Debugging with the GNU Debugger (gdb)

- **Compiling your program.** For C programs, use the `-g` option for the gcc compiler. For `C++` programs use the `-g -gstabs+` options to the `g++` compiler.
- **Using the debugger.** We will look at the following topics.
  - Starting your program under the debugger. Specifying command line arguments.
  - Stopping your program on specified places and conditions. Setting breakpoints, setting conditional breakpoints, watching variables etc.
  - Stepping through a program: instruction at a time, line at a time, over functions etc.
  - Examining what has happened, when your program has stopped. Looking at the stack frames, values of variables etc.
  - Modifying variables in your program.
  - Attaching the debugger to programs that are already running!
- **Documentation.**
  - The `gdb` debugger has extensive on-line help that can be accessed by typing in `help` at the `gdb` prompt.
  - A two page reference card is available.
  - The complete reference manual is available in HTML.

  Please check the links on your class home page for the reference card and the complete manual.

Profiling your program with the GNU Profiler (gprof)

- Compile your program with the option `-pg` (either with the `g++` or the `gcc` compiler). Run your program, which produces an extra file called `gmon.out`. Then run the following command to produce profiling information.

  `gprof a.out`

  where `a.out` is the name of your executable that you ran to profile.