Project 1

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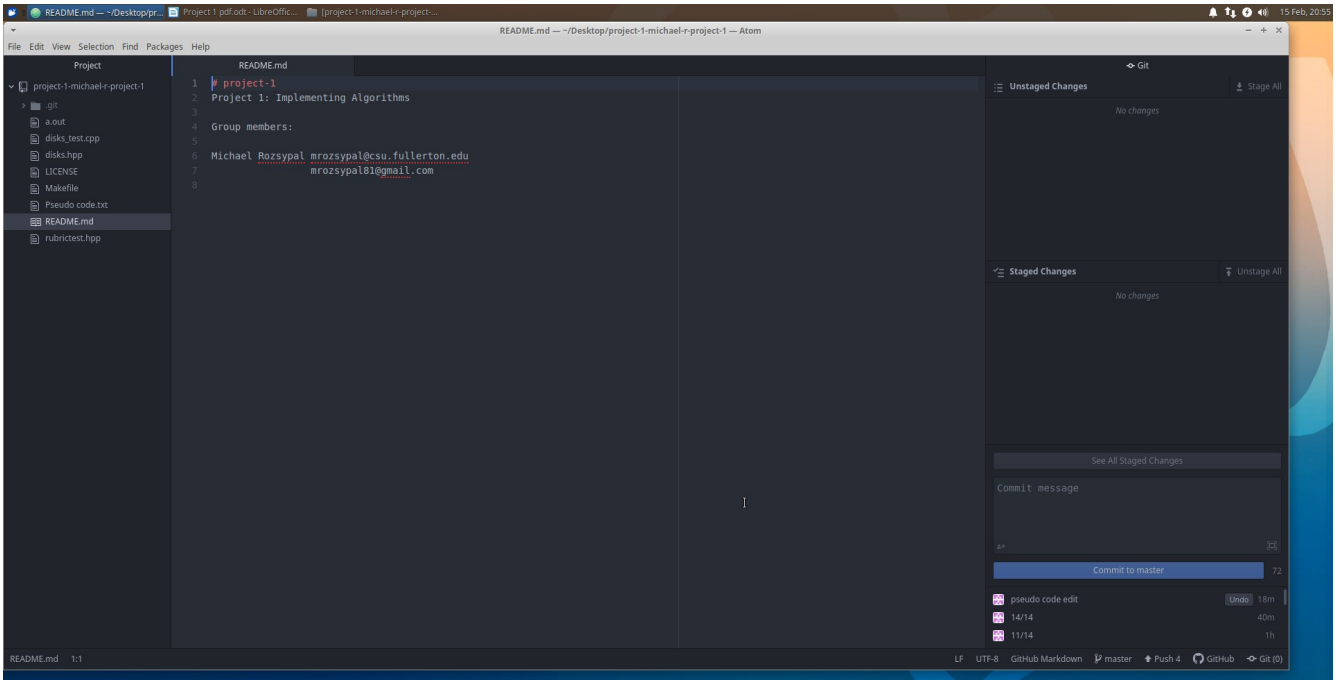

Pseudocode

left to right algorithm

```
// K is the array or datastructure that is storing the disks
        for each element from n to K's size -1
            for each element from n to K's size -1
            if(element at n does not equal element at n+1)
                    swap element n and n+1
                return K
```

lawnmower algorithm

```
bool direction = true;  //true is go right, false is go left
        for each element from n to K's size-1{
                if( direction == true){
            for each element from n to K's size-1
            if(element at n does not equal element at n+1)
                    swap element n and n+1
                direction = false;
                n increment
                    }
                if(direction == false){
        for each element from K's size-n-1 to n //decreasing
            if(element at m does not equal element at m-1)
                    swap element m and m-1
                direction = true;
                n increment
                    }
                }
                return K
```

left to right dependent loop
basically bubble sort
which does to $O(n^2)$

$\frac{n-i}{1}+1$ $n-i+1$ steps

$(n-i+1)\times 2$

$$\sum_{i=1}^{n} 2n-2i+2 \rightarrow \sum_{i=1}^{n} 2n - \sum_{i=1}^{n} 2i + \sum_{i=1}^{n} 2$$

$$2n^2 - 2\left[\frac{n(n+1)}{2}\right] + 2n \approx n^2$$

lawn mower dependent loop
about the same
speed of the left
to right of $O(n^2)$

$\left[\left(\frac{n-1}{1}\right)+4\right] \cdot (n-i+4)\times 2$

$$\sum_{i=1}^{n} 2n-2i+8 \quad \sum_{i=1}^{n} 2n - \sum_{i=1}^{n} 2i + \sum_{i=1}^{n} 8$$

$$2n^2 - 2\left[\frac{n(n+1)}{2}\right] + 8n \approx n^2$$