

CIS 330: Project #1C

Assigned: April 12th, 2017

Due April 17th, 2017

(which means submitted by 6am on April 18th, 2017)

Worth 2% of your grade

Assignment: Download the file "Proj1C.tar". This file contains a C-based project. You will build a Makefile for the project, and also extend the project.

What's in the tar file?

When you untar the file ("tarball"), you will see:

- math330.h: the header file for the "math330 library"
- .c files in the trig and exp directories: the source files for the "math330 library"
- cli.c: a program that uses the "math330 library"

What is your assignment?

- (1) Build a Makefile for math330
- (2) Extend the math330 library

Details for both below.

IMPORTANT: this project will be graded on ix.cs.uoregon.edu. If your project does not work there, you will likely be docked significantly.

== Build a Makefile for math330 ==

Your Makefile should:

- (1) create an include directory
- (2) copy the Header file to the include directory
- (3) create a lib directory
- (4) compile the .c files in trig and exp as object files (.o's)
- (5) make a library
- (6) install the library to the lib directory
- (7) create a bin directory. "bin" is short for binary and it is where binary files are stored for later execution
- (8) compile the "cli" program against the include and library directory. The cli program should be compiled so that it is created in the bin directory.

When your Makefile does all of these things, then you have completed the first step.

NOTE: "mkdir include" fails if you call it twice in a row, since the 2nd invocation will complain that "include" already exists. But "mkdir -p" will not fail on the 2nd invocation. Do "man mkdir" to learn more. (And this tip is helpful if you are developing your Makefile and you start running it more than one time.)

== Extend the math330 library ==

You should:

- (1) add 3 new functions: arccos, arcsin, and arctan (each in their own file)
- (2) Extend the “cli” program to support these functions
- (3) Extend your Makefile to support the new functions

What to turn in:

When you are done, create a new tarball:

```
% ls # demonstrate that the current working directory contains Proj1C
Proj1C
% tar cvf Proj1C.tar Proj1C # command for tarring up Proj1C.tar
```

Then submit Proj1C.tar

Before you submit, you may want to test your code on ix.

```
% scp Proj1C.tar username@ix.cs.uoregon.edu
% ssh -l username ix.cs.uoregon.edu
% tar xvf Proj1C.tar # shell is now on ix
% cd Proj1C
% make
% ./bin/cli cos 60
```