



# Systems and Internet Infrastructure Security

Institute for Networking and Security Research  
Department of Computer Science and Engineering  
Pennsylvania State University, University Park, PA



## Midterm 2 Review

Devin J. Pohly <djpohly@cse.psu.edu>

# Format

- Roughly...
- 1/3 knowledge
  - 3pts each
  - Short answer, at most a sentence.
- 1/3 synthesis
  - 5-6pts each
  - Two or three sentences, or a diagram
- 1/3 comprehension
  - ~10pts each
  - More detailed answers, diagrams, etc.



# Material

- Anything since the end of the previous midterm's material
  - If it was covered again, it may be tested again
  - Anything learned on the assignment
  - As always, a portion will come from the *readings!*
- The most important things are those which got the most coverage



# Lecture material

- Strings
  - Arrays/pointers
  - Initializing strings
  - String functions
- Bits and bytes
  - Endianness
  - Boolean algebra
  - Bitwise operations
- Shell programming
  - Return value/exit status
  - Conditionals and command lists
  - For and while loops





# Lecture material

- Memory management
  - Box/arrow diagrams
  - Pointer arithmetic
  - Pointers to pointers
  - Memory manipulation functions
  - Scope and lifetime
  - Static vs. automatic vs. dynamic allocation
  - Memory management functions (malloc, free, and friends)
  - The program break
  - Memory mapping files
  - Memory mapping pages



# Lecture material

- Regular expressions
- Debugging
  - Assertions
  - What is a debugger?
  - Breakpoints
  - Stack navigation
  - Stepping
  - Debugging workflows
- I/O (part I)
  - Buffering and blocking
  - Terminal I/O
  - Paths
  - File I/O functions



# Open questions

