

**Problem 1** - Print the following pattern. Write a program to use for loop to print the following reverse number pattern.

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

# Code here

**Problem 2:** Print the following pattern.

```
*
```

  

```
* *
```

  

```
* * *
```

  

```
* * * *
```

  

```
* * * * *
```

  

```
* * * *
```

  

```
* * *
```

  

```
*
```

# Code here

**Problem 3:** Write a program to print the following pattern

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

---

---

# Code here

**Problem 4:** Write a program to print the following pattern

```
1  
21  
321  
4321  
54321
```

```
# Code here
```

Problem 5: Write a Python Program to Find the Sum of the Series till the nth term:

$1 + x^2/2 + x^3/3 + \dots + x^n/n$  n will be provided by the user

```
# Code here
```

Problem 6: The natural logarithm can be approximated by the following series.

$$\frac{x-1}{x} + \frac{1}{2} \left(\frac{x-1}{x}\right)^2 + \frac{1}{2} \left(\frac{x-1}{x}\right)^3 + \frac{1}{2} \left(\frac{x-1}{x}\right)^4 + \dots$$

If x is input through the keyboard, write a program to calculate the sum of the first seven terms of this series.

```
# Code here
```

Problem 7 - Find the sum of the series upto n terms.

Write a program to calculate the sum of series up to n term. For example, if n =5 the series will become  $2 + 22 + 222 + 2222 + 22222 = 24690$ . Take the user input and then calculate. And the output style should match which is given in the example.

**Example 1:**

Input:

```
5
```

Output:

```
2+22+222+2222+22222
```

```
Sum of above series is: 24690
```

```
# Code here
```

#### Problem 8: Write a program to print all the unique combinations of 1,2,3 and 4

Output:

```
1 2 3 4  
1 2 4 3  
1 3 2 4  
1 3 4 2  
1 4 2 3  
1 4 3 2  
2 1 3 4  
2 1 4 3  
2 3 1 4  
2 3 4 1  
2 4 1 3
```

.

.

and so on

# Code here

####Problem 9: Write a program that will take a decimal number as input and prints out the binary equivalent of the number

# Code here

####Problem 10: Write a program that will take 2 numbers as input and prints the LCM and HCF of those 2 numbers

# Code here

## Problem 11: Create Short Form from initial character

Given a string create short form of the string from Initial character. Short form should be capitalised.

Example:

Input:

Data science mentorship program

Output:

DSMP

# Code here

####Problem 12: Append second string in the middle of first string

Input:

```
campusx  
data
```

Output:

```
camdatapusx  
# Code here
```

**Problem 13:** Given string contains a combination of the lower and upper case letters. Write a program to arrange the characters of a string so that all lowercase letters should come first.

Given:

```
str1 = PyNaTive
```

Expected Output:

```
yaivePNT
```

```
# Code here
```

**Problem 14:** Take a alphanumeric string input and print the sum and average of the digits that appear in the string, ignoring all other characters.

Input:

```
hel12304every093
```

Output:

```
Sum: 22  
Avg: 2.75
```

```
# Code here
```

**Problem 15:** Removal of all characters from a string except integers

Given:

```
str1 = 'I am 25 years and 10 months old'
```

Expected Output:

```
2510
```

```
# Code here
```

### Problem 16: Check whether the string is Symmetrical.

**Statement:** Given a string. the task is to check if the string is symmetrical or not. A string is said to be symmetrical if both the halves of the string are the same.

**Example 1:**

Input

```
khokho
```

Output

```
The entered string is symmetrical
```

```
# Code here
```

### Problem 17: Reverse words in a given String

**Statement:** We are given a string and we need to reverse words of a given string.

**Example 1:**

Input:

```
geeks quiz practice code
```

Output:

```
code practice quiz geeks
```

**Example 2:**

Input:

```
my name is laxmi
```

Output:

```
laxmi is name my
```

```
# Code here
```

### Problem 18: Find uncommon words from two Strings.

**Statement:** Given two sentences as strings **A** and **B**. The task is to return a list of all uncommon words. A word is uncommon if it appears exactly once in any one of the sentences, and does not

appear in the other sentence. Note: A sentence is a string of space-separated words. Each word consists only of lowercase letters.

**Example 1:**

Input:

```
A = "apple banana mango"  
B = "banana fruits mango"
```

Output:

```
['apple', 'fruits']  
# Code here
```

Problem 19: Word location in String.

**Statement:** Find a location of a word in a given sentence.

**Example 1:**

Input:

**Sentence:** We can learn data science through campusx mentorship program.

**word:** campusx

Output:

```
Location of the word is 7.
```

Note- Don't use index/find functions

```
# Code here
```

Problem 20: Write a program that can remove all the duplicate characters from a string. User will provide the input.

```
# Code here
```