```java
import java.util.*;
// 1 2 3 7 5  sum=12
// 0 1 2 3 4
// output: 2+3+7=12   2 4
public class SubarrayWithGivenSum {

	public static void main(String[] args) {
		int n=5;
		int a[]={1,2,3,7,5};
		int s=12;

		int i=0,j=0;
		int sum=a[0];

		while(j<n){

			if(sum==s){ // check contion
				System.out.println((i+1)+" "+(j+1));
				break;
			}
			if(sum<s){
				j++;
				sum+=a[j];
				continue;//next iteration
			}
			if(sum>s){
				sum-=a[i];
				i++;
				continue;
			}
		}

	}

}

//2 4
```

```java
import java.util.*;
// max sum subarry
public class KadanesAlgo {
```

```
	public static void main(String[] args) {
		// TODO Auto-generated method stub
		int n=5;
		int a[]={1,2,-4,3,1};

		int sum=0;
		int ans=Integer.MIN_VALUE;
		for(int i=0;i<n;i++){
			ans=Math.max(ans,a[i]);
		}
		for(int i=0;i<n;i++){

			if(sum+a[i]<0){
				sum=0;
				continue;
			}
			//if(sum+a[i]>=0)
			else{//update ans
				sum+=a[i];
				ans=Math.max(sum,ans);

			}
		}
		System.out.println(ans);
	}

}
//4


import java.util.*;
public class MergeTwoSortedArray {

	public static void main(String[] args) {
		// TODO Auto-generated method stub
		int n=5;
		int a[]={1,5,6,9,12};

		int m=3;
		int b[]={2,3,7};

		int i=0,j=0,k=0;
		int c[]=new int[n+m];

		while(i< n && j<m){
```

```
                if(a[i]<b[j]){
                        c[k++]=a[i++];
                }
                //else if(a[i]>b[j])
                else{
                        c[k++]=b[j++];
                }
        }

        while(i<n){
                c[k++]=a[i++];
        }

        while(j<m){
                c[k++]=b[j++];
        }

        for(int x=0;x<n+m;x++){
                System.out.print(c[x]+" ");
        }

    }

}

//1 2 3 5 6 7 9 12



import java.util.*;

// a=4 b=5 n=6
// x= a+(b*n)
//  =4+(5*6)=34
// a=x%n=4  b=x/n=34/6=5
// modulus division
public class AlternateSortingEvenArray {

    public static void main(String[] args) {
        // TODO Auto-generated method stub
        int n=6;
        int a[]={10,20,30,40,50,60};

        int l=0,h=n-1;
        boolean flag=true;
```

```
            int t[]=a.clone();

            for(int i=0;i<n;i++){
                  if(flag){
                        a[i]=t[h--];
                  }
                  else{
                        a[i]=t[l++];
                  }
                  flag=!flag;
            }
            for(int i=0;i<n;i++){
                  System.out.print(a[i]+" ");
            }
      }

}

//60 10 50 20 40 30



import java.util.*;
public class EquilibriumPoint {

      public static void main(String[] args) {
            // TODO Auto-generated method stub

            int n=5;
            int a[]={1,3,5,2,2};

            int lsum=0,rsum=0,eqpoint;

            for(int i=0;i<n;i++){
                  rsum+=a[i];
            }
            for(int j=0;j<n;j++){
                  rsum-=a[j];
                  if(lsum==rsum){
                        System.out.print(j+1);
                  }
                  lsum+=a[j];
            }
```

```
	}

}
//3



import java.util.*;

//leader=== no greater ele in right side
public class LeaderElement {

	public static void main(String[] args) {
		// TODO Auto-generated method stub
		int n=7;
		int a[]={2,5,7,9,4,3,1};



		for(int i=0;i<n;i++){

			boolean flag=false;

			for(int j=i+1;j<n;j++){
				if(a[i]<=a[j]){
					flag=true;
					break;
				}
			}
			if(flag==false){
				System.out.print(a[i]+" ");
			}
		}


		int max=a[n-1];
		System.out.print(max+" ");

		for(int i=n-2;i>=0;i--){

			if(a[i]>max){
				max=a[i];
				System.out.print(a[i]+" ");
			}
		}
```

```
	}

}
//9 4 3 1

//1 3 4 9



import java.util.*;
public class ReverseArrayInGroup {

	public static void main(String[] args) {
		// TODO Auto-generated method stub

		int n=8;
		int a[]={1,2,3,4,5,6,7,8};
		int k=5;

		for(int i=0;i<n;i=i+k){

			int start=i;
			int end=Math.min(i+k-1, n-1); // 5+5-1=9 8-1=7
							//AIOBE

			while(start<=end){//reverse
				int t=a[start];
				a[start]=a[end];
				a[end]=t;
				start++;
				end--;
			}
		}
		for(int i=0;i<n;i++){
			System.out.print(a[i]+" ");
		}

	}

}
//5 4 3 2 1 8 7 6
```

```java
import java.util.*;
// 7,1,5,3,6,4
//   b s   s
//   profit
public class BestTimeToBuyAndSell {

	public static void main(String[] args) {
		// TODO Auto-generated method stub

		int n=6;
		int a[]={7,1,5,3,6,4};

		int b=a[0];
		int profit=0;
		for(int i=1;i<n;i++){
			if(a[i]<=b){
				b=a[i];
				continue;
			}

			profit=Math.max(profit, a[i]-b);
		}
		System.out.print(profit);



	}

}
//5


import java.util.*;
public class BestTimeToBuyAndSellii {

	public static void main(String[] args) {
		// TODO Auto-generated method stub

		int n=6;
		int a[]={7,1,5,3,6,4};

		int l=0,h=0,i=0,maxProfit=0;

		while(i<n-1){
```

```
                while(i<n-1 && a[i]>=a[i+1]){  // 7 1
                      i++;
                }

                l=a[i];//1  1

                while(i<n-1 && a[i+1]>=a[i]){ //  5 1
                      i++;
                }
                h=a[i]; // 5 2

                maxProfit+=h-l;
            }
          System.out.print(maxProfit);
      }

}

//7
// 5-1 = 4 and 6-3=3
//4+3=7



import java.util.*;

//element with left smaller right greater
public class FindElement {

      public static void main(String[] args) {
            // TODO Auto-generated method stub

            int n=4;
            int a[]={4,2,5,7};

            int[] min=new int[n];
            int[] max=new int[n];

            for(int i=0;i<n;i++){
                  min[i]=Integer.MAX_VALUE;
                  max[i]=Integer.MIN_VALUE;
            }

            max[0]=a[0];
```

```
            for(int i=1;i<n;i++){

                  max[i]=Math.max(max[i-1], a[i]); // 4 2---4 4 5 7

            }

            min[n-1]=a[n-1];

            for(int i=n-2;i>=0;i--){

                  min[i]=Math.min(min[i+1], a[i]);  // 2 2 5 7
            }

            for(int i=1;i<n-1;i++){

                  if(a[i]<=min[i+1] && a[i]>=max[i-1]){// 5<=7 && 5>=4

                        System.out.print(a[i]); // 2
                  }
            }

      }

}

//5



import java.util.*;
public class LastIndexOf1 {

      public static void main(String[] args) {
            // TODO Auto-generated method stub

            String str="01010";
            int pos=0;
            for(int i=str.length()-1;i>=0;i--){
                        if(str.charAt(i)=='1'){
                              pos=i;
                              break;
                        }
            }
            System.out.print(pos);
      }
```

```
}
//3


import java.util.*;
//rowlower--0   rowupper-last
public class SpiralMatrix {

	public static void main(String[] args) {
		int[][] mat =new int[4][4];

		int val=1;
		int minCol=0,maxCol=3;
		int minRow=0,maxRow=3;

		while(val<=16){

		// l to r

//		for(int col=0;col<=3;col++){
//			mat[0][col]=val;
//			val++;
//		}

		for(int col=minCol;col<=maxCol;col++){
			mat[minRow][col]=val;
			val++;
		}

		// top to bottom

//		for(int row=1;row<=3;row++){
//			mat[row][3]=val;
//			val++;
//		}

		for(int row=minRow+1;row<=maxRow;row++){
			mat[row][maxCol]=val;
			val++;
		}

		// r to l

//		for(int col=2;col>=0;col--){
```

```
//                mat[3][col]=val;
//                val++;
//          }

            for(int col=maxCol-1;col>=minCol;col--){
                  mat[maxRow][col]=val;
                  val++;
            }

            //bottom to top

//          for(int row=2;row>=1;row--){
//                mat[row][0]=val;
//                val++;
//          }

            for(int row=maxRow-1;row>=minRow+1;row--){
                  mat[row][minCol]=val;
                  val++;
            }

            minCol++;maxCol--;minRow++;maxRow--;
      }


      for(int row=0;row<4;row++){
            for(int col=0;col<4;col++){
                  System.out.print(mat[row][col]+"\t");
            }
            System.out.println();
      }

      }
}


//1   2    3    4
//12  13   14   5
//11  16   15   6
//10  9    8    7
```

```java
import java.lang.reflect.Array;
import java.util.*;
public class LargestNumber {

	public static void main(String[] args) {
		// TODO Auto-generated method stub

		int n=5;
		int a[]={3,30,34,5,9};

		 String[] sa=new String[a.length];
		 for(int i=0;i<a.length;i++){
			sa[i]=Integer.toString(a[i]);
		 }

		 Arrays.sort(sa, new Comparator<String>(){
			public int compare(String a,String b){
				String o1=a+b;
				String o2=b+a;
				return o2.compareTo(o1);
			}
		 });

		 StringBuilder sb=new  StringBuilder();
		 for(String s:sa){
			sb.append(s);
		 }
		 System.out.print(sb.toString());
	}

}
//9534330
```

```java
import java.util.*;

// a < b > c < d > e < f
//  second ele greater than 1st and 3rd ele

public class ZigZagFashion {

	public static void main(String[] args) {
```

```
        int n=7;
        int a[]={4,3,7,8,6,2,1};
        boolean flag=true;

        for(int i=0;i<n-1;i++){
         // increasing  order  && decreasing order pair
         if(flag==true){
               if(a[i] > a[i+1]){
                     //swap(a[i],a[i+1]);
                     int t=a[i];
                     a[i]=a[i+1];
                     a[i+1]=t;
               }
         }
         else{
               if(a[i] < a[i+1]){
                     //swap(a[i],a[i+1]);
                     int t=a[i];
                     a[i]=a[i+1];
                     a[i+1]=t;
               }
         }
         flag = !flag;
        }

        for(int i=0;i<n;i++){
               System.out.print(a[i]+" ");
         }


    }

}

//3 7 4 8 2 6 1
```