Problem 4: Boggled

In the game of Boggled, players are given a 4x4 array of letters and about 2 minutes to list as many words as they can find in the array of letters. A word only counts if it is 3 or more letters long and you can trace at least one path through the letters to spell the word without using any letters twice.

In the example at left (depicting the offline version of the game) the two styles of arrows trace the words SALT and MACE.

For the purposes of scoring, 3- and 4-letter words are worth 1 point, 5-letter words are worth 2 points, 6-letter words are worth 3 points, 7-letter words are worth 4 points, and anything longer is worth 11 points. Paths can travel in any direction, including diagonally. There is no penalty for listing words that are too short or not present on the board and there is no penalty for listing the same word twice, but none of these are worth any points. (Of course in the real game, words would also have to be found in some standard dictionary, but we're not going to worry about that here.)

DATA41.txt (DATA42.txt for the second try) will contain 5 test cases. The first 4 lines of each test case will be a Boggled board, followed by an integer n on a line by itself, and then a list of n words that represent a single player's turn. Your program must output that player's score along with the number of legal and illegal words in the list. Illegal words are either not found on the board, too short, or repetitions of words higher up in the list. If a word is illegal for more than one reason, it is recorded once in the most important category of illegal words, with too short being most important, followed by repetition, and then not found. The format of the output must be exactly as shown below.

Sample Input

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HIWH        VASE        EBUI        WEDS        BEADS       JIG
PXBY        VASES       WERJ        BED         EAD         JIGS
ASQK        BY          37          BEDS        EADS        JIGSAW
PVES        HIP         SUN         BALD        LAD         RIG
15          HIPS        SUNG        BALDS       LADS        RIGS
SAX         SAVE        LANGUAGE    BUG         GUN         RUG
SAP         SAVES       SAGE        BUGS        GAS         RUGS
WHIP        PAVE        BAG         LAGS        BAG
WHY         PAVES       SAG         LAG         BAGS
PAP         LSUN        BEE         SAD         BAD
PAX         DAGE        WED         BEAD        BADE
```

Sample Output

```
Your score: 16 (13 good, 1 not found, 1 too short, 0 repeated)
Your score: 36 (34 good, 2 not found, 0 too short, 1 repeated)
```