

# Report

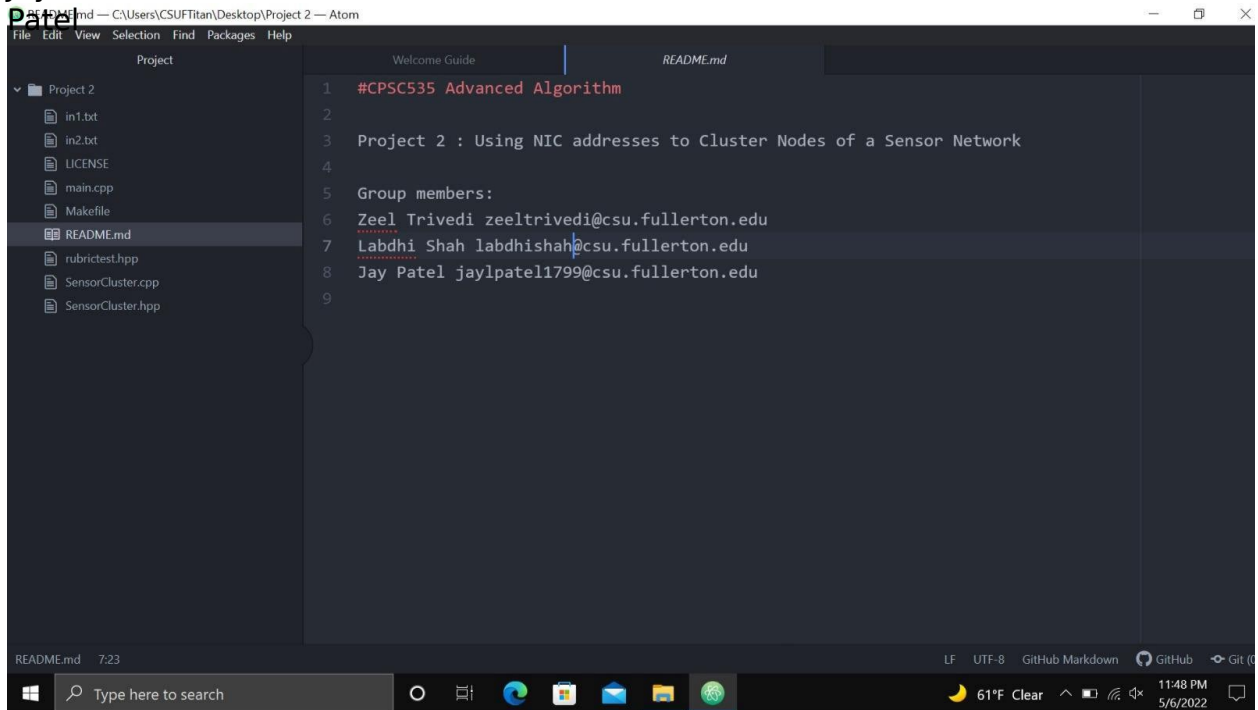
## Project 2

### Group Members

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```
1 #CPSC535 Advanced Algorithm
2
3 Project 2 : Using NIC addresses to Cluster Nodes of a Sensor Network
4
5 Group members:
6 Zeel Trivedi zeeltrivedi@csu.fullerton.edu
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9
```

The screenshot shows the Atom code editor with a file explorer on the left displaying a project structure. The main editor area shows a README.md file with the following content:

- Line 1: #CPSC535 Advanced Algorithm
- Line 2: (empty)
- Line 3: Project 2 : Using NIC addresses to Cluster Nodes of a Sensor Network
- Line 4: (empty)
- Line 5: Group members:
- Line 6: Zeel Trivedi zeeltrivedi@csu.fullerton.edu
- Line 7: Labdhi Shah labdhishah@csu.fullerton.edu
- Line 8: Jay Patel jaylpatel1799@csu.fullerton.edu
- Line 9: (empty)

The status bar at the bottom indicates the file is README.md, 7:23, with encoding LF, UTF-8, and GitHub Markdown.

## **Pseudocode description:**

There are total 6 hash tables in given program.

## **Pseudocode for the given problems:**

##the given has value is of six digit

##so to compute it the first digit of the address, the

module logic is used to compute first digit,

(address1/100000 % 10) to compute second digit,

(address2/10000%10)

to compute third digit, (address3/1000%10)

to compute fourth digit,(address4/100%10)

to compute fifth digit,(address5/10%10)

to compute sixth digit,(address6/1%10)

##now after returning the hash value based on

the each digit, ##copying the text, from one file

to other file.

##now function to add the NIC to the given sensor network file for example, using the hash table,

hashTable1.insert({nic1, item1})

hashTable2.insert({nic2, item2})

hashTable3.insert({nic3, item3})

hashTable4.insert({nic4, item4})

hashTable5.insert({nic5, item5})

hashTable6.insert({nic6, item6})

#now using delete function to remove the NIC value from network, if the function finds the NIC in file, then it deletes the value; else it will return the false and close the file.

hashTable1.erase(nic)

hashTable2.erase(nic)

hashTable3.erase(nic)

hashTable4.erase(nic)

hashTable5.erase(nic)

```
hashTable6.erase(nic)
```

##function will decide the best hash function from the six hasing table and the most balanced sensor network for the current set of NIC address to find the maximum and minimum value from each hashtable turn by turn

```
unsigned int minimum_val = hashTable1.bucket_size(0);
```

```
unsigned int maximum_val = hashTable1.bucket_size(0);
```

```
for (auto i = 1; i < 10; ++i){
```

```
    unsigned int bucket = hashTable1.bucket_size(i);
```

```
    if (bucket < minimum_val){
```

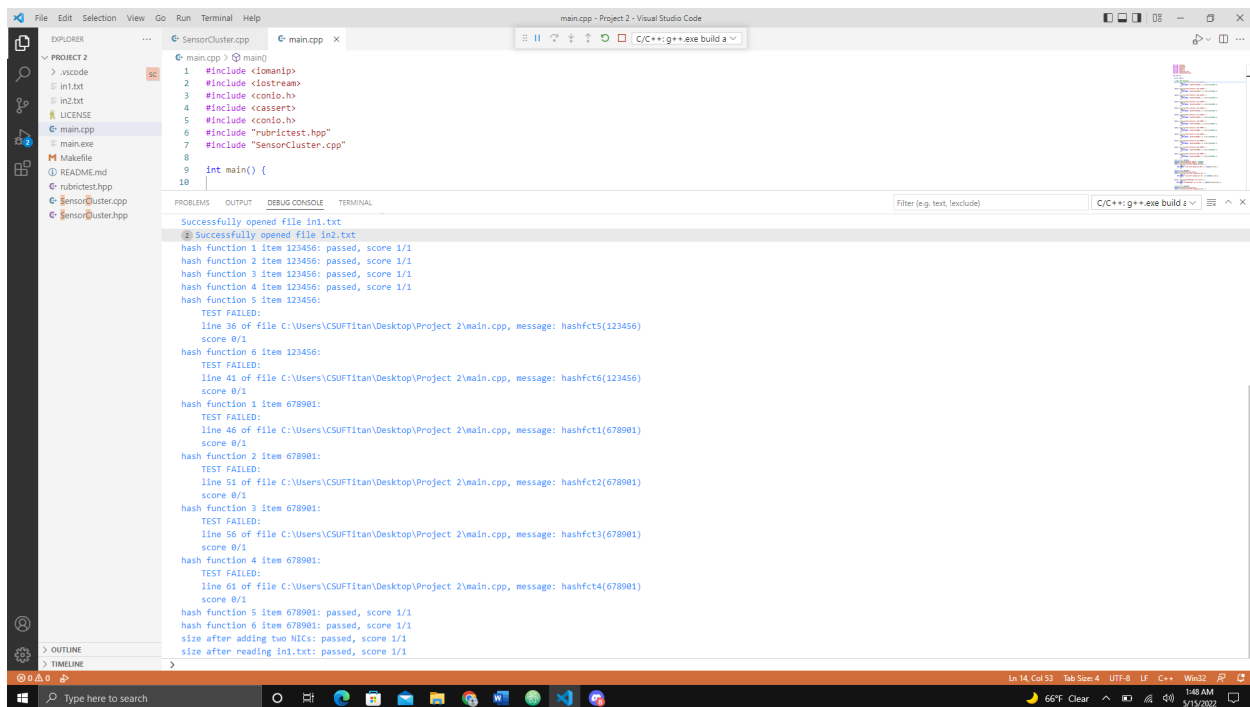
```
        min = bucket;
```

```
    } else if (bucket > maximum_val){
```

```
        max = bucket;
```

##now to find the best, best\_value = maximum\_value - minimum\_value

## Result:



```
1 #include <iomanip>
2 #include <iostream>
3 #include <conio.h>
4 #include <cassert>
5 #include <conio.h>
6 #include "rubricTest.hpp"
7 #include "SensorCluster.cpp"
8
9 int main() {
10
    Successfully opened file ini.txt
    @ Successfully opened file ini.txt
    hash function 1 item 123456: passed, score 1/1
    hash function 2 item 123456: passed, score 1/1
    hash function 3 item 123456: passed, score 1/1
    hash function 4 item 123456: passed, score 1/1
    hash function 5 item 123456:
    TEST FAILED:
    line 36 of file C:\Users\CSUFTitan\Desktop\Project 2\main.cpp, message: hashfct5(123456)
    score 0/1
    hash function 6 item 123456:
    TEST FAILED:
    line 41 of file C:\Users\CSUFTitan\Desktop\Project 2\main.cpp, message: hashfct6(123456)
    score 0/1
    hash function 1 item 678901:
    TEST FAILED:
    line 46 of file C:\Users\CSUFTitan\Desktop\Project 2\main.cpp, message: hashfct1(678901)
    score 0/1
    hash function 2 item 678901:
    TEST FAILED:
    line 51 of file C:\Users\CSUFTitan\Desktop\Project 2\main.cpp, message: hashfct2(678901)
    score 0/1
    hash function 3 item 678901:
    TEST FAILED:
    line 56 of file C:\Users\CSUFTitan\Desktop\Project 2\main.cpp, message: hashfct3(678901)
    score 0/1
    hash function 4 item 678901:
    TEST FAILED:
    line 61 of file C:\Users\CSUFTitan\Desktop\Project 2\main.cpp, message: hashfct4(678901)
    score 0/1
    hash function 5 item 678901: passed, score 1/1
    hash function 6 item 678901: passed, score 1/1
    size after adding two NICs: passed, score 1/1
    size after reading ini.txt: passed, score 1/1
```