Report for Assignment6 D1262075

Files overview

linear_equation_system_solver.cpp: Main driver code that initializes and uses matrix/vector classes to solve and output linear equations.

matrix.cpp / matrix.h: Matrix class that includes operations like add, subtract, multiply, inverse, and determinant. Key methods include constructors, operators, and utilities.

smatrix.cpp / smatrix.h: SMatrix class for sparse matrices, optimized for efficient storage and operations. Key methods include storeElement and multiplySparse.

vector.cpp / vector.h: Vector class that includes operations like add, subtract, dot product, cross product, and magnitude. Key methods include constructors, operators, and utilities.

Key Methods

Matrix Class: add (const Matrix&), multiply(const Matrix&), determinant(), inverse()

Vector Class: add (const Vector&), dotProduct(const Vector&), crossProduct(const Vector&), magnitude()

SMatrix Class: storeElement(int, int, double), multiplySparse(const SMatrix&)

Main Solver Workflow

Initialize matrices/vectors.

Input coefficients/constants.

Solve using Gaussian elimination/matrix inversion.

Output results.