Specification

Copy the program ValleyPeakPlateau.java to your computer and implement the method named **valley_peak_plateau(int[])**.

The **static void valley_peak_plateau(int[] a)** method prints to the standard output stream the valleys, peaks, and plateaus found in the **int[] a** parameter. Only arrays having two or more elements are processed.

The following are definitions for *valley*, *peak*, and *plateau*. Note: A *plateau* is when a number occurs three or more consecutive times in an array.

```
note:
    int[] a ... an array of ints of named a
    int n ... the length of array a, where n ≥ 2
    int i ... index into array a

when i is 0
    a[i] is valley if a[i] less than a[i+1]
    a[i] is peak if a[i] greater than a[i+1]
    a[i] is plateau if a[i] equals a[i+1] and a[i+2]

when 0 < i < n - 1
    a[i] is valley if a[i] is less than both a[i-1] and a[i+1]
    a[i] is peak if a[i] is greater than both a[i-1] and a[i+1]
    a[i] is plateau if a[i] equals both a[i-1] and a[i+1]
        note:  a[i-1] is the start of the plateau and the
               plateau ends when the number changes (or end
               of array is reached) -- see the output if
               clarification is needed

when i is n - 1
    a[i] is valley if a[i] less than a[i-1]
    a[i] is peak if a[i] greater than a[i-1]
    a[i] is plateau if a[i] equals a[i-1] and a[i-2]
```

The Program's Output

The output of the program must match the following. {output file}

```
array: { 3, 5, 4, 4, 4, 4, 2, 6, 5, 5, 5, 5, 4, 4, 4, 4, 7, 2, 4, 6, 5, }
[0]=3 is a valley
[1]=5 is a peak
[2]=4 is a plateau
[3]=4 is a plateau
[4]=4 is a plateau
[5]=4 is a plateau
[6]=2 is a valley
[7]=6 is a peak
[8]=5 is a plateau
[9]=5 is a plateau
[10]=5 is a plateau
[11]=5 is a plateau
[12]=4 is a plateau
[13]=4 is a plateau
[14]=4 is a plateau
[15]=4 is a plateau
[16]=7 is a peak
[17]=2 is a valley
[19]=6 is a peak
[20]=5 is a valley

array: { 9, 9, 9, 9, 9, 4, 7, 9, 9, 9, 9, 2, 9, 9, 9, 9, 9, }
[0]=9 is a plateau
[1]=9 is a plateau
[2]=9 is a plateau
[3]=9 is a plateau
[4]=9 is a plateau
[5]=4 is a valley
[7]=9 is a plateau
[8]=9 is a plateau
[9]=9 is a plateau
[10]=9 is a plateau
[11]=2 is a valley
[12]=9 is a plateau
[13]=9 is a plateau
[14]=9 is a plateau
[15]=9 is a plateau
[16]=9 is a plateau

array: { 0, 5, 7, 7, 7, 4, 8, 7, 7, 7, 10, 2, 6, }
[0]=0 is a valley
[2]=7 is a plateau
[3]=7 is a plateau
[4]=7 is a plateau
[5]=4 is a valley
[6]=8 is a peak
[7]=7 is a plateau
[8]=7 is a plateau
[9]=7 is a plateau
[10]=10 is a peak
[11]=2 is a valley
[12]=6 is a peak
```

```
array: { 2, 8, 8, 8, 7, 9, 9, 9, 9, 9, 3, }
[0]=2 is a valley
[1]=8 is a plateau
[2]=8 is a plateau
[3]=8 is a plateau
[4]=7 is a valley
[5]=9 is a plateau
[6]=9 is a plateau
[7]=9 is a plateau
[8]=9 is a plateau
[9]=9 is a plateau
[10]=3 is a valley

array: { 1, 9, 3, 5, 2, 7, 3, 5, 1, }
[0]=1 is a valley
[1]=9 is a peak
[2]=3 is a valley
[3]=5 is a peak
[4]=2 is a valley
[5]=7 is a peak
[6]=3 is a valley
[7]=5 is a peak
[8]=1 is a valley

array: { 2, 5, 3, 2, 1, 9, 7, 8, }
[0]=2 is a valley
[1]=5 is a peak
[4]=1 is a valley
[5]=9 is a peak
[6]=7 is a valley
[7]=8 is a peak

array: { 4, 4, 7, 4, 4, 4, 2, }
[2]=7 is a peak
[3]=4 is a plateau
[4]=4 is a plateau
[5]=4 is a plateau
[6]=2 is a valley

array: { 2, 5, 3, 3, 7, 2, }
[0]=2 is a valley
[1]=5 is a peak
[4]=7 is a peak
[5]=2 is a valley

array: { 1, 1, 1, 2, 0, 9, }
[0]=1 is a plateau
[1]=1 is a plateau
[2]=1 is a plateau
[3]=2 is a peak
[4]=0 is a valley
[5]=9 is a peak

array: { 9, 0, 2, 1, 1, 1, }
[0]=9 is a peak
[1]=0 is a valley
[2]=2 is a peak
[3]=1 is a plateau
[4]=1 is a plateau
[5]=1 is a plateau

array: { 1, 2, 3, 3, 2, 1, }
[0]=1 is a valley
[5]=1 is a valley

array: { 1, 2, 5, 9, 10, }
[0]=1 is a valley
[4]=10 is a peak

array: { 4, 3, 2, 1, 0, }
[0]=4 is a peak
[4]=0 is a valley

array: { 7, 7, 7, 7, }
[0]=7 is a plateau
[1]=7 is a plateau
[2]=7 is a plateau
[3]=7 is a plateau

array: { 6, 5, 5, 5, }
[0]=6 is a peak
[1]=5 is a plateau
[2]=5 is a plateau
[3]=5 is a plateau

array: { 3, 3, 3, 9, }
[0]=3 is a plateau
[1]=3 is a plateau
[2]=3 is a plateau
[3]=9 is a peak

array: { 1, 3, 2, }
[0]=1 is a valley
[1]=3 is a peak
[2]=2 is a valley

array: { 3, 2, 1, }
[0]=3 is a peak
[2]=1 is a valley
```

```
array: { 1, 2, }
[0]=1 is a valley
[1]=2 is a peak

array: { 7, 5, }
[0]=7 is a peak
[1]=5 is a valley

array: { 6, 6, }

array: { 1, } (skipped)

array: { } (skipped)
```