**Sum and Product of The Symmetrical Matrix Experiment Report**

Class:计科201 Student ID 1:20401010101 Name 1:沈梦越 Experiment Date:2021/11/7

Student ID 2:20401010114 Name 2:余亚宁

Student ID 3:20401010106 Name 3:杨婧菡

1. **Experimental purpose**

sum and product of the symmetrical matrix

1. **Experimental environment**

A computer with Visual C ++ 6.0 / CFree.

1. **Experimental content**

A and B are known to be symmetrical matrices of two n×n-orders, and a program implementation is written:

1. Store its lower triangle elements in one-dimensional arrays a and b and output.

1 1 2 4

1 2 3 5

2 3 4 6

4 5 6 7

1 1 1 1

1 1 1 1

1 1 1 1

1 1 1 1

Tip: The original matrix A and B can be represented in the program with two-dimensional arrays of int A, 4, and B.

1. Set CtoAandBto output Cina matrix.
2. Set D,A×B,and output Dina matrix.
3. **Important data structures**

Matrix structure

1. **Implementation analysis**

int a[10], b[10];

int A[4][4] = { 0 }, B[4][4] = { 0 }, C[4][4] = { 0 }, D[4][4] = { 0 };

int i = 0, j = 0, q = 0, n = 0;

ifstream infile;

infile.open("textA.txt");

while (i < 4)

{

j = 0;

while (j < 4)

{

infile >> A[i][j];

j++;

}

i++;

}

infile.close();

i = 0;

infile.open("textB.txt");

while (!infile.eof())

{

j = 0;

while (j < 4)

{

infile >> B[i][j];

j++;

}

i++;

}

infile.close();

1. **Debugging problem analysis**

while (i < 4)

{

j = 0;

while (j <= i)

{

a[q] = A[i][j];

b[q] = B[i][j];

q++;

j++;

}

i++;

}

cout << "a数组为：";

i = 0;

while (i < q)

{

cout << a[i] << " ";

i++;

}

cout << endl;

cout << "b数组为：";

i = 0;

while (i < q)

{

cout << b[i] << " ";

i++;

}

cout << endl;

i = 0;

while (i < 4)

{

j = 0;

while (j < 4)

{

C[i][j] = A[i][j] + B[i][j];

j++;

}

i++;

}

cout << "C数组为：";

i = 0;

while (i < 4)

{

j = 0;

while (j < 4)

{

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

j++;

}

i++;

}

cout << endl;

i = 0;

while (i < 4)

{

j = 0;

while (j < 4)

{

n = 0;

while (n < 4)

{

D[i][j] = D[i][j] + A[i][n] \* B[n][j];

n++;

}

j++;

}

i++;

}

cout << "D数组为：";

i = 0;

while (i < 4)

{

j = 0;

while (j < 4)

{

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

j++;

}

i++;

}

cout << endl;

1. **Summary**

This experiment knowledge summary and own experience

1. **Crew Division**

|  |  |  |
| --- | --- | --- |
| **Group division** | | |
| **Member name** | **Work done** | **Completion situation** |
| **沈梦越** | **代码和报告** | **100%** |
| **余亚宁** | **代码** | **100%** |
| **杨婧菡** | **代码** | **60%** |