BCSE101E – Python Programming

Name of the UTA – ARVIND C B

Question Bank for PAT-2 Preparation

Note:

1. Topics covered in this question bank: Loops, Lists.
2. These are sample questions for practice, hence **do not** expect the same questions.
3. You are free to refer the internet to learn, but **do not use it to copy paste** the solutions.
4. These questions will **NOT** be evaluated. However, if there are any queries, contact me and get it cleared.

1. Write a Python program to remove and print every third number from a list of numbers until the list becomes empty.

Example:

[10,20,30,40,50,60]

Output:

30
60
40
20
50
10

Explanation:

[10, 20, 30, 40, 50, 60] → initial list
[10, 20, 40, 50, 60] → 30 is the 3rd element, so it is removed and printed
[10, 20, 40, 50] → 60 is the 3rd element from 30, it is removed and printed
[10, 20, 50] → List starts from beginning, 40 is the third element, it is removed and printed
[10, 50] → 20 is the third element from 40, it is removed and printed
[10] → 50 is the third element from 20, it is removed and printed
[] → 10 is the only element in the list, it is removed and printed

2. Anushree wants to get chocolates from her children's bank. She has a list of currency notes. She can get chocolates if she can take 2 currency notes from the list of currency notes she has. You are given a list of *k* currency notes and a number *n*, where *n* is the cost of the chocolate. Write a Python program to check if the sum of any 2 numbers in the list is equal to *n*. If so, print "Yes" else print "No".
   Example:
   List → [14, 1, 23, 19]
   n → 37
   Output:
   Yes
   Explanation: 14+23=37, it is possible

   List → [1, 5, 18, 34, 2]
   n → 50
   Output:
   No

3. *Fibonacci* Series: the *Fibonacci* numbers, commonly denoted F_n, form a sequence, called the *Fibonacci* sequence, such that each number is the sum of the two preceding ones, starting from 0 and 1. Given a number *m,* write a Python program to print the *Fibonacci* series till *m.*

4. Develop a suitable algorithm and write a program in Python, which accepts a list *Arr* of numbers and *n* is a numeric value by which all elements of the list are shifted to left.
   Sample Input
   [10,20,30,40,12,11]
   n=2

   Output
   [30,40,12,11,10,20]

5. Given 2 lists *list1* and *list2*, write a Python program to print the union of *list1* and *list2* without inbuilt *union()* method.
   Note: You can use *in* and *not in.*

6. Write a Python program that accept a list of numbers and create a list to store the negative count of negative number in first element and store the sum of positive numbers in second element. Note: Treat 0 as positive digit.

Example:
List → [4, -10, 12, 17, 25, -9, 1, -10, 27, -43, -15]
Output:
[-5, 6]
Explanation: There are 5 negative numbers and 6 positive numbers.

7. Write a Python program to construct the following pattern

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

8. Given a list of 3 numbers, write a Python program to calculate the Least Common Multiple (LCM) and Highest Common Factor (HCF) and store it in a list where LCM is the first element and HCF is the second element.

9. Write a program in Python to display the n terms of even natural number and their sum.

   Test Data :
   Input number of terms : 5

   Expected Output :
   The even numbers are :2 4 6 8 10
   The Sum of even Natural Number upto 5 terms : 30

10. Write a program in Python to display the n terms of square natural number and their sum. 1 4 9 16 ... n Terms
    Test Data :
    Input the number of terms : 5
    Expected Output :
    The square natural upto 5 terms are :1 4 9 16 25
    The Sum of Square Natural Number upto 5 terms = 55

11. Special List Set (SLT) : A SLS is a list that behaves like a set, i.e. there are no duplicate elements in the list. Given a list of floating point numbers, develop an algorithm and a subsequent Python program to print if the given list is a SLS or not. Print "Yes" or "No".

12. Read an integer *num* from the user. Write a Python code to print the squares from 1 to *num*.

    If n=3

    Output:

    1

    4

    9

13. Given 2 lists *list1* and *list2*, develop an algorithm and write a Python program to print all the elements in *list1* that are not in *list2*.

    Note: Do NOT use *not in* operator.

14. Write a program in Python to find the number and sum of all integer between *m* and *n* which are divisible by 7.
    Constraints: *m*<*n*

15. [*HOTS Type Question*] As the software developer for a company, you must develop a product for them. The product is called "Friendship Compatibility Checker". Two people are said to be friends if they are connected with each other. If one of the persons does not connect with the other, they are not said to be friends. Friends can chat with each other. Given the list of people in the community (Akash, George, Kumar, Mira, Uma) and the connected status, indicate the pairs of friends. Connected is indicated by '1' and not connected is indicated by '0'.
    Example: There are 5 people, Akash, George, Kumar, Mira, Uma
    5 lists will be given indicating the connected status on the 5 people.
    Akash → [0, 0, 0, 1, 0]
    George → [0, 0, 1, 0, 1]
    Kumar → [0, 1, 0, 0, 1]
    Mira → [0, 1, 0, 0, 0]
    Uma → [0, 0, 1, 0, 0]

    In this example, we can find that George and Kumar are friends, and Kumar and Uma are friends.
    Hint: Use two dimensional lists (nested list) and compare the indices.