

Debugging Programs with DDD

Project #5

[Due by February 19th]

Often, scientific programming projects benefit from a joint development effort by a collaborative group. One way to distribute and maintain the development source code is through software repository utility programs. The *Concurrent Versions System*, *cvs*, is a popular and an open source version control system. We will use *cvs* to retrieve the code for a program which intends to calculate the sum of powers of positive integers:

$$\sum_{x=1}^n x^p = 1^p + 2^p + 3^p + \dots + n^p$$

Before using *cvs*, you will need to set the `CVSROOT` environmental variable. From the Linux shell execute “`setenv CVSROOT /export/home/crede/comphy/cvs/`”. Note that every time you open a new terminal window you will need to set this environmental variable. Alternatively, you could modify your `.cshrc` file to include this command. Now create a directory where you want to work on this exercise and check out the *cvs* package *debug* via the command “`cvs checkout debug`”. You should now have a directory called *debug* with several `src` files. Use *make* to build the program *mysum* via “`make mysum`”. Use an editor to modify the file named *Makefile* so that it now includes the `debug` option when building the program *mysum*. Now execute “`make clean`” (see the *Makefile* on what this does) and then execute “`make mysum`” again.

Modify the `src` code to fix any compiler warnings. Now execute the program via “`./mysum <integer> <power>`” where `<integer>` and `<power>` are integer values. For example: “`./mysum 2 3`” should return the sum of 1^3+2^3 .

Note there are several bugs in the code to fix. Use the *ddd* debugger to debug your *mysum* program. Some bugs cause the program to crash (segmentation fault) whereas others cause faulty results.

In addition, **format and comment the source code to our conventions.**

Post the exercise to your computational physics website. Create an html page for Project 5. Create a link from your main project web page to this html page. This html page should include the following heading information: exercise title, exercise number, your name, & today’s date. The main content of this page should include the following:

- a short description of the exercise with a list of bugs corrected
- links to your final source code files
- a text region which contains the actual source code text
- a text region with the program outputs

***For text regions use the html object tag; example:

```
<object width="600" height="400" type="text/plain" data="ex1_part2.cc" border="0"
></object>
```