3.

(a)

Line 1: n+1

Line 2: (n+3)\*n/2

Line 3: [2+(n+3)\*n/2]\*n/2

Line 4:[1+(n+1)\*n/2]\*n/2

(b)

Line 1: 1

Line 2: n+1

Line 3: n

Line 4: n

Line 5: n

Line 6: n

4.

(a)

Void D(int \*x, int n)

{

int i = 1;

count++;

do{

x[i] += 2;

count++;

i+=2;

count++;

}

while(i<=n);

i=1;

count++;

while(i<=(n/2))

{

x[i] +=x[i+1];

count++;

i++;

count++;

}

}

(b)

Void D(int \*x, int n)

{

int i = 1

do{

i+=2;

count+=2;

}

while(i<=n);

i=1;

count+=2;

while(i<=(n/2))

{

i++;

count+=2;

}

}

(c)

2n+2

(d)

N为奇数

|  |  |  |
| --- | --- | --- |
| Line | frequency | step |
| 1 | 1 | 0 |
| 2 | 1 | 1 |
| 3 | (n+1)/2 | 0 |
| 4 | (n+1)/2 | (n+1)/2 |
| 5 | (n+1)/2 | (n+1)/2 |
| 6 | (n+1)/2 | 0 |
| 7 | (n+1)/2+1 | 0 |
| 8 | 1 | 1 |
| 9 | (n+1)/2 | 0 |
| 10 | (n-1)/2 | 0 |
| 11 | (n-1)/2 | (n-1)/2 |
| 12 | (n-1)/2 | (n-1)/2 |
| 13 | (n-1)/2 | 0 |
| 14 | 1 | 0 |
| Total steps | | 2n+2 |

N为偶数

|  |  |  |
| --- | --- | --- |
| Line | frequency | Step |
| 1 | 1 | 0 |
| 2 | 1 | 1 |
| 3 | n/2 | 0 |
| 4 | n/2 | n/2 |
| 5 | n/2 | n/2 |
| 6 | n/2 | 0 |
| 7 | n/2+1 | 0 |
| 8 | 1 | 1 |
| 9 | n/2+1 | 0 |
| 10 | n/2 | 0 |
| 11 | n/2 | n/2 |
| 12 | n/2 | n/2 |
| 13 | n/2 | 0 |
| 14 | 1 | 0 |
| Total steps | | 2n+2 |

5

(a)

void Transpose(int \*\*a, int n)

{

for(int i=0; i<n-1; i++)

{

count++;

for(int j=i+1;j<n;j++)

{

count++;

Swap(a[i][j],a[j][i]);

count++;

}

count++;

}

count++;

}

(b)

void Transpose(int \*\*a, int n)

{

for(int i=0; i<n-1; i++)

{

count+=2;

for(int j=i+1;j<n;j++)

{

count+=2;

}

}

count++;

}

(c)

n\*n+n-1

(d)

|  |  |  |
| --- | --- | --- |
| Line | frequency | Step |
| 1 | 1 | 0 |
| 2 | n | n |
| 3 | (n-1)(2+n)/2 | (n-1)(2+n)/2 |
| 4 | (n-1)n/2 | (n-1)n/2 |
| 5 | 1 | 0 |
| Total steps | | n\*n+n-1 |