Distance.h

```
#ifndef DISTANCE_H
#define DISTANCE_H
#include <istream>
#include <ostream>

class Distance //English Distance class
{
private:
	int feet;
	float inches;
public: //constructor (no args)
	Distance() : feet(0), inches(0.0)
	{ } //constructor (two args)
	Distance(int ft, float in) : feet(ft), inches(in)
	{ }
	//Distance(float allc);
	Distance operator+(const Distance & dis2) const;
	friend Distance operator-(Distance d1, Distance d2);
	friend std::ostream& operator<<(std::ostream& out, const Distance& d);
	friend std::istream & operator>>(std::istream & in, Distance & d);
};

#endif // !DISTANCE_H
```

Distance.cpp

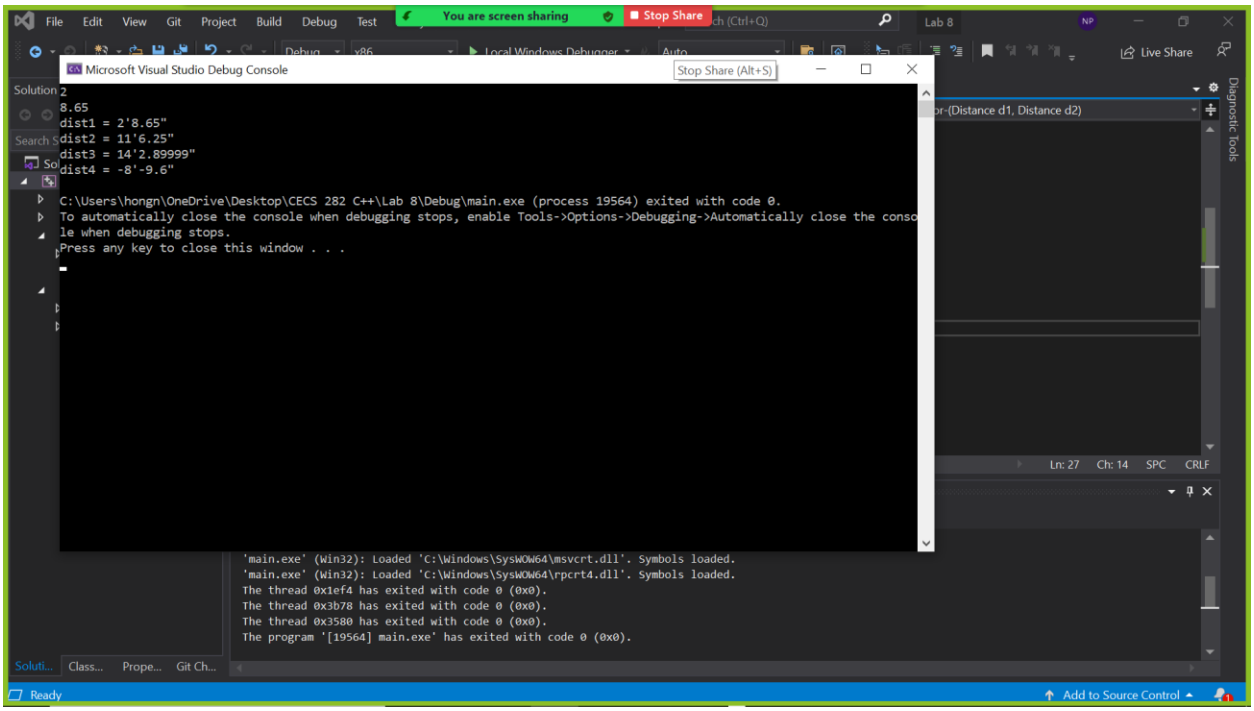
```
#include "Distance.h"
#include <iostream>
#include <istream>
#include <ostream>
using namespace std;

Distance Distance::operator+(const Distance& dis2) const
{
    float total = (feet * 12 + inches) + (dis2.feet * 12 + dis2.inches);
    int ft = std::floor(total / 12);
    float in = total - 12 * ft;
    Distance local(ft, in);
    return local;
}

Distance operator-(Distance d1, Distance d2)
{
    Distance d;
    float result = (d1.feet * 12 + d1.inches) - (d2.feet * 12 + d2.inches);
    if ((d1.feet * 12 + d1.inches) >= (d2.feet * 12 + d2.inches)) {
        d.feet = std::floor(result / 12);
    }
    else {
        d.feet = std::ceil(result / 12);
    }
    d.inches = result - 12 * d.feet;
    return d;
```

```
}

ostream& operator<<(ostream& out, const Distance& d)
{
    out << d.feet  << "'" << d.inches << "\"";
    return out;
}

istream& operator>>(istream& in, Distance& d)
{
    in >> d.feet >> d.inches;
    return in;
}
```

Main.cpp

```
#include "Distance.h"
#include <iostream>
using namespace std;

int main()
{
	Distance dist1, dist3, dist4; //define distances
	cin >> dist1;
	Distance dist2(11, 6.25); //define, initialize dist2
	dist3 = dist1 + dist2; //single '+' operator
	dist4 = dist1 - dist2; //friend '-' operators
	//display all lengths
	cout << "dist1 = ";
	cout << dist1 << endl;
	cout << "dist2 = ";
	cout << dist2 << endl;
	cout << "dist3 = ";
	cout << dist3 << endl;
	cout << "dist4 = ";
	cout << dist4 << endl;
	return 0;
}
```

Demonstrated at 11:26 am on 10/14/2021


File Edit View Git Project Build Debug Test
You are screen sharing
Stop Share
Lab 8
Live Share
Microsoft Visual Studio Debug Console
Stop Share (Alt+S)
2
8.65
dist1 = 2'8.65"
dist2 = 11'6.25"
dist3 = 14'2.89999"
dist4 = -8'-9.6"
C:\Users\hongn\OneDrive\Desktop\CECS 282 C++\Lab 8\Debug\main.exe (process 19564) exited with code 0.
To automatically close the console when debugging stops, enable Tools->Options->Debugging->Automatically close the conso
le when debugging stops.
Press any key to close this window . . .
-(Distance d1, Distance d2)
Ln: 27 Ch: 14 SPC CRLF
'main.exe' (Win32): Loaded 'C:\Windows\SysWOW64\msvcrt.dll'. Symbols loaded.
'main.exe' (Win32): Loaded 'C:\Windows\SysWOW64\rpcrt4.dll'. Symbols loaded.
The thread 0x1ef4 has exited with code 0 (0x0).
The thread 0x3b78 has exited with code 0 (0x0).
The thread 0x3580 has exited with code 0 (0x0).
The program '[19564] main.exe' has exited with code 0 (0x0).
Ready
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