W06 - UnitTesting Exercise

Objective

Create an executable with the provided files and implement Unit Tests using either Google Test (GTest) or DocTest. Using the expected input/output values below, write tests for each function, identify bugs, and modify the code as needed to pass all tests.

Provided Files:
- main.cpp
- FunctionsUtil.cpp
- FunctionsUtil.h

Expected Input/Output Values

- **function1(int input)**

    - function1(10): Expected output: 15

    - function1(5): Expected output: 10

    - function1(-3): Expected output: 0

    - function1(0): Expected output: 5

- **function2(int input)**

    - function2(15): Expected output: 30

    - function2(8): Expected output: 16

    - function2(3): Expected output: 6

    - function2(0): Expected output: 0

- **function3(int input)**

    - function3(45): Expected output: 40

    - function3(49): Expected output: 44

    - function3(50): Expected to throw std::runtime_error

    - function3(51): Expected to throw std::runtime_error

- **function4(int input)**

    - function4(30): Expected output: 35

    - function4(60): Expected output: -1

    - function4(45): Expected output: 50

- function4(51): Expected output: -1

- **function5(int input)**

    - function5(5): Expected output: 5 (when called multiple times, consider behavior)

    - function5(5): Expected output: 10

    - function5(10): Expected output: 20

    - function5(0): Expected output: 0

    - function5(5): Expected output: 5

- **function6(int input)**

    - function6(8): Expected output: 9

    - function6(3): Expected output: 3

    - function6(10): Expected output: 12

    - function6(20): Expected output: 23

- **process(int input) (This function should not be altered!)**

    - process(10): Expected output: 35

    - process(7): Expected output: 28

    - process(-17): Expected output: -32

Instructions

1. Write tests based on the expected input/output values above.

2. Analyze any failed tests to identify and correct the underlying issues.

3. Ensure all tests pass with the final implementation.

EXPECTED OUTPUT:


```
Microsoft Visual Studio Debug Console

Result: 35
Result: 28
Result: -32
```