# Preparation for Midterm Exam 1

## Part I Review

## Review the notes

## Review the quiz1

## Part II recursion

1. Review the notes
2. Review the quiz2
3. This problem is from quiz2. For the following program segment:

int fun(int n)

{

if (n==0) return 1;

return n\*fun(n-1);

}

* 1. What is the output of function call fun(3)?
  2. Describe the procedure(recursive calls) of deriving fun(3).
  3. Describe what is done by the function fun?
  4. Is it possible that the above recursive program will not terminate? If so, for what type of input, the above program will not terminate?

1. Short coding questions:
2. Same as Homework1 and Quiz2: power, power2, power3
3. Write down the program (pseudocode) for Binary Search using **recursion**. And trace the program to search a key from the given list (same as homework1)

## Part II Array\_based List

1. Review the notes
2. Review the quiz2

## Part III Linked List and Variants of Linked Lists

1. Review the notes
2. Review the quiz2
3. Be able to write the programs for all the methods in the linked list class definition
4. Program for printing out all the element in a circular singly linked list
5. Insert before a node pointed by p and delete a node pointed by p in a doubly linked list

## Part IV Stack

1. Review the notes
2. For array\_based stack, be able to write the program for push, pop, and gettop
3. For pointer\_based stack, be able to write the program for push, pop, and gettop