//comsc 200

// completed

// main.cpp

// 6d dateClass

//

// Created by Jeff on 9/21/16.

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//

//====================================================

// testDate.cpp

// Chapter 14, Programming Challenge 8: Date Class Modification

#include <iostream>

#include "date.h"

using namespace std;

// Test Date Class

int main()

{

// Demonstrate the overloaded - and << operators.

Date d1(12, 25, 2014);

Date d2; // default day

// declared ostream & istream in date.h, then d1 can be called dirtectly

cout << "\n Date d1(12, 25, 2014); ===> " << d1 <<endl;

//d1.showDate();

cout<< "\nDate d2; default today ===> "

<<d2 <<endl;

// d2.showDate();

cout<<endl;

// overload -

cout << d1 << " minus " << d2 << " equals " << d1 - d2 << " days\n";

Date d3(12, 31, 2014);

// Demonstrate the overloaded ++ operators.

cout << "\n\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_"

<< "\nNew d3 as " << d3;

cout << "\n ++d3 is " << ++d3

<< "\n d3(stm) " << d3;

cout << "\n d3 is " << d3;

cout << "\n d3++ is " << d3++

<< "\n d3(stm) " << d3;

cout << "\n d3 is " << d3;

d1.setMonth(1);

d1.setDay(1);

d1.setYear(2015);

// Demonstrate the overloaded -- operators.

cout << "\n\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_"

<< "\nSet d1 as " << d1;

cout << "\n --d1 is " << --d1

<< "\n d1(stm) " << d1;

cout << "\n d1 is " << d1;

cout << "\n d1-- is " << d1--

<< "\n d1(stm) " << d1;

cout << "\n d1 is " << d1 << endl;

while(true) {

// Demonstrate the overloaded >> operator.

cout << "\nTest a valid Date entry, 0th month to exit.\n";

cin >> d1;

if(d1.getMonth() == 0) break;

if(!d1.valid()==false) {

cout << "Not a valid date!\n";

continue;

}

cout << "You entered " << d1 << endl;

}

cout << "\nProgram exit!";

return 1;

}

// comcs 200

// completed

//

// date.h

// 6d dateClass

//

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//

#ifndef date\_h

#define date\_h

#include <string>

#include <cstdlib>

#include <iostream>

//const int NUM\_MONTH = 12;

using namespace std;

class Date;

ostream &operator << (ostream &, const Date &);

istream &operator >> (istream &, Date &);

static const string monthNames[] ={"January","February","March","April","May","June","July","August","September","October","November","December"};

static const int daysInMonth[] = {31, 28, 31, 30, 31, 30, 31, 31, 30, 31, 30, 31};

class Date{

private:

int month,day,year;

// int daysInyear[] = {0,31,59,90};

public:

Date(){

month = 9;

day = 21;

year = 2016;

}

Date(int m,int d, int y){

month=m;

day=d;

year=y;

}

Date(Date &d){

month =d.month;

day = d.day;

year = d.year;

}

int getDay(){

return day;

}

int getMonth(){

return month;

}

int getYear(){

return year;

}

void setDay(int d){

day = d;

}

void setMonth(int m){

month = m;

}

void setYear(int y){

year = y;

}

string getMonthName(){

return monthNames[month-1];

}

bool valid(){

if(month>12)

return false;

else if (day > 31)

return false;

else

return true;

}

void showDate(){

cout << getMonthName() << day << "," <<year<<std::endl;

}

//prefix

friend ostream &operator << (ostream &strm, const Date &obj){

strm << monthNames[obj.month - 1] << " " << obj.day << ", " << obj.year;

return strm;

}

friend istream &operator >> (istream &strm, Date &obj){

cout << "\nEnter a Date";

cout << "\n the month: ";

strm >> obj.month;

// if(obj.month > 12 || obj.month <= 0) exit(EXIT\_FAILURE);

cout << " the day: ";

strm >> obj.day;

cout << " the year: ";

strm >> obj.year;

if(obj.month > 12 || obj.month <= 0 || obj.day > daysInMonth[obj.month - 1]) cout << "Not a valid date!";

return strm;

}

int operator-(const Date &right){

int totalDays1;

int totalDays2;

int diff;

totalDays1 = day;

totalDays2 = right.day;

diff = year - right.year;

if(diff < 0){

totalDays2 += 365 \* abs(diff);

}

else{

totalDays1 += 365\*diff;

}

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

totalDays1 += daysInMonth[i];

}

for(int i = 0; i <= right.month - 1; i++){

totalDays2 += daysInMonth[i];

}

return (totalDays1-totalDays2);

}

Date operator++(){

++day;

if(day > daysInMonth[month - 1] && month != 12){ day = 1; ++month;}

else if(day > daysInMonth[month - 1]){ day = 1; month = 1; ++year;}

return \*this;

}

Date operator++(int){

Date temp(\*this);

temp.day++;

if(temp.day > daysInMonth[temp.month - 1] && temp.month != 12){ temp.day = 1; temp.month++;}

else if(day > daysInMonth[temp.month - 1]){ temp.day = 1; temp.month = 1; temp.year++;}

return temp;

}

Date operator--(){

--day;

if(day <= 0 && month != 1){ day = daysInMonth[month - 2]; --month;}

else if(day <= 0){ month = 12; day = daysInMonth[month - 1];}

return \*this;

}

Date operator--(int){

Date temp(\*this);

temp.day--;

if(day <= 0 && month != 1){ day = daysInMonth[month - 2]; month--;}

else if(day <= 0){ month = 12; day = daysInMonth[month - 1];}

return temp;

}

};

#endif /\* date\_h \*/

