MODULE-1: CORE PYTHON CONCEPTS

INTRODUCTION OF PYTHON, IF, IF- ELSE, NESTED IF-ELSE, WHILE, FOR-LOOP

1. What is Python, name some of the features of Python.
2. Write a Python program to get the Python version you are using?
3. Is python the right choice for Web based Programming?
4. Why was the language called as Python?
5. Write a Python program to check if a number is positive, negative or zero.
6. What is the language from which Python has got its features or derived its features?
7. Write a Python program to check if variable is of integer or string.
8. Does python support switch or case statement in Python? If not what is the reason for the same?
9. How Python is interpreted?
10. Write a Python program to get the Factorial number of given number
11. Write a Python program to get the Fibonacci series of given range.
12. How memory is managed in Python?
13. What is namespace in Python?
14. What is the purpose of continue statement in python?
15. Write python program that swap two number with temp variable and without temp variable
16. Write a Python program to find whether a given number is even or odd, print out an appropriate message to the user.
17. Write a Python program that compute the area of following:
    1) Triangle (accepts base and height)2) Circle (accept radius)
18. Write a Python program to test whether a passed letter is a vowel or not.
19. Write a Python program to compute the value of a specified principal amount, rate of interest, and several years.
20. What are the tools that help to find bugs or perform static analysis?
21. What are Python decorators?
22. What is PEP 8?
23. Write a Python program to sort three integers without using conditional statements and loops.
24. Write a Python program that accepts an integer (n) and computes the value of n+nn+nnn.
25. Write a Python program to sum of three given integers. However, if two values are equal sum will be zero.
26. Write a Python program that will return true if the two given integer values are equal or their sum or difference is 5.
27. Write a python program to sum of the first n positive integers.

ACCESSING STRING, BASIC OPERATION, STRING SLICE, FUNCTION AND METHOD

28. Write a Python program to calculate the length of a string.
29. Write a Python program to count the number of characters (character frequency) in a string
30. What are negative indexes and why are they used?

31. Explain split(), sub(), subn() methods of “re” module in Python.
32. How do you perform pattern matching in Python? Explain
33. Write a Python program to count occurrences of a substring in a string
34. Write a Python program to count the occurrences of each word in a given sentence
35. Write a Python program to get a single string from two given strings, separated by a space and swap the first two characters of each string.
36. Write a Python program to add 'ing' at the end of a given string (length should be at least 3). If the given string already ends with 'ing' then add 'ly' instead If the string length of the given string is less than 3, leave it unchanged
37. Write a Python program to find the first appearance of the substring 'not' and 'poor' from a given string, if 'not' follows the 'poor', replace the whole 'not'...'poor' substring with 'good'. Return the resulting string.
38. Write a Python function that takes a list of words and returns the length of the longest one.
39. Write a Python function to reverses a string if it's length is a multiple of 4.

COLLECTIONS

LIST

40. What is List? How will you reverse a list?
41. How will you remove last object from a list?
42. Suppose list1 is [2, 33, 222, 14, 25], What is list1[-1]?
43. Differentiate between append() and extend() methods.? B5. Write a Python function to get the largest number, smallest num and sum of all from a list.
44. How will you compare two lists?
45. Write a Python program to count the number of strings where the string length is 2 or more and the first and last character are same from a given list of strings.
46. Write a Python program to remove duplicates from a list.
47. Write a Python program to check a list is empty or not.
48. Write a Python function that takes two lists and returns True if the y has at least one common member.
49. Write a Python program to generate and print a list of first and last 5 elements where the values are square of numbers between 1 and 30.
50. Write a Python function that takes a list and returns a new list with unique elements of the first list l7. Write a Python program to convert a list of characters into a string.
51. Write a Python program to select an item randomly from a list.
52. Write a Python program to find the second smallest number in a list.
53. Write a Python program to get unique values from a list.
54. Write a Python program to check whether a list contains a sublist.
55. Write a Python program to split a list into different variables.

TUPLE

56. What is tuple? Difference between list and tuple.
57. Write a Python program to create a tuple with different data types.
58. Write a Python program to create a tuple with numbers.
59. Write a Python program to convert a tuple to a string.
60. Write a Python program to check whether an element exists within a tuple.

61. Write a Python program to find the length of a tuple.
62. Write a Python program to convert a list to a tuple.
63. Write a Python program to reverse a tuple.
64. Write a Python program to replace last value of tuples in a list.
65. Write a Python program to find the repeated items of a tuple.
66. Write a Python program to remove an empty tuple(s) from a list of tuples.
67. Write a Python program to unzip a list of tuples into individual lists.
68. Write a Python program to convert a list of tuples into a dictionary.

DICTIONARIES

69. What is Dictionaries?
70. How will you create a dictionary in python? How will you get all the keys from the dictionary?
71. How will you get all the values from the dictionary?
72. How will you create a dictionary using tuples in python?
73. Write a Python script to sort (ascending and descending) a dictionary by value
74. Write a Python script to concatenate following dictionaries to create a new one.
75. Write a Python script to check if a given key already exists in a dictionary.
76. How do you traverse through a dictionary object in Python?
77. How do you check the presence of a key in a dictionary?
78. Write a Python script to print a dictionary where the keys are numbers between 1 and 15 (bot Sample Dictionary.
79. {1: 1, 2: 4, 3: 9, 4: 16, 5: 25, 6: 36, 7: 49, 8: 64, 9: 81, 10: 100, 11: 121, 12: 144, 13: 169, 14: 196, 15: 225}
80. Write a Python program to check multiple keys exists in a dictionary
81. Write a Python script to merge two Python dictionaries
82. Write a Python program to map two lists into a dictionary
83. Write a Python program to combine two dictionary adding values for common keys.

d1 = {'a': 100, 'b': 200, 'c':300} d2 = {'a': 300, 'b': 200, 'd':400}
Sample output: Counter({'a': 400, 'b': 400, 'd': 400, 'c': 300})

84. Write a Python program to print all unique values in a dictionary.
85. Why do you use the zip() method in Python?
86. Write a Python program to create and display all combinations of letters, selecting each letter from a different key in a dictionary.

Sample data : {'1':['a', 'b'], '2':['c', 'd']}
Expected Output: ac ad bc bd.

87. Write a Python program to find the highest 3 values in a dictionary
88. Write a Python program to combine values in python list of dictionaries.

Sample data: [{'item': 'item1', 'amount': 400}, {'item': 'item2', 'amount': 300},
{'item': 'item1', 'amount': 750}]
Expected Output: Counter({'item1': 1150, 'item2': 300})

FUNCTIONS

FUNCTION

89. Write a Python function to calculate the factorial of a number (a non-negative integer)

90. Write a Python function to check whether a number is in a given range.
91. Write a Python function to check whether a number is perfect or not.
92. Write a Python function that checks whether a passed string is palindrome or not
93. How do you perform pattern matching in Python? Explain
94. What is lambda function in python? What we call a function which is incomplete version of a function?
95. How many basic types of functions are available in Python?
96. Write a Python program to access a function inside a function.
97. Write a Python program to detect the number of local variables declared in a function.
98. What is map function in Python?
99. Does Python have a main() method?
100. What does the *args do in Python? What does the **kwargs do in Python?
101. What does the __ Name __ do in Python? What Is the purpose of “end” in Python?
102. What does the len() function do in Python? What does the ord() function do in Python?
103. Name few methods that are used to implement Functionally Oriented Programming in Python?
104. Write a program in Python to reverse a string without using inbuilt function reverse string?

MODULES

IMPORTING MODULE, MATH MODULE, RANDOM MODULE, PACKAGES

105. How can you pick a random item from a list or tuple?
106. How can you pick a random item from a range?
107. How can you get a random number in python?
108. How will you set the starting value in generating random numbers?
109. How will you randomizes the items of a list in place?
110. Write a Python program to read a random line from a file.
111. Write a Python program to convert degree to radian
112. Write a Python program to calculate the area of a trapezoid
113. Write a Python program to calculate the area of a parallelogram
114. Write a Python program to calculate surface volume and area of a cylinder
115. Write a Python program to returns sum of all divisors of a number
116. Write a Python program to find the maximum and minimum numbers from the specified decimal numbers.
117. Write a Python program to find the sum of the following decimal numbers and display the numbers in sorted order
    Decimal numbers: 2.45, 2.69, 2.45, 3.45, 2.00, 0.04, 7.25
    Expected Output:
    Sum: 20.33
118. Sorted order: [Decimal('0.04'), Decimal('2.00'), Decimal('2.45'), Decimal('2.45'), Decimal('2.69'), Decimal('3.45'), Decimal('7.25')]
119. Write a Python program to get the square root and exponential of a given decimal number
120. Write a Python program to add, subtract, multiply and divide two fractions.
    Expected Output:

2/3 + 3/7 = 23/21
2/3 - 3/7 = 5/21
2/3 * 3/7 = 2/7
2/3 / 3/7 = 14/9

INPUT - OUTPUT

INPUT-OUTPUT

121. What is File function in python? What is keywords to create and write file.
122. Write a Python program to read an entire text file.
123. Write a Python program to append text to a file and display the text. B4. Write a Python program to read first n lines of a file.
124. Write a Python program to read last n lines of a file.
125. Write a Python program to read a file line by line and store it into a list.
126. Write a Python program to read a file line by line store it into a variable.
127. Write a python program to find the longest words.
128. Write a Python program to count the number of lines in a text file.
129. Write a Python program to count the frequency of words in a file.
130. Write a Python program to write a list to a file.
131. Write a Python program to copy the contents of a file to another file.
132. Write a Python program to read a random line from a file.
133. Write a Python program to assess if a file is closed or not.
134. Write a Python program to remove newline characters from a file.

EXCEPTION HANDLING

EXCEPTION HANDLING

135. Explain Exception handling? What is an Error in Python?
136. How many except statements can a try-except block have? Name Some built-in exception classes.
137. When will the else part of try-except-else be executed?
138. Can one block of except statements handle multiple exception?
139. When is the finally block executed?
140. What happens when '1' == 1 is executed?
141. How do you handle exceptions with try/except/finally in Python? Explain with coding snippets.
142. Write python program that user to enter only odd numbers, else will raise an exception.
143. Write program for Catching Specific Exceptions in Python
144. Write python program for file operations to makes sure the file is closed even if an exception occurs.
145. Explain Python Errors and Built-in Exceptions with coding snippets
146. Explain User-Defined Exception in Python
147. Write program that will ask the user to enter a number until they guess a stored number correctly.

148. What is Assertions in Python? Write function that converts a temperature from degrees Kelvin to degrees Fahrenheit.
149. Write program that except Clause with No Exceptions.
150. What is Argument of an Exception? Explain with coding snippets

OOPS CONCEPTS

CLASS, OBJECT, ATTRIBUTES, INHERITANCE, OVERLOADING

151. What are oops concepts? Is multiple inheritance supported in java.
152. How to define a class in Python? What is self? Give an example of a Python class.
153. Write a Python class named Rectangle constructed by a length and width and a method which will compute the area of a rectangle.
154. Write a Python class named Circle constructed by a radius and two methods which will compute the area and the perimeter of a circle.
155. Write a Python class named Circle constructed by a radius and two methods which will compute the area and the perimeter of a circle.
156. Explain Inheritance in Python with an example?
157. What Is __init__? Or What Is a Constructor in Python?
158. What is Instantiation in terms of OOP terminology?
159. What is used to check whether an object o is an instance of class A?
160. What relationship is appropriate for Course and Faculty?
161. What relationship is appropriate for Student and Person?
162. Which function overloads the + operator? Which operator is overloaded by __invert__()?
163. Which function overloads the >> operator?
164. Create a class called Numbers, which has a single class attribute called MULTIPLIER, and a constructor which takes the parameters x and y (these should all be numbers).
165. Write a Python class to implement pow(x, n).

Topic –Database Fundamentals

Task-1 SQL Practices

Table Name : User

First Name	Last Name	Address	City	Age
Mickey	Mouse	123 Fantasy Way	Anaheim	73
Bat	Man	321 Cavern Ave	Gotham	54
Wonder	Woman	987 Truth Way	Paradise	39
Donald	Duck	555 Quack Street	Mallard	65
Bugs	Bunny	567 Carrot Street	Rascal	58
Wiley	Coyote	999 Acme Way	Canyon	61
Cat	Woman	234 Purrfect Street	Hairball	32
Tweety	Bird	543	Itotltaw	28

Table Name : Student and Exam

Primary Key

Student

Rollno	Name	Branch
1	Jay	Computer Science
2	Suhani	Electronic and Com
3	Kriti	Electronic and Com

Foreign Key

Exam

Rollno	S_code	Marks	P_code
1	CS11	50	CS
1	CS12	60	CS
2	EC101	66	EC
2	EC102	70	EC
3	EC101	45	EC
3	EC102	50	EC

B1	How to Create an Table student write an SQL Query ?
B2	How to Create a Exam table with Foreign key on rollno write a SQL Query ?
B3	What is SQL Key Constraints write an Example of SQL Key Constraints ?
B4	What is SQL View Create a View of Student Table ?
B5	How to Create a Table user write a SQL query ?
B6	What is SQL and How to Create a table with Forign Key ?
B7	What is store Proceedure write a query of creating store Proceedure ?
B8	What is save Point How to Create a save Point write a Query ?
B9	What is trigger and how to Create a Trigger in SQL ?
B10	What do you understood By Database ?
B11	What is Difference Between DBMS and RDBMS ?
B12	What do you understood By Data Redundancy ?
B13	What is Normalization ?
B14	What is DDL Interpreter ?
B15	What is DML Compiler in SQL ?
B16	What is Database transaction ?
B17	What is Store Procedure in Database ?

B18	What is MF Codd Rule of RDBMS Systems ?
B19	What do You understood by Data Independence in Database?
B20	What are the name of the different data models that are available for database systems ?

Table Name : Employee

Employee_id	First_name	Last_name	Salary	Joining_date	Department
1	John	Abraham	1000000	01-JAN-13 12.00.00 AM	Banking
2	Michael	Clarke	800000	01-JAN-13 12.00.00 AM	Insurance
3	Roy	Thomas	700000	01-FEB-13 12.00.00 AM	Banking
4	Tom	Jose	600000	01-FEB-13 12.00.00 AM	Insurance
5	Jerry	Pinto	650000	01-FEB-13 12.00.00 AM	Insurance
6	Philip	Mathew	750000	01-JAN-13 12.00.00 AM	Services
7	TestName1	123	650000	01-JAN-13 12.00.00 AM	Services
8	TestName2	Lname%	600000	01-FEB-13 12.00.00 AM	Insurance

Table Name : Incentive

Employee_ref_id	Incentive_date	Incentive_amount
1	01-FEB-13	5000
2	01-FEB-13	3000
3	01-FEB-13	4000
1	01-JAN-13	4500
2	01-JAN-13	3500

I1	Get First_Name from employee table using alias name “Employee Name”.
I2	Get FIRST_NAME, Joining year, Joining Month and Joining Date from employee table.
I3	Get all employee details from the employee table order by First_Name Ascending and Salary descending.
I4	Get employee details from employee table whose first name contains ‘o’.
I5	Get employee details from employee table whose joining month is “January”.
I6	Get department, total salary with respect to a department from employee table order by total salary descending.
I7	Get department wise maximum salary from employee table order by salary ascending.
I8	Select first_name, incentive amount from employee and incentives table for those employees who have incentives and incentive amount greater than 3000
I9	Select 2nd Highest salary from employee table.
I10	Select first_name, incentive amount from employee and incentives table for

	all employees who got incentives using left join.
I11	Create View OF Employee table in which store first name ,last name and salary only.
I12	Create Procedure to find out department wise highest salary.
I13	Create After Insert trigger on Employee table which insert records in view table

TABLE-1

TABLE NAME- SALSEPERSON

(PK)SNo	SNAME	CITY	COMM
1001	Peel	London	.12
1002	Serres	San Jose	.13
1004	Motika	London	.11
1007	Rafkin	Barcelona	.15
1003	Axelrod	New York	.1

TABLE-2

TABLE NAME- CUSTOMER

(PK)CNM.	CNAME	CITY	RATING	(FK)SNo
201	Hoffman	London	100	1001
202	Giovanne	Roe	200	1003
203	Liu	San Jose	300	1002
204	Grass	Barcelona	100	1002
206	Clemens	London	300	1007
207	Pereira	Roe	100	1004

TABLE-3

TABLE NAME- Order

(PK)ONM	AMT	ODE	(FK)CNM	(FK)SNo
3001	18.69	03-OCT-94	2008	1007
3003	767.19	03-OCT-94	2001	1001
3002	1900.10	03-OCT-94	2007	1004
3005	3005	03-OCT-94	2003	1002
3006	3006	04-OCT-94	2008	1007
3009	3009	04-OCT-94	2002	1003
3007	3007	05-OCT-94	2004	1002
3008	3008	05-OCT-94	2006	1001
3010	3010	06-OCT-94	2004	1002
3011	3011	06-OCT-94	2006	1001

A1	All orders for more than $1000.
A2	Names and cities of all salespeople in London with commission above 0.10.
A8	All salespeople either in Barcelona or in London.
A9	All salespeople with commission between 0.10 and 0.12. (Boundary values shouldbe excluded).
A10	All customers excluding those with rating <= 100 unless they are located in Rome.
A11	All orders except those with 0 or NULL value in amt field.
A12	Count the number of salespeople currently listing orders in the order table.
A13	Largest order taken by each salesperson, datewise.
A14	Largest order taken by each salesperson with order value more than $3000. (ie same city).

Create DataBase: Practices

Note: Use Create SQL statement for creating table.

Task-1

tblProducts:

ColumnName	DataType	Constraint	Description
tID	int	Primarykey	AutoIncrement
ProductName	Varchar(20)		
RecommendedPrice	Money		
Category	Varchar(10)		

tblCustomers:

ColumnName	DataType	Constraint	Description
CustomerID	int	Primarykey	AutoIncrement
FirstName	Varchar(50)		
LastName	Varchar(50)		
City	Varchar(50)		
State	Char(2)		
Zip	Varchar(10)		

tblSales

Column Name	DataType	Constraint	Description
SalesID	int	Primarykey	AutoIncrement
ProductID	Int	Foreignkey	
CustomerID	Int	Foreignkey	
SalesPrice	Money		
SalesDate	Smalldatetime		

Note : Insert data using insert statement in to table

tblProduct:

ProductID	ProductName	RecommendedPr	Category
1	DVD	105.00	LivingRoom
2	Microwave	98.00	Kitchen
3	Monitor	200.00	Office
4	Speakers	85.00	Office
5	Refrigerator	900.00	Kitchen
6	VCR	165.00	LivingRoom
7	CoffeePot	35.00	Kitchen

tblCustomers:

CustomerID	FirstName	LastName	City	State	Zip
1	Chintan	Patel	Anand	GJ	388001
2	Paresh	Prajapati	Nadiad	GJ	387001
3	Pragnesh	Patel	Surat	GJ	395008
4	Nilesh	Dharsandia	Mumbai	MH	400002
5	Sonal	Patel	Mumbai	MH	400002
6	Harshal	Patel	Mogri	GJ	388345
7	Prakash	Rathod	Mogri	GJ	388345
8	Aarzoo	Dodhiya	Rajkot	GJ	360003
9	Heta	Dave	Varanasi	UP	221002
10	Nikita	Dave	Varanasi	UP	221002
11	Vaibhav	Dave	Varanasi	UP	221002
12	Paresh	Patel	Pune	MH	411001
13	Prakash	Patel	Pune	MH	411001
14	Sandhya	Patel	Hyedrabad	AP	500031
15	Divesh	Patel	Banglore	KA	560002
16	Payal	Shah	Banglore	KA	560002
17	Priyanka	Rana	Anand	GJ	388001
18	Sanket	Dhebar	V.V.Nagar	GJ	388121
19	Puja	Shah	Varanasi	UP	221002
20	Priya	Shah	Varanasi	UP	221002

tblSales:

SalesID	ProductID	CustomerID	SalesPrice	SalesDate
1	1	1	130.00	2005-06-14
2	2	2	97.00	2005-06-19
3	3	3	200.00	2005-09-20
4	4	4	80.00	2005-03-22
5	5	5	899.00	2005-01-23
6	6	6	150.00	2005-03-24
7	3	7	209.00	2005-03-10
8	4	8	90.00	2005-08-11
9	6	9	130.00	2005-08-12
10	2	14	85.00	2005-12-13
11	3	15	240.00	2005-05-14
12	1	17	87.00	2005-07-19
13	2	18	99.00	2005-09-20
14	6	19	150.00	2005-07-22
15	5	5	900.00	2005-03-06
16	4	6	86.00	2005-04-07
17	2	7	88.00	2005-11-08
18	3	8	198.00	2005-05-09
19	1	9	150.00	2005-10-10
20	6	14	99.00	2005-05-09
21	6	15	104.00	2005-09-20
22	4	14	90.00	2005-07-22
23	1	1	130.00	2005-03-06
24	2	2	102.00	2005-04-07
25	1	3	114.00	2005-11-08
26	5	4	1000.00	2005-05-09
27	5	5	1100.00	2005-10-10
28	3	6	285.00	2005-06-11
29	2	7	87.00	2005-10-12
30	3	8	300.00	2005-07-13
31	3	20	205.00	2005-12-31

B1	Return the FirstName, LastName, ProductName, and SalePrice for all products sold in the month of October200
B2	Return the CustomerID, FirstName, and LastName of those individuals in the Customer table who have made no Sales purchases.
B3	.Return the FirstName, LastName, SalePrice, Recommended SalePrice, and the difference between the SalePrice and Recommended SalePrice for all Sales. The difference must be returned as a positive number.

I1	I1.Add the following Customer and Sale information to the database. (using store procedure) FirstName : Priyanka LastName : Chopra City:Mumbai State:MH Zip:400001 ProductID:3 SalePrice:205 SaleDate:12/31/2005
I2	Return the Product Category and the average Sale Price for those customers who have purchased two or more products.
A1	Update the Sale Price to the Recommended Sale Price of those Sales occurring between 6/10/2005and6/20/2005.
A2	Number of Sales by Product Category where the average Recommended Priceis10 or more dollars greater than the average Sale Price.
A3	Largest order taken by each salesperson, datewise.
A4	Without using a declared iterative construct, return Sale Date and the running total for all sales, ordered by the Sale Date in Ascending Order.

Task-2

Note : Operatinal Statement with Employement.

tblemp(eno,ename,bdate,title,salary, dno), tblproj(pno,pname,budget,dno),

tbldept(dno,dname,mgreno), tblworkson(eno,pno,resp,hours).

B1	Write an SQL query that returns the project number and name for projects with a budget greater than $100,000.
B2	Write an SQL query that returns all works on records where hours worked is less than10and the responsibility is “Manager”.

B3	Write an SQL query that returns the employees (number and name only) who have a title of “EEE‟ or “SA‟ and make more than $35,000.
B4	Write an SQL query that returns the employees (name only) in department “D1‟ordered by decreasing salary.
I1	Write an SQL query that returns the departments (all fields) ordered by ascending department name.
I2	Write an SQL query that returns the employee name, department name, and employee title.
I3	Write SQL query that returns the project name, hours worked, and project number for all works on records where hours > 10.
A1	Write an SQL query that returns the project name, department name, and budget for all projects with a budget < $50,000.
A2	Write an SQL query that returns the employee numbers and salaries of all employees in the “Consulting” department ordered by descending salary.
A3	Write an SQL query that returns the employee name, project name, employee title and hours for all works on records.

Module 3 : Take A Dataset From the Class Mentor And Clean That Dataset Using The Excel And Build Some chart Which Represent the data Visually .

MODULE-4 : Statistics

NUMPY :

1. Write a program to find and manipulate the shape of ndarray.
2. Write a program to find the logarithmic value of numbers from 31 to 40.
3. Write a program to create a 3x2 matrix containing zeros and another matrix containing one only.
4. Write a program to convert regular array into an ndarray.
5. Write a program to create an ndarray containing characters of a string.
6. Write a program to find transpose of two metrics and then perform addition on them.
7. Write a program to explain various string manipulation methods on Numpy arrays.
8. Write a program to perform various arithmetic functions on Numpy arrays.
9. Write a program to explain matrix manipulation using ndarrays.
10. Assume That You have this Array [[5 , 10 , 15] , [20 , 12 , 28]] , Now At output give Only that Value which is Greater Than 12 .
11. Generate the Normally distributed data using the numpy function.
12. W.A.P to get the largest elements of the given array using numpy .
13. Write the Code to find the mean across the dimension Of the below matrix .

    [[10 , 20 ,30] , [11 ,22 ,33] , [111,222,333]]

14. Replace all the value less than 5 with 5 in given array . [8, 7, -5, 6, 0, 3, 2, 90 ,10]
15. Check Whether [2,5,6] is present in [22,55,2,66,5,6]

Pandas :

1. Difference between Series, DataFrame and Panel in Pandas.
2. Write a program to concat two DataFrames.
3. Write a program to perform custom addition function on a DataFrame.
4. Write a program to merge two DataFrames.
5. Write a program to handle missing data from DataFrame.
6. Write program to create bar chart, box chart, area plot, scatter plot and pie chart from a DataFrame.
7. What is the difference between rand() and randn() methods.
8. W.A.P two program Which can represent the difference between rand(and randn().
9. Assume that in data frame we are having the 'Elbert' on some position, how you are going to convert that Name To 'Albert', Write a Program For that.
10. You are having Some dataFrame of IPL ,
    Column 1 = Team Name
    Column 2 = Team Captain name
    Column 3 = Total Run by The Team
    Column 4 = Year

10.1 Write A Pandas Function which can Give the output as Year Vise Run
10.2 Write A Pandas Function which can Give the output as Year Vise Average Run
10.3 Write A Pandas Function which can Give the output as Team vise Run
10.4 Write A Pandas Function which can Give the output as Captain Occurs in each team.

SCIPY:

1. Take Any data and perform algebra operations using Scipy?
2. Write a program to perform Fourier transformation.
3. Write a program to perform image processing using Scipy. Like , cropping the image , image rotation , Image Blurring .
4. Take any data and perform integration on them using Scipy .
5. Open And Append the data In MATLAB File using the Scipy .

MATPLOTLIB:

1. Write a program to create a line graph using Matplotlib.
2. Write a program to create a scatter plot using Matplotlib.
3. Write a program to create a bar chart using Matplotlib.
4. Write a program to create a histogram using Matplotlib.
5. Write a program to create a pie chart using Matplotlib.
6. Write a program to plot categorical data using Matplotlib.
7. Write a program to add a pinpoint in a graph using Matplotlib.
8. Write a program to add extra text into a graph using Matplotlib.
9. Write a program to create multiple graph within a graph using Matplotlib .
10. Write a Program to draw a Sin Trigonometric function with BLUE DOT .
11. Write a Program to draw a Sin Trigonometric function with BLUE DOT And On that same graph Draw A sin function with the continuous decreasing form With red Line .

MODULE-5: DATA PREPROCESSING

1. What is Machine Learning? Explain the applications of Machine Learning.
2. Why do we need Machine Learning?
3. Why do we need to preprocess the data in Machine Learning?
4. Explain types of variables in Machine Learning.
5. Explain different types of methods to handle missing data.
6. How to handle categorical variables in Machine Learning.
7. What is feature scaling? Why do need to scale the data?
8. Explain two feature scaling methods.
9. What is the necessity of splitting the dataset into training and testing set?
10. Explain different types of learning in Machine Learning.
11. Write a program to handle conditional data in Machine Learning.
12. Write a program to scale the data for better accuracy.
13. Write a program to handle missing data.

REGRESSION

REGRESSION:

14. What is Regression? List down types of Regression.
15. Explain Simple Linear Regression.
16. Explain Multiple Linear Regression.
17. What are dummy variables?
18. What is multicollinearity in Regression?
19. What is dummy variable trap?
20. Explain null hypothesis and p-value in statistics.
21. List down different methods of feature selection. Explain each in brief.
22. Explain Polynomial Regression.
23. What is Support Vector Regressor? Explain Kernel, Hyperplane, Boundary Lines and Support Vectors in SVR.
24. Difference between SVR and Simple Linear Regressor.
25. What is Regression Tree? Explain in detail.
26. What is entropy and information gain in Regression Tree.
27. How to split a decision tree using entropy and information gain.
28. Explain Random Forest Regression.
29. What is ensemble learning?
30. What is the significance of R-squared and adjusted R-squared in feature selection?
31. In Regression, how to interpret coefficient to improve the accuracy of the model.
32. Compare pros and cons of Linear Regression, Polynomial Regression, SVR, Decision Tree Regression and Random Forest Regression.
33. What is overfitting?
34. How to ensure that you are not overfitting the model?
35. Write a program to predict Salary of a person based on their experience using Simple Linear Regression.
36. Write a program to predict profit of startups based on their expenses like R&D, Administration, Marketing using Multiple Linear Regression.
37. Write a program to predict salary of employee based on their position in the organization using Polynomial Regression.
38. Write a program to predict salary of employee based on their position in the organization using Support Vector Regression.
39. Write a program to predict salary of employee based on their position in the organization using Decision Tree Regression.

40. Write a program to predict salary of employee based on their position in the organization using Random Forest Regression.

CLASSIFICATION

CLASSIFICATION:

41. What is ensemble learning?
42. Explain Logistic Regression to classify binary class data.
43. Why Logistic Regression is called Linear Classifier?
44. Explain K-Nearest Neighbor Classifier.
45. What is Support Vector Classifier? Explain in brief.
46. Why SVC is different than other classifiers?
47. What is linearly separable and linearly non-separable data?
48. Explain Gaussian Radial Basis Function Kernel in SVC.
49. List down different types of kernels in SVC.
50. What is Bayes Theorem? Explain with example.
51. What is Naïve Bayes Theorem? Explain with example.
52. Why Naïve Bayes theorem is called Naïve?
53. How a Decision Tree Classifier creates a tree to classify anonymous data?
54. How is decision tree pruned?
55. Explain Random Forest Classifier in brief. Also, explain the difference between Random Forest Regressor and Random Forest Classifier.
56. What is false positive and false negative?
57. Explain Confusion Matrix in Classification.
58. Explain Accuracy Paradox.
59. What is CAP curve?
60. When should you use classification over regression?
61. Write a program to classify whether a user will buy a certain product based their Gender, Age and Salary using Logistic Regression.
62. Write a program to classify whether a user will buy a certain product based their Gender, Age and Salary using k-NN Classifier.
63. Write a program to classify whether a user will buy a certain product based their Gender, Age and Salary using Support Vector Classifier.
64. Write a program to classify whether a user will buy a certain product based their Gender, Age and Salary using kernel SVM.
65. Write a program to classify whether a user will buy a certain product based their Gender, Age and Salary using Naïve Bayes Classifier.
66. Write a program to classify whether a user will buy a certain product based their Gender, Age and Salary using Decision Tree Classifier.
67. Write a program to classify whether a user will buy a certain product based their Gender, Age and Salary using Random Forest Classifier.

CLUSTERING

CLUSTERING:

68. List down different types of clustering algorithms.
69. Explain K-Means Clustering in brief.
70. What is Random Initialization Trap in K-Means Clustering?
71. Explain Hierarchical Clustering.
72. What is Dendrogram? Explain their use in Hierarchical Clustering.

ASSOCIATION RULE LEARNING, REINFORCEMENT LEARNING, DEEP LEARNING, DIMENSIONALITY REDUCTION AND MODEL BOOSTING:

73. Explain Apriori algorithm in Association Rule Learning.
74. What is the significance of Upper Confidence bound in Reinforcement Learning?
75. Explain Thompson Sampling in detail.
76. What is the difference between Machine Learning and Deep Learning?
77. What is Deep Learning and how does it contrast with other Machine Learning Algorithms?
78. What is the significance of neural networks in Deep Learning?
79. Explain Artificial Neural Network and Convolutional Neural Network.
80. Explain in detail the methods of Dimensionality Reduction.
81. Explain XGBoost in detail.
82. What is cross validation technique?
83. What is more important, model accuracy or model performance?

Build the Dashboard From The Dataset Given by Your Tutor During Class.

Remember : its Not Necessary to Take All Columns For Analysis But Your Dashboard Should Tell Story For Specific Outcome.