Institute of Geographical Information Systems

CS-212 - Object Oriented Programming LAB

Semester: Fall 2025	**Class: SCEE-IGIS - 2024**
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Submitted to: Ma'am Alvina Anjum	**Due Date: Nov 26, 2025**

LAB 11: Friends Function

Lab Task 1:

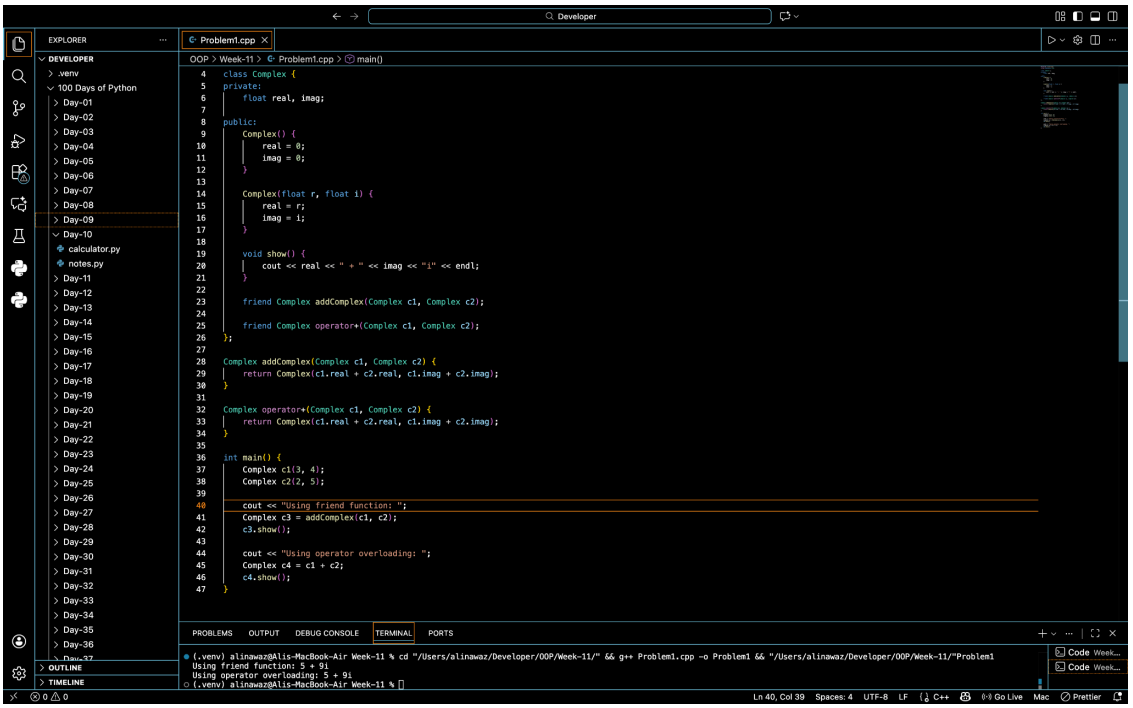
Create a class Complex with private real & imaginary parts.

Make a friend function addComplex(Complex, Complex) that returns sum as a new object.

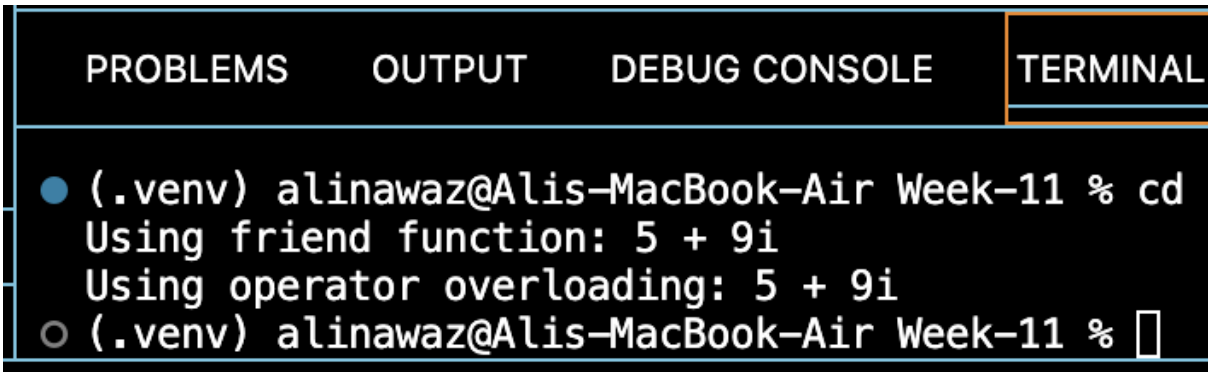
Display result using show().

Extension: overload friend Complex operator+(Complex, Complex);

Screenshot:



Output:



Lab Task 2:

The company SkyRoute Logistics uses autonomous drones to deliver parcels. Each drone has a battery level (in %) and unique Drone ID. Sometimes, a drone low on battery may request power transfer from another drone mid-route.

Create a class Drone having private variables droneID, batteryLevel

- constructor to initialize
- functions: setBattery(), setDroneID(), getBattery(), displayStatus()

Write a friend function:

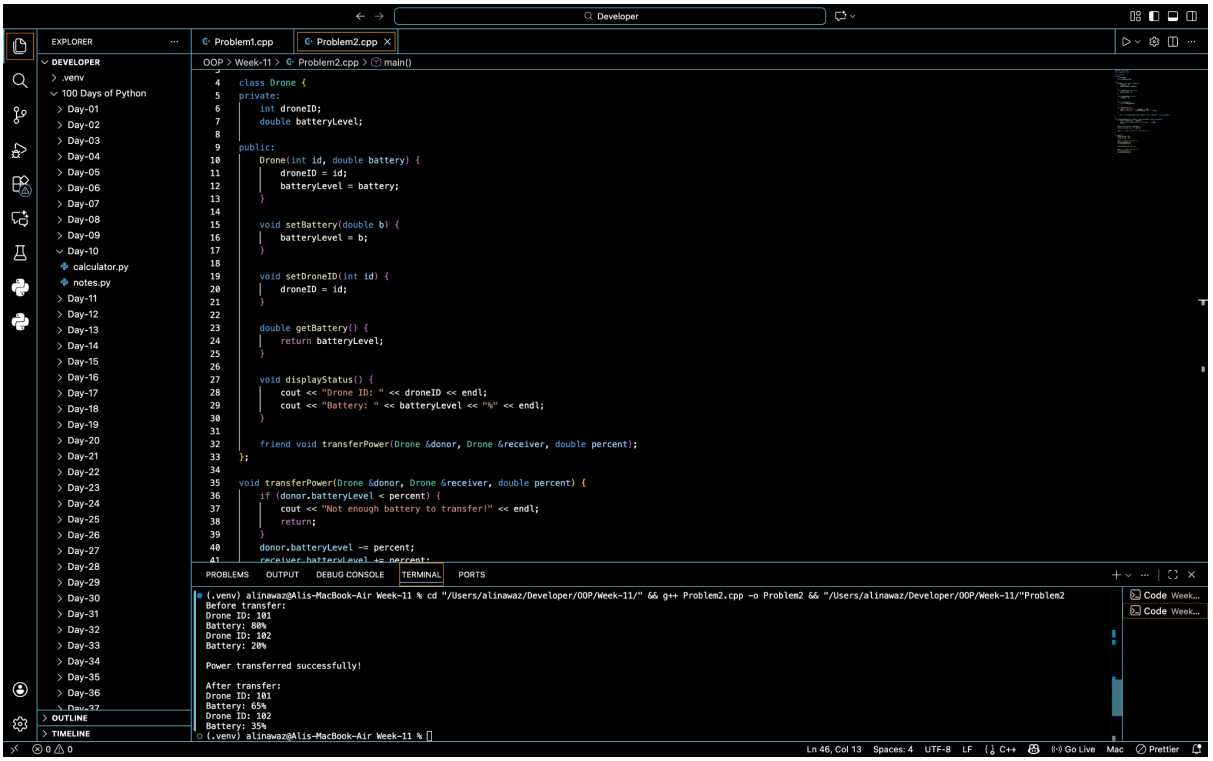
void transferPower(Drone &donor, Drone &receiver, double percent);

This function will reduce battery from donor and add to receiver.

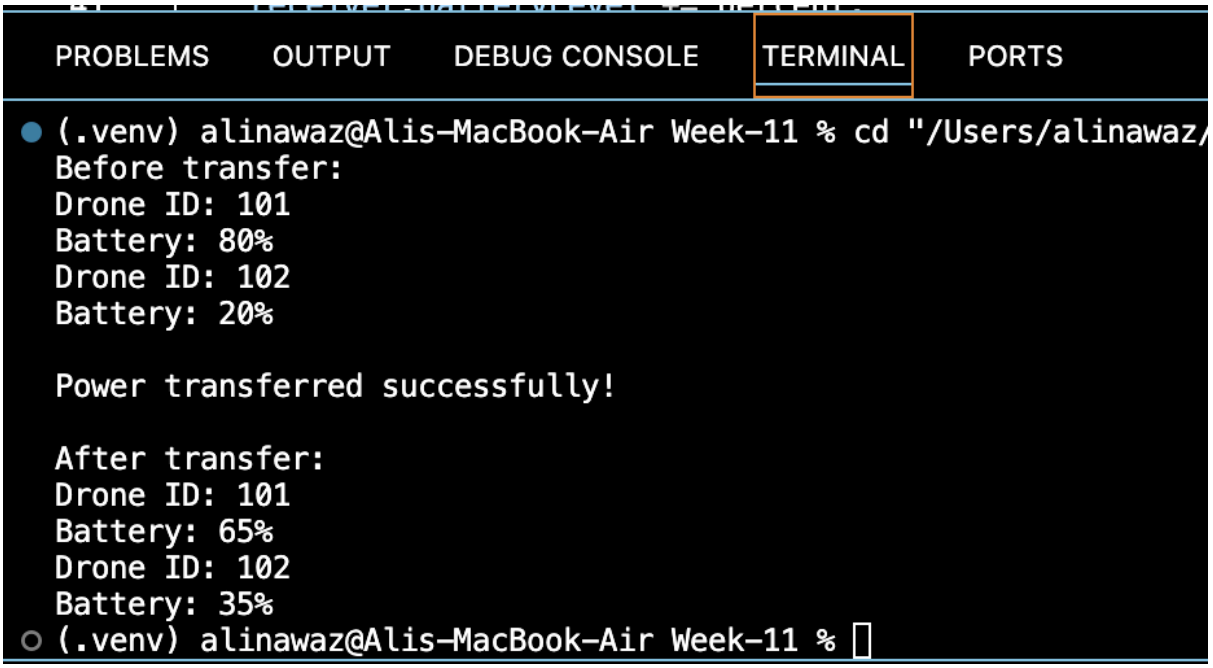
Demonstration:

Create two drones, charge one, drain one, then use the friend function to transfer energy.

Screenshot:


Developer
EXPLORER
Problem1.cpp
Problem2.cpp
OOP > Week-11 > Problem2.cpp > main()
class Drone {
private:
int droneID;
double batteryLevel;
public:
Drone(int id, double battery) {
droneID = id;
batteryLevel = battery;
}
void setBattery(double b) {
batteryLevel = b;
}
void setDroneID(int id) {
droneID = id;
}
double getBattery() {
return batteryLevel;
}
void displayStatus() {
cout << "Drone ID: " << droneID << endl;
cout << "Battery: " << batteryLevel << "%" << endl;
}
friend void transferPower(Drone &donor, Drone &receiver, double percent);
};
void transferPower(Drone &donor, Drone &receiver, double percent) {
if (donor.batteryLevel < percent) {
cout << "Not enough battery to transfer!" << endl;
return;
}
donor.batteryLevel -= percent;
PROBLEMS
OUTPUT
DEBUG CONSOLE
TERMINAL
PORTS
(.venv) alinawaz@Alis-MacBook-Air Week-11 % cd "/Users/alinawaz/Developer/OOP/Week-11/" && g++ Problem2.cpp -o Problem2 && "/Users/alinawaz/Developer/OOP/Week-11/"Problem2
Before transfer:
Drone ID: 101
Battery: 80%
Drone ID: 102
Battery: 20%
Power transferred successfully!
After transfer:
Drone ID: 101
Battery: 65%
Drone ID: 102
Battery: 35%
(.venv) alinawaz@Alis-MacBook-Air Week-11 %
OUTLINE
TIMELINE
Ln 46, Col 13
Spaces: 4
UTF-8
LF
C++
Go Live
Mac
Prettier

Output:


PROBLEMS
OUTPUT
DEBUG CONSOLE
TERMINAL
PORTS
(.venv) alinawaz@Alis-MacBook-Air Week-11 % cd "/Users/alinawaz/
Before transfer:
Drone ID: 101
Battery: 80%
Drone ID: 102
Battery: 20%
Power transferred successfully!
After transfer:
Drone ID: 101
Battery: 65%
Drone ID: 102
Battery: 35%
(.venv) alinawaz@Alis-MacBook-Air Week-11 %

Lab Task 3:

A content creator tracks engagement on two posts — each has likes and comments.

We need to calculate the total combined engagement across both posts.

Create class Post with likes and comments, a constructor and display function

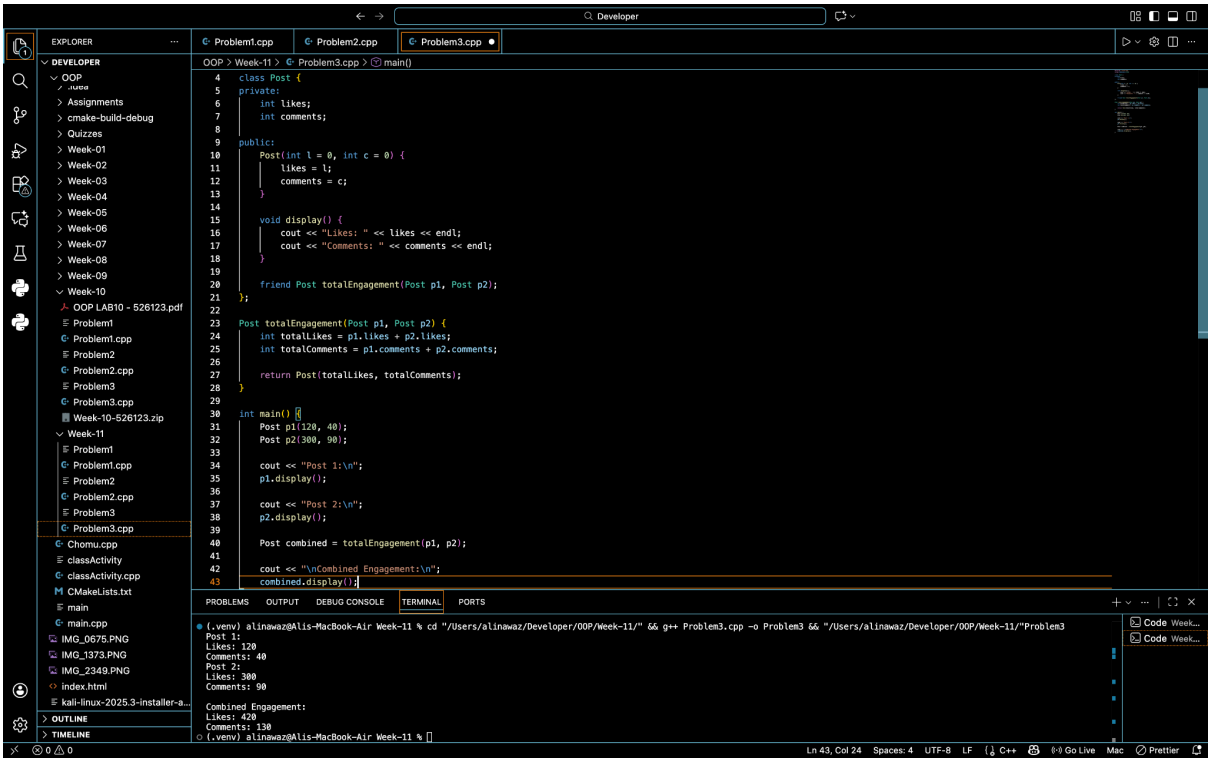
Write a friend function:

Post totalEngagement(Post p1, Post p2);

Return a new Post with summed likes & comments.

Display the final combined reach.

Screenshot:



Output: