# Assignment Questions

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**1. Functions with Return Statements**

1. Write a function calculate_area() that takes the length and width of a rectangle as parameters, calculates the area, and returns the result. Call the function and print the returned value.
2. Create a function is_prime() that takes an integer as input and returns True if the number is prime, otherwise returns False. Test the function with different values.
3. Write a function find_largest() that accepts a list of numbers, finds the largest number, and returns it. Demonstrate the function with a sample list.
4. Implement a function fahrenheit_to_celsius() that converts a given temperature in Fahrenheit to Celsius and returns the result. Use the formula: $Celsius = (Fahrenheit - 32) \times \frac{5}{9}$
5. Write a function calculate_average() that accepts a list of grades, calculates the average, and returns whether the student has passed or failed (passing grade is 50).

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**2. Lambda Functions**

1. Write a lambda function to calculate the square of a number. Use it with at least three different numbers.
2. Create a list of numbers from 1 to 10. Use a lambda function with filter() to extract all even numbers from the list.
6. Use a lambda function with map() to convert a list of temperatures in Celsius to Fahrenheit. The formula is: $Fahrenheit = Celsius \times \frac{9}{5} + 32$
3. Write a lambda function that checks if a string starts with the letter 'A'. Test it with multiple strings.

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**3. Making Simple Modules**

1. Create a module named math_operations.py with functions to perform addition, subtraction, multiplication, and division. Import the module and demonstrate each function with examples.
2. Write a module named string_utilities.py containing functions to:
    - Count the number of vowels in a string.
    - Reverse a string.
    - Check if a string is a palindrome.
      Import the module and test the functions with different inputs.

3. Create a module geometry.py with functions to calculate:
    - Area of a circle (given radius).
    - Area of a triangle (given base and height).
      Import the module and use it in another script to calculate areas.
4. Create a module currency_converter.py with a function that converts a given amount from one currency to another. Use exchange rates (like USD to INR or EUR to USD) as constants.

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**4. Concept of Making Simple Packages**

1. Create a package named math_tools with submodules:
    - basic_operations.py (functions: addition, subtraction).
    - advanced_operations.py (functions: factorial, power).
      Use the package in a script to demonstrate its functionality.
2. Build a package named text_processing with submodules:
    - cleaning.py (function: remove special characters).
    - analyzing.py (function: count word frequency).
      Import the package in a script and test it with a sample string.
3. Create a package conversion_tools with submodules:
    - length_conversion.py (functions: meters to kilometers, inches to feet).
    - weight_conversion.py (functions: kilograms to pounds, grams to kilograms).
      Write a script to use the package for performing conversions.