//

// main.cpp

// as2

//comsc 200

//status: complete

// Created by Jeff on 8/22/16.

// Copyright © 2016 Jeff zhang. All rights reserved

#include <iostream>

#include <string>

#include <iomanip>

#include <cmath>

#include <math.h>

#include <stdio.h>

using namespace std;

class Angle{

private:

int degrees, minutes;

double seconds;

char direct;

public:

//constructor

Angle (double gps,int latlong){

//latlong = 0 for N/S latitude, 1 for E/W longitude

int d\_part,m\_part;

double s\_part;

char dir\_part;

double degTemp, minTemp;

int temp = gps;

temp = modf(temp,&degTemp);

temp = temp\*60.0;

temp = modf(temp,&minTemp);

s\_part = temp\*60.0;

d\_part = degTemp;

m\_part = minTemp;

if(latlong == 0)

dir\_part =((gps>0)?'N':'S');

else

dir\_part = ((gps>0)?'E':'W');

// Angle\* converted = new Angle(d\_part,m\_part,s\_part,dir\_part);

//return \*converted;

degrees = d\_part;

minutes = m\_part;

seconds = s\_part;

direct = dir\_part;

}

Angle(){degrees=0;minutes=0;seconds=0;direct='N';};

Angle(int d,int m,double s, char dir){

degrees=d;minutes=m;seconds=s;direct=dir;

}

Angle(Angle &a){

degrees = a.degrees;

minutes =a.minutes;

seconds = a.seconds;

direct = a.direct;

};

//setters

void setDegrees(int d) {degrees=d;};

void setMinutes(int m) {minutes=m;};

void setSeconds(double s){seconds=s;};

void setDirect(char dir){direct=dir;};

//getter

int getDegrees() {return degrees;};

int getMinutes() {return minutes;};

double getSeconds(){return seconds;};

char getDirect(){return direct;};

//features

void print(){

cout<<std::setprecision(4)<<degrees << " ^0" << seconds << "' " << minutes << "\""<<direct ;

};

};

Angle convertGPS(double gps,int latlong){

//latlong = 0 for N/S latitude, 1 for E/W longitude

int d\_part,m\_part;

double s\_part;

char dir\_part;

double degTemp, minTemp;

int temp = gps;

temp = modf(temp,&degTemp);

temp = temp\*60.0;

temp = modf(temp,&minTemp);

s\_part = temp\*60.0;

d\_part = degTemp;

m\_part = minTemp;

if(latlong == 0)

dir\_part =((gps>0)?'N':'S');

else

dir\_part = ((gps>0)?'E':'W');

Angle\* converted = new Angle(d\_part,m\_part,s\_part,dir\_part);

return \*converted;

}

int main() {

// insert code here...

double lat,lon;

Angle latA,lonA;

cout <<"\n\n Enter GPS- style coordinates: " << endl << "Latitude: (+/- 0-90.00): ";

cin >> lat;

cout <<"\n\n Enter GPS- style coordinates: " << endl << "Longitude: (+/- 0-180.00): ";

cin >> lon;

latA = convertGPS(lat, 0);

lonA = convertGPS(lon,1);

cout << "conver from GPS to DMS, " <<lat << "," <<lat << "," << lon << "is : " <<endl;

latA.print();

cout << "," ;

lonA.print();

cout <<"\n\n Enter GPS- style coordinates: " << endl << "Latitude: (+/- 0-90.00): ";

cin >> lat;

Angle latC(lat,0);

cout <<"\n\n Enter GPS- style coordinates: " << endl << "Longitude: (+/- 0-180.00): ";

cin >> lon;

Angle lonC(lon,0);

latC.print();

cout << " , ";

lonC.print();

return 0;

}

