Assignment 3

1. Swap two adjacent elements by adjusting only the links (and not the data) using [10 Points]
    a. Singly linked list
    b. Doubly linked list

2. Implement the contains routine for MyLinkedList [5 Points]

3. What is the running time of the following code? [5 Points}

```
public static List<Integer> makeList( int N)
{
      ArrayList<Integer> lst = new ArrayList<>();
      for( inti  =0; i < N; i++)
      {
            lst.add(i);
            lst.trimToSize();
      }
}
```

4. The following routine removes the first half of the list passed as a parameter: [10 Points]

```
public static void removeFirstHalf(List<?> lst)
{
      int theSize = lst.size() /2
      for( inti =0; i < theSize; i++ )
            lst.remove(0);
}
```

a. Why is theSize saved prior to entering the for loop?
b. What is the running time of removeFirstHalf if lst is an ArrayList?
c. What is the running time of removeFirstHalf if lst is a LinkedLIst?
d. Does using an iterator make removeFirstHalf faster for either type of List