Practice Problem B - Cribbage
Source: Matt Anglin

The Problem

In the card game of 4 player cribbage, 5 cards are dealt to each player as well as the dealer. Each person playing the game then discards 1 of their cards into the dealers "crib," leaving 4 cards in each player’s hands and 4 cards in the crib. At this time the top card of the remaining deck is flipped over to reveal the "start card." Points are added up for the "show" using the 4 cards in your hand along with the start card (a community card shared by all 4 players). The dealer first scores points for his hand with the start card and then also scores points for the 4 cards in the crib with the start card. Each set of 5 cards (4 from hand/crib + start card) are scored with the following rules:

- 15: Any combination of cards adding up to 15 scores 2 points (J, Q, K are worth 10, A is 1, and number cards are worth their value).

- Pair: A pair of cards of the same rank score 2 points. Three cards of the same rank contain 3 different pairs and thus score a total of 6 points. Four of a kind contains 6 pairs and scores 12 points.

- Run: Three cards of consecutive rank (irrespective of suit), such as ace-2-3, score 3 points for a run. A hand such as 3-4-4-5 contains two runs of 3 and so would score 6 points for the runs (Plus 2 for the pair). A run of four cards, such as 9-10-J-Q scores 4 points (you might expect it to score 6 because it contains two runs of 3, but it doesn't. The runs of 3 within it don't count - you just get 4), and a run of five cards scores 5.

- Flush: If all four cards of the hand are the same suit, 4 points are scored for flush. If the start card is the same suit as well, the flush is worth 5 points. There is no score for having 3 hand cards and the start all the same suit.

- One For His Nob: If a hand contains a jack of the same suit as the start card, you score One for his nob (1 point).

- Two For His Heels: If the start card is a jack, the dealer scores Two for his heels (2 points).

The dealer has an advantage in that not only are the cards in his hand added to his score, but also the cards in the crib. Each set of four cards is scored separately with the start card, though. Normally the dealer is unaware of what he holds in the crib until the show (with the exception of the one card he discarded). This program, however, lets the dealer know the exact rank and suit of the three cards his opponents discarded into the crib so he can decide which one of his 5 cards would maximize his total crib and hand score total.
Input

The first line of an input file contains an integer representing the number of games that will follow. The next n lines (n games scored) contain 9 cards. The first five cards are those in the dealer’s hand. The next three are the cards already discarded into the crib. The last card is the start card. Each card is represented by a two-character code. The first being the card rank (A=Ace, 2-9, T=10, J=Jack, Q=Queen, K=King) and the second the suit (C=Clubs, D=Diamonds, H=Hearts, S=Spades). Cards are separated by a single space.

Output

Each line of input should produce one line of output, stating the hand number and the maximum possible score the dealer can receive from both his hand as well as the crib.

Sample Input

3
7S AS TC JC 6D 9H 3D KS 7C
8C AH KH 8H 4H 3D 3C 5D 5S
TS KH QS AC 4D JD 8D 7D 5D

Sample Output

Hand 1 Max Score: 7
Hand 2 Max Score: 24
Hand 3 Max Score: 16