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**Left-to-Right Algorithm:**

Sorted\_disks sort \_left\_to\_right

Check if input is alternating

auto disk = before

While sorting do

For i=1 to 2n-1 do

//If previous is dark and current is light then

If (disk[prev] ==DISK\_DARK && disk[i] ==DISK\_LIGHT)

Do

Swap disk[prev] with disk[i]

Return sorted\_disks

**Left-to-Right Proof:**

Alternating -2n

Auto Disk-1

Swap-1

Return-1

If condition -2

Then branch-1+1= 2

Else -0

If= condition+max(2,0)=2+2=4

For: inside block-4

For :loop duration-2n

For= inside block\* duration=8n

While duration-n

While block= for loop\* while duration=8n2

Left-to-right algorithm: 8n2+2n+1+1+1=O(n2)

**Lawnmower Algorithm:**

Sorted\_disks sort\_lawnmower

Check if input is alternating

auto disk =before

While sorting do

For i=1 to 2n-1 do

//If prev disk is dark and current is light then

If(disk[prev]==DISK\_DARK && disk[i]==DISK\_LIGHT)

Do

Swap disk[prev] and disk[i]

//If prev disk is light and current dark then

If(disk[prev]==DISK\_LIGHT && (disk[k]==DISK\_DARK)

Do

Swap disk[prev] and disk[i]

//return sorted\_disks

**Lawnmower Proof:**

Alternating-2n

Auto disk-1

Swap-1

Return-1

If condition-2

Then branch-1+1= 2

Else -0

If= condition+max(2,0)=2+2=4

For: inside block-4

For :loop duration-2n

For= inside block\* duration=8n

If condition-2

Then branch-1+1= 2

Else -0

If= condition+max(2,0)=2+2=4

For: inside block-4

For :loop duration-2n-1

For= inside block\* duration=4(2n-1)=8n-4

While inside block = for loop + for loop-8n+8n-4=16n-4

While duration-n/2

While block= while duration\* while inside block-n/2\*16n-4=8n2-2n

Lawnmower Algorithm: 8n2 -2n +2n+1+1+1=O(n2)

