Delta College

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Abstract

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Program 4 – Windchill 2

Brett Kriz

// PROGRAM 4

// Windchill2

// Brett Kriz

#include <iostream>

#include <iomanip>

#include <cmath>

#include <string>

using namespace std;

void input();

void out(string arg);

void out(double arg);

void error(string arg);

double calculate(double ws, double t);

int round\_off(double arg);

void AdviseOut();

void body();

double temp,windspd, windchill;

int main()

{

system("title PROG 4 - Windchill 2");

system("color 0A");

body();// for show

system("pause");

return 0;

}

void body()

{

// Code body

input();

cout << "\n\n";

windchill = calculate(windspd, temp); // Even though my variables are declared in the header

AdviseOut();

}

void input()

{

bool f1,f2;

// TEMP

do{

cout << "Tempurature: ";

cin >> temp;

f1 = (temp < -40 || temp > 40);

if (f1){ error("Bad TEMP! Must be between -40 and 40\n");}

}while (f1);

// WIND SPEED

do{

cout << "Wind Speed: ";

cin >> windspd;

f2 = (windspd < 0 || windspd > 60);

if (f2){ error("Bad SPEED! Must be between 0 and 60\n");}

}while (f2);

}

double calculate(double ws, double t)

{

double ans;

// Soooo ya

ans = double(35.74 + (0.6215\*t)-(35.75\* pow(ws,0.16))+(0.4275\*t\*pow(ws,0.16)));

ans = round\_off(ans);

// I would out but...

cout << "Windchill: " << fixed << setw(7) << setprecision(3) << ans << " degrees\n";

return ans;

}

int round\_off(double arg)

{

if (arg == 0.00){return 0;}

int ans;

// More of a ceil

if (arg > 0) {

ans = int(arg+0.5);

}else{

ans = int(arg-0.5);

}

return ans;

}

void AdviseOut()

{

string ans = "", t; // t was going to be used and still might

double x = windspd; // for shorthand

if (x < -48){

ans = "Life threatening: Frostbite can occur within 5 minutes.";

system("title Life threatening: Frostbite can occur within 5 minutes.");

}else if (x >= -48 && x <= -31){

ans = "Danger: Frostbite can occur within 10 minutes.";

system("title Danger: Frostbite can occur within 10 minutes.");

}else if (x >= -30 && x <= -13){

ans = "Warning: Frostbite can occur within 30 minutes.";

system("title Warning: Frostbite can occur within 30 minutes.");

}else if (x >= -12 && x <= 17){

ans = "Advisory: Frostbite can occur with extended exposure.";

system("title Advisory: Frostbite can occur with extended exposure.");

}else if (x >= 18 && x <= 39){

ans = "Notice: Wear cold weather clothing as needed for comfort.";

system("title Notice: Wear cold weather clothing as needed for comfort.");

}else{

ans = "No significant cold weather risk. Go play outside!"; // LOL

system("title Go play outside \t\t lol");

}

out(ans);

out("\n\n");

}

void error(string arg)

{

cout << "\n[!] ERROR! " << arg << endl;

}

void out(string arg)

{

cout << arg << endl;

}

void out(double arg)

{

cout << arg << endl;

}

TESTS: 