Python Lab 5 Exercises - Functions

1. ***Create a Python function called calculate_average that takes a list of numbers as input and prints the average of those numbers without returning anything.***
2. ***Write a Python function named print_power_of_two that takes an integer n as input and prints the first n powers of 2 without returning anything.***
3. ***Write a Python function called calculate_area that takes the radius of a circle as input and returns its area. Use the formula: area = π * radius^2.***
4. ***Write a Python function called reverse_list that takes a list as input and returns a new list with the elements in reverse order.***
5. ***Write a Python function that takes a list of integers and returns the maximum element.***
6. ***Implement a Python function named count_vowels that takes a string as input and returns the number of vowels (a, e, i, o, u) in the string.***
7. ***Create a Python function called merge_lists that takes two lists as input and returns a new list containing all the elements from both lists.***
8. Implement a Python function called calculate_tax that takes the income of a person as input and returns the amount of tax they need to pay based on the following tax brackets:

   0% tax for income up to Rs10,000
   10% tax for income between Rs.10,001 and Rs.50,000
   20% tax for income between Rs.50,001 and Rs.100,000
   30% tax for income above Rs.100,000
9. Implement a Python function to reverse a string
10. Write a Python function called create_phonebook that takes two lists, one containing names and the other containing phone numbers, and returns a dictionary where the names are keys and the phone numbers are values.
11. Create a Python function called calculate_average_grade that takes a dictionary where the keys are student names and the values are lists of grades, and returns a new dictionary where the keys are student names and the values are their average grades.

12. ***Implement a Python function called find_key_by_value that takes a dictionary and a value as input and returns the corresponding key if the value is found in the dictionary, and None otherwise.***
13. Implement a Python function named calculate_word_frequencies that takes a string of text as input and returns a dictionary where the keys are the words in the text and the values are the frequencies of those words.
14. Write a Python function to generate all possible combinations of a given string
15. ***Write a Python function to calculate the factorial of a non-negative integer using recursion.***
16. ***Write a Python function to calculate the power of a number using recursion.***
17. Write a Python function that takes a list of numbers as input and returns the sum of all the numbers using recursion.
18. ***Implement a Python function to find the nth Fibonacci number using recursion.***