Experiment wise program list

Class: BCA-II Course: Programming with python

Exp1. Demonstrate installation steps and different ways of invoking python file.

1. Write a program to find the type of triangle. Input sides from user.
2. Write a program to display electricity bill. Input no of units from user.
3. Write a program to find the location of point in graph.
4. Write a program to check whether given triplet is pythagorian triplet. Input three numbers from user.
5. Write a program to find the distance between two points.

Exp 2. Write a program to demonstrate use of different datatypes (range, string, list, dictionary, set, and tuples) in python

1. Write a program to implement various methods for modifying set.

    1. add () 2. remove() 3.discard() 4.pop() 5.clear()

2. Write a Python script to perform following operations:

    1. Merge two Python dictionaries.
    2. Iterate over dictionaries using for loops.
    3. Sum of all the items in a dictionary
    4. Multiply all the items
    5. Remove element from a dictionary
    6. Sort a given dictionary by key

7. Get the maximum and minimum value

8. Remove duplicates from Dictionary

3. Write a python program to create, append and remove lists in python

4. Write a program to peform various string operations.

Exp. 3: Program to demonstrate Use of Statements in Python

1. Write a Python program to find those numbers which are divisible by 7 and multiple of 5,between 1500 and 2700(both included).

2. Write a Python program to construct the following pattern,using a nested for loop.

```
*
**
***
****
*****
****
***
**
*
```

3. Write a Python program to count the number of even and odd numbers from a series of numbers.
Sample numbers : numbers = (1, 2, 3, 4, 5, 6, 7, 8, 9) *ExpectedOutput*:
Number of even numbers:
5
Number of odd numbers:4

4. Write a Python program that prints all the numbers from 0 to 7 except 3 and 6.Note:Use 'continue' statement.
Expected Output: 012457

5. Write a Python program which iterates the integers from 1 to 50. For multiples of three print "Fizz" instead of the number and for the multiples of five print "Buzz".For numbers which are multiples of both three and five print "FizzBuzz".

SampleOutput:
fizzbu
zz1
2
fi
z
z
4
buzz

6. Write a Python program which accepts a sequence of comma separated 4 digit binary numbers as its input and print the numbers that are divisible by 5 in a comma separated sequence.
Sample Data:0100,0011,1010,1001,1100,1001
Expected Output:1010

7. Write a Python program to find numbers between 100 and 400 (bothincluded)where each digit of a number is an even number.The numbers obtained should be printed in a comma-separated sequence.

8. Write a Python program to print alphabet pattern 'L'.

ExpectedOutput:

```
*
*
*
*
*
*
*****
```

9. Write a Python program to print alphabet pattern 'U'.

ExpectedOutput:

```
 *   *
 *   *
 *   *
 *   *
 *   *
 *   *
  ***
```

10. Write a Python program to print alphabet pattern 'Z'.

ExpectedOutput:

```
*******
      *
     *
    *
   *
  *
*******
```

11. Write a Python program to print alphabet pattern 'T'.
Expected Output:

```
 *****
   *
   *
   *
   *
   *
   *
```

12. Write a Python program to sum of two given integers. However, if the sum is between 15 to 20 it will return 20.

13. Write a Python program to create the multiplication table(from1to10) of a number

ExpectedOutput:

```
Input a number:
66x1=6
6x2=12
6x3=18
6x4=24
6x5=30
6x6=36
6x7=42
6x8=48
6x9=54
6x10=60
```

14. Write a Python program to construct the following pattern,using a nested loop number.

ExpectedOutput:

```
1
22
333
4444
55555
666666
7777777
88888888
999999999
```

15. Write a program to display following pattern

```
*
*     *
*     *     *
*     *     *     *
```

16. Write a program to display following pattern

```
0
0   1
0   1   2
0   1   2   3
```

17. Write a program to display following pattern

```
*   *   *   *   *   *
*   *   *   *   *
*   *   *   *
*   *   *
*   *
*
```

18. Write a program to display following pattern

```
0   1   2   3   4   5
0   1   2   3   4
0   1   2   3
0   1   2
0   1
0
```

Exp 4. Functions, Modules and Packages in Python

Q. 1. Create user defined module for given problem and demonstrate use of import.

1. Create module named rectangle.py
2. Create two user defined functions named area and perimeter
3. Create testrectangle.py module and import rectangle.py module.

Q.2 User defined package.

1. Create user defined package named AIRT_OP
2. Create airth.py module in AIRT_OP package
3. Create four user defined functions add,sub,mul,div with two formal parameters each in airth.py
4. create a __init__.py file in AIRT_OP package
5. create testmodule.py outside package AIRT_OP and import airth.py module in it.

Exp 5: Write a program to implement File Handling operations

1. Write a function in python to read the content froma text file"poem.txt" line by line and display the same on screen

2. Write a function in Python to count and display the tota l number of words in a text file.

3. Write a function in Python to read lines from a textfile "notes.txt".Your function should find and display the occurrence of the word "the".
   For example: If the content of the file is:
   "India is the fastest-growing economy.India is looking for more investments around the globe.The whole world is looking at India as a great market. Most of the Indians can foresee the heights that India is capable of reaching."
   The output should be 5.

4. Write a function in Python to count the words "this" and" these" present in a text file "article.txt". [Note that the words "this" and "these" are complete words]

5. Write a function in Python to count words in a text file those are ending with alphabet "e".

6. Write a function in Python to count upper case character in a textfile

7. Write a function AMCount() in Python, which should read each character of a text file STORY.TXT, should count and display the occurrence of alphabets A and M (including small cases a and m too).

   Example: If the file content is as follows:
   Hi I am from dypcet. There are various programs in our university namely BCA,MCA etc.

   .The EUCount() function should display the output as:
   A or a:7
   M or m :5

Exp 6: Write a program to implement exception Handling

1. Write a python program to handle ZeroDivisionError Exception when dividing a number by zero.
2. Write a python program that prompts the user to input an integer and raises a ValueError Exception if the input is not valid integer.
3. Create user defined exception named as EligibleforEntrance(Exception) and NotEiligibleforEntrance(Exception). Input PCM marks from user. If per<45 raise userdefined exception NotEiligibleforEntrance else EligibleforEntrance

Exp 7: Write a program to perform different database operations like Select,

Insert, Update, Delete

1. Write a python program to do following:

   a. Create a database named EMP_RECORD

   b. Create a table named Emp_Details with following attributes (Emp_id,Emp_nm,Emp_Sal,Emp_add)

   c. Insert 3 records into a Emp_Details table

   d. Display first two records of the table

2. Write a python program to do following:

   a. Create a database named EMP_RECORD

b. Create a table named Emp_Details with following attributes (Emp_id,Emp_nm,Emp_Sal,Emp_add)

c. Insert 3 records into a Emp_Details table

d. Sort the record by Emp_Sal in ascending order

e. Update the Emp_Name as “john” wosesal is 10000

3. Write a python program to do following:

a. Create a database named EMP_RECORD

b. Create a table named Emp_Details with following attributes (Emp_id,Emp_nm,Emp_Sal,Emp_add)

c. Insert 5 records into a Emp_Details table

d. Display all the records in the Emp table

e. Delete the record of emp whose Emp_id=101

Exp 8: Write a program to provide a solution to the problem using python object oriented concepts.

1. Write a Python program to create a calculator class. Include methods for basic arithmetic operations.
2. Create a base class called Person with attributes name and age in constructor. Then, create a derived class called Employee that inherits from Person and adds an additional attribute employee_id in constructor. Create an instance of the Employee class and print out its name, age, and employee ID.
3. Create a **Bus** child class that inherits from the Vehicle class. The default fare charge of any vehicle is **seating capacity * 100**. If Vehicle is **Bus** instance, we need to add an extra 10% on full fare as a maintenance charge. So total fare for bus instance will become the **final amount = total fare + 10% of the total fare.**
4. Create a class named Rectangle constructed from length and width and a method that will compute the area of a rectangle.

5. Create a Python class named Circle constructed from a radius and two methods that will compute the area and the perimeter of a circle.

6. create a Python class Employee with attributes like emp_id, emp_name, emp_salary, and emp_department and methods like calculate_emp_salary, emp_assign_department, and print_employee_details.

   Sample Employee Data:
   "ADAMS", "E7876", 50000, "ACCOUNTING"
   "JONES", "E7499", 45000, "RESEARCH"
   "MARTIN", "E7900", 50000, "SALES"
   "SMITH", "E7698", 55000, "OPERATIONS"

   Note:
   - Use 'assign_department' method to change the department of an employee.
   - Use 'print_employee_details' method to print the details of an employee.
   - Use 'calculate_emp_salary' method takes two arguments: salary and hours_worked, which is the number of hours worked by the employee. If the number of hours worked is more than 50, the method computes overtime and adds it to the salary. Overtime is calculated as following formula:
   - overtime = hours_worked - 50
     Overtime amount = (overtime * (salary / 50))

Exp 9: Create, access, modify, and sort multidimensional NumPy arrays.

1. **Write a program to perform following on Numpy array.**

   a. Create numpy array of type integer having 5 numbers

   b. Display elements of an array using loop

   c. Display dimensions of array

   d. Perform slicing on array

   e. Sort the array

Exp 10: Create, access, and modify the DataFrame in Pandas