Week-1, Graded Assignment (programming)

(10 marks)

Problem-1

(1 marks)

Question

Print the following pattern.

```
1
11
111
1111
11111
```

Answer

```
print('1')
print('11')
print('111')
print('1111')
print('11111')
```

Solution

Self explanatory.

Problem-2

(1 marks)

Question

The following pattern is called the Pascal's triangle. Print it!

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

Note

1. There is a single space between any two consecutive numbers in every row.
2. The number of spaces before the first number in each row keeps decreasing by exactly one unit from the first row to the last row.
3. There are no spaces before the first number in the last row.
4. There are no spaces after the last number in each row.

Answer

```
print('   1')
print('  1 1')
print(' 1 2 1')
print('1 3 3 1')
```

Solution

The `print` method displays what is given inside brackets within single or double quotes as it is on the console. After displaying the output, the control goes to the next line by default.

Problem-3

(3 marks)

Question

Accept a string as input and create a copy of this string. Now, insert the length of the original string at the end of this copy and print the final string to the console.

Test Cases

Public

Input	Output
good	good4
abcdefg	abcdefg7

Private

Input	Output
123456789	1234567899
aaa	aaa3
	0

Answer

```
string = input()
string_len = str(len(string))
new_string = string + string_len
print(new_string)
```

Solution

- In the first line, take the input from the user and assign it to `string` variable.
- In the Second line, calculate the length of `string` and type cast the length value to `str` and assign to `string_len` variable.
- In the third Line, concatenate the `string` and `string_len` value and assign to `new_string` variable.
- In the fourth line, finally print `new_string` value.

Problem-4

(2 marks)

Question

Accept an integer x as input. Find the remainder when 2^{100} is divided by x and print the output.

Test Cases

Public

Input	Output
5	1
2	0

Private

Input	Output
10	6
100	76

Answer

```
x = int(input())
print(2 ** 100 % x)
```

Solution

- In the first line, take the input from the user, then change the input to integer assigned to x variable.
- In the Second line, write the python expression for the remainder when 2^{100} it is divided by within the print statement. So it will print the remainder value in output.

Problem-5

(3 marks)

Question

You are given the registration number of a vehicle as input. Print the two letter state-code where the vehicle is registered. You can assume that there will be no change in the format of the registration number. But the state code may change.

Test Cases

Public

Input	Output
TN 09 AV 1998	TN
AP 02 BK 1084	AP

Private

Input	Output
KL 02 BK 4910	KL
MH 13 GR 2491	MH
PB 00 AW 1948	PB

Answer

```
regno = input()
print(regno[0:2])
```

Solution

- In the first line, take the input from the user and assign it to `regno` variable.
- We know that the first two letters represent the state-code. So, the first letter is at index `0` and the second letter at index `1`.
- In Second line, use slicing for getting the first two letters with start index `0` and stop index `2` (because stop index is not included in range) within the `print` statement.
- Therefore, the line-2 will display the state-code in output.