**Overview**

- **DDD** – Data Display Debugger
- Graphical user interface for Gnu **gdb**
  - can be used with other debuggers, too
- Execute a program in a controlled way
  - Start the program
  - Stop the program on specified conditions (**breakpoints**)
  - Examine data structures and source code
  - Modify data while debugging
- Invoke by
  
  ddd -program, e.g. ddd nachos

**Start Execution**

- Select *Run* from the toolbar
- or

  - Select *Program - Run ...* from the menu
    - Here you can give arguments to the program

**Breakpoints & Data Display**

- Select a line of code and click the *Break* button in the toolbar
- or

  - Right-click the leftmost part of a program line and select *Set Breakpoint* from the popup-menu
- Temporary breakpoints are removed after the first time the execution stopped at this line

**Debugging**

- After stopping at a breakpoint
  - Select *Step* from the toolbar to proceed stepwise and step into function calls
  - Select *Next* from the toolbar to proceed stepwise without stepping into function calls
  - Select *Cont* from the toolbar to continue execution until the next breakpoint or the end of the program
Displaying Data Details

- Move the cursor over an item in the source window, the value is then displayed as a popup.
- Double-click in the display area to show more data structures.

Tips

- Get used to it with a simple C program.
- Read documentation from the homepage.
- To open a source file, use "File->Open Source..." menu.

Using stack backtrace

- Use "Status->Backtrace..." menu option: (you can double-click on a function to open the corresponding code.)