**Course: ENSF 614** - Fall 2023  
**Lab #:** Lab 4  
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**Submission Date:** October 18, 2023

**Exercise A**

String\_Vector transpose(const String\_Vector& sv) {

assert(sv.size() >= 1);

size\_t rows = sv.size();

size\_t col = sv.at(0).size();

// check if all strings have the same length

for (const auto& s : sv) {

assert(s.size() == col);

}

String\_Vector vs(col, string(rows, ' '));

for (size\_t j = 0; j < col; j++) {

for (size\_t i = 0; i < rows; i++) {

vs[j][i] = sv[i][j];

}

}

return vs;

}

**Sample Output:**

A black screen with white text

Description automatically generated

**Exercise B**

void print\_from\_binary(char\* filename) {

string file\_base\_name(filename);

string txt\_name = file\_base\_name.substr(0, file\_base\_name.rfind('.')) + ".txt";

ifstream stream(filename, ios::in | ios::binary);

ofstream stream\_txt(txt\_name);

int counter = 0;

City city;

if (!stream) {

cerr << "failed to open the file: " << filename << endl;

exit(1);

}

if (!stream\_txt) {

cerr << "Failed to create the file: " << txt\_name << endl;

exit(1); // Consider throwing an exception instead

}

while (counter < vector\_size) {

stream.read((char\*)(&city), sizeof(City));

if (stream.eof()) {

break;

}

if (!stream) {

cerr << "failed to read from input file" << endl;

exit(1);

}

cout << "Name: " << city.name << ", x coordinate: " << city.x <<

", y coordinate: " << city.y << endl;

stream\_txt << "Name: " << city.name << ", x coordinate: " << city.x <<

", y coordinate: " << city.y << endl;

counter++;

}

stream\_txt.close();

stream.close();

}