the above case study, answer the questions given below:

- i. Specify which type of cybercrime is it.
  - a) Spamming
  - b) Phishing
  - c) Identity Theft
  - d) Hacking

Answer: (b) Phishing

- ii. URL stands for \_\_\_\_\_
  - a) Universal Resource Loader
  - b) Uniform Resource Locator
  - c) United Research Loader
  - d) Uniform Resource Loader

Answer: (b) Uniform Resource Locator

- iii. Unsolicited commercial email is known as:
  - a) Malware
  - b) Virus
  - c) Spam
  - d) Spyware

Answer: (c) Spam

- iv. WiFi stands for \_\_\_\_\_
  - a) Wireless Internet Frequent Interface
  - b) Wireless Functioning
  - c) Wireless Fidelity
  - d) Wire Free Internet

Answer: c Wireless Fidelity

- v. Ideally, what characters should be used in a password to make it strong?
  - a) Letters and numbers only
  - b) Mixed Case (Upper and Lower)
  - c) Special characters
  - d) All of above

Answer: (d) All of the above

### **Q.11.**

Pushp, a student of class-XII, has been assigned a code to create a pandaseries S1, as shown below.

```
a    100  
b    200  
c    300  
d    400  
e    500  
dtype: int64
```

With reference to the above answer given questions:

- i Choose the command that will give the following output-

```
b    200  
c    300  
dtype: int64  
  
a. print(S1[:3])  
b. print(S1[0:3])  
c. print(S1[1:3])  
d. print(S1[2:4])
```

- ii. Help him to identify the correct statement that can be used to extract the value with the index 'c'

```
a. print(S1[c])  
b. print(S1(c))  
c. print('S1' ['c'])  
d. print(S1 ['c'])
```

- iii. Which of the following command will give the following output-

```
b    200  
d    400  
dtype: int64  
  
a. print(S1.iloc[1:4])  
b. print(S1.iloc[2:4])  
c. print(S1.iloc(1:4))  
d. print(S1.iloc[1:4:2])
```

- iv. Which of the following command will display the series by adding 10 in eachvalue.

```
a. print(S1 [+10])
```

- b. `print(S1+10)`
- c. `print(S1)+10`
- d. `print(S1)+print(10)`

v. Pushp wants to delete the value against index 'd'. Help him to choose the suitable option to do so:

- a. `S1=S1.drop(d)`
- b. `S1=S1.drop('d')`
- c. `S1=drop('d')`
- d. `S1=S1.drop['d']`

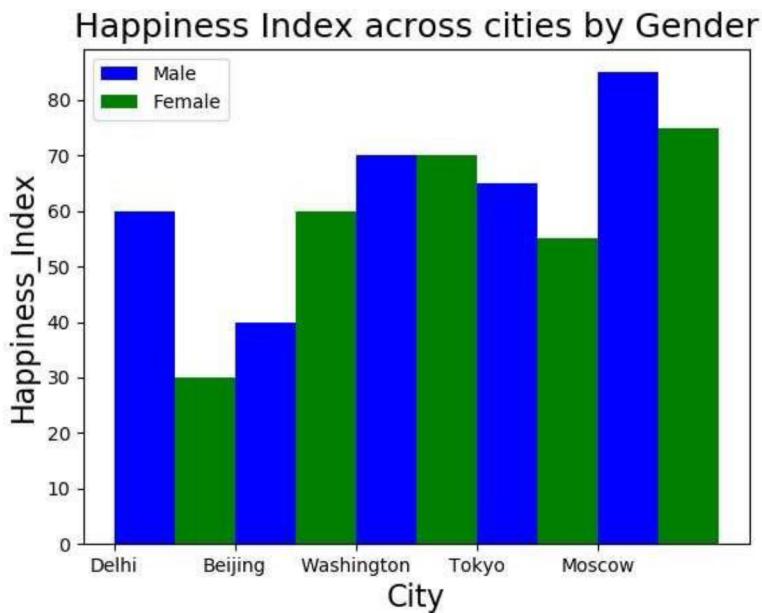
### Solution:

- i. c) `print(s1[1:3])`
- ii. d) `print(S1 ['c'])`
- iii. d) `print(S1.iloc[1:4:2])`
- iv. b) `print(S1+10)`
- v. b) `S1=S1.drop('d')`

### Q.12.

Gaurav has written a Python Code to create a bar plot as given below using the following data :

City	Happiness_Index Male	Happiness_Index Female
Delhi	60	30
Beijing	40	60
Washington	70	70
Tokyo	65	55
Moscow	85	75



```

import _____ as _____ #Statement 1
City=['Delhi','Beijing','Washington','Tokyo','Moscow']
Gender=['Male','Female'] Happiness_Index_Male=[60,40,70,65,85]
Happiness_Index_Female=[30,60,70,55,75]
plt.bar([0.25,1.25,2.25,3.25,4.25],Happiness_Index_Male,color='blue',label="Male",width=.5)
plt._____([.75,1.75,2.75,3.75,4.75],Happiness_Index_Female,color='Green',w #Statement 2
idth=.5,label="Female")
pos=range(len(City)) print(pos)
plt.xticks(pos,City,fontsize=10) plt.xlabel('City', fontsize=16)
plt.ylabel('Happiness_Index', fontsize=16) #Statement 3
_____
_____
_____ #Statement 4
_____ #Statement 5

```

- Identify the suitable code to be used in the blank space in line marked as Statement 1.
  - `matplotlib as plt`
  - `numpy as np`
  - `pandas as pd`
  - `matplotlib.pyplot as plt`
- What is the name of the function to plot the required bar graph in the line marked as Statement 2
  - `hist()`
  - `pie()`
  - `bar()`

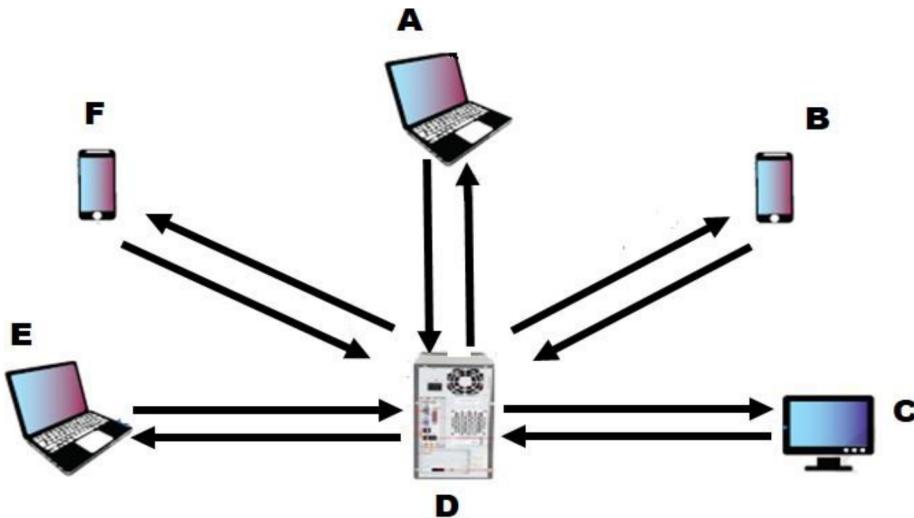
- d. scatter()
- iii. Fill in the blank in statement 3 to set Chart Title as “**Happiness Index across cities by gender**” and font size as 18.
- plt.xtext("Happiness Index across cities by gender", fontsize=18)
  - plt.title("Happiness Index across cities by gender", fontsize=18)
  - plt.ytitle("Happiness Index across cities by gender", fontsize=18)
  - plt.show("Happiness Index across cities by gender", fontsize=18)
- iv. Identify the suitable code for line marked as Statement 4 to display the legendsas shown in the plot.
- plt.showlegend()
  - plt.legend()
  - plt.display()
  - plt.show()
- v. Fill in the blank marked in Statement 5 to display the plot.
- plt.plot()
  - plt.showplot()
  - plt.display()
  - plt.show()

**Solution:**

- d. matplotlib.pyplot as plt
- c. bar()
- b. plt.title("Happiness Index across cities by gender", fontsize=18)
- b. plt.legend()
- d. plt.show()

### Q.13.

Refer to the following diagram and answer the questions given below.



- i. Which of the following devices acts as a server?
- a. A
  - b. B
  - c. C
  - d. D

Answer : (d) D

- ii. The arrow from device D to pointing to A represents?
- a. HTTP request
  - b. HTTP response
  - c. HTTP request & response
  - d. All of the above

Answer (b) HTTP response

- iii. Which of the following device(s) can have IP Addresses?
- a. A
  - b. D
  - c. F
  - d. All of the above

Answer: (d) All of the above

- iv. Identify the network topology of the above network :
- a. Ring
  - b. Star
  - c. Bus
  - d. None of the above

Answer: (b) Star

- v. \_\_\_\_\_ is a protocol (set of rules) used when transmitting files (data) over the world wide web.
- a. FTP
  - b. HTTP
  - c. SMP
  - d. None of the above

Answer: (b) HTTP

#### **Q.14.**

Vidya Devi, a retired school principal, was inspired by her granddaughter who uses technology for her day to day activities. Being a learner and teacher all her life, she wanted to open an email account and interact with her friends and family. Her granddaughter created an email account for her and gradually she started sending mails

to her friends and family. This was a big achievement for her. Her granddaughter explained how emails are sent, how to create an email address, what protocols are used. Some of these details were too technical for her, but she never gave up. There are few doubts/misconceptions in her mind which you can help her with.

i. Unsolicited e-mail advertising is known as \_\_\_\_\_

- a. newsgroup
- b. junk ads
- c. spam
- d. none of the above

answer (c) spam

ii. Which of the following is the correct format of email address?

- a. name@website@info
- b. name@website.info
- c. www.nameofwebsite.com
- d. name.website.com

answer: (b) name@website@info

iii. Mail access starts with client when user needs to download email from the \_\_\_\_\_

- a. mail box
- b. mail server
- c. IP server
- d. Internet

Answer: (a) mail box

iv. To use email service, one needs to register with \_\_\_\_\_

- a. Internet Service Provider
- b. Email Service Provider
- c. A company
- d. No need to register

Answer: (a) Internet Service Provider

v. Bcc stands for \_\_\_\_\_ to send the copy of mail.

- a. Black carbon copy
- b. Blue carbon copy
- c. Blind carbon copy
- d. Block chain copy

Answer: (c ) Blind Carbon Copy

**Q.15.**

A Gift Gallery has different stores in India. Database Administrator Abhay wants to maintain database of their Salesmen in SQL to store the data, He has decided that

Name of the database: GiftGallery

Name of the table: Salesman

Attributes of the tables: Scode – Numeric, Sname – Character 25, Address - Character 25, Dojoin - Date, Sales – Numeric and Area – Character 10

Consider the following records in ‘Salesman’ table and answer the given questions:

**Table : Salesman**

Scode	Sname	Address	Dojoin	Sales	Area
100	Amit	Delhi	2017/09/29	5000.90	East
101	Sushant	Gurgaon	2018/01/01	7000.75	East
102	Priya	Noida	2018/04/25	3450.45	West
103	Mohit	Delhi	2018/11/03	6000.50	North
104	Priyanshi	Delhi	2019/12/15	8000.62	North

- i. State the command that will give the output as :

Sname
Sushant
Priya

- a. Select Sname from Salesman Where Not Address =”Delhi”;
- b. Select Sname from Salesman Where Address NOT IN(“Delhi”);
- c. Select Sname from Salesman Where Address !=“Delhi”;
- d. All of the above;

Answer: (d) All of the above

- ii. Which of the following commands will display the details of all sales record of North Area, regardless of case (whether North / NORTH / north):
- a. Select \* from salesman where area like upper ‘north’;
  - b. Select \* from salesman where area = ‘North’ or ‘NORTH’ or north;
  - c. Select \* from salesman where upper(area)=’NORTH’;
  - d. Select \* from salesman where area= =upper(‘North’);

Answer : (c) Select \* from salesman where upper(area)=’NORTH’;

- iii. Help Priya to display sname and sales of east and west areas
- Select sname, sales from Salesman where area=’East’ and area=’West’;
  - Select sname, sales from Salesman where area=’East’ or area=’West’;
  - Select sname, sales from Salesman where area in ’East’ and ’West’;
  - Select sname, sales from Salesman where area=’East’, ’West’;
- Answer:(b) Select sname, sales from Salesman where area=’East’ or area=’West’;
- iv. The command to display the name of the salesman along with the sales amount rounded off to one decimal point will be:
- Select sname, round(sales,1) from salesman;
  - Select sname, round(sales,0.1) from salesman;
  - Select sname, trunc(sales,1) from salesman;
  - Select sname, trunc(sales,0.1) from salesman;
- answer:(a) Select sname, round(sales,1) from salesman;
- v. What will be the output of the following command?  
Select Right(Sname,3), Round(Sales) from Salesman Where Sname Like “P%”;

a.

Right(Sname,3)	Round(Sales)
Pri	3450
Pri	8000

b.

Right(Sname,3)	Round(Sales)
iya	3450
shi	8000

c.

Right(Sname,3)	Round(Sales)

iya	3450
shi	8001

d.

Right(Sname,3)	Round(Sales)
Pri	3450
Pri	8001

Answer : (d)

### Q.16.

A Fashion Store MyStore is considering to maintain database of their Customers in SQL to store the data, As a Database Administrator Hina has decided that

Name of the database: MyStore

Name of the table: Customer

Attributes of the tables: Acc\_No – Numeric, Cust\_Name – Character 25, Cust\_City - Character 25, Cust\_Phone - Character 11, Open\_Bal – Numeric

Consider the following records in ‘Customer’ table and answer the given questions:

**Table : Customer**

Acc_No	Cust_Name	Cust_City	Cust_Phone	Open_Bal
1001	Dhashmesh	Ambala	9710557614	10000
1002	Sanya	Patna	8223545233	15000
1003	Joe	NewDelhi	9972136576	13000
1004	Mrinal	NewDelhi	9321305453	12000
1005	Ishaan	Agra	9809876798	19000

- i. With reference to the above given table, give query for generating following output

Cust_Name
Dhashmesh
Sanya

Ishaan

- a. Select Name from Customer where Open\_bal<20000;
- b. Select Name from Customer where Cust\_City like ‘%a’;
- c. Select Cust\_Name from Customer where Cust\_City like ‘%a’;
- d. Select Cust\_name from Customer where Cust\_Name like “a%”;

Answer : (c) Select Cust\_Name from Customer where Cust\_City like ‘%a’;

ii. Give the output of :

**Select Cust\_Name, Open\_Bal from Customer order by Open\_bal;**

a.

Cust_Name	Open_Bal
Dhashmesh	10000
Mrinal	12000
Joe	13000
Sanya	15000
Ishaan	19000

b.

Cust_Name	Open_Bal
Ishaan	19000
Sanya	15000
Joe	13000
Mrinal	12000
Dhashmesh	10000

c.

Cust_Name	Open_Bal
Dhashmesh	10000
Ishaan	19000
Joe	13000
Mrinal	12000
Sanya	15000

d.

Cust_Name	Open_Bal

Dhashmesh	10000
Sanya	15000
Joe	13000
Mrinal	12000
Ishaan	19000

Answer : (a)

iii. Pranay has given the following command to obtain Highest Opening Balance of each City

**Select max(Open\_Bal) from Customer where group by Cust\_City;**

but he is not getting the desired result. Help him by writing the correct command.

- a. Select Max(Open\_Bal) group by Cust\_City;
- b. Select Max(Open\_Bal) from Customer where group by Cust\_City;
- c. Select Cust\_City, Max(Open\_Bal) from Customer group by Cust\_City;
- d. Select max(Open\_Bal) from Customer group by Cust\_name;

**Answer : (c) Select Cust\_City, Max(Open\_Bal) from Customer group by Cust\_City;**

iv. Help Pranay find the total no. of records having open\_bal between 15000 to 20000 by selecting the right command:

- a. Select total from customer having open\_bal between 15000 and 20000;;
- b. Select count(\*) from customer where open\_bal between 15000 to 20000;;
- c. Select count(\*) from customer where open\_bal between 15000 and 20000;
- d. Select count(\*) from customer order by open\_bal;

Answer: (c) Select count(\*) from customer where open\_bal between 15000 and 20000;

v. Choose the correct command to display the first two letters of each customer's name.

- a. select right(cust\_name,2) from customer;
- b. select left(cust\_name,2) from customer;
- c. select right(cust\_name,0,2) from customer;
- d. select left(cust\_name,2) from customer;

Answer: (b) select left(cust\_name,2) from customer;

**Q.17.**

Ramanpreet has to work on his science project which deals with electromagnetic waves. A lot of research work is required by him for the same. He uses Google Chrome to search for the relevant matter.

- i. Google chrome is an example of a
  - a. Website
  - b. Web browser
  - c. Web Page
  - d. Web Page

**Ans. (b)**

- ii. He finally locates some useful information and clicks on the link provided to access the website. The link is actually known as a \_\_\_\_\_.
  - a. Domain name
  - b. Web Page
  - c. URL
  - d. IP address

**Ans. (c)**

- iii. As Ramanpreet works on his project, he collects and curates information. Whenever he clicks on the link the same piece of information is shown and the content is not clickable. Ramanpreet is accessing a/an \_\_\_\_\_ website.
  - a. Dynamic
  - b. Textual
  - c. Outdated
  - d. Static

**Ans. (d)**

- iv. A web cookie is a small piece of data that is \_\_\_\_\_.
  - a. sent from a website and stored in user's web browser while a user is browsing a website
  - b. sent from user and stored in the server while a user is browsing a website
  - c. sent from root server to all servers
  - d. sent from the root server to other root servers

**Ans. (a)**

- v. HTML stands for \_\_\_\_\_.
  - a. Hyper Text Markup Link
  - b. Hyper Text Markup Language
  - c. Hybrid Text Markup Language
  - d. Hyper Text Manipulation Language

**Ans. (c)**

**Q.18.**

Zeenat has created the following data frame dataframe1 to keep track of data Rollno, Name, Marks1 and Marks2 for various students of her class where row indexes are taken as the default values:

Rollno	Name	Marks1	Marks2
1	Swapnil Sharma	30	50
2	Raj Batra	75	45
3	Bhoomi Singh	82	95
4	Jay Gupta	90	95

i. Which among the following option will give 90, 95 as output

- a) `print(max(dataframe1['Marks1'], 'Marks2'))`
- b) `print((dataframe1.Marks1.max(), (dataframe1.Marks2.max()))))`
- c) `print(max(dataframe1['Marks1']))`
- d) `print(max(dataframe1['Marks2']))`

Answer: (b) `print((dataframe1.Marks1.max(), (dataframe1.Marks2.max()))))`

ii. She needs to know the marks scored by Rollno 2. Help her to identify the correct set of statement/s from the given options:

- a. `print(dataframe1[dataframe1['Rollno'] = =2])`
- b. `print(dataframe1['Rollno'] = =2)`
- c. `print(dataframe1[dataframe1. Rollno = =2])`
- d. `print(dataframe1[dataframe1['Rollno']]])`

**Answer : (c)** `print(dataframe1[dataframe1. Rollno = =2])`

iii. Which of the following statement/s will delete the 3rd column?

- a. `del dataframe1['Marks1']`

- b. `dataframe1.pop('Marks1')`
- c. `drop dataframe1['Marks1']`
- d. `pop dataframe1['Marks1']`

Choose the correct option:

- a) both (a) and (b)
- b) only (b)
- c) (a), (b) and (c)
- d) (a), (b) and (d)

Answer : (a) both (a) and (b)

iv. Which of the following command will display the total number of elements in the dataframe?

- a. `print(dataframe1.shape)`
- b. `print(dataframe1.num)`
- c. `print(dataframe1.size)`
- d. `print(dataframe1.elements)`

answer (c) `print(dataframe1.size)`

v. Now she wants to add a new column Marks3 with relevant data. Help her choose the command to perform this task.

- a. `dataframe1.column=[ 45,52,90,95]`
- b. `dataframe1 ['Marks3']= [ 45,52,90,95]`
- c. `dataframe1.loc['Marks3']= [ 45,52,90,95]`
- d. Both (b) and (c) are correct

Answer: (b) `dataframe1 ['Marks3']= [ 45,52,90,95]`

### **Q.19.**

Naman has created the following dataframe “Climate” to record the data about climatic conditions of four years.

Year	MaxTemp	MinTemp	Rainfall
2017	32	20	123
2018	33	22	140
2019	35	21	135
2020	34	23	160

i. Which of the following code snippets will return the MaxTemp and Rainfall for year 2018 and 2019?

- a. Climate[['MaxTemp', 'Rainfall']][1:3]
- b. Climate['MaxTemp', 'Rainfall'][1:3]
- c. Climate.iloc[1:3]
- d. Climate.iloc[1:3,1:2]**

Answer: (c) Climate.iloc[1:3]

ii. Display the temperature difference between MaxTemp and MinTemp for all the rows in the dataframe Climate.

- a. Climate=Climate["MaxTemp"]-Climate["MinTemp"]
- b. print(Climate["maxt"]-Climate["mint"])
- c. print(Climate["MaxTemp"]-Climate["MinTemp"])
- d. print(Climate.Climate["MaxTemp"]-Climate["MinTemp"])**

**e. Answer : (c) print(Climate["MaxTemp"]-Climate["MinTemp"])**

iii. To display 2 rows from the top in the dataframe, which of the following statement is correct:

- a. print (Climate.head()=2 )
- b. print (Climate.head(n==2) )
- c. print (Climate.head(range(2)) )
- d. print (Climate.head(2) )**

answer: (d) print (Climate.head(2) )

- iv. Which of the following statement/s will give the exact number of values in each column of the dataframe?
- a. `print(Climate.count())`
  - b. `print(Climate.count(0))`
  - c. `print(Climate.count)`
  - d. `print(Climate.count(axis='index'))`

Choose the correct option:

- a) both (a) and (b)
- b) only (b)
- c) (a), (b) and (c)
- d) (a), (b) and (d)

**Answer: (d)** (a), (b) and (d)

- v. To display 2 rows from the bottom in the dataframe, which of the following statement is correct:
- a. `print (Climate.tail()=2 )`
  - b. `print (Climate.tail(n==2) )`
  - c. `print(Climate.tail(range(2)))`
  - d. `print (Climate.tail(2) )`

Answer: (d) `print (Climate.tail(2) )`

## **Q.20.**

Sumit has to prepare a project on “Swachh Bharat Shreshth Bharat”.

He decides to get information from the Internet. He downloads three web pages (webpage1, webpage 2, webpage 3) containing information on the given topic.

1. He read a paragraph on from webpage 1 and rephrased it in his own words. He finally pasted the rephrased paragraph in his project.
2. He downloaded three images of from webpage 2. He made a collage for his project using these images.
3. He also downloaded an icon from web page 3 and pasted it on the front page of his project report.

i. Step1 An Example of \_\_\_\_\_

- a. Plagiarism
- b. Paraphrasing
- c. copyright infringement
- d. Intellectual Property right

Answer:(b) :Paraphrasing

ii. Step 2 An act of \_\_\_\_\_

- a. plagiarism
- b. copyright infringement
- c. Intellectual Property right
- d. Digital Footprints

Answer: (a) Plagiarism

iii. Step 3 An act of \_\_\_\_\_

- a. Plagiarism
- b. Paraphrasing
- c. copyright infringement
- d. Intellectual Property right

Answer : (c) Copyright Infringement

iv. A website is a collection of \_\_\_\_\_

- a. Web Servers

- b. Web pages
- c. Browsers
- d. Hyperlinks

Answer : (b)

- v. The process of getting web pages, images and files from a web server to local computer is called
  - a. FTP
  - b. Uploading
  - c. Downloading
  - d. Remote access

Answer : (c) Downloading

## Q.21.

HR Department of ABCTech has created following dataframe to store data about salaries and bonus paid to their employees:

```
import pandas as pd  
import numpy as np  
  
d1={'EName':['Kavita', 'Sudha',  
'Garima'],'Sal':[50000,60000,55000],'Bonus':[3000,4000,5000]}  
  
Df1=pd.DataFrame(d1)
```

Choose the python statement using suitable functions for the following tasks:

- i. Display the columns Sal and Bonus

- a. df1 [:Sal :Bonus]
- b. df1.loc(['Sal', 'Bonus'])
- c. df1.iloc(['Sal', 'Bonus'])
- d. df1[['Sal', 'Bonus']]**

Answer: **(b)** df1.loc(['Sal', 'Bonus'])

- ii. Display the details of employee Kavita.

- a. df1[df1.EName='Kavita']
- b. df1.loc[df1.EName=='Kavita']
- c. df1.iloc[df1.EName=='Kavita']
- d. df1[EName='Kavita']**

Answer **(b)** df1.loc[df1.EName=='Kavita']

iii. Display the details of the last employee.

- a. Df1.tail(1)
- b. Df1.tail (-1)
- c. Df1.head(n=1)
- d. Df1.head()

Answer: (a) Df1.tail(1)

iv. Add a new column named ‘Email’ with the value “[abc@gmail.com](mailto:abc@gmail.com)”.

- a. Df1['Email'] = 'abc@gmail.com'
- b. Df1[Email]='abc@gmail.com'
- c. Df1.loc['Email']='abc@gmail.com'
- d. Df1('Email')='abc@gmail.com'

Answer : (a) Df1['Email'] = 'abc@gmail.com'

v. Write a python statement to print the details of employees having Sal more than 50000

- a. df1.Sal>=5000
- b. df1[df1.Sal>=5000]
- c. df1[df1.'Sal'>=5000]
- d. df1.iloc[df1.Sal>=5000]

answer: (b) df1[df1.Sal>=5000]