

Question

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Design a Course Management System in C++ using OOP concepts.

1. Create an abstract base class Person with pure virtual functions `getRole()` and `displayDetails()`.

2. Derive two classes from it:

Student (attributes: `rollNo`, `name`, `course`, `marks[3]`)

Faculty (attributes: `employeeID`, `name`, `subjectTaught`)

3. Implement encapsulation by keeping attributes private and accessing them via constructors.

4. Demonstrate abstraction and function overriding by overriding `getRole()` and `displayDetails()` in both derived classes.

5. Store at least 5 Students and 2 Faculty objects in an array of base class pointers.

6. Calculate and display the average marks of students.

7. Implement constructor and destructor for each class to show object creation and destruction.

8. Use runtime polymorphism to display all details using base class pointers.