

## **Topics for the Midterm**

CSCI-E113

### **Data Types**

Understand and know how to define, initialize, and use variables of various types and scope:

- char, int, long, short, unsigned, float, double
- struct
- pointer to char, pointer to int, pointer to long, ..., pointer to struct
- array of char, array of int, array of structs, ...
- array of arrays, array of pointers, pointer to pointer
- local, global, static, extern

### **Control Flow**

Understand and know how to use all C control flow constructs:

- for, while, switch, if, do
- functions

### **Strings**

Understand and know how to define, initialize, and perform various operations on strings, including:

- input, output, copy, compare, append, extract substrings,
- search for characters, search for substrings.
- strings and functions

### **Pointers and Addresses**

Understand and be able to read and write code for the following:

- Pointers to single variables of all types
- Pointers to arrays, Pointers to structs
- Pointers and functions: as arguments and return values
- Arithmetic and comparison operations: ++, --, -, +, <, >, ==, etc

### **Type of Processing**

Understand and be able to write functions to perform the following sort of processing:

- char by char, field by field, line by line
- processing several strings or lines using arrays or structs
- processing strings using indexing and using pointers
- processing arrays of chars, arrays of ints, arrays of structs
- using state variables

### **Web Interfaces**

Understand and be able to write simple web interfaces using:

- HTML form: input, form, action, submit, select, radio
- shell script: pipeline, command line args (\$1, \$2, ..)
- tools: grep, cut, sort, uniq, echo
- CGI shell connector script

### **Understanding and Programming**

You will be asked to show your understanding and skills in the following ways:

- Explaining in English: ideas, syntax, and techniques
- Reading code to find errors or predict output
- Drawing diagrams of memory and data structures
- Writing short functions
- Writing short scripts

