[DAA ASSIGNMENT-2]

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Aim:

Find gross and net salary of 2000 employees and also find time and space complexity

Code:

```cpp
#include <iostream>
#include <fstream>
#include <sstream>
#include <vector>
#include <string>
using namespace std;

int findMax(vector<double> a, int lo, int hi)
{

    if (lo > hi)
        return -1;

    if (lo == hi)
        return a[lo];
    int mid = (lo + hi) / 2;
    int leftMax = findMax(a, lo, mid);
    int rightMax = findMax(a, mid + 1, hi);
    return max(leftMax, rightMax);
}
int findMin(vector<double> a, int lo, int hi)
{
    if (lo > hi)
        return -1 ;

    if (lo == hi)
        return a[lo];
    int mid = (lo + hi) / 2;
    int leftMin = findMin(a, lo, mid);
    int rightMin = findMin(a, mid + 1, hi);
    return min(leftMin, rightMin);
}


int main()
{
    ifstream inputFile("1input.csv"); // Input CSV file
    ofstream outputFile("1.csv");   // Output CSV file
    vector<double>v;
        if (!inputFile.is_open() || !outputFile.is_open())
        {
        cout << "Error opening file!" << endl;

        }

    string line;
    // Write the header for the output file
```
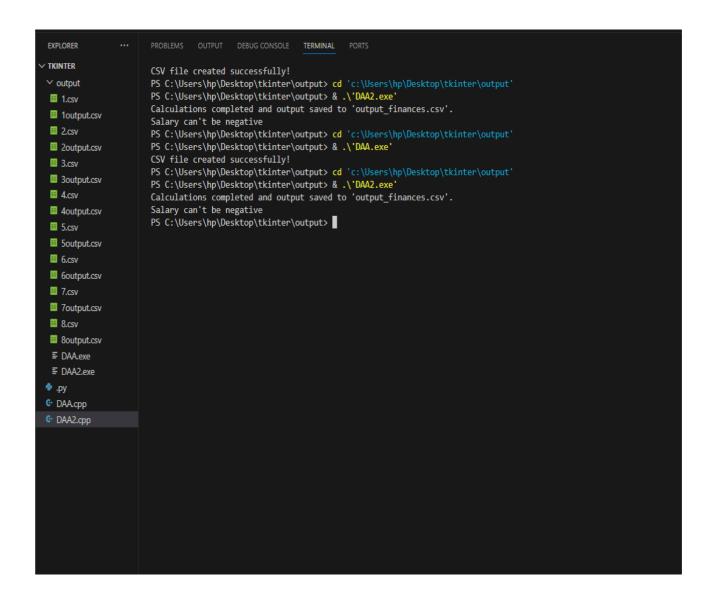
```cpp
    outputFile << "Name,Salary,Tax,Home Rent,Bonus\n";

    // Skip the header line in the input file
    getline(inputFile, line);

    // Process each line
    while (getline(inputFile, line))
    {
        stringstream ss(line);
        string name, salaryStr;
        getline(ss, name, ',');
        getline(ss, salaryStr, ',');

        double salary = stod(salaryStr);
        v.push_back(salary);
        double tax = 0.10 * salary;
        double homeRent = 0.20 * salary;
        double bonus = 0.15 * salary;

        // Write the results to the output file
        outputFile << name << "," << salary << "," << tax << "," << homeRent << "," << bonus <<
"\n";
    }

    inputFile.close();
    outputFile.close();


    cout << "Calculations completed and output saved to 'output_finances.csv'." << endl;

    if(findMin(v,0,2000)<0){
        cout<<"Salary can't be negative";
    }
    else{
    cout<<"Min Salary -> "<<findMin(v,1,2000)<<endl;
    cout<<"Max Salary -> "<<findMax(v,1,2000);
    }

    return 0;
}
```

Output:

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

```
PS C:\Users\hp\Desktop\tkinter\output> & .\'DAA.exe'
CSV file created successfully!
PS C:\Users\hp\Desktop\tkinter\output> cd 'c:\Users\hp\Desktop\tkinter\output'
PS C:\Users\hp\Desktop\tkinter\output> & .\'DAA2.exe'
Calculations completed and output saved to 'output_finances.csv'.
Min Salary -> 20020
Max Salary -> 52748
PS C:\Users\hp\Desktop\tkinter\output> cd 'c:\Users\hp\Desktop\tkinter\output'
PS C:\Users\hp\Desktop\tkinter\output> & .\'DAA.exe'
CSV file created successfully!
PS C:\Users\hp\Desktop\tkinter\output> cd 'c:\Users\hp\Desktop\tkinter\output'
PS C:\Users\hp\Desktop\tkinter\output> & .\'DAA2.exe'
Calculations completed and output saved to 'output_finances.csv'.
Min Salary -> 1008
Max Salary -> 33726
PS C:\Users\hp\Desktop\tkinter\output> cd 'c:\Users\hp\Desktop\tkinter\output'
PS C:\Users\hp\Desktop\tkinter\output> & .\'DAA.exe'
CSV file created successfully!
PS C:\Users\hp\Desktop\tkinter\output> cd 'c:\Users\hp\Desktop\tkinter\output'
PS C:\Users\hp\Desktop\tkinter\output> & .\'DAA2.exe'
Calculations completed and output saved to 'output_finances.csv'.
Min Salary -> 1001
Max Salary -> 20981
PS C:\Users\hp\Desktop\tkinter\output> cd 'c:\Users\hp\Desktop\tkinter\output'
PS C:\Users\hp\Desktop\tkinter\output> & .\'DAA.exe'
CSV file created successfully!
PS C:\Users\hp\Desktop\tkinter\output> cd 'c:\Users\hp\Desktop\tkinter\output'
PS C:\Users\hp\Desktop\tkinter\output> & .\'DAA2.exe'
Calculations completed and output saved to 'output_finances.csv'.
Min Salary -> 10012
Max Salary -> 42740
PS C:\Users\hp\Desktop\tkinter\output> cd 'c:\Users\hp\Desktop\tkinter\output'
PS C:\Users\hp\Desktop\tkinter\output> & .\'DAA2.exe'
Error opening file!
Calculations completed and output saved to 'output_finances.csv'.
PS C:\Users\hp\Desktop\tkinter\output> cd 'c:\Users\hp\Desktop\tkinter\output'
PS C:\Users\hp\Desktop\tkinter\output> & .\'DAA.exe'
CSV file created successfully!
PS C:\Users\hp\Desktop\tkinter\output> cd 'c:\Users\hp\Desktop\tkinter\output'
PS C:\Users\hp\Desktop\tkinter\output> & .\'DAA2.exe'
Calculations completed and output saved to 'output_finances.csv'.
Min Salary -> 10006
Max Salary -> 42758
PS C:\Users\hp\Desktop\tkinter\output> cd 'c:\Users\hp\Desktop\tkinter\output'
PS C:\Users\hp\Desktop\tkinter\output> & .\'DAA.exe'
CSV file created successfully!
PS C:\Users\hp\Desktop\tkinter\output> cd 'c:\Users\hp\Desktop\tkinter\output'
PS C:\Users\hp\Desktop\tkinter\output> & .\'DAA2.exe'
Calculations completed and output saved to 'output_finances.csv'.
Salary can't be negative
PS C:\Users\hp\Desktop\tkinter\output> cd 'c:\Users\hp\Desktop\tkinter\output'
PS C:\Users\hp\Desktop\tkinter\output> & .\'DAA.exe'
CSV file created successfully!
PS C:\Users\hp\Desktop\tkinter\output> cd 'c:\Users\hp\Desktop\tkinter\output'
PS C:\Users\hp\Desktop\tkinter\output> & .\'DAA2.exe'
```

Conclusion :

We learnt to download and install VS code, and use it to run a c++ code of gross and net salary of 2000 employees. Divide and Conqure algorithm is used in the program to sort the randomly created name and salary.

The code is well-structured and efficient, ensuring that the array is sorted with a time complexity of O(n), making it suitable for handling large datasets.