Quiz 3: Friend Functions with Operator Overloading

Course Title: Object Oriented Programming

Course Code: CC-112

Credit Hours: 3 (Theory)

Total Marks: 20

Submission Deadline: 28-06-2025

CLOs Assessed: CLO-2, CLO-3

Instructor: Syed Hamed Raza

Objective:

This assignment is designed to help students:
- Understand how friend functions interact with operator overloading in C++.
- Implement operator overloading using friend functions for classes.
- Practice encapsulation with controlled access.

Instructions:

- Submit your work as a single `.cpp` file and a brief report (PDF format).
- Comment your code for clarity.
- Maintain academic integrity.

Part A – Theory [4 Marks]

1. (2 Marks): Explain the role of friend functions in C++.

2. (2 Marks): Why and when would you combine friend functions with operator overloading? Provide an example scenario.

Part B – Programming [16 Marks]

Create a class `Distance` that stores distances in feet and inches. Implement the following:
- A friend function to overload the `+` operator to add two `Distance` objects.
- A friend function to overload the `<<` operator to display a `Distance` object.
- Proper constructors and methods for input validation.