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1)

```
import java.util.ArrayList;
import java.util.Comparator;
import java.util.Scanner;



public class ArrayListImproved<T extends Comparable <? super T>> extends ArrayList<T> {


        public void sort(int start, int end) {
                int t = end;
                T tmp;
                for(int j = 0;j*2 < (end-start);j++){
                        for(int i = start;i < end; i++){
                                if(this.get(i).compareTo(this.get(i+1)) > 0){
                                        tmp= this.get(i);
                                        this.set(i, this.get(i+1));
                                        this.set(i+1, tmp);
                                }
                                if(this.get(t).compareTo(this.get(t-1)) < 0){
                                        tmp= this.get(t);
                                        this.set(t, this.get(t-1));
                                        this.set(t-1, tmp);
                                }
                                t--;
                        }
                        t = end;
                }
        }

        public void sort(int start, int end, Comparator c){
                int t = end;
                T tmp;

                for(int j = 0;j*2 < (end-start);j++){
                        for(int i = start;i < end; i++){
                                if(c.compare(this.get(i),this.get(i+1)) > 0){
                                        tmp= this.get(i);
                                        this.set(i, this.get(i+1));
                                        this.set(i+1, tmp);
                                }
                                if(c.compare(this.get(t),this.get(t-1)) < 0){
                                        tmp= this.get(t);
                                        this.set(t, this.get(t-1));
                                        this.set(t-1, tmp);
                                }
                                t--;
                        }
                        t = end;
                }
        }

        public void randomize(int start, int end){
```

```
        int random;
        T tmp;
        for( int i = start; i <= end; i++){
            random = (int) (Math.random()*end);
            if( random < start )
            {
                random = random + start;
            }
            tmp = this.get(i);
            this.set(i,this.get(random));
            this.set(random,tmp);
        }
    }
}
```

2)

```
public interface Accumulable<T>{

    public T accummulate(T t1,T t2);

}

public T fold(ArrayListImproved<T> list){
        T acc = list.get(0);
        for(int i = 1; i < list.size(); i++)
        {
            acc = accummulate(acc,list.get(i));
        }
        return acc;
}
```