

left to right

sorted_disks sort_left_to_right(const disk_state & before) {

int swapCount = 0;

disk_state temporary = before;

for (size_t i = 0; i < temporary.disk_count(); i++) {

for (size_t j = i; j < temporary.total_count() - 1; j++) {

if (temporary.get(j) > temporary.get(j+1)) {

temporary.swap(j);

swapCount++;

}

}

}

assert(before.is_alternating());

return sorted_disks(disk_state(temporary), swapCount);

}

1
1
1+1=2

$n/2$

n

2

3

2

3+2=5

5+2=7

7n

$\frac{7n^2}{2}$

$2+3+\frac{7n^2}{2}$

$= 5+\frac{7n^2}{2}$

1
2
1+2=3

sorted_disks sort_lawnmower(const disk_state & before) {

int swapCount = 0;

disk_state temporary = before;

bool increment;

for (size_t i = 0; i < temporary.disk_count(); i++) {

increment = (i % 2 == 0) ? true : false;

for (size_t j = increment ? 0 : temporary.total_count() - 2; j < temporary.total_count() - 1; increment ? j++ : j--) {

if (temporary.get(j) > temporary.get(j+1)) {

temporary.swap(j);

swapCount++;

}

}

}

assert(before.is_alternating());

return sorted_disks(disk_state(temporary), swapCount);

}

1
1
3

$n/2$

3

3

3

2

3+5=8

8+3=11

$6+\frac{11n}{2}$

$\frac{11n}{2}$

1
2
3