Defect Analysis

CPRE 556: Lecture 4

Summary: Types of Defects

- Last time we listed the following types of defects:
  - Memory leaks
  - Dangling pointers
  - Uninitialized pointers
  - Segmentation faults
  - Floating point problems such as division by zero
  - Segmentation fault (e.g. an array index goes beyond the array bound)
  - Deadlocks
  - Race conditions

Our Goal

- Defect analysis strategies that will work with large software.
- We want to get insights into the thinking process behind designing such strategies – ability to design new strategies to address new defect scenarios.
- Qualifying the strategies – how scalable, sound and complete are the strategies?
- Experience of applying the strategies to real-world software.

Starting with an example

- I have selected a routine called *dswrite* from the Xinu operating system. The routine has a *getbuf()* call that allocates memory.
- We want to know if there is a memory leak in this case, i.e., is the allocated memory released later.
- Our discussion will be:
  - What code should we examine? Why?

Homework

- The first homework is posted on the web.
- Type the answer and send the answer to me by next Thursday (1/26), 2 pm.
- Mail a PDF or MS Word document to: kothari@iastate.edu