

Programming Assignment 6:

Linear Equation System Solver

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In this assignment, I designed and implemented a C++ project based on class inheritance to handle matrices and vectors. The project includes a base class, Matrix, and two derived classes, Vector and SMatrix, representing vectors and square matrices, respectively. Through this project, I gained a deeper understanding of class inheritance and polymorphism in C++ and learned how to share and extend functionality between classes.

During the implementation, I created a linear equation system solver program that can randomly generate matrices and vectors, solve the $AX=C$ form of linear equations, and verify the correctness of the solutions. This enhanced my understanding of basic linear algebra concepts, such as matrix determinants and matrix replacement.

Additionally, I mastered C++ memory management and matrix operations implementation techniques. By handling different types of matrices, I improved my ability to write robust code. This assignment not only enhanced my programming skills but also deepened my understanding of the application of mathematics in computer science.