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C++

Lab Work

Chapter - 3

Encapsulation

RED & WHITE MULTIMEDIA EDUCATION
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Lab Work #3.4

Sr. No.	Question
Q.1	Write a C++ program for managing student records using reference variables and copy constructors. The program should allow users to perform the following operations: a. Define a Student Class: Create a Student class with private data members for the student's name (string), roll number (integer), and GPA (floating-point). Include a default constructor, a parameterized constructor, a copy constructor, and appropriate getter methods to access the student's details. b. Reference Variables Usage: Utilize reference variables in member functions where appropriate, such as passing Student objects to functions to avoid unnecessary copying. c. Copy Constructor Implementation: Ensure that your copy constructor performs a deep copy of the student's name, as you don't want two student objects sharing the same name string. d. Record Management System: Develop a class named StudentRecordManager to manage multiple student records. This class should contain a dynamic array (or any suitable data structure) to store Student objects. Include methods to add new students, display all student details, and search for a student by their roll number. e. Checking: Write a main function to check your implementation. Create an instance of the StudentRecordManager class and populate it with a few student records. Chec the addition of new students, display functionality, and search functionality to ensure that your record management system operates correctly. f. Memory Management: Make sure to properly manage memory in your implementation, including deallocating dynamically allocated memory when necessary.