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Class: csc 211

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#include<iostream>
#include<fstream>
using namespace std;

class TextLines{

private:
    int len; // stores the length of lines present in the array

public:

    string* lines; // stores the array of lines
    int size; // stores the size of the array

// Default constructor for setting default values
    TextLines(){

        size = 10; // setting the default array size 10
        lines = new string[size]; // allocating memory

        len = 0; // no elements would be initially in the array so keep len 0
    }

// Copy constructor
    TextLines(TextLines& line){

        this->lines = line.lines;
        this->size = line.size;
        this->len = line.Length();
    }

//// Fucntion for expanding the array when size is full
    void expandArray(){
// create a new string array of double size

        int newSize = this->size*2;

        string *newArr = new string[newSize];

// copy elements of old array to new
        for(int i = 0; i<len; i++)
            newArr[i] = lines[i];
// delete alocated space for old
        delete []lines;
// points line to new array
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        lines = newArr;

        this->size = newSize;
    }
    /// constructor that takes an string paarmeter as filename
    TextLines(string filename):TextLines(){

        ifstream fin;

        fin.open(filename);

        string line;

        if(!fin.fail()){

            while(!fin.eof()){

                if(len >= size){
                    expandArray();
                }

                getline(fin, line);

                lines[len++] = line;

            }
        }

        else{
            cout<<"Error! File couldn't be open."<<endl;
        }
    }
    // constructor that takes integer parameter and create an array
    TextLines(int size): TextLines(){

        lines = new string[size];

        this->size = size;
    }
    // destructor
    ~TextLines(){
        delete []lines;
    }
    // rmeove and return the last line
    string removeLast(){

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        string el = lines[len-1];

        lines[len-1] = "";

        len += 1;

        return el;
    }
    // for pushing a line at the end
    void pushBack(string line){

        if(len < size)
            lines[len++] = line;

        else{

            cout<<"No vacant space! We are expanding the array for taking your entry.\n";
            expandArray();
        }

    }
    // for making the list empty
    void emptyTheList(){

        for(int i = 0; i<len; i++)
            lines[i] = "";

        len = 0;
    }
    // return the length of lines array
    int Length(){
        return len;
    }

};

// main driver function
int main(){

    TextLines t("Data.txt");

    cout<<"Length of array is "<<t.Length()<<endl;

    t.pushBack("Hi, I am programmer");
    t.pushBack("C++ is high-level language");

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t.pushBack("This program based on OOPs");
t.pushBack("It uses pointers");
t.pushBack("It uses dynamic array");

cout<<"Length of array is after pushing 5 entries at last: "<<t.Length()<<endl;

cout<<"Removing the last line: "<<t.removeLast()<<endl;

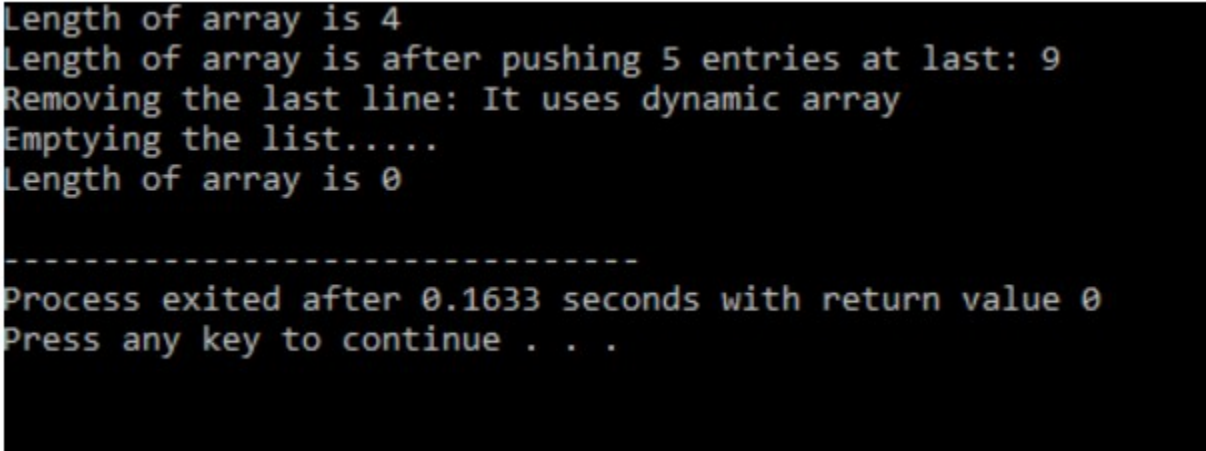
cout<<"Emptying the list....."<<endl;
t.emptyTheList();
cout<<"Length of array is "<<t.Length()<<endl;

}

```

Data.txt file:

Javascript is a scripting language.
 Python is purely OOP language.
 Java is a platform independent language.
 C++ is mainly used in Desktop applications.



```

Length of array is 4
Length of array is after pushing 5 entries at last: 9
Removing the last line: It uses dynamic array
Emptying the list.....
Length of array is 0

-----
Process exited after 0.1633 seconds with return value 0
Press any key to continue . . .

```