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C++

Week 5

Chapter 11 Programming Exercise 1:

*// Author: Clint Klename: Wk5Pt2.cpp*

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*// Purpose: homework*

#include <iostream>

using *namespace* std;

*class* clockType

{

*// public:*

*//     void setTime(int, int, int);*

*//     void getTime(int &, int &, int &) const;*

*//     void printTime() const;*

*//     void incrementSeconds();*

*//     void incrementMinutes();*

*//     void incrementHours();*

*//     bool equalTime(const clockType &) const;*

*public:*

*int* hr;

*int* min;

*int* sec;

*void* setTime(*int* *hours*, *int* *minutes*, *int* *seconds*)

    {

        if (0 <= *hours* && *hours* < 24)

            hr = *hours*;

        else

            hr = 0;

        if (0 <= *minutes* && *minutes* < 60)

            min = *minutes*;

        else

            min = 0;

        if (0 <= *seconds* && *seconds* < 60)

            sec = *seconds*;

        else

            sec = 0;

    }

*void* getTime(*int* *&hours*, *int* *&minutes*, *int* *&seconds*) *const*

    {

*hours* = hr;

*minutes* = min;

*seconds* = sec;

    }

*void* printTime() *const*

    {

        if (hr < 10)

            cout << "0";

        cout << hr << ":";

        if (min < 10)

            cout << "0";

        cout << min << ":";

        if (sec < 10)

            cout << "0";

        cout << sec;

    }

*void* incrementHours()

    {

        hr++;

        if (hr > 23)

        {

            hr = 0;

        }

    }

*void* incrementMinutes()

    {

        min++;

        if (min > 59)

        {

            min = 0;

            incrementHours();

        }

    }

*void* incrementSeconds()

    {

        sec++;

        if (sec > 59)

        {

            sec = 0;

            incrementMinutes();

        }

    }

*bool* equalTime(*const* clockType *&otherClock*)

    {

        return (hr == *otherClock*.hr && min == *otherClock*.min && sec == *otherClock*.sec);

    }

};

*class* extClockType : *public* clockType

{

*public:*

    string timeZone;

    string findTimeZone()

    {

        cout << "Enter the time zone:  " << endl;

        cout << ">> ";

        cin >> timeZone;

        return timeZone;

    }

};

*int* main()

{

    clockType myClock;

    clockType yourClock;

    extClockType extendedClock;

*int* hours;

*int* minutes;

*int* seconds;

    string timeZone;

    myClock.setTime(5, 4, 30);

    cout << "\nmyClock: ";

    myClock.printTime();

    cout << endl;

    cout << "before setting yourClock: ";

    yourClock.printTime();

    cout << endl;

    yourClock.setTime(5, 45, 16);

    cout << "After setting yourClock: ";

    yourClock.printTime();

    cout << endl;

    if (myClock.equalTime(yourClock))

        cout << "Both times are equal."

             << endl;

    else

        cout << "Both times are not equal."

             << endl;

    cout << "Enter the hours, minutes, and seconds: " << endl;

    cout << "hours: ";

    cin >> hours;

    cout << "minutes: ";

    cin >> minutes;

    cout << "seconds: ";

    cin >> seconds;

    cout << endl;

    extendedClock.findTimeZone();

    myClock.setTime(hours, minutes, seconds);

    cout << "\nNew myClock: ";

    myClock.printTime();

    cout << " " << extendedClock.timeZone << endl;

    myClock.incrementSeconds();

    cout << "After incrementing myClock by one second, myClock: ";

    myClock.printTime();

    cout << " " << extendedClock.timeZone << endl;

    myClock.getTime(hours, minutes, seconds);

    cout << "hours = " << hours

         << ", minutes = " << minutes

         << ", seconds = " << seconds

         << timeZone << endl;

    return 0;

}

