上机实验六

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实验任务一：

#include<iostream>

#include<random>

#include<cmath>

#include<time.h>

int main()

{

int square[4][4];

int temp[4][4];

srand((unsigned)time(NULL));

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

{

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

{

square[i][x] = (rand() % 21);

}

}

int order; int to;

std::cout << "Please enter your order:" << std::endl;

std::cin >> order; //0代表压缩，1代表旋转

std::cin >> to; //对于压缩，1代表按行上，2代表按行下，3代表列左，4为列右；对于旋转，1,2,3,4，分别代表左右上下

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

{

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

{

if (square[i][x] < 10)

std::cout << square[i][x] << " ";

else

std::cout << square[i][x] << " ";

}

std::cout << std::endl;

}

std::cout << "-------------------OUTPUT-------------------" << std::endl;

switch (order)

{

case 0:

{

switch (to)

{

case 1:

{

for (int i = 3; i > 0; i--)

{

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

{

square[0][x] += square[i][x];

square[i][x] = 0;

}

}

break;

}

case 2:

{

for (int i = 0; i < 3; i++)

{

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

{

square[3][x] += square[i][x];

square[i][x] = 0;

}

}

break;

}

case 3:

{

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

{

for (int x = 3; x >0; --x)

{

square[i][0] += square[i][x];

square[i][x] = 0;

}

}

break;

}

case 4:

{

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

{

for (int x = 0; x < 3; ++x)

{

square[i][3] += square[i][x];

square[i][x] = 0;

}

}

break;

}

}

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

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

{

temp[i][x] = square[i][x];

}

break;

}

case 1:

{

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

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

{

temp[x][i] = square[3-i][x];

}

}break;

}

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

{

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

{

if (temp[i][x] < 10)

std::cout << temp[i][x] << " ";

else

std::cout << temp[i][x] << " ";

}

std::cout << std::endl;

}

}

实验任务二：

#include<iostream>

#include<cmath>

#include<vector>

using namespace std;

int main()

{

int matix[4][4]{ 0 };

int temp[4][4];

cout << "Enter you love number:" << endl;

int num;

cin >> num;

num = (16 \* num)/100;

vector<int> n(num);

vector<int> x(num);

vector<int> y(num);

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

{

srand((unsigned)time(NULL) + (unsigned)rand());

n[i] = (rand() % 11);

srand((unsigned)time(NULL) + (unsigned)rand());

x[i] = (rand() % 5);

srand((unsigned)time(NULL) + (unsigned)rand());

y[i] = (rand() % 5);

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

while (x[i] == x[c] && y[i] == y[c])

{

srand((unsigned)time(NULL)+(unsigned)rand());

x[i] = (rand() % 5);

srand((unsigned)time(NULL) + (unsigned)rand());

y[i] = (rand() % 5);

}

matix[x[i]][y[i]] = pow(2, n[i]);

}

char order; int to;

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

{

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

{

if (matix[i][x] < 10)

std::cout << matix[i][x] << " ";

else

std::cout << matix[i][x] << " ";

}

std::cout << std::endl;

}

std::cout << "-------------------OUTPUT-------------------" << std::endl;

do {

std::cout << "Please enter your order:" << std::endl;

std::cin >> order; //0代表压缩，1代表旋转

std::cin >> to; //对于压缩，1代表按行上，2代表按行下，3代表列左，4为列右；对于旋转，1,2,3,4，分别代表左右上下

if (order == 'Q' || order == 'q')

switch (order)

{

case '0':

{

switch (to)

{

case 1:

{

for (int i = 3; i > 0; i--)

{

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

{

matix[0][x] += matix[i][x];

matix[i][x] = 0;

}

}

break;

}

case 2:

{

for (int i = 0; i < 3; i++)

{

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

{

matix[3][x] += matix[i][x];

matix[i][x] = 0;

}

}

break;

}

case 3:

{

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

{

for (int x = 3; x > 0; --x)

{

matix[i][0] += matix[i][x];

matix[i][x] = 0;

}

}

break;

}

case 4:

{

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

{

for (int x = 0; x < 3; ++x)

{

matix[i][3] += matix[i][x];

matix[i][x] = 0;

}

}

break;

}

}

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

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

{

temp[i][x] = matix[i][x];

}

break;

}

case '1':

{

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

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

{

temp[x][i] = matix[3 - i][x];

}

}break;

case '2':

{

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

{

int a = 0;

while (matix[a][i] == 0 && matix[a + 1][i] != 0 && a <= 2)

swap(matix[a][i], matix[a + 1][i]);

a++;

}

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

{

int a = 0;

while (matix[a][i] == matix[a + 1][i] && a <= 2)

{

matix[a][i] = 0;

matix[a + 1][i] \*= 2;

}

}

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

{

int a = 0;

while (matix[a][i] == 0 && matix[a + 1][i] != 0 && a <= 2)

swap(matix[a][i], matix[a + 1][i]);

a++;

}

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

{

srand((unsigned)time(NULL) + (unsigned)rand());

n[i] = (rand() % 3 + 1);

srand((unsigned)time(NULL) + (unsigned)rand());

x[i] = (rand() % 5);

srand((unsigned)time(NULL) + (unsigned)rand());

y[i] = (rand() % 5);

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

if (matix[x[i]][y[i]] != 0)

{

srand((unsigned)time(NULL) + (unsigned)rand());

x[i] = (rand() % 5);

srand((unsigned)time(NULL) + (unsigned)rand());

y[i] = (rand() % 5);

matix[x[i]][y[i]] = pow(2, n[i]);

break;

}

else

continue;

}

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

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

{

temp[i][x] = matix[i][x];

}

}

}

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

{

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

{

if (temp[i][x] < 10)

std::cout << temp[i][x] << " ";

else

std::cout << temp[i][x] << " ";

}

std::cout << std::endl;

}

}while(1)

; }