

1. Write a loop that makes seven calls to `print()`, so we get on the output the following triangle:

```
#
##
###
####
#####
#####
#####
```

2. Use nested loops to create the following:

```
#####
#####
#####
#####
#####
#####
#####
#####
```

3. Iterate through the list, ['Python', 'Numpy','Pandas','Django', 'Flask'] using a for loop and print out the items.
4. Use for loop to iterate from 0 to 100 and print the sum of all evens and the sum of all odds.
5. Calculate the cube of all numbers from 1 to a given number
6. Declare a function `add_two_numbers`. It takes two parameters and it returns a sum.
7. Area of a circle is calculated as follows:  $\text{area} = \pi \times r \times r$ . Write a function that calculates `area_of_circle`.
8. Write a function called `add_all_nums` which takes an arbitrary number of arguments and sums all the arguments. Check if all the list items are number types. If not, do give reasonable feedback.
9. Temperature in  $^{\circ}\text{C}$  can be converted to  $^{\circ}\text{F}$  using this formula:  $^{\circ}\text{F} = (^{\circ}\text{C} \times 9/5) + 32$ . Write a function which converts  $^{\circ}\text{C}$  to  $^{\circ}\text{F}$ , `convert_celsius_to-fahrenheit`.
10. Write a function called `check-season`, it takes a month parameter and returns the season: Autumn, Winter, Spring or Summer.
11. Write a function called `calculate_slope` which return the slope of a linear equation
12. Quadratic equation is calculated as follows:  $ax^2 + bx + c = 0$ . Write a function which calculates the solution set of a quadratic equation, `solve_quadratic_eqn`.
13. Declare a function named `print_list`. It takes a list as a parameter and it prints out each element of the list.
14. Declare a function named `reverse_list`. It takes an array as a parameter and it returns the reverse of the array (use loops).

```
print(reverse_list([1, 2, 3, 4, 5]))  
[5, 4, 3, 2, 1]  
print(reverse_list1(["A", "B", "C"]))  
["C", "B", "A"]
```

15. Declare a function named `evens_and_odds` . It takes a positive integer as a parameter and it counts the number of events and odds in the number.
16. Write different functions which take lists. They should `calculate_mean`, `calculate_median`, `calculate_mode`, `calculate_range`, `calculate_variance`, `calculate_std` (standard deviation).
17. Write a function which checks if all items are unique in the list.
18. Write a function which checks if all the items of the list are of the same data type.
19. Write a function which check if provided variable is a valid python variable
20. Write a Python program to detect the number of local variables declared in a function.