ROBOTICS – Python Development – Lab 5 - Homework

1. We need to create a flexible interface for a data processing pipeline. The data processing pipeline consists of a series of functions that can be applied to a variable numbers of arguments and return a tuple, this enables parallel processing of data (each function can be possibly executed on a different processing node).
Create a function **parallel_process** that performs the following:
    a. Accepts a variable number of values specified as positional parameters (for homework purpose consider these values as positive integers);
    b. Also accepts a variable number of data processing functions that are assigned via the function_<n> parameter names (e.g. function_1 = square, function_2 = sum, …);
    c. Executes each command for the positional parameters and creates a dictionary having as key the command parameter name and the value being the result of the associated function applied to the positional parameters.

For example considering the functions **p_sum** – sums all the positional parameters, **p_square** – creates an array of the square value of the positional parameters and **p_multiply** – multiplies all the positional parameters. Considering the following call:

parallel_process(1, 2, 3, 4, function_1 = p_sum, function_2 = p_square, function_3 = p_multiply)

will return:

{'function_1': 10, 'function_2': [1, 4, 9, 16], 'function_3': 24}

2. Implement a parallel package containing two modules:
    a. **operations** module containing the **p_sum**, **p_square** and **p_multiply** functions;
    b. **processing** module containing the **parallel_process** function.

    Implement a Python program that uses these modules and exemplifies the usage of all the functions exported by the module.