ICS/CSE 22 **Monday, May 16, 2011**

Quiz 6

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1. The code below shows a method for **binary search**. This version takes as input an integer **find** and an array of integers called **list** which are sorted in increasing order. If **find** is contained in the array, the method returns the index where it is stored in the array. If it is not contained in the array, it returns -1. Every time an integer in the array is examined, it is printed out.

```
int binarySearch( int find, int[] list )
{

     int low = 0;
     int high = list.length()-1;
     int mid;

     while ( low < high )
     {
          mid = ( low + high )/2;

          System.out.println( list[mid] );

          if ( list[mid] == find )
               return( mid );

          if ( find < list[mid] )
                high = mid - 1;
          else
                low = mid + 1;
     }

     if ( low == high && list[low] == find )
          return( low );

     else
          return( -1 );
}
```

(a) What is the running time of the binary search method on the opposite page? Use Oh-notation and assume that **n** is the number if integers in the array.

(b) Show the output of the method when it is called on the following input:

find = 11

	0	1	2	3	4	5	6
list:	-4	-2	-1	0	11	17	19

2. Consider the tree shown below. Suppose that the tree is traversed in **pre-order**. When a node is "visited", its label is printed out. Show the order that the labels are printed out.