

Exercises: Level 1

1. Declare a function *add_two_numbers*. It takes two parameters and it returns a sum.
2. Area of a circle is calculated as follows: $\text{area} = \pi \times r \times r$. Write a function that calculates *area_of_circle*.
3. Write a function called *add_all_nums* which takes arbitrary number of arguments and sums all the arguments. Check if all the list items are number types. If not do give a reasonable feedback.
4. Temperature in °C can be converted to °F using this formula: $^{\circ}\text{F} = (^{\circ}\text{C} \times 9/5) + 32$. Write a function which converts °C to °F, *convert_celsius_to-fahrenheit*.
5. Write a function called *check-season*, it takes a month parameter and returns the season: Autumn, Winter, Spring or Summer.
6. Write a function called *calculate_slope* which return the slope of a linear equation
7. Quadratic equation is calculated as follows: $ax^2 + bx + c = 0$. Write a function which calculates solution set of a quadratic equation, *solve_quadratic_eqn*.
8. Declare a function named *print_list*. It takes a list as a parameter and it prints out each element of the list.
9. 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"]
```

10. Declare a function named *capitalize_list_items*. It takes a list as a parameter and it returns a capitalized list of items
11. Declare a function named *add_item*. It takes a list and an item parameters. It returns a list with the item added at the end.

```
food_staff = ['Potato', 'Tomato', 'Mango', 'Milk'];  
print(add_item(food_staff, 'Meat')) # ['Potato', 'Tomato',  
'Mango', 'Milk', 'Meat'];  
numbers = [2, 3, 7, 9];  
print(add_item(numbers, 5)) [2, 3, 7, 9, 5]
```

12. Declare a function named `remove_item`. It takes a list and an item parameters. It returns a list with the item removed from it.

```
food_staff = ['Potato', 'Tomato', 'Mango', 'Milk'];  
print(remove_item(food_staff, 'Mango')) # ['Potato', 'Tomato',  
'Milk'];  
numbers = [2, 3, 7, 9];  
print(remove_item(numbers, 3)) # [2, 7, 9]
```

13. Declare a function named `sum_of_numbers`. It takes a number parameter and it adds all the numbers in that range.

```
print(sum_of_numbers(5)) # 15  
print(sum_all_numbers(10)) # 55  
print(sum_all_numbers(100)) # 5050
```

14. Declare a function named `sum_of_odds`. It takes a number parameter and it adds all the odd numbers in that range.
15. Declare a function named `sum_of_even`. It takes a number parameter and it adds all the even numbers in that - range.

Exercises: Level 2

1. Declare a function named `evens_and_odds` . It takes a positive integer as parameter and it counts number of evens and odds in the number.

```
print(evens_and_odds(100))  
# The number of odds are 50.  
# The number of evens are 51.
```

1. Call your function `factorial`, it takes a whole number as a parameter and it return a factorial of the number
2. Call your function `is_empty`, it takes a parameter and it checks if it is empty or not
3. Write different functions which take lists. They should `calculate_mean`, `calculate_median`, `calculate_mode`, `calculate_range`, `calculate_variance`, `calculate_std` (standard deviation).

Exercises: Level 3

1. Write a function called `is_prime`, which checks if a number is prime.
2. Write a functions which checks if all items are unique in the list.
3. Write a function which checks if all the items of the list are of the same data type.
4. Write a function which check if provided variable is a valid python variable
5. Go to the data folder and access the countries list file.
 - Create a function called `the most_spoken_languages` in the world. It should return 10 or 20 most spoken languages in the world in descending order
 - Create a function called `the most_populated_countries`. It should return 10 or 20 most populated countries in descending order.