K: Tree Borers

Tree borers are nasty bugs that chew holes into trees. Imagine following the twisting path of a borer from entry to exit, observing the thickness of the tree rings along the way (actual thickness, not the length of the possibly slanted hole). The same ring might be revisited several times because of the meandering path, and there is no guarantee that the borer reaches the middle. Your task is to determine how many possible routes could have been taken by the tree borer, given only the sequence of tree ring thicknesses being chewed.

You may assume that a tree ring is of the same thickness all the way around the tree. Keep in mind that there may be multiple rings of the same thickness and that there may even be some "palindromic" sequences. This may make it impossible to tell exactly what path was followed.

Input

Input may consist of multiple cases. The first line contains a single positive integer indicating the number of cases. Each subsequent line represents one of the cases. Each case consists of the sequence of tree ring thicknesses (measured to the nearest millimeter) encountered by a tree borer from entry to exit. Widths will be positive integers less than 2^5. The sequence will be from 1–100 rings. Obviously each ring will be fully chewed through, otherwise the thickness could not be determined. If the tree borer chews through a ring and immediately turns around, either retracing his path or chewing a fresh path, the thickness of that ring will be reported twice. The same applies if the ring is the center "ring". There may be arbitrary white space in the input.

Output

For each case, display the case number followed by the number of possible routes taken by the tree borer, formatted as in the sample. Use single spaces as delimiters. The number of possible routes will be less than 2^{15}.

Sample Input

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3
  2 1 1 1 1 2
1 1   1 1 1 1
3
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```

Sample Output

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Case 1: 2
Case 2: 5
Case 3: 0
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