SCSU CSCI 200 Elements of Computing
Spring 2011 [A.A. Anda]

**Midterm 2** will include material from Reed chapters 8 – 9 & 11 – 13.
Exam will not be open book. Use two review sheets (one from 1st hourly).
Skills tested on this exam:

- 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
  - *pre*conditions & *post*conditions
- 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? Are boundaries included?
  - fall-through vs. single-option (uses **`break`**s) **`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
  - **`do 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.
    - Convert a **`for`** loop containing a **`continue`** statement into an equivalent **`while`** loop.
  - 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)
  - infinite loop identification