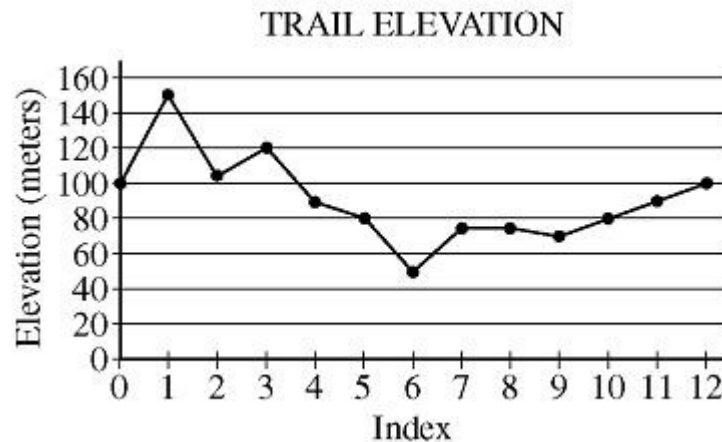


# Trail Project

A hiking trail has elevation markers posted at regular intervals along the trail. Elevation information about a trail can be stored in an array, where each element in the array represents the elevation at a marker. The elevation at the first marker will be stored at array index 0, the elevation at the second marker will be stored at array index 1, and so forth. Elevations between markers are ignored in this question. The graph below shows an example of trail elevations.



The table below contains the data represented in the graph.

Index	0	1	2	3	4	5	6	7	8	9	10	11	12
Elevation	100	150	105	120	90	80	50	75	75	70	80	90	100

**Your assignment is to finish writing the `Trail` class as a class for representing a hiking trail.** Follow the instructions listed below.

- (a) Write the `Trail` method `isLevelTrailSegment`. A trail segment is defined by a starting marker, an ending marker, and all markers between those two markers. The parameters of the method are the index of the starting marker and the index of the ending marker. The method will return true if the difference between the maximum elevation and the minimum elevation in the trail segment is less than or equal to 10 meters. For the trail shown at the beginning of the question, the trail segment starting at marker 7 and ending at marker 10 has elevations ranging between 70 and 80 meters. Because the difference between 80 and 70 is equal to 10, the trail segment is considered level. The trail segment starting at marker 2 and ending at marker 12 has elevations ranging between 50 and 120 meters. Because the difference between 120 and 50 is greater than 10, this trail segment is not considered level.
- (b) Write the `Trail` method `isDifficult`. A trail is rated by counting the number of changes in elevation that are at least 30 meters (up or down) between two consecutive markers. A trail with 3 or more such changes is rated difficult. The following table shows trail elevation data and the elevation changes between consecutive trail markers.

### Trail Elevation (meters)

Index	0	1	2	3	4	5	6	7	8	9	10	11	12
Elevation	100	150	105	120	90	80	50	75	75	70	80	90	100

50   \   /   \   /   \   /   \   /   \   /   \   /   \   /   \   /   \   /   \   /

This trail is rated difficult because it has 4 changes in elevation that are 30 meters or more (between markers 0 and 1, between markers 1 and 2, between markers 3 and 4, and between markers 5 and 6).

Good luck. Show me the results of your successful test when you are finished. Feel free to see me if you have any questions or difficulties in the meantime.