**Air University  
Mid Semester Examinations: Spring 2025**

Student ID: \_\_\_\_\_\_\_\_\_\_



**Subjective Part   
(To be solved on Answer Books only)**

**Subject:** Object Oriented Programming **Class:** BSCYS

**Section(s):** A  
**Course Code:** CS-112**Time Allowed:** \_\_60\_\_\_\_ Minutes

**Max Marks: 100  
FM’s Name: Sheikh Qaisar Ayyub**  
**FM’s Signature:­**

**INSTRUCTIONS**

* Attempt responses on the answer book only.
* Nothing is to be written on the question paper.
* Rough work or writing on question paper will be considered as use of unfair means.
* Tables / calculators are allowed / not allowed.

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|  | **Q. No. 1 (CLO 1)** | **15 Marks** |
|  | Question:  Design a C++ program with three classes (AirplaneSpecifications, AirplaneOperations, and AirplaneSeating) to manage a passenger airplane system. Each class should have two attributes and at least two methods representing its behavior.  Class 1: AirplaneSpecifications (Stores technical details of the airplane)  ✔ Attributes:   * Int model (Airplane model name) * Int maxRange (Maximum flight range in kilometers)   ✔ Methods:   * displaySpecs() – Displays the airplane's model and max range. * setAirplaneSpecs(int model, int maxRange) – Updates airplane specifications.   Class 2: AirplaneOperations (Handles flight operations)  ✔ Attributes:   * int altitude (Current flying altitude in feet) * int fuelLevel (Current fuel level in liters)   ✔ Methods:   * takeOff() – Outputs "Passenger airplane taking off..." * land() – Outputs "Passenger airplane landing..." * setOperations(int altitude, int fuelLevel) – Updates altitude and fuel level. * displayOperations() – Displays the airplane's operational status.   Class 3: AirplaneSeating (Manages passenger seating system)  ✔ Attributes:   * int totalSeats (Total number of seats in the airplane) * int occupiedSeats (Number of currently occupied seats)   ✔ Methods:   * bookSeat() – Increases occupiedSeats by one when a passenger books a seat. * availableSeats() – Returns the number of available seats.   Your Task:   1. Write a C++ program implementing these three classes. 2. Ensure that each class operates independently (no inheritance required). 3. Create objects of all three classes, call their methods, and display the outputs. |  |