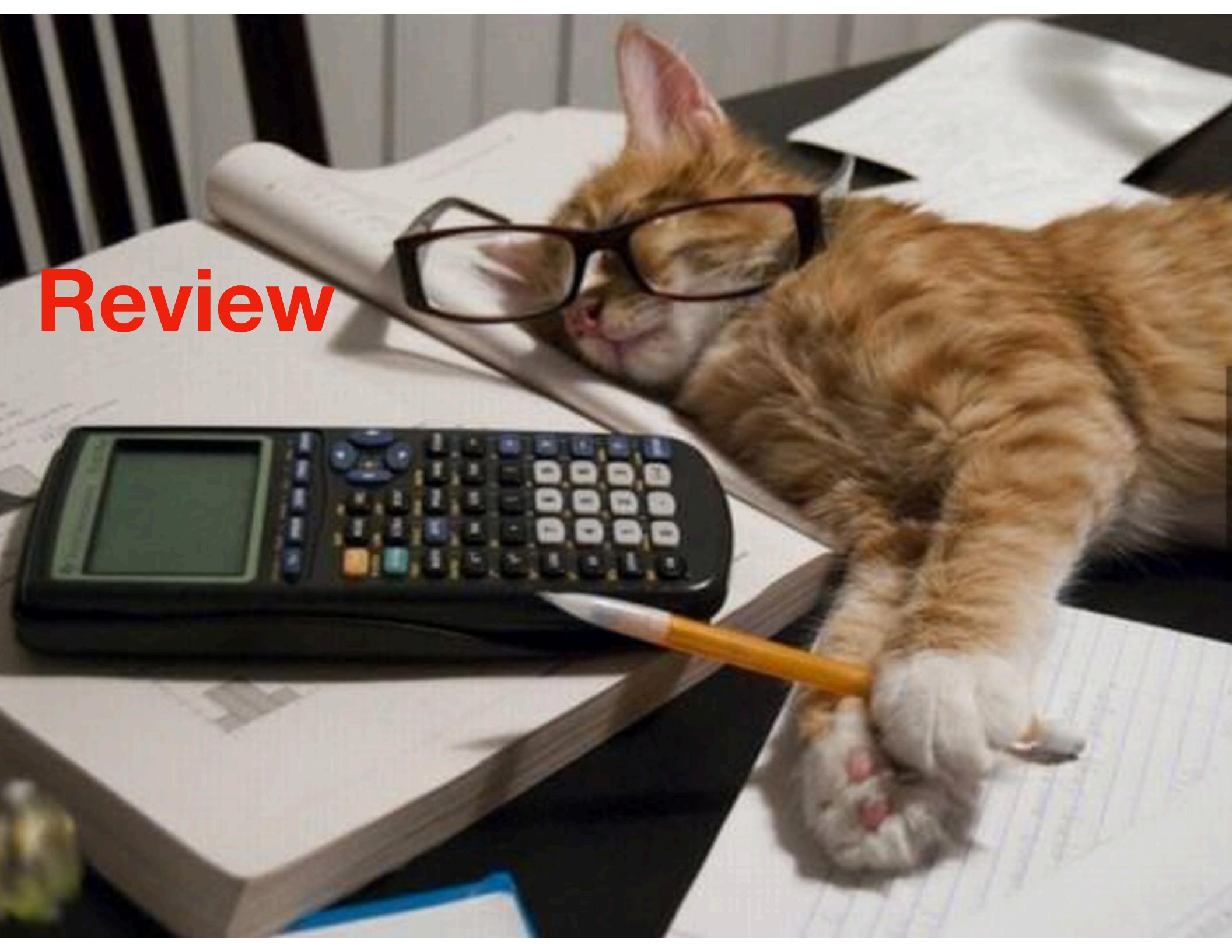


Review



Study Hints

- **Reading Code**
 - Find all the code in the lecture notes, text, labs, and assignments and read them.
 - Read the code out loud.
 - Explain the code as you read it.

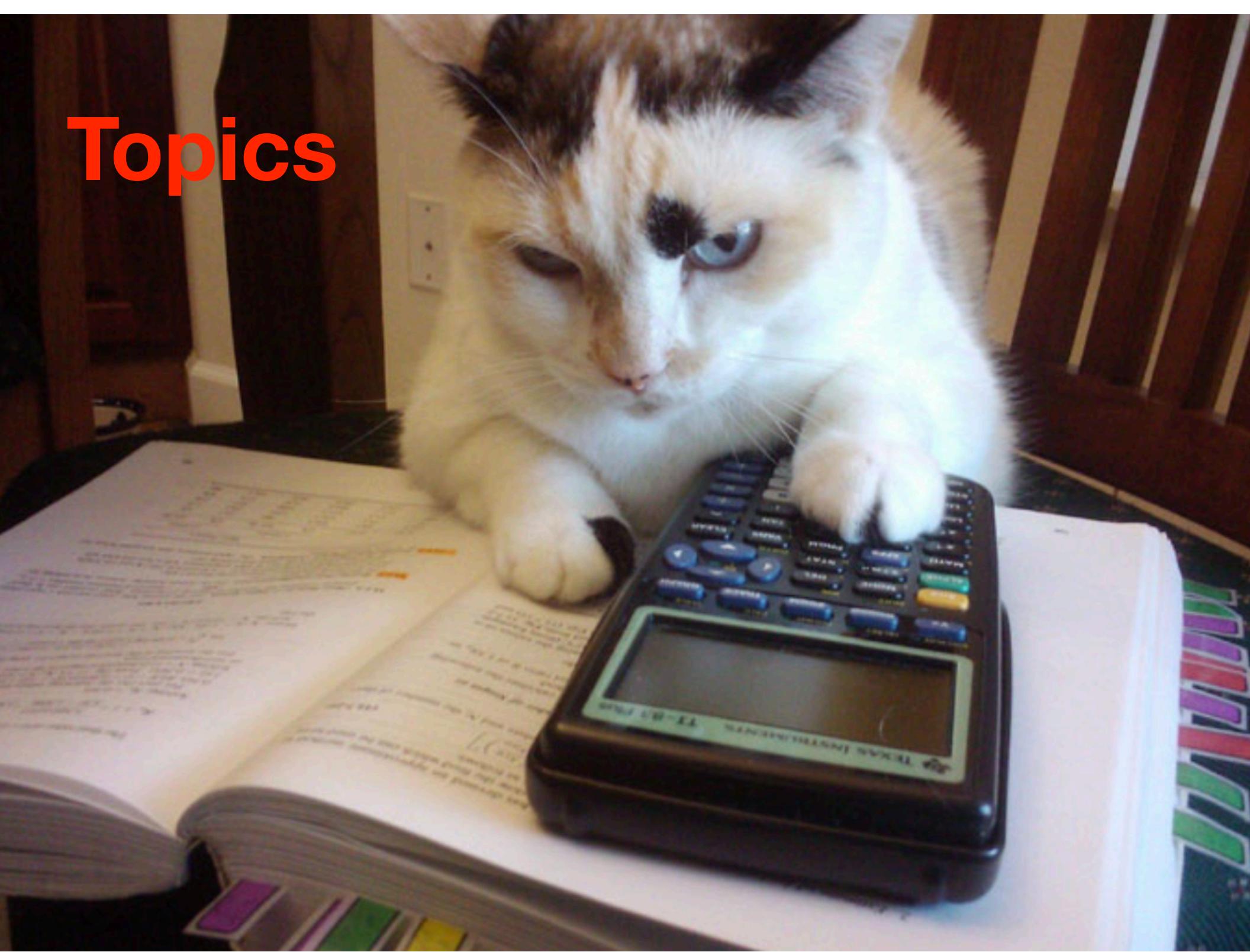
Study Hints

- **Writing Code**
 - Look at all the code that you have read and think about other code based on this that you could write.
 - Write out test programs by hand, type them in, compile, and test. Repeat.

Final Examination Hints

- **Read** the whole exam **first** before you start to answer the questions.
- Answer the questions that are **easy** (you know the answers) **first**.
- Manage your time.
- All of the code on the exam has been tested - it works!
- **READ ALL OF THE QUESTIONS VERY CAREFULLY.**

Topics



Basic C Program Structure

- The mainline of a C program has 4 main components:
 - Preprocessor directives
 - `main()` function
 - Variables and statements
 - `return()` function

Preprocessor Directives

- `#include`
 - libraries, headers, libc, stdio.h
- `#define`, `#undef`
- `#ifdef`, `#ifndef`,
- `#if`, `#else`, `#endif`
- `#warning`, `#error`, `#pragma`

Directory, Files, Commands, Command Line

- UNIX commands of the day and any commands used in lectures or labs
- UNIX philosophy
- UNIX pipes (|)
- Command line arguments: `argc`, `argv[]`

Control Structures

- `if - else`
 - Boolean operators
- Loops
 - `for`
 - `while`

Characters

- Reading characters
- Writing/printing characters
- Special characters
- ASCII
- Character arrays (strings)
 - String operations

Data Types in C

- `char, int, float, double`
- `size, range, unsigned`
- Operators
 - arithmetic, relational, logical
 - Assignment
- `sizeof, casting`

More about Coding

- Variable names
 - Camel, Snake, Pascal, Kebab cases, Hungarian
- Indentation
- Comments

Functions

- Definition
- Declaration
- Return
- Parameters
 - Pass by value
 - Pass by reference

Pointers

- Arrays and pointers
- Pointer declarations
- Pointer operators - referencing, dereferencing

Compiling and Linking

- Preprocessor
- Compiler
- Linker
- File types
- Compiler options
- make
- Libraries and archives

Interacting with the User

- `scanf`, `fscanf`
- `fgets`, `fputs`, `fprintf`
- Files - text files
- opening, closing, reading, writing
- File pointer, file modes
- Information about files in UNIX - file permissions, `chmod`,
`chown`, `chgrp`, `file`, `touch`

Structures, Testing, Design

- Definition and declaration of `struct`
- Passing `structs` to functions
- Testing strategies
- Program design
 - Model-View-Controller

Shell Scripts

- Printing with `echo`
- Variables - setting and using
- Capturing output of commands
- Arithmetic operations
- Command line parameters
- Functions
- Branching (`if`), loops (`for`, `while`),

Arrays, Scope of Variables

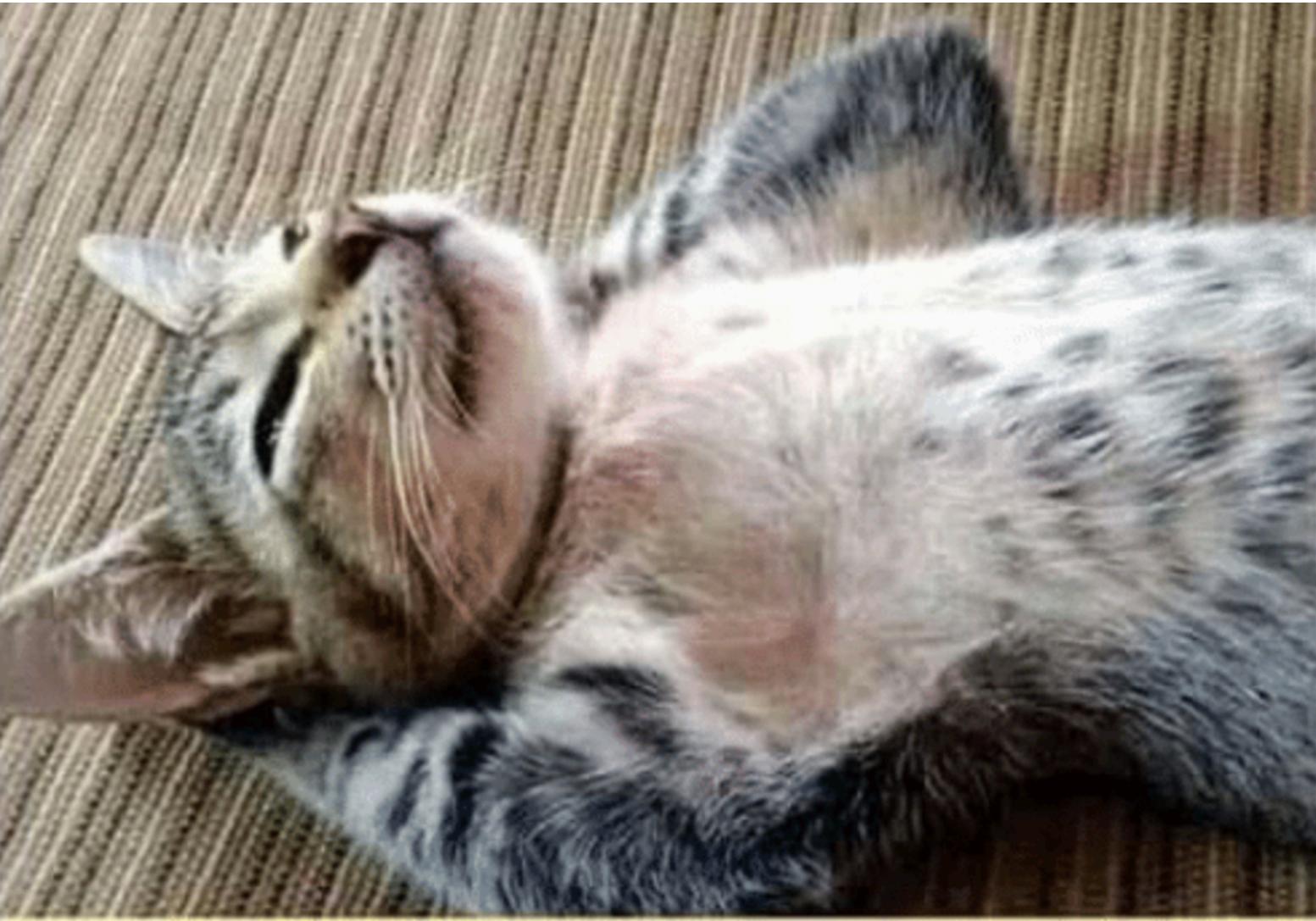
- 1-D, 2-D arrays
- Passing arrays to functions
- Scope
 - Global
 - Local

Switch, Overloading, Variables

- switch, case, break
- Overloading symbols
- Spacing, multiple +'s, maximal munch
- Variable size and ranges
 - `#include <limits.h> #include <values.h>`
- Overflow
- Static Variables

Precedence, Randomness

- Arithmetic, relational, logical
- Bitwise operators
- Shift operators
- Conditional operator
- Randomness
 - `random()`, `srandom()`

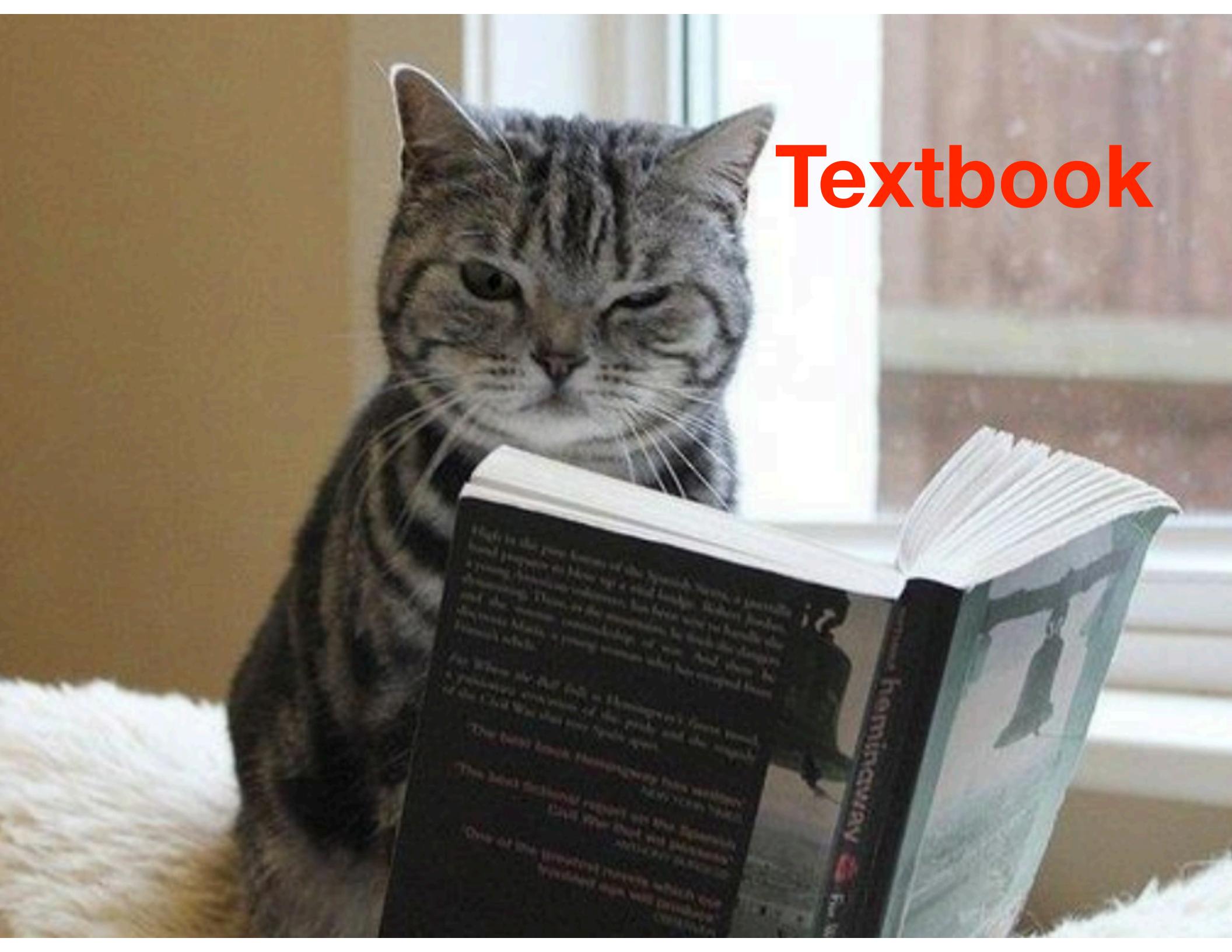


Cats can memorize
up to 120 commands.
But they don't want to.

UNIX Commands

- cal, date, diff, find, grep, history, man, sort, wc, file, od
- cp, mv, rm, ls, cat, more, less, mkdir, pwd, cd
- wget, scp, gzip, tar, ar, ssh, sudo
- chgrp, chmod, chown
- clear, echo, sleep
- git

Textbook



Textbook Chapters

- Chapters 1 and 2
- Chapter 3: 3.1-3.6
- Chapter 4: 4.1-4.6, 4.11
- Chapter 5: 5.1-5.11
- Chapter 6: 6.1-6.4
- Chapter 7: 7.1-7.2, 7.4-7.5