

# CS 300 Valgrind Lab

1. Make sure that the correct SVN interface is selected:
  - a. Go to Window->Preferences
  - b. Type SVN in the search box
  - c. Change the SVN interface. Client: SVNKit (Pure Java) SNVKIT V1.8.8.10419
2. Import the Valgrind lab project into Eclipse
  - a. File->Import->SVN->Checkout Projects from SVN->Create a new repository location
  - b. URL: `svn+ssh://zeus.cs.pacificu.edu/home/CS300Public/2015/SVNROOT_CS300_2015`
  - c. Type in your password
  - d. Select folder: CS300ValgrindLab
  - e. Check out as a project in the workspace
3. Disconnect from the public repository:
  - a. Right click on project->Team->Disconnect
  - b. SELECT: Also delete the SVN meta information from the file system
4. Connect the project to your repository
  - a. Right click on project->Team->Share Project->SVN
  - b. URL: your own repository
  - c. Commit the project

The lab contains two C files, `dynamicArrays.c` and `dynamicList.c`, a Makefile and a data file, `numbers.txt`. You must find and fix memory errors in both files.

We will use Valgrind to profile the code and see where some errors come from.

5. Build the project:
  - a. Check the console to make sure that there are no errors.
6. Run `dynamicArrays` from inside Eclipse.
  - a. Right click on the project -> Run As -> Local C/C++ Application -> `dynamicArrays`.
  - b. What happens in the Console tab? Very often if you have memory errors you will get no output on the console inside Eclipse.
7. Run `dynamicArrays` from the command line
  - a. `cd workspace/CS300ValgrindLab/bin`
  - b. `./dynamicArrays`
  - c. What is displayed?
8. Run `dynamicArrays` through `valgrind` at the command line
  - a. `valgrind -v --leak-check=yes ./dynamicArrays`
  - b. or
  - c. `make valgrinda`
  - d. What is displayed?

9. Run Valgrind in Eclipse
  - a. Right Click dynamicArrays->Profiling Tools->Profile with Valgrind
  - b. Select dynamicArrays
  - c. In the Valgrind tab, look for lines of code in your source files (not in /libc-2.X.so)
  - d. What line(s) have errors?
  
10. Fix errors! Iterate! Memory errors may mask other memory errors!
  - a. For EACH fix you make, check your code into subversion documenting the fix. That is, you changed from what to what.
  
11. Run Valgrind on your StaticStack. Show me the result of the first run.
  
12. Run Valgrind on your DynamicStack. Run valgrind. Show me the result of the first run.