

Jorge Diaz jorgediaz@csu.fullerton.edu

Jacqueline Isabel Cardenas jacisac@csu.fullerton.edu

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 ($\text{disk}[\text{prev}] == \text{DISK_DARK} \ \&\& \ \text{disk}[i] == \text{DISK_LIGHT}$)

Do

Swap $\text{disk}[\text{prev}]$ with $\text{disk}[i]$

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= $8n^2$

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

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

CPSC335 Project1 Report

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

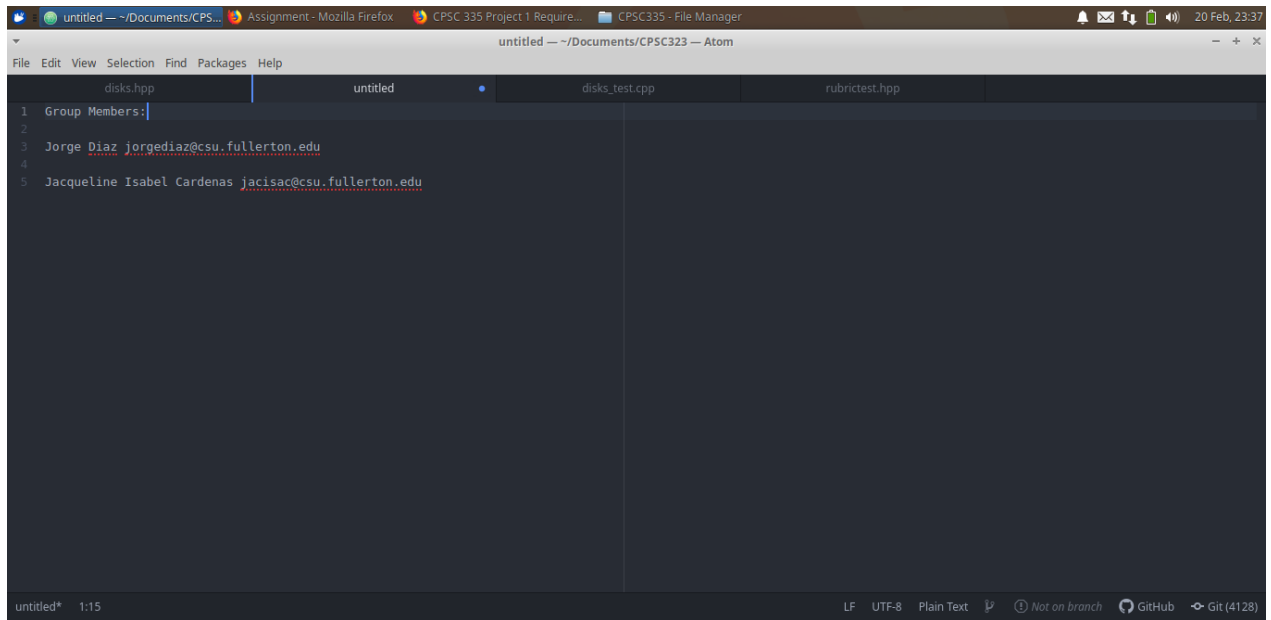
While inside block = for loop + for loop-8n+8n-4=16n-4

While duration-n/2

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

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

CPSC335 Project1 Report



The screenshot shows the Atom code editor interface. The top status bar indicates the file path is `untitled - ~/Documents/CPSC323 - Atom`. The menu bar includes File, Edit, View, Selection, Find, Packages, and Help. The file explorer on the left shows a project structure with files `disks.hpp`, `untitled`, `disks_test.cpp`, and `rubrictest.hpp`. The main editor area displays the content of `disks.hpp`, which contains a list of group members. The text is as follows:

```
1 Group Members:
2
3 Jorge Diaz jorgediaz@csu.fullerton.edu
4
5 Jacqueline Isabel Cardenas jacisac@csu.fullerton.edu
```

The bottom status bar shows the current file is `untitled*` at line 1, column 15. It also displays encoding information: `LF UTF-8 Plain Text`, a warning `Not on branch`, and repository links for `GitHub` and `Git (4128)`.