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测试代码：

//name:刘宏远 U202413662 B03

#include <stdio.h>

#include <stdlib.h>

#include <time.h>

void setRandomArray( int \*x, const int size );

void sortArraySelect( int \*x, const int size );

void displaySumRelation( int \*x, const int size, int \*foundNum );

int main()

{

srand( time(NULL) );

const int size = 16;

int x[size];

int i;

setRandomArray( x, size );

printf("Before sorting:\n");

for ( i = 0; i < size; i ++ )

{

printf("%d ", x[i] );

}

printf("\n\n");

sortArraySelect( x, size );

printf("After sorting:\n");

for ( i = 0; i < size; i ++ )

{

printf("%d ", x[i] );

}

printf("\n\n");

int foundNum, \*foundNumptr = &foundNum;

printf("Sum relations:\n");

displaySumRelation( x, size, foundNumptr );

puts("");

printf("There are %d sum relations.", \*foundNumptr );

return 0;

}

void setRandomArray( int \*x, const int size )

{

int i;

for ( i = 0; i < size; i ++ )

{

x[i] = 1 + rand() % 99;//set random integer(1-99)

}

}

void sortArraySelect( int \*x, const int size )

{

int i, j;

int min\_value, min\_index;

for ( i = 0; i < size - 1; i ++ )

{

min\_index = i;

//找出未排序数组中最小的元素

for ( j = i + 1; j < size; j ++ )

{

min\_index = ( x[min\_index] < x[j] ) ? min\_index : j;

}

//是否交换

if ( min\_index != i )

{

min\_value = x[min\_index];

x[min\_index] = x[i];

x[i] = min\_value;

}

}

}

void displaySumRelation( int \*x, const int size, int \*foundNum )

{

int i, j, k;

int counter = 1;

\*foundNum = 0;

//遍历每一种元素组合看是否满足条件

for ( i = 0; i < size; i ++ )

{

for ( j = i + 1; j < size; j ++ )

{

for ( k = j + 1; k < size; k ++ )

{

if ( \*(x+i) + \*(x+j) == \*(x+k) )

{

printf("[%d]: %d + %d = %d\n", counter, \*(x+i), \*(x+j), \*(x+k) );

counter ++;

(\*foundNum) ++;

}

}

}

}

}

测试过程：

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 序号 | 测试任务 | 测试方法 | 测试结果 | 测试结论 |
| 1 | 测试void setRandomArray( int \*x, const int size )函数 | 随机生成数组并打印 |  | 测试通过 |
| 2 | 测试void sortArraySelect( int \*x, const int size );函数 | 对生成的数组排序后打印看是否正确 |  | 测试通过 |
| 3 | 测试void displaySumRelation( int \*x, const int size, int \*foundNum )函数 | 打印生成数组的sum relations看是否正确 |  | 测试通过 |

测试结论：

该题所有要求都完成。