Course: ENSF 614 - Fall 2023

Lab B01: Lab 4

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Exercise A

Definition

```
String_Vector transpose (const String_Vector& sv) {

   // STUDENTS MUST COMPLETE THE DEFINITION OF THIS FUNCTION.
        String_Vector temp;
        String_Vector vs;
        temp = sv;

        int row = temp.size();
        int col = temp[0].size();
        cout << "\n";

        temp.resize(row);
        vs.resize(row);
        for(int i = 0; i < col; i++){
                for(int j = 0;j<row; j++){
                        vs.at(i).push_back(temp.at(j).at(i));

                }
        }

   return vs;
}
```

Output

```
Braden@TBLaptop04 /cygdrive/c/users/braden/documents/school/ENSF 614/Assignments/Assignment 4
$ ./a.exe
ABCD
EFGH
IJKL
MNOP
QRST

AEIMQ
BFJNR
CGKOS
DHLPT
```

Exercise B

Definition:

```
void print_from_binary(char* filename) {

        std::ifstream is(filename, std::ios::binary);
    if (!is) {
        std::cerr << "Failed to open the file." << std::endl;
    }

    City cities[size1]; // Assuming there are 5 cities in the file

    for (int i = 0; i < size1; i++) {
        is.read(reinterpret_cast<char*>(&cities[i]), sizeof(City));

        if (!is) {
            std::cerr << "Failed to read the file." << std::endl;
           // return 1;
        }
    }

    is.close();

    // Print the parsed data
    for (int i = 0; i < size1; i++) {
        std::cout << "Name: " << cities[i].name << ", x coordinate: " << std::fixed <<
std::setprecision(2) << cities[i].x << ", y coordinate: " << std::fixed << std::setprecision(2) <<
cities[i].y << std::endl;
    }
        std::ofstream os("filename_argument.txt");
    if (!os) {
        std::cerr << "Failed to open the file for writing." << std::endl;
        return;
    }

    for (int i = 0; i < size1; i++) {
        os << "Name: " << cities[i].name << ", x coordinate: " << std::fixed << std::setprecision(2)
<< cities[i].x << ", y coordinate: " << std::fixed << std::setprecision(2) << cities[i].y << std::endl;
    }
    os.close();
}
```

Output:

Command line

```
Braden@TBLaptop04 /cygdrive/c/users/braden/documents/school/ENSF 614/Assignments/Assignment 4
$ ./a.exe

The content of the binary file is:
Name: Calgary, x coordinate: 100.00, y coordinate: 50.00
Name: Edmonton, x coordinate: 100.00, y coordinate: 150.00
Name: Vancouver, x coordinate: 50.00, y coordinate: 50.00
Name: Regina, x coordinate: 200.00, y coordinate: 50.00
Name: Toronto, x coordinate: 500.00, y coordinate: 50.00
Name: Montreal, x coordinate: 200.00, y coordinate: 50.00
```

Output File