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| --- | --- |
| **Author Identification Block** | |
| **Author:** | Mr. Lynn Barnett |
| **Student ID:** | \*20360727 |
| **E-Mail:** | [barnettlynn@gmail.com](mailto:aturing@uco.edu) |
| **Course:** | CMSC 2613 – Programming II |
| **CRN:** | 21256, Spring, 2014 |
| **Project:** | p01 |
| **Due:** | January 24, 2014 |
| **Account:** | tt044 |

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| --- | --- | --- | --- |
| **Scoring Block** | | | |
| **Component** | **Available** | **Earned** | **Explanation** |
| Compilation |  |  |  |
| Submission Instructions | 2 | 2 |  |
| Author Identification | 1 | 1 |  |
| Modularity | 3 | 3 |  |
| Command Line | 3 | 3 |  |
| Input file | 3 | 3 |  |
| Output file | 3 | 3 |  |
| Execution | 10 | 10 |  |
| **Total** | **25** | **25** | **Perfect!** |

File p01.cpp

//------------------------------------------------------------------------

// Author: Mr. Lynn Barnett

// Student ID: \*20360727

// E-Mail: barnettlynn@gmail.com

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//------------------------------------------------------------------------

//------------------------------------------------------------------------

// Files:

// p01.cpp \*\*\*

// List01.cpp

// List01.h

// p01make

//------------------------------------------------------------------------

//------------------------------------------------------------------------

#include <iostream>

#include <cstring>

#include <fstream>

#include <cstdlib>

#include "List01.h"

using namespace std;

//------------------------------------------------------------------------

//------------------------------------------------------------------------

// EXCEPTION MESSAGES

struct CommandLineException

{

CommandLineException(int max, int actual){

cout << "Too many command line agruments." << endl;

cout << "A Maximum of " << max << " arguments are permited" << endl;

cout << actual << " arguments were given" << endl;

}

};

struct FileException

{

FileException(const char\* fn)

{

cout << "File " << fn << " could not be opened" << endl;

}

};

//------------------------------------------------------------------------

int main(int argc, char\* argv[])

{

try

{

char input\_file\_name[255], output\_file\_name[255];

switch(argc)

{

case 1:

cout << "Please Enter The Input File Name" << endl;

cout << ": ";

cin >> input\_file\_name;

cout << "Please Enter The Output File Name" << endl;

cout << ": ";

cin >> output\_file\_name;

break;

case 2:

strcpy(input\_file\_name, argv[1]);

cout << "Please Enter The Output File Name" << endl;

cout << ": ";

cin >> output\_file\_name;

break;

case 3:

strcpy(input\_file\_name, argv[1]);

strcpy(output\_file\_name, argv[2]);

break;

default:

throw CommandLineException(2, argc-1);

break;

}

//------------------------------------------------------------------------

// TEST IF INPUT FILES CAN BE USED

ifstream i (input\_file\_name);

if(!i) throw FileException(input\_file\_name);

ofstream o (output\_file\_name);

if(!o) throw FileException(output\_file\_name);

o.close();

i.close();

//------------------------------------------------------------------------

//------------------------------------------------------------------------

// MAIN LIST OPERATIONS

List01 main\_list(input\_file\_name, output\_file\_name);

main\_list.read();

main\_list.write("Unsorted List: ");

main\_list.sort();

main\_list.write("Sorted List: ");

//------------------------------------------------------------------------

} catch(...)

{

cout << "Something has gone wrong!!!" << endl;

exit(EXIT\_FAILURE);

}

return 0;

}

File List01.h

#ifndef List01\_h

#define List01\_h

#include <fstream>

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// Files:

// p01.cpp

// List01.cpp

// List01.h \*\*\*

// p01make

//------------------------------------------------------------------------

#include <string>

class List01{

int size;

char\* input;

char\* output;

std::ofstream o;

void swap(int a, int b);

public:

List01(char\* input\_file\_name, char\* output\_file\_name);

~List01(); // DESTRUCTOR, LOOK UP HOW THIS WORKS

int\* my\_list;

void read(void);

void sort(void);

void write(const char\* message);

};

#endif

File List01.cpp

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// Files:

// p01.cpp

// List01.cpp \*\*\*

// List01.h

// p01make

//------------------------------------------------------------------------

//------------------------------------------------------------------------

#include "List01.h"

#include <iostream>

#include <fstream>

#include <string.h>

#include <iomanip>

using namespace std;

//------------------------------------------------------------------------

//------------------------------------------------------------------------

// ARRAY OVERFLOW MESSAGE

struct OverflowException

{

OverflowException()

{

cout << "Array is too small to hold input file size of array needs to be increased" << endl;

}

};

//------------------------------------------------------------------------

//------------------------------------------------------------------------

// CONSTRUCTOR AND DECONSTRUCTOR

List01::List01(char\* input\_file\_name, char\* output\_file\_name):input(input\_file\_name), output(output\_file\_name), size(100){

my\_list = new int[size];

};

List01::~List01(){

delete[] my\_list;

}

//------------------------------------------------------------------------

//------------------------------------------------------------------------

// READ OR SCAN METHOD, PUTS DATA INTO ARRAY

void List01::read(void){

int i = 0;

ifstream input\_data (input);

while(true)

{

int s;

input\_data >> s;

if(input\_data.eof())

{

break;

}

if (i >= size - 1)

{

throw OverflowException();

}

my\_list[i] = s;

i++;

}

size = i; // SETS THE AMOUNT OF THE ARRAY USED

input\_data.close();

};

//------------------------------------------------------------------------

//------------------------------------------------------------------------

// SORT ARRAY

void List01::sort(void){

int eol = size - 1;

while(eol >= 1)

{

int iom = 0;

int i = 1;

while(i <= eol)

{

if(my\_list[i] > my\_list[iom])

{

iom = i;

}

i++;

}

swap(eol, iom);

eol --;

}

};

//------------------------------------------------------------------------

//------------------------------------------------------------------------

// Swap numbers in array

void List01::swap(int a, int b){

int c = my\_list[a];

my\_list[a] = my\_list[b];

my\_list[b] = c;

}

//------------------------------------------------------------------------

//------------------------------------------------------------------------

// METHOD USED TO WRITE DATA TO FILE

void List01::write(const char\* message){

o.open(output, ofstream::out | ofstream::app); // OUTPUT OR APPEND TO FILE

o << message << endl;

for(int i = 0; i <= size - 1; i++)

{

if(i % 10 == 0) o << endl;

o << right << setw(5) << my\_list[i] << " ";

}

o << endl;

o << endl;

o.close();

};

//------------------------------------------------------------------------

File p01make

#-------------------------------------------------------------------------

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#-------------------------------------------------------------------------

#-------------------------------------------------------------------------

# Files:

# p01.cpp

# List01.cpp

# List01.h

# p01make \*\*\*

#-------------------------------------------------------------------------

#-------------------------------------------------------------------------

#Object Files

#-------------------------------------------------------------------------

obj = p01.o List01.o

#-------------------------------------------------------------------------

# Create Executable File p01

#-------------------------------------------------------------------------

p01: ${obj}

g++ -o p01 ${obj} -lm

#-------------------------------------------------------------------------

# Compile p01.cpp

#-------------------------------------------------------------------------

p01.o: p01.cpp List01.h

g++ -c -g p01.cpp

#-------------------------------------------------------------------------

# Compile List01.cpp

#-------------------------------------------------------------------------

List01.o: List01.cpp List01.h

g++ -c -g List01.cpp

#-------------------------------------------------------------------------