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CSC 121 001 Computer Science I

Homework – Chapter 13 Advanced File I/O

## Programming Challenge @ Page 911.

Qn. 1 – File Previewer.

There are four screenshots attached below.

(1) Input: A file with more than 10 lines of text.

```
This program previews the first 10 lines of text in a file.
Enter filename as prompted.

For reference, three files are loaded for testing.
1. lor.txt           Only 5 lines of text.
2. lorem.txt        More than 10 lines of text.
3. loremten.txt     Exactly 10 lines of text.

Filename? lorem.txt

Here's the preview of lorem.txt...
1| Lorem ipsum dolor sit amet, consectetur adipiscing elit.
2| Suspendisse dapibus euismod scelerisque.
3| Morbi tincidunt nunc sed ante elementum posuere.
4| Nam vel justo tempus, posuere metus fringilla, sagittis felis.
5| Aliquam luctus nunc eu felis varius pulvinar vitae ac leo.
6| Donec eu elit in metus lobortis aliquam.
7| Integer dapibus malesuada neque, in scelerisque purus vestibulum eget.
8| Nulla commodo risus ut malesuada hendrerit.
9| Curabitur eu semper ante, nec viverra mauris.
10| Nunc laoreet purus sit amet est sagittis, vitae sodales magna iaculis.
Only first 10 lines are shown.

Process finished with exit code 0
|
```

(2) Input: A file with exactly 10 lines of text.

```
This program previews the first 10 lines of text in a file.
Enter filename as prompted.

For reference, three files are loaded for testing.
1. lor.txt           Only 5 lines of text.
2. lorem.txt        More than 10 lines of text.
3. loremten.txt     Exactly 10 lines of text.

Filename? loremten.txt

Here's the preview of loremten.txt...
1| Lorem ipsum dolor sit amet, consectetur adipiscing elit.
2| Suspendisse dapibus euismod scelerisque.
3| Morbi tincidunt nunc sed ante elementum posuere.
4| Nam vel justo tempus, posuere metus fringilla, sagittis felis.
5| Aliquam luctus nunc eu felis varius pulvinar vitae ac leo.
6| Donec eu elit in metus lobortis aliquam.
7| Integer dapibus malesuada neque, in scelerisque purus vestibulum eget.
8| Nulla commodo risus ut malesuada hendrerit.
9| Curabitur eu semper ante, nec viverra mauris.
10| Nunc laoreet purus sit amet est sagittis, vitae sodales magna iaculis.
The entire file is displayed.

Process finished with exit code 0
```

(3) Input: A file with less than 10 lines of text.

This program previews the first 10 lines of text in a file.  
Enter filename as prompted.

For reference, three files are loaded for testing.

1. lor.txt                Only 5 lines of text.
2. lorem.txt            More than 10 lines of text.
3. loremten.txt        Exactly 10 lines of text.

Filename? *lor.txt*

Here's the preview of lor.txt...

- 1| Lorem ipsum dolor sit amet, consectetur adipiscing elit.
- 2| Suspendisse dapibus euismod scelerisque.
- 3| Morbi tincidunt nunc sed ante elementum posuere.
- 4| Nam vel justo tempus, posuere metus fringilla, sagittis felis.
- 5| Aliquam luctus nunc eu felis varius pulvinar vitae ac leo.

The entire file is displayed.

Process finished with exit code 0

(4) Input: Invalid filename / File not on project folder.

This program previews the first 10 lines of text in a file.  
Enter filename as prompted.

For reference, three files are loaded for testing.

1. lor.txt                Only 5 lines of text.
2. lorem.txt            More than 10 lines of text.
3. loremten.txt        Exactly 10 lines of text.

Filename? *notfound.txt*

Cannot open file. Sorry. :(

Process finished with exit code 0

There are three source files and three test text files in the project folder.

- (1) main.cpp
- (2) FilePreviewer.h
- (3) FilePreviewer.cpp
- (4) lor.txt
- (5) lorem.txt
- (6) loremten.txt

The original project folder is also stored at Github.

Link below:

[https://github.com/TheLoneWoof1102/FA17\\_CSC121001/tree/master/Source%20Code/](https://github.com/TheLoneWoof1102/FA17_CSC121001/tree/master/Source%20Code/)

## (1) main.cpp

```
#include "FilePreviewer.h"
#include <iostream>
#include <iomanip>
using namespace std;

int main() {
    FilePreviewer fp;
    string filename;

    cout << "This program previews the first 10 lines of text in a file." << endl;
    cout << "Enter filename as prompted." << endl;
    {
        cout << endl;
        cout << "For reference, three files are loaded for testing." << endl;
        cout << "  1. lor.txt           Only 5 lines of text." << endl;
        cout << "  2. lorem.txt        More than 10 lines of text." << endl;
        cout << "  3. loremten.txt       Exactly 10 lines of text." << endl;
    }
    cout << endl;

    cout << "Filename? ";
    cin >> filename;
    cout << endl;

    if (fp.loadFile(filename)) {
        int i = 0;

        cout << "Here's the preview of " << filename << "... " << endl;
        for (string s : fp.getPreview()) {
            cout << setw(4) << ++i << "| " << s << endl;
        }

        if (fp.endReached()) {
            cout << "The entire file is displayed." << endl;
        } else {
            cout << "Only first 10 lines are shown." << endl;
        }
    } else {
        cout << "Cannot open file. Sorry. :( " << endl;
    }

    return 0;
}
» end of main.cpp
```

## (2) FilePreviewer.h

```
#ifndef HOMEWORK_CH13_QN1_FILEPREVIEWER_H
#define HOMEWORK_CH13_QN1_FILEPREVIEWER_H

#include <fstream>
#include <string>
#include <vector>

class FilePreviewer {

private:
    std::ifstream file;
    std::vector<std::string> preview;
    bool isEndReached;
    bool isGood;

    void extractLines();

public:
    FilePreviewer();
    FilePreviewer(std::string);
    ~FilePreviewer();

    bool loadFile(std::string);
    bool good();
    bool endReached();
    std::vector<std::string> getPreview();
};

#endif //HOMEWORK_CH13_QN1_FILEPREVIEWER_H

» end of FilePreviewer.h
```

### (3) FilePreviewer.cpp

```
#include "FilePreviewer.h"
using namespace std;

FilePreviewer::FilePreviewer() {
    isGood = false;
    isEndReached = false;
    preview.clear();
}

FilePreviewer::FilePreviewer(string filename) {
    isGood = false;
    isEndReached = false;
    preview.clear();
    loadFile(filename);
}

FilePreviewer::~FilePreviewer() {
    if (file) { file.close(); }
}

void FilePreviewer::extractLines() {
    int limit = 10;
    string temp;

    for (int i = 0; i < limit && file.good(); i++) {
        getline(file, temp);
        preview.push_back(temp);
    }
    isEndReached = !file.good();

    file.clear();
    file.seekg(0, ios::beg);
}

bool FilePreviewer::loadFile(string filename) {
    file.open(filename);
    isGood = file.good();
    extractLines();

    return isGood;
}

bool FilePreviewer::good() {
    return isGood;
}

vector<string> FilePreviewer::getPreview() {
    return preview;
}

bool FilePreviewer::endReached() {
    return isEndReached;
}

» end of FilePreviewer.cpp
```

#### **(4) lor.txt**

Lorem ipsum dolor sit amet, consectetur adipiscing elit.  
Suspendisse dapibus euismod scelerisque.  
Morbi tincidunt nunc sed ante elementum posuere.  
Nam vel justo tempus, posuere metus fringilla, sagittis felis.  
Aliquam luctus nunc eu felis varius pulvinar vitae ac leo.  
» **end of lor.txt**

#### **(5) lorem.txt**

Lorem ipsum dolor sit amet, consectetur adipiscing elit.  
Suspendisse dapibus euismod scelerisque.  
Morbi tincidunt nunc sed ante elementum posuere.  
Nam vel justo tempus, posuere metus fringilla, sagittis felis.  
Aliquam luctus nunc eu felis varius pulvinar vitae ac leo.  
Donec eu elit in metus lobortis aliquam.  
Integer dapibus malesuada neque, in scelerisque purus vestibulum eget.  
Nulla commodo risus ut malesuada hendrerit.  
Curabitur eu semper ante, nec viverra mauris.  
Nunc laoreet purus sit amet est sagittis, vitae sodales magna iaculis.  
Maecenas tellus libero, dapibus non turpis sed, malesuada vehicula ligula.  
Aenean vitae ex id dui ultrices consequat. Nullam feugiat consequat elementum.  
» **end of lorem.txt**

#### **(6) loremten.txt**

Lorem ipsum dolor sit amet, consectetur adipiscing elit.  
Suspendisse dapibus euismod scelerisque.  
Morbi tincidunt nunc sed ante elementum posuere.  
Nam vel justo tempus, posuere metus fringilla, sagittis felis.  
Aliquam luctus nunc eu felis varius pulvinar vitae ac leo.  
Donec eu elit in metus lobortis aliquam.  
Integer dapibus malesuada neque, in scelerisque purus vestibulum eget.  
Nulla commodo risus ut malesuada hendrerit.  
Curabitur eu semper ante, nec viverra mauris.  
Nunc laoreet purus sit amet est sagittis, vitae sodales magna iaculis.  
» **end of loremten.txt**