

Telephone Numbers

We have a set of poorly-formatted telephone numbers which require processing. These numbers are contained in a text file. The standard format for telephone numbers is:

- An initial code, mobile code or area code number, without parentheses, followed by a space.
- a telephone number consisting of digits only, with the following rules:
 - numbers that consist of 5 digits contain no spaces,
 - numbers that consist of 6 or 7 digits must be separated by a space between the third and fourth digit,
 - numbers that consist of exactly 8 digits must be separated by a space after the fourth digit.

The following rules apply to the various sorts of telephone numbers.

Initial codes

| Code | Number length |
|------|---------------|
| 0508 | 6 digits |
| 0800 | 6 or 7 digits |
| 0900 | 5 digits |

Area codes

| Code | Number length | Special notes |
|--------------------|---------------|--|
| 02 | 7 digits | First three digits must be 409 (Scott Base) |
| 03, 04, 06, 07, 09 | 7 digits | First digit must be 2 through 9, but not 900, 911, or 999. |

Mobile codes

| Code | Number length | Special notes |
|----------|---------------|-------------------------------|
| 021 | 6-8 digits | |
| 022, 027 | 7 digits | |
| 025 | 6 digits | No longer used, but see below |

In the input format we wish to allow the following variations:

- a number might be listed entirely as digits without any spaces, e.g., 024097777
- the code part might be enclosed in parentheses, e.g., (021) or (0800)
- the blocks of digits might be separated by a hyphen rather than a space, e.g., 03 444-1234, but not 03-444-1234
- for numbers with initial codes, digits in the number part may be replaced by corresponding letters, and extra letters (but not digits) may be added up to a limit of 9 total after the code, e.g., 0800 TOGOGO or (0508) 4PIPELINE
- 025 numbers should be converted to 027 with a 4 in front of the number, e.g., 025 123456 should be formatted as 027 412 3456.



Task

Write a program that:

1. Reads a list of telephone numbers (one per line) from `stdin`
2. Checks whether each number is valid (but possibly not correctly formatted).
3. Outputs the numbers (in the same order) to `stdout` according to the following rules:
 - valid numbers must be in the standard format
 - invalid numbers should be presented as they were input followed by a space and `INV`
 - duplicate numbers should be output in standard format followed by a space and `DUP`.

(2 points, Individual)