

Part1.

CPSC 335 Project 1 PDF submission

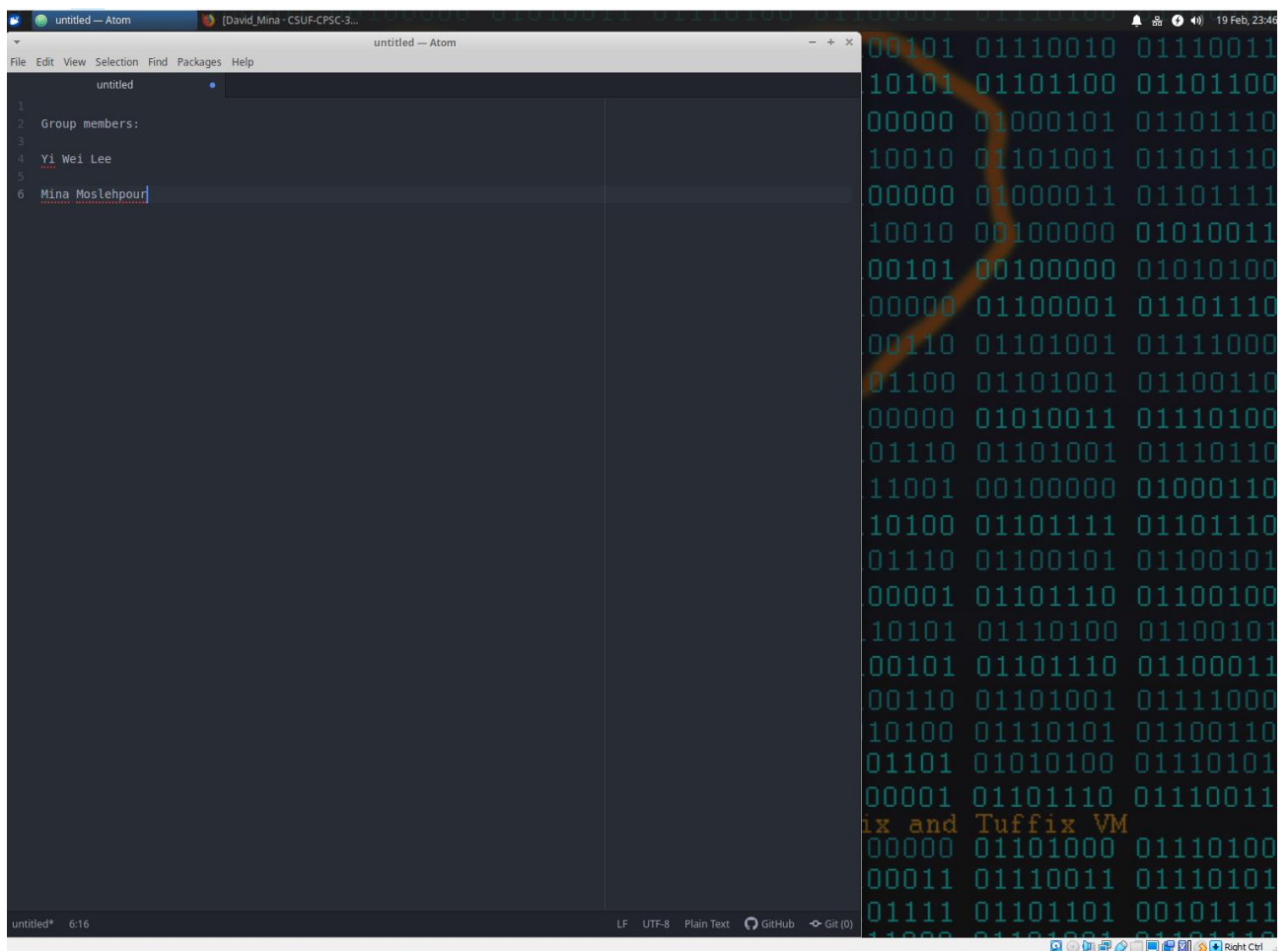
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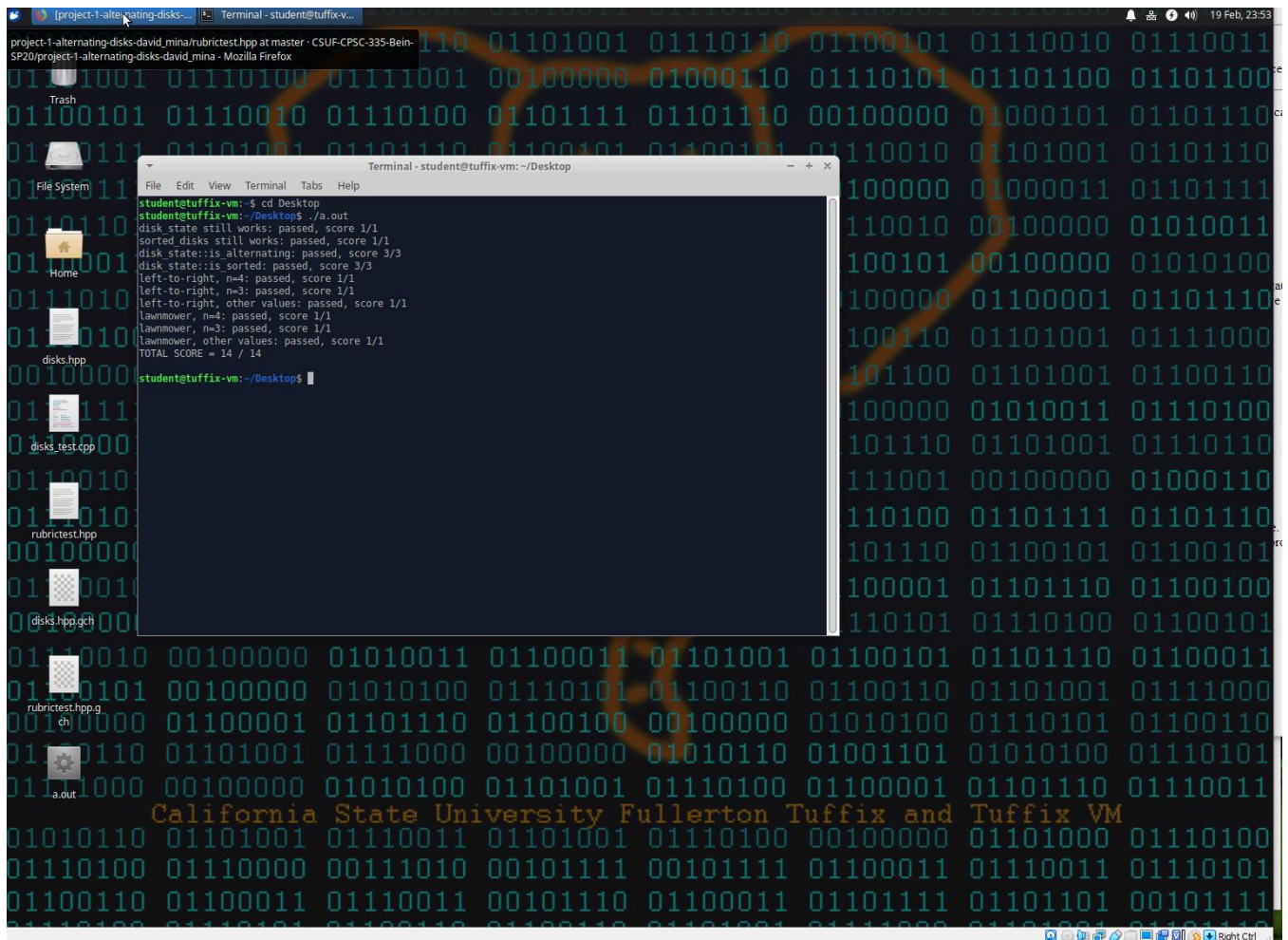
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Part2.

Full-screen screenshot





Part3. Pseudocode

a. Pseudocode left to right

Make sure initial disk (before.is_alternating()) = true

count = 0 **1TS**

temp = before ; **1TS**

While != temp.is_sorted() **n time**

For i = 0 to n do **n time**

If disk at index (i) is light disk and disk at index (i+1) is dark disk { **3 + max(7,0)**

swap(disk at index (i) with disk at index (i+1)) **5TS (swap is 3TS)**

count ++ **2TS**

Return sorted disks and swap count **1TS**

$$10(n-1)(n)+3 = (10n-10)(n)+3 = 10n^2-10n+3$$

So make this program is $O(n^2)$

b. Pseudocode lawnmower

Make sure initial disk (before.is_alternating()) = true

Count = 0 **1TS**

temp = before **1TS**

While disks in temp is not sorted do **n time**

For i= 0 to n -1 do **n-1 time**

If disk at index(i) is light disk disk at index (i+1) is dark disk {**3+max(7,0)**}

Swap (disk at index (i) with disk at index (i+1)) **5TS (swap is 3TS)**

count ++ **2TS**

For i=0 to n -1 do **n-1 time**

If disk at index(i) is light disk at index (i-1) is dark disk {**3+max(7,0)**}

Swap (disk at index (i) with disk at index (i-1)) **5TS (swap is 3TS)**

count ++ **2TS**

Return sorted disks and swap count **1TS**

$$(10(n-1)+10(n-1))*n+3 = (10n-10+10n-10)n+3 = 20n^2-20n+3$$

So make this program is $O(n^2)$

Part4.

a. Proof left to right

$\lim_{n \rightarrow \infty} (10n^2-10n+3)/n^2 = \lim_{n \rightarrow \infty} 10n^2/n^2 - 10n/n^2 + 3/n^2 = 10$ so because its not infinite and because $10 \geq 0$. Thus $10n^2-10n+3 = O(n^2)$

b. Proof lawnmower

$\lim_{n \rightarrow \infty} (20n^2-20n+3)/n^2 = \lim_{n \rightarrow \infty} 20n^2/n^2 - 20n/n^2 + 3/n^2 = 20$, so because its not infinite and because $20 \geq 0$. Thus $20n^2-20n+3 = O(n^2)$