COMP1000: Software Engineering 1
C1W1 - Exercise 3

Assessment Criteria:

- **Correctness:** Your code should perform the specified task correctly.
- **Syntax:** Your code should be free of syntax errors and compile without issues.
- **Clarity:** Your code should be well-organized and include comments where appropriate to explain the logic.

Deadline:

- Submission must be made with other exercises before the deadline through the "C1W1 – Set Exercises" submission point on DLE. Late submissions will not be accepted without prior approval.

Honor Code:

- This assessment is to be completed individually. You must **not** collaborate with other students or use prohibited materials. All submitted work must be your own.

Assessment Tasks:

Task 1: Implement and Test a Distance Calculation Function (3 Points)

Task Description:

- Write a C++ function that calculates the Euclidean distance from the origin (0,0) to a point (x,y) on a 2D graph.
- Here is the formula to calculate Euclidean distance

$$d = \sqrt{x^2 + y^2}$$

- The function should take two doubles (x, y) as parameters and return the distance as a double.
- Test this function in main() with at least two different points.

Task 2: Static Local Variables in a Function (4 Points)

Task Description:

- Write a function that tracks how many times it has been called using a static local variable.
- Each time the function is called, it should print the current count.
- Demonstrate this function by calling it multiple times from main().

Task 3: Function Using Global and Static Global Variables (3 Points)

Task Description:

- Define a global variable and a static global variable.
- Write a function that modifies both variables and prints their values.
- Show the effect of the function call on these variables in main().