

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
```