CS 202 Iditarod - Takotna

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Source Code Link: `https://github.com/siddhartha-crypto/cs202/tree/master/iditarod/takotna`

1 Design

1.1 TSPLIB

The design for this assignment is largely already laid out. I intend to simply do as instructed by creating the CityList and CityNode classes, with the former holding M instances of the latter.

I load the files according to a list that is also stored locally on the SSD.

2 Post Mortem

2.1 TSPLIB

This was not overly difficult. The only struggles I had were with remembering simple syntax and logic solutions.

This is good, because it shows that from the last two classes, I have developed a simple C++/logical vocabulary for basic problem solving.

3 Commit History

3.1 Both Parts 1 2

2020-04-14 Load list of filenames
2020-04-14 Create basic CityNode and CityList classes
2020-04-14 Add basic CityNode and CityList loading functions for file streams
2020-04-14 Debug for all files passing through CityList and CityNode loading functions
2020-04-14 Iditarod 3: Additional debugging for parsing files
2020-04-14 Create function to calculate distance between two nodes
2020-04-14 Test distance formula
2020-04-14 Takotna: additional debugging for distance formula

4 Sample Output

4.1 TSPLIB Part 1

```
The distance between Nodes 1 and 2 of CityList 0 is: 69.3542
```

5 My Programs

5.1 TSPLIB Part 1 - main.cpp

```
/*
 * main.cpp
 * CS202
 * April 14, 2020
 * Bryan Beus
 * Takotna station for Iditarod Challenge
 */

#include <iomanip>
#include <vector>
#include <string>
#include <iostream>
#include <fstream>
#include <filesystem>
#include <stdlib.h>
#include <memory>

#include "Takotna.hpp"
#include "CityNode.hpp"
#include "CityList.hpp"
#include "Miscellaneous.hpp"

using std::cin;
using std::cout;
using std::endl;
using std::vector;
using std::string;
using std::ofstream;
using std::ifstream;
using std::istringstream;
using std::pair;
using std::make_pair;
using std::setw;
using std::right;
using std::left;

namespace fs = std::filesystem;
```

```
38
39 int main() {
40
41     clearConsole();
42
43     vector<string> fileNames;
44     callFileNames(fileNames);
45     vector<CityList> citylist;
46
47     for (size_t i = 0; i < fileNames.size(); i++) {
48         string file = "./big/" + fileNames.at(i);
49         ifstream fin(file);
50         if (!fin) {
51             cout << "Error loading file: " << file << endl;
52             exit(0);
53         }
54
55         CityList newList;
56         newList.parseFile(fin);
57         citylist.push_back(newList);
58     }
59
60     CityList test1 = citylist.at(0);
61     double testDistance = test1.distance(1,2);
62     cout << "The distance between Nodes 1 and 2 of CityList 0 is:
       ↪  " << testDistance << endl;
63
64     return 0;
65 }
```