# COP4530 – Data Structures, Algorithms and Generic Programming
Recitation 11
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Lab topic:
1) **Take Quiz 9**
2) **Learn to (i) implement Breadth First Search on a tree and (ii) implement an iterator. This will help you with assignment 5.**

Breadth First Search on a tree

1. Write an algorithm that uses a queue to perform Breadth First Search on a binary tree.
2. Show the state of the queue after each node is visited in the breadth first search of the following tree.
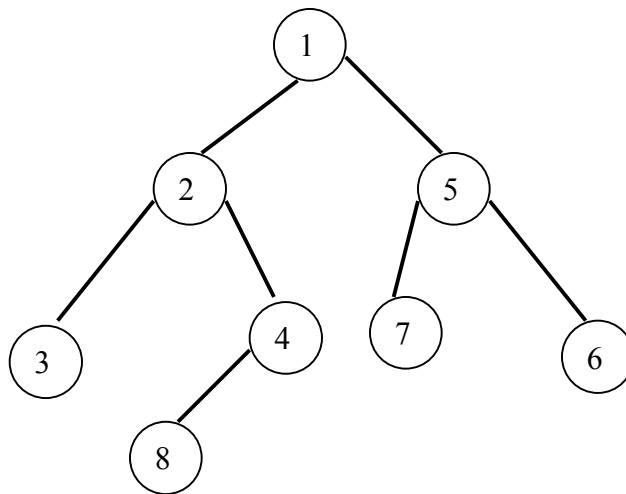
Implementing iterators

1. Implement an iterator class that will work with the following singly linked list class. You will need to modify the linked list class too, and add the *begin* and *end* member functions. You should also typedef the iterator class to the usual STL name provided in containers. The iterator class should implement the pre-increment and dereference operators. You can look up ~cop4530/fall09/CodeExamples/Lec17.

```
class Node{
 public:
  unsigned long data;
  Node *Next;
  Node(unsigned long value, Node*n=0);
};
```

```
class SLL{
  public:
   ToyLL();
   ~ToyLL();
   void Insert(unsigned long value);
  private:
   Node   *Head;
 } ;
```

References

Topic	Links
Breadth First Search	Section 6.4.1 of the text book
Iterators	http://www.oreillynet.com/pub/a/network/2005/11/21/what-is-iterator-in-c-plus-plus-part2.html?page=3#heading3