

# MEMWATCH

created by Stef Nychka

Department of Computing Science  
University of Alberta

October 7, 2008

# Overview

- 1 Setting up MEMWATCH
- 2 Testing MEMWATCH
- 3 Symptoms
  - Compilation Errors and Messages
  - No memwatch.log
  - Double-check include
- 4 Reading memwatch.log
- 5 Exceptions

# Setting up MEMWATCH

- TA'll cover how to use MEMWATCH:
  - 1 Go to MEMWATCH tutorial (top of home page, under Tutorials)
  - 2 Download mem\_eg.tar.gz and extract sample code (Please follow along.)
  - 3 TA will discuss 4 steps at MEMWATCH tutorial.
  - 4 TA will basically apply these 4 steps to the sample code. (Please follow along. See README from mem\_eg.tar.gz if needed.)
- If you follow these, then there will be no problems (4 known minor exceptions will be mentioned later).
- Yet, it's easy to make mistakes ...

# Testing MEMWATCH

- After incorporating MEMWATCH into your asn2 code, test right away to help ensure MEMWATCH is working. Do the following:

put two lines at beginning of main function

```
char* aByte = malloc(1);
```

(include stdlib.h, and do not free what aByte points to)

- If do not get 1 ANOMOLY, then you must have a mistake. Redo 4 steps, and ask TA if needed.
- (Remove above lines from your code once MEMWATCH is working.)
- TA will show using sample code, by compiling, then running memEG. (Please follow along.)

# Compilation Errors and Messages

- Certain compile errors usually indicate problems with your make file.
- If an error says "undefined reference to mw function", like `mwAlloc`, likely you are not linking `memwatch.o` into executable.
  - TA will show, and you can follow along (1st type `make clean`, then make appropriate modifications, then compile)
- if notice `cc` instead of `gcc` when compiling, likely didn't compile `memwatch.c`
  - TA will show, and you can follow along (`make clean` 1st, modify, compile)

# No memwatch.log

- A memwatch.log file is updated after each program run.
- If memwatch.log is not updated (normally just use `ls -l`)

```
ls --full-time memwatch.log
./memEG
ls --full-time memwatch.log
```

it may be because you

- forgot to use or misspelled MEMWATCH -D options, or
- haven't included memwatch.h in at least 1 .c file

(If you have anomalies, no message about anomalies to stdout is also an indicator)

- TA will show, and you can follow along (remember `make clean`, and misspell MEMWATCH option for `memEG.c`)
- Note if you aren't allocating memory, you will not get a memwatch.log

# Double-check include

- If you haven't included `memwatch.h` in each C file, you can get many symptoms
  - `memwatch.log` not updated.
  - Incorrect anomalies reported (and `memwatch.log` updated).
  - Perhaps even run time errors.

Always double-check that you've properly included `memwatch.h`

# Reading memwatch.log

- Now that things are working, you can read memwatch.log for more info.
- Basically, it gives the line number of the error and a brief description of error.
- Likely not perfect info. in memwatch.log, but it helps.
- TA will show.
- For more info., search memwatch.h for the first occurrence of "MEMWATCH.LOG".



# Exceptions

- The previously mentioned minor exceptions (i.e., things that do not work with MEMWATCH):
  - Basically, do not use `strndup`.
  - Basically, do not use `atexit`.
  - Basically, do not use `getline` or `getdelim`(First 2 are C standard library functions, last 2 are GNU extensions.)