Jessica Sullivan

ID: 1282151

Class: COMSC-210-5067

Professor: Pentcheva

Source Code:

CS210\_Assignment2\_ClassesPointers.cpp:

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*Programmer: Jessica Sullivan*

*Programmer's ID: 1282151*

*Class: COMSC-210-5067*

*Goal: Write a program that will record information about employees*

*and will compute their paychecks*

*\*/*

#include <string>

#include <sstream>

#include <iostream>

#include <iomanip>

**using** **namespace** std;

#include "DynamicStringArray.h"

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

*// programmer's identification*

cout << "Programmer: Jessica Sullivan" << endl;

cout << "Programmer's ID: 1282151" << endl;

cout << "File: " << \_\_FILE\_\_ << endl;

DynamicStringArray names;

*// List of names*

names.addEntry("Frank");

names.addEntry("Wiggum");

names.addEntry("Nahasapeemapetilon");

names.addEntry("Quimby");

names.addEntry("Flanders");

*// Output list*

cout << "List of names:" << endl;

**for** (**int** i = 0; i < names.getSize(); i++)

cout << names.getEntry(i) << endl;

cout << endl;

*// Add and remove some names*

names.addEntry("Spuckler");

cout << "After adding a name:" << endl;

**for** (**int** i = 0; i < names.getSize(); i++)

cout << names.getEntry(i) << endl;

cout << endl;

names.deleteEntry("Nahasapeemapetilon");

cout << "After removing a name:" << endl;

**for** (**int** i = 0; i < names.getSize(); i++)

cout << names.getEntry(i) << endl;

cout << endl;

names.deleteEntry("Skinner");

cout << "After removing a name that isn't on the list:" << endl;

**for** (**int** i = 0; i < names.getSize(); i++)

cout << names.getEntry(i) << endl;

cout << endl;

names.addEntry("Muntz");

cout << "After adding another name:" << endl;

**for** (**int** i = 0; i < names.getSize(); i++)

cout << names.getEntry(i) << endl;

cout << endl;

*// Remove all of the names by repeatedly deleting the last one*

**while** (names.getSize() > 0) {

names.deleteEntry(names.getEntry(names.getSize() - 1));

}

cout << "After removing all of the names:" << endl;

**for** (**int** i = 0; i < names.getSize(); i++)

cout << names.getEntry(i) << endl;

cout << endl;

names.addEntry("Olivia");

cout << "After adding a name:" << endl;

**for** (**int** i = 0; i < names.getSize(); i++)

cout << names.getEntry(i) << endl;

cout << endl;

cout << "Testing copy constructor" << endl;

DynamicStringArray names2(names);

*// Remove Olivia from names*

names.deleteEntry("Olivia");

cout << "Copied names:" << endl;

**for** (**int** i = 0; i < names2.getSize(); i++)

cout << names2.getEntry(i) << endl;

cout << endl;

cout << "Testing assignment" << endl;

DynamicStringArray names3 = names2;

*// Remove Olivia from names2*

names2.deleteEntry("Olivia");

cout << "Copied names:" << endl;

**for** (**int** i = 0; i < names3.getSize(); i++)

cout << names3.getEntry(i) << endl;

cout << endl;

cout << "Enter a character to exit." << endl;

**char** wait;

cin >> wait;

**return** 0;

}

*/\**

*// ensures that number input is valid - no whitespace, letters, or negatives*

*bool validateInput(const string &input, double &value) {*

*stringstream ss;*

*ss.str(input);*

*ss >> value;*

*return value >= 0 && !ss.fail();*

*}*

*// gets info from users and calls validateInput on numbers inputed*

*void initialize(Employee \*employees) {*

*string input, lName = "";*

*double hours = -1, wages = -1;*

*stringstream ss;*

*bool valid = false;*

*// go through each of the employees to get info*

*for (int i = 0; i < NUM\_EMPLOYEES; i++) {*

*cout << endl << "Enter Last Name of Employee " << i + 1 << ": ";*

*getline(cin, lName);*

*employees[i].mLName = lName; // no error catching required*

*// go through each day of the work week*

*for (int j = 0; j < NUM\_WORKDAYS; j++) {*

*do {*

*cout << endl << "Enter hours worked on: " << DAYS[j] << " : ";*

*getline(cin, input);*

*//valid makes sure input is valid for hours*

*valid = validateInput(input, hours) && hours <= 24;*

*if (!valid) {*

*cerr << endl << "Error, " << input << " is an invalid input."*

*<< endl;*

*hours = -1;*

*}*

*input = "";*

*} while (!valid);*

*employees[i].mHours[j] = hours;*

*valid = false;*

*}*

*do {*

*cout << endl << "Enter hourly wage : $";*

*getline(cin, input);*

*//valid makes sure wages are valid*

*valid = validateInput(input, wages);*

*if (!valid) {*

*cerr << endl << "Error, " << input << " is an invalid input."*

*<< endl;*

*wages = -1;*

*input = "";*

*}*

*} while (!valid);*

*employees[i].mHourlyWage = wages;*

*}*

*}*

*// computes wages of employees based on total hours worked and wage rate*

*void compute(Employee &employee) {*

*double totalHours = 0;*

*for (int i = 0; i < NUM\_WORKDAYS; i++) {*

*totalHours += employee.mHours[i];*

*}*

*employee.mWages = totalHours > NUM\_HOURS\_FOR\_OVERTIME*

*? NUM\_HOURS\_FOR\_OVERTIME \* employee.mHourlyWage*

*+ (totalHours - NUM\_HOURS\_FOR\_OVERTIME)*

*\* employee.mHourlyWage \* PERCENT\_WAGE\_OT*

*: totalHours \* employee.mHourlyWage;*

*}*

*//prints out relevant information about employees.*

*//Passing by value according to the instructions instead of by reference*

*void result(Employee employee) {*

*cout << endl << "Employee Name: " << employee.mLName << endl;*

*cout << "Total Wages: $" << fixed << setprecision(2)*

*<< employee.mWages << endl;*

*}*

*\*/*

DynamicStringArray.h:

*// DYNAMICSTRINGARRAYH*

*// CS210\_Assignment2\_ClassesPointers*

*//*

*/\**

*Programmer: Jessica Sullivan*

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*\*/*

*// Created by Jessie Sully on 2/5/20.*

*// Copyright © 2020 Jessie Sully. All rights reserved.*

*//*

#ifndef DYNAMICSTRINGARRAY\_H

#define DYNAMICSTRINGARRAY\_H

#include <string>

**using** **namespace** std;

**class** DynamicStringArray {

**public**:

DynamicStringArray();

DynamicStringArray(**const** DynamicStringArray &srcArray);

~DynamicStringArray() {**delete** [] mDynamicArray;}

DynamicStringArray& **operator**=(**const** DynamicStringArray &srcArray);

string getEntry(**int** index) **const** {**return** mSize > 0 ? mDynamicArray[index] : "";};

**int** getSize() **const** {**return** mSize;}

**void** addEntry(**const** string &entry);

**bool** deleteEntry(**const** string &entry);

**int** getNumMatchingEntries(**const** string &entry) **const**;

**private**:

**int** mSize = 0;

string \*mDynamicArray = **nullptr**;

};

#endif */\* DYNAMICSTRINGARRAY\_H \*/*

DynamicStringArray.cpp:

*//*

*// DynamicStringArray.cpp*

*// CS210\_Assignment2\_ClassesPointers*

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*#include <iostream>*

*using namespace std;*

*\*/*

#include "DynamicStringArray.h"

DynamicStringArray::DynamicStringArray(){

mSize = 0;

mDynamicArray = **nullptr**;

}

DynamicStringArray::DynamicStringArray(**const** DynamicStringArray &srcArray) {

mSize = srcArray.mSize;

mDynamicArray = **new** string[mSize];

**for** (**int** i = 0; i < mSize; i++) {

mDynamicArray[i] = srcArray.mDynamicArray[i];

}

}

DynamicStringArray& DynamicStringArray:: **operator**=(**const** DynamicStringArray &srcArray) {

mSize = srcArray.mSize;

mDynamicArray = **new** string[mSize];

**for** (**int** i = 0; i < mSize; i++) {

mDynamicArray[i] = srcArray.mDynamicArray[i];

}

**return** \***this**;

}

**void** DynamicStringArray::addEntry(**const** string &entry) {

string \*tempArray = mDynamicArray;

mSize++;

mDynamicArray = **new** string[mSize];

**if** (tempArray != **nullptr**) {

**for** (**int** i = 0; i < mSize - 1; i++) {

mDynamicArray[i] = tempArray[i];

}

**delete** [] tempArray;

}

mDynamicArray[mSize - 1] = entry;

}

**int** DynamicStringArray::getNumMatchingEntries(**const** string &entry) **const** {

**int** numEntries = 0;

**if** (mSize > 0) {

**for** (**int** i = 0; i < mSize; i++) {

**if** (mDynamicArray[i] == entry) {

numEntries++;

}

}

}

**return** numEntries;

}

**bool** DynamicStringArray::deleteEntry(**const** string &entry) {

string \*tempArray = mDynamicArray;

**int** numEntries = getNumMatchingEntries(entry);

**int** newSize = mSize - numEntries;

**if** (numEntries) {

mDynamicArray = **new** string[newSize];

**for** (**int** i = 0, j = 0; j < newSize && i < mSize; i++) {

**if** (tempArray[i] != entry) {

mDynamicArray[j] = tempArray[i];

j++;

}

}

**delete** [] tempArray;

mSize = newSize;

}

**else** {

**return** **false**;

}

**return** **true**;

}

Output:



