

Software Development Intern Take Home Challenge: Report

There are 2 classes:

- 1) VolunteerNode
- 2) Graph

VolunteerNode:

Basic node class that stores the information (name, id,schedule) of the volunteer. There is a conflictedVolunteer array which keeps track of all the adjacent volunteers(neighbors) who have met in the office.

conflictedWeightMap (*For bonus task*): A member variable of the node class that stores the weight(value) of a conflicting node(volunteer) as a <key, value> pair with respect to the volunteer id(key) of the conflicting node.

dateShiftMap: Stores the shift of a volunteer. This member variable is used later to detect conflict and form a graph.

Graph:

Basically used to form a graph, connect edges between conflicting nodes (volunteers) using member attribute (conflictedVolunteer, dateShiftMap) of VolunteerNode class.

How did I decide when to add edges between two nodes?

*For every row of the given csv file I make a node for the corresponding volunteer. Then I've checked in the **addNode** function of the graph class if the node is already added in the iNodeMap of the graph class.*

If it's already added, then I just update its schedule and checked if it creates any conflict between any nodes of the iNodeMap (inside addEdge Function).

If it's not already added (a new node) then I add the node into iNodeMap, update its schedule and checked if it creates any conflict between any nodes of the iNodeMap (inside addEdge Function).

Challenges:

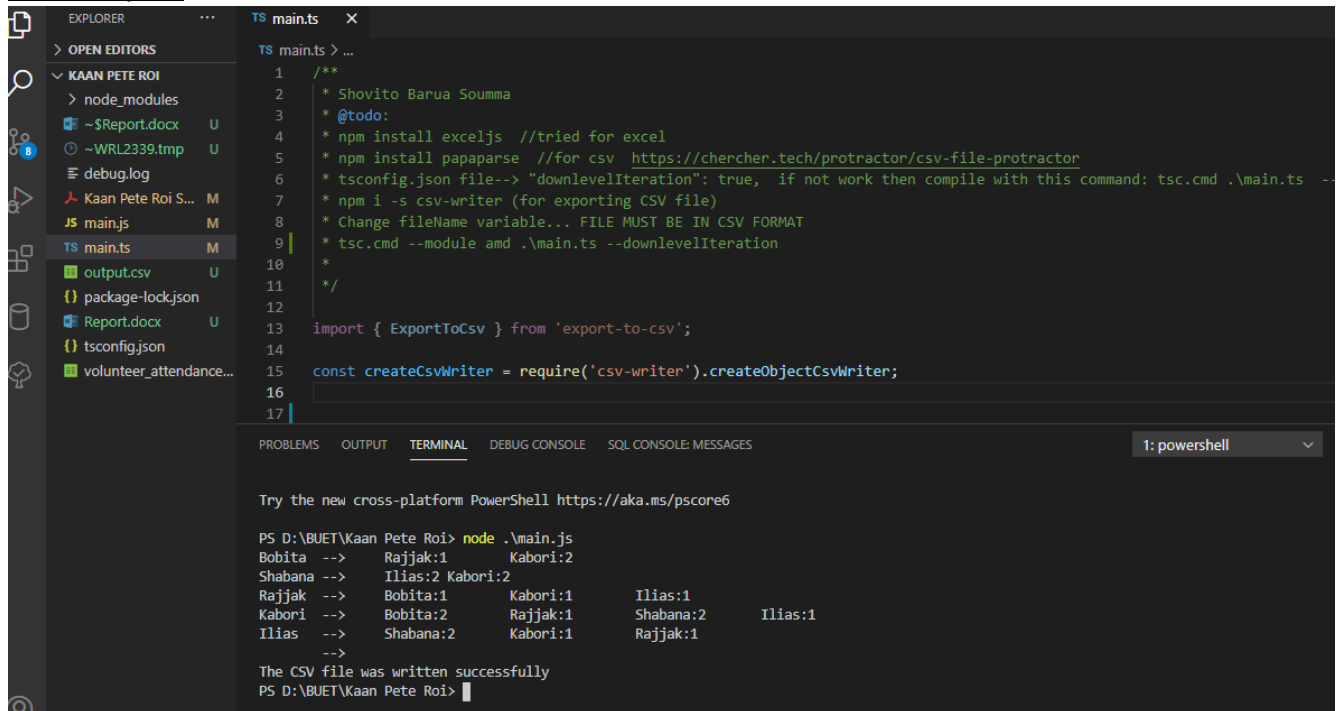
Found an error: 'IterableIterator <[number, any]>' is not an array type or a string type. Use compiler option '**--downlevelIteration**' to allow iterating of iterators.

I solved it by adding "downlevelIteration": true, in compilerOptions inside tsconfig.json file.

Requirements to run the code:

Need to install these npm modules

- **npm install papaparse**
- Add "downlevelIteration": true, in compilerOptions inside tsconfig.json file
If it is not working then compile with this command: `tsc.cmd .\main.ts --downlevelIteration`
- `npm i -s csv-writer` (for exporting CSV file)
- Change fileName variable for a different input file
- **input FILE MUST BE IN CSV FORMAT**
- **ouput file will be also in CSV format.**

Software Development Intern Take Home Challenge: Report**Demo output :**

The screenshot shows a Visual Studio Code editor with a file explorer on the left and a terminal at the bottom. The file explorer shows a project named 'KAAN PETE ROI' with files like 'main.js', 'output.csv', 'package-lock.json', 'Report.docx', 'tsconfig.json', and 'volunteer_attendance...'. The main editor shows a TypeScript file 'main.ts' with the following code:

```
1 /**
2  * Shovito Barua Soumma
3  * @todo:
4  * npm install exceljs //tried for excel
5  * npm install papaparse //for csv https://chercher.tech/protractor/csv-file-protractor
6  * tsconfig.json file--> "downlevelIteration": true, if not work then compile with this command: tsc.cmd .\main.ts --
7  * npm i -s csv-writer (for exporting CSV file)
8  * Change fileName variable... FILE MUST BE IN CSV FORMAT
9  * tsc.cmd --module amd .\main.ts --downlevelIteration
10 */
11
12
13 import { ExportToCsv } from 'export-to-csv';
14
15 const createCsvWriter = require('csv-writer').createObjectCsvWriter;
16
17
```

The terminal shows the execution of the program:

```
PS D:\BUET\Kaan Pete Roi> node .\main.js
Bobita --> Rajjak:1 Kabori:2
Shabana --> Ilias:2 Kabori:2
Rajjak --> Bobita:1 Kabori:1 Ilias:1
Kabori --> Bobita:2 Rajjak:1 Shabana:2 Ilias:1
Ilias --> Shabana:2 Kabori:1 Rajjak:1
-->
The CSV file was written successfully
PS D:\BUET\Kaan Pete Roi>
```