README

**ex3q1**

q1 is designed to perform basic operations on polynomials. It takes two polynomials and an operation as input and returns the result of the operation applied to the polynomials. The supported operations are addition, subtraction, and multiplication.

**Usage**

To use program q1, follow these steps:

Compile using gcc.

Input a problem to solve in the following format:

(<degree>:<coefficient1>,<coefficient2>,...)<operation>(<degree>:<coefficient1>,<coefficient2>,...)

Operation: <ADD>\<SUB>\<MUL>

The program will output the result of the operation applied to the polynomials.

**ex3q2a**

Program q2a reads input and writes it to a shared memory space, allowing for concurrent processing of problems. It handles the task of problem generation.

**ex3q2b**

Program q2b reads from the shared memory space and outputs the solutions to the problems stored there. It handles the task of problem solution.

**Usage**

Compile q2a and q2b using gcc compiler then run q2a first and q2b second

To input problem follow format from q1

**ex3q3a**

qa works exactly the same as q2a

**ex3q3b**

q3b extends the functionality of q3a by utilizing multithreading for concurrent problem solving. It reads problems from the shared memory space using multiple threads and outputs the solutions.

**Usage**

Follow instructions for q2a and q2b. Run the producer first.