**Banker's Algorithm Implementation for Resource Allocation**

This project is an implementation of the Banker's algorithm for resource allocation in operating systems. The program reads input from a file, which contains information about the allocation, maximum, and available resources for a given set of processes. The program outputs whether the system is in a safe state and whether a resource request can be granted.

**Usage**

To use this program, run it from the command line with the name of the input file as a command line argument. For example:

bashCopy code

./banker input.txt

The program will output information about the allocation, maximum, and available resources, as well as the need matrix and whether the system is in a safe state. It will then prompt for a resource request and output whether it can be granted and the new available resources.

**Input file format**

The input file should be in the following format:

* The first line contains the number of processes.
* The second line contains the number of resource types.
* The next n lines contain the allocation matrix.
* The next n lines contain the maximum matrix.
* The next line contains the available vector.
* The last line contains the request vector.

Each matrix or vector should be space-separated.

**Output format**

The program outputs the following information:

* The number of processes.
* The number of resource types.
* The allocation matrix, labeled with process and resource names.
* The maximum matrix, labeled with process and resource names.
* The need matrix, labeled with process and resource names.
* The available vector, labeled with resource names.
* Whether the system is in a safe state.
* A request vector, labeled with the process making the request and resource names.
* Whether the request can be granted.
* The new available vector, labeled with resource names.

**Requirements**

This program is written in C++ and requires a C++ compiler to build. It should compile on any platform with a standard C++ compiler.

**Contributing**

Contributions to this project are welcome. If you find a bug or want to suggest a feature, please open an issue or submit a pull request.

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