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INTERNSHIP TASK 3

CODE:

```
#include <iostream>
#include <string>
#include <fstream>
#include <stdexcept>
using namespace std;

string readFile(const string& fileName) {
    ifstream file(fileName, ios::in | ios::binary);
    if (!file) {
        throw runtime_error("File cannot be opened or read");
    }
    string content((istreambuf_iterator<char>(file), istreambuf_iterator<char>()),
        return content;
}

void writeFile(const string& fileName, const string& data) {
    ofstream file(fileName, ios::out | ios::binary);
    if (!file) {
        throw runtime_error("File cannot be opened or written");
    }
    file.write(data.c_str(), data.size());
}

string compressRLE(const string& data) {
    string compressed;
    int n = data.size();
    for (int i = 0; i < n; ++i) {
        int count = 1;
        while (i + 1 < n && data[i] == data[i + 1]) {
            ++i;
            ++count;
        }
        compressed += data[i];
        compressed += to_string(count);
    }
    return compressed;
}

string decompressRLE(const string& data) {
    string decompressed;
    int n = data.size();
    for (int i = 0; i < n; ++i) {
        char ch = data[i];
        string countStr;
        while (i + 1 < n && isdigit(data[i + 1])) {
            countStr += data[++i];
        }
        int count = stoi(countStr);
        decompressed.append(count, ch);
    }
    return decompressed;
}

int main() {
```

```

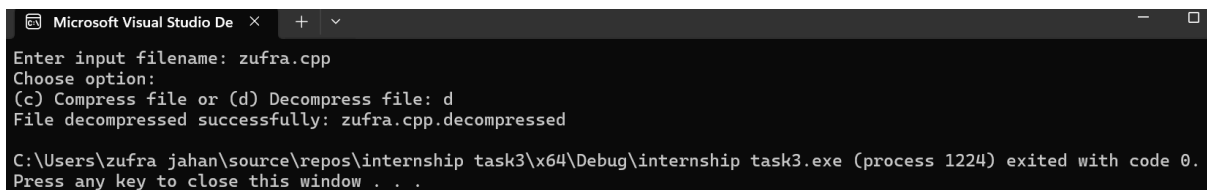
string inputFileName, outputFileName;
char choice;

cout << "Enter input filename: ";
cin >> inputFileName;
cout << "Choose option:" << endl;
cout << "(c) Compress file or (d) Decompress file: ";
cin >> choice;

if (choice == 'c' || choice == 'C') {
    try {
        string data = readFile(inputFileName);
        string compressedData = compressRLE(data);
        outputFileName = inputFileName + ".rle";
        writeFile(outputFileName, compressedData);
        cout << "File compressed successfully: " << outputFileName << endl;
    }
    catch (const exception& e) {
        cerr << "Error: " << e.what() << endl;
    }
}
else if (choice == 'd' || choice == 'D') {
    try {
        string data = readFile(inputFileName);
        string decompressedData = decompressRLE(data);
        outputFileName = inputFileName + ".decompressed";
        writeFile(outputFileName, decompressedData);
        cout << "File decompressed successfully: " << outputFileName << endl;
    }
    catch (const exception& e) {
        cerr << "Error: " << e.what() << endl;
    }
}
else {
    cout << "Invalid choice" << endl;
}

return 0;
}

```



```

Microsoft Visual Studio De  ×  +  ▾
Enter input filename: zufra.cpp
Choose option:
(c) Compress file or (d) Decompress file: d
File decompressed successfully: zufra.cpp.decompressed

C:\Users\zufra_jahan\source\repos\internship task3\x64\Debug\internship task3.exe (process 1224) exited with code 0.
Press any key to close this window . . .

```