ACM Pacific NW Region Programming Contest
11 November 2000

PROBLEM D
Poker Solitaire

This problem features a variant of the game of "poker solitaire" (PS). To play PS, deal a 5x5 grid of cards from a standard deck. The score for a PS grid is the SUM of the scores for each row, column, and diagonal. These twelve hands each score as follows:

- pair (1 point) two of the five cards have the same rank.
- two pair (3 points) two pairs amongst the five cards.
- three of a kind (5 points) three of the five cards have the same rank.
- straight (7 points) the five cards may be arranged in sequence, 8−−6−−9−−7−−5. Aces may be high (above King) or low (below 2).
- flush (10 points) All five cards are the same suit.
- full house (12 points) one pair and three of a kind.
- four of a kind (25 points) four of the five cards have the same rank.
- straight−flush (50 points) both a straight and a flush.

In normal poker solitaire, the player deals one card at a time and can place the card in any open space until all twenty−five are dealt. But we've changed the game! We'll give you a grid of twenty−five cards and then you'll swap pairs of cards to try to maximize the score. At each step, choose the pair of cards that maximizes the score (be greedy).

You'll need to calculate the number of steps until no single step yields improvement.

If there are several possible steps with the same score, break ties by choosing the pair with the lowest POSITIONED card in it, using the following grid:

```
 1  2  3  4  5
 6  7  8  9  10
 11 12 13 14 15
 16 17 18 19 20
 21 22 23 24 25
```

For example, swapping 1 & 24 would take priority over swapping 2 & 3. If there's still a tie (for example, 1 & 3 vs. 1 & 5), use the second card's position in the grid, taking the lower one.

INPUT:
The input file will contain a series of 5x5 grids of cards. Each line will correspond to a row of five cards. Each card will be a rank ('2'−'9', 'A', 'K', 'Q', 'J', 'T') followed by a suit ('C', 'D', 'H', 'S'). For example, a single row would look like this:

```
TD 2S 3C AS QH
```

Each row will be flush to the left and cards will be separated by exactly one blank. Thus there are EXACTLY 14 characters per row.

There will be a row with 14 zeros ("00000000000000") to signal the end of input.

The number of rows will be divisible by 5 (we won't give you a partial grid at the end).

SAMPLE INPUT:

```
AD KD QD JD TD
AC TC QC JC KC
AS KS QS JS TS
AH KH QH JH TH
9S 9C 9D 9H 8S
AD KD QD JD TD
TC AC QC JC KC
AS KS QS JS TS
AH KH QH JH TH
9S 9C 9D 9H 8S
AC KD TH JD TD
TC AD QC JC KC
AS KS JS JH TS
AH KH QH QH 9D
9S 9C QD 9H 8S
00000000000000
```

OUTPUT:

For each grid, print three lines, followed by a blank line, with:
- the score for the initial grid
- the number of steps
- the score for the final grid

OUTPUT for SAMPLE INPUT:

```
Initial score = 317
Steps = 1
Final score = 357

Initial score = 298
Steps = 2
Final score = 357

Initial score = 38
Steps = 7
Final score = 314
```