MIDTERM 2 Review Sheet

MIDTERM 2 will include True/False, Multiple Choice, and some Homework style Questions, drawing from ALL of the Material Covered in Lectures 10 through Lecture 19.
You will be allowed to bring in one (1) 8.5" by 11" sheet of notes into the exam with you.

Topics	Lecture

Finite State Machines
     Graphically
     Implementation with a `switch` / `if-else` Block
	10

Memory Organization
     Differences btw. different Memory Architectures
     Memory Addressing
     & Memory Address operator
	11

Pointers
     Initializing Pointers with *
     De-references Pointers with *
     Arrays as Pointers (use of `name` with offset)
     Pointer Arithmetic (comparing pointers, subtracting pointers)
     Pointers used as Function Parameters (compare to reference operator &)
     `Const` pointers, and pointers to `const`
	11, 12

Dynamic Memory Allocation
     `new` operator, dynamically allocating primitive types (`int`, `char`)
     Dynamically allocating arrays
     Memory is finite
     `delete` operator (`delete []` arrays)
     NULL memory address (use of NULL with pointers)
     Identify memory *leaks*.
	13

Structured Data
     Primitive Data Types vs. Structured Data
     Abstraction
     Anatomy of a `Struct` (access through dot-notation)
     Initializing `structs`
     Arrays of `structs`
     Dynamically Allocated `structs` (use of pointers to `structs`)
     `->` operator in accessing members of structs
	13, 14, 15

Linked Lists
     Dynamically Linked Data
     Types of Linked Lists (single linked, double linked)
     Traversing a linked list
     Add, Delete, Swap in a singly linked list
     Definition of a `union`
	15, 16

Object Oriented Programming
     4 properties of OOP:
     Encapsulation
     Data Hiding
     Polymorphism
     Inheritance
	16

Classes (OOP in C++)
     Anatomy of a `Class`
     Access specifiers (`private`, `public`, `protected`)
     Read-only member functions with `const`
     Inline Member functions (vs. defining member functions with ::)
     Dynamically Allocated Classes (with pointers, and `->` operator)
     Constructors, Destructors (differing parameters)
	16, 17

Inheritance
     Use of : to define inheritance
     Base class access specifiers (`public`, `private`, `protected`)
	18,19

UML Diagrams Create your own	19
Random Number Generation Picking a Random Number from an Array	18