**Matrix Experiment Report**

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1. **Experimental purpose**

Learn the number of arrays and master the application of arrays. Understand matrix, be familiar with matrix addition and multiplication. Matrix operation with two-dimensional array.

1. **Experimental environment**

A computer with Visual C++ 6.0/CFree.

This experiment has 4 class hours in all.

1. **Experimental content**

Find the sum and product of Symmetric Matrices

A and B are known to be two n × N-order symmetric matrix, write a program to realize:

1. The lower triangular elements are stored in one-dimensional arrays a and B and output.

Tip: the program can use int a [4] [4] and B [4] [4] two-dimensional arrays to represent the original matrices A and B.

（2） Let C = a + B and output C in matrix mode.

（3） Let d = a × B. Output D in matrix mode.

(See the instruction manual for the above three parts)

1. **Important data structures**

Matrix structures;

The addition algorithm of matrix writes a function:

void jj(int a[4][4],int b[4][4])

{

int c[4][4];

for(int i=0;i<4;i++)

{

for(int j=0;j<4;j++)

{

c[i][j]=a[i][j]+b[i][j];

cout<<c[i][j]<<" ";

}

cout<<endl;

}

}

Matrix multiplication algorithm writing a function:

void cc(int a[4][4],int b[4][4])

{

int c[4][4];

for (int i = 0; i < 4; i++)

{

for (int j = 0; j < 4; j++)

{

c[i][j] = 0;

for (int k = 0; k < 4; k++)

{

c[i][j] += a[i][k] \* b[k][j];

}

cout<<c[i][j]<<" ";

}

cout<<endl;

}

}

Important data structures and explanatory notes for global variables are used in the experiments

1. **Implementation analysis**

Write a function that adds two matrixes, then write a function that makes the two matrices multiply. Finally, write a function to print out the matrix. In the main function, we call matrix plus function and multiplication function. Finally, we call the two print function to display the result.

void jj(int a[4][4],int b[4][4])

void cc(int a[4][4],int b[4][4])

void show(int d[4][4])

int main();

The idea of an implementation or analysis of a flowchart

1. **Debugging problem analysis**

The algorithm in the function of multiplying two matrices enters three cycles, the logic problem of three cycles.

Problems encountered in debugging and Solutions

1. **Summary**

Learned the matrix algorithm, understood the matrix addition and multiplication, was familiar with the use of two-dimensional arrays, and experienced the fun of teamwork.

This experiment knowledge summary and own experience

1. **Crew Division**

|  |  |  |
| --- | --- | --- |
| **Group division** | | |
| **Member name** | **Work done** | **Completion situation** |
| **周宸** | **代码与报告** | **100%** |
| **张雅康** | **代码与报告** | **100%** |
| **徐彤** | **代码与报告** | **100%** |