1. Download and modify the following program:

<https://markbowman.org/231/Lab15.zip>

2. Create a loop to read each character from the file and display it on the screen.

Sample Run

Enter file name: ***Lab15.txt***

Input: A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

Text

Description automatically generated

3. Update your input loop to push each character from the file into the vector. After closing the file, display the data stored in the structure. Save your output.

Sample Run

Enter file name: ***Lab15.txt***

Input: A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

Vector: A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

Text

Description automatically generated

4. After your output, create another loop to push each character in the vector into the queue. Then display the data stored in the queue. Save your output

Sample Run

Enter file name: ***Lab15.txt***

Input: A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

Vector: A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

Queue: A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

Text

Description automatically generated

5. Change your loop so that every third character goes into the stack instead of the queue. Then display the data stored in the data structures. Save your output.

Sample Run

Enter file name: ***Lab15.txt***

Input: A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

Vector: A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

Queue: A B D E G H J K M N P Q S T V W Y Z

Stack: X U R O L I F C

Text

Description automatically generated

**Lab15.cpp:**

/\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

\* Lab 15

\* Created by Safford, Twymun

\* Date: 13-Oct-2021

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*/

#include <iostream>

#include <fstream>

#include <string>

#include <vector>

#include <queue>

#include <stack>

using namespace std;

/\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

\* main()

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*/

void main()

{

string s;

//for individual characters

string ch;

fstream infile;

vector<string> a;

queue<string> b;

stack<string> c;

//for counter

int i;

// Open file

cout << "Enter file name: ";

cin >> s;

cout << endl;

infile.open(s, ios::in);

if (!infile.is\_open()) return;

// Read data from file

//Loop - read through file as long as it is not the end of the file

//display data from input

cout << "Input: ";

while (!infile.eof())

{

//get characters from contents of list

infile >> ch;

cout << ch << " ";

a.push\_back(ch);

}

// Close file

infile.close();

//display data from vector

cout << "\nVector: ";

// Display vector

for (i = 0; i < a.size(); i++)

{

//display the vector - step 3

cout << a[i] << " ";

}

// Copy vector data

for (i = 0; i < a.size(); i++)

{

//comment out if-else statements for step 4, keep b.push(..)

// uncomment for step 5

//for stack printing

if ((i + 1) % 3 == 0)

{

c.push(a[i]);

}

else

{

b.push(a[i]);

}

}

// Display queue

cout << "\nQueue: ";

/\*1) While loop - check if queue is empty

2) If the queue is not empty, print to console the elements of the queue

\*/

while (!b.empty())

{

cout << b.front() << " "; //print queue elements

//

b.pop(); //pops that element

}

cout << "\nStack: ";

////// Display stack - every third character

while (!c.empty())

{

cout << c.top() << " ";

c.pop(); //pop

// //make sure it is every third character

}

}