Problem 12: Interleaved 2 of 5[1]

Source filename: `barcode.(cpp|java)`
Input filename: `barcode.in`
Output filename: `barcode.out`

"Interleaved 2 of 5" is a high-density numeric specification for barcodes. This specification is commonly used in the distribution and warehouse industry. You are to write a program that translates numbers into barcodes using this specification.

Interleaved 2 of 5 Specification

- A bar code is made up of bars (black lines) and spaces (white lines).
- The bars and the spaces have 2 possible widths: **n**arrow and **w**ide.
- Each digit is encoded using a pattern of five widths as shown in the table to the right.
- The number to be encoded must have an even number of digits. If it has an odd number of digits you must add a 0 to the beginning. For example; the number 123 should be represented as 0123.
- Digits are grouped into adjacent pairs. Each pair will be represented by five bars interleaved with five spaces. The left digit determines the widths of the bars, and the right digit determines the widths of the spaces.
- A start sequence of (narrow bar, narrow space, narrow bar, and narrow space) must appear at the beginning of all barcodes.
- An end sequence of (wide bar, narrow space, and narrow bar) must appear at the end of all barcodes.
- Input is limited to 100 digits per integer.

Digit	**Code**
0	**nnwwn**
1	**wnnnw**
2	**nwnnw**
3	**wwnnn**
4	**nnwnw**
5	**wnwnn**
6	**nwwnn**
7	**nnnww**
8	**wnnwn**
9	**nwnwn**

When writing a barcode specification, we simply list the widths of the successive bars and spaces. For clarity, we use uppercase letters for the bars and lowercase letters for the spaces.

Width/Type	**Code**
narrow bar	**N**
narrow space	**n**
wide bar	**W**
wide space	**w**

For example, consider the number 27. The widths of the bars should match the pattern for the digit 2 (`NWNNW`); and the widths of the spaces should match the pattern for the digit 7 (`nnnww`). So 27 would be encoded as:

```
NnWnNnNwWw
```

The full barcode would also need the start and end sequences, giving us:

```
NnNnNnWnNnNwWwWnN
```

Write a program named **`barcode.cpp`** that reads input from a file named **`barcode.in`** and writes output to a file named **`barcode.out`**. The judges will ignore all output to the screen.

Input (`barcode.in`)

One or more positive integers, each integer contains 100 digits or less and is on a line by itself. The end of the input file is marked by a line that contains the single digit 0. There are no spaces in the file.

[1] This program appeared on the March 31, 2006 CCSC Student Programming Contest

Output (`barcode.out`)

A series of characters (using the letters 'N', 'n', 'W', & 'w') that represent each integer input using the interleaved 2 of 5 specifications. Each encoded sequence appears on a line by itself.

Example Input File	**Example Output File**
1 **27** **2701** **234** **2342701** **0**	**NnNnNwNnWnWnNwWnN** **NnNnNnWnNnNwWwWnN** **NnNnNnWnNnNwWwNwNnWnWnNwWnN** **NnNnNnWnWnNwWnNwWnNnWnNwNnNwWnN** **NnNnNnNwWnWnNwWnWnNwNnNwNnNnWnNnNwWwNwNnWnWnNwWnN**