

Midterm 2 Review

Midterm 2 will include material from Reed chapters 7 – 9 & 11 – 13.

Exam will not be open book. Use two review sheets (one from 1st hourly).

Skills tested on this exam:

- Ch. 7: swap the values of two variables using only one additional variable
- Ch. 8:
 - Specifying algorithms
 - Analyzing algorithms, i.e. how much time/work. *big-O()* notation
 - *sequential* vs. *binary* search
 - what conditions are necessary
 - *least* time vs. *most* time required.
 - Newton's method & refinement
- Ch. 9: Functions:
 - parameters: specifying, calling, & using.
 - return values
 - global vs. local values (parameters & **var** variables)
 - use of **random()** & other predefined functions
 - breaking a task into separate functions
 - *preconditions* & *postconditions*
- Ch. 11: Conditional Execution:
 - Boolean data & operators
 - relational operators
 - **if - then - else - else if** statements
 - nested **if**
 - cascading **if**
 - range determination. E.g. is a point (x, y) in a box? boundaries included?
 - fall-through vs. single-option (uses **breaks**) **switch** statements
 - **switch** statements vs. **if-else if**
 - DeMorgan's Law (for Boolean complements)
- Ch. 12: Data Representation:
 - bits vs. bytes, words, etc.
 - converting between bases (use of “/” and “%” operators)
 - floating point representation (which segment specifies range vs. precision)
 - how are characters represented?
 - analog/digital conversion (basic ideas)
- Ch. 13: Conditional Repetition
 - **while** loops
 - **for** loops
 - when is it more appropriate to use a **for** than a **while** loop?
 - conversion between **for** and **while** loops (in either direction)
 - **continue** vs. **break** in **while** & **for** loop conversions.
 - how much work is a loop performing?
 - what is the fewest times a loop will perform its body?
 - how many times will a loop perform its body? (as a function of a constant and of a variable)
 - is it an infinite loop?