Midterm Review

I. Introduction

II. Unix Basics
   A. Unix Directories
      1. pwd, ls, mkdir, cd, cp, mv
      2. user/group/world
      3. read/write/execute
      4. rm, ps, kill

III. Introduction to C
   A. C input/output
      1. printf, scanf
   B. Type declarations
      1. sizeof
      2. address of a variable
   C. preprocessor directives
      1. #include
      2. #define
   D. C constructs
      1. if, while, for, switch, conditional
      2. promotion, casting, operator precedence

IV. Functions
   A. A Simple Function Example
      1. function prototypes
   B. Math Library Functions
   C. Header Files
   D. Random Number Generation Example
   E. Call by Value
   F. Call by Reference
   G. Scope
      1. Global variables
      2. Local variables
      3. auto versus static variables

V. Arrays
   A. Initialization
   B. Array Example
   C. Subscripting Out-of-Range Example
   D. Passing Arrays to Functions
   E. Multiple Dimensional Arrays
      1. Double-Subscripted Arrays
      2. enum and switch Example

III. Pointers
   A. Addresses and typed (& *)
   B. Indirection
   C. Using pointers in call-by-reference Example
D. Swap with Pointers Example  
E. Pointers and Arrays  
F. Operator Precedence with Pointers Example  

IV. Strings  
A. Strings as arrays of characters ending with “\0”  
B. Pointers to Strings  
C. An Array of Strings Example  

V. Make  
A. A make Example  

VI. Structures  
A. Definitions and typedef  
B. Structure member operator (.)  
C. Structure pointer operator (->)  
D. Structures with Functions  
E. A Structure Example  

VII. Command Line Arguments  
A. argc and argv, atoi function  

VIII. Introduction to Data Structures  
A. Self-Referential Structures  
B. malloc and free  
C. Linked Lists  
   1. Linked List of Strings Example  
   2. Linked List Example  

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IX. Computer System Performance and Simulation  
A. Performance Metrics  
   1. Utilization, throughput, response time and delay  
B. System queue model versus queue data structure  
C. Event lists and script driven simulations  

X. Data Structures  
A. Queues  
   1. Examples of queues in systems and networks  
   2. Enqueue and dequeue  
   3. Head and tail of queue data structure