3. Little Hands

Program Name: Little.java   **Input File: little.dat**

Two card poker is played using a standard 52 card deck. Each card in the deck has a rank and a suit. The possible ranks are Two, Three, Four, Five, Six, Seven, Eight, Nine, Ten, Jack, Queen, King, and Ace. The possible suits are Clubs, Diamonds, Hearts, and Spades. Each combination of suit and rank exists once in the deck leading to 52 cards. In two card poker a hand consist of only two cards.

The possible two card hands that can be formed are pairs, flushes, and high card.

Pair is the highest ranking hand in two card poker. To be a pair both cards in the hand must be of the same rank. So, if a hand consists of the Nine of Spades and the Nine of Hearts, the hand is a pair of Nines. Ties between pairs are broken by the rank of the cards in the pair. The list of ranks in the previous paragraph show the ordering of ranks from lowest, Two, to highest, Ace. Thus a pair of Aces is better than all others pairs except another pair of Aces. A pair of Kings is better than all other pairs except a pair of Aces and is equal to another pair of Kings, and so forth. If two pairs contain cards with the same rank, the tie is not broken.

The next highest ranking hand in two card poker is a flush. A flush is a pair of cards that have the same suit. So, for example, a hand consisting of the Nine of Spades and the Three of Spades is a flush. Ties between flushes are broken by the rank of the highest ranking card in each flush. For example a flush consisting of the Ace of Hearts and the Two of Hearts is better than a flush consisting of the King of Clubs and the Queen of Clubs because Ace is a higher rank than King. If there is a tie between the highest ranking card of flushes, the rank of the second card is used to break the tie. So, for example, a flush with the Ten of Hearts and the Eight of Hearts is better than a flush with the Ten of Clubs and the Four of Clubs because Eight is a higher rank than Four. If two flushes contain cards with the same rank, the tie is not broken.

The lowest ranking hand in two card poker is referred to as a high card hand. This is a hand that is not a pair or a flush. Ties between high card hands are broken by the rank of the highest ranking card in the hand. Thus, a high card hand with the Jack of Hearts and the Ten of Clubs is better than a high card hand with the Ten of Hearts and the Eight of Spades. If there is a tie between the highest ranking card of the high card hands, the rank of the second card is used to break the tie. If two high card hands contain cards with the same rank the tie is not broken.

Write a program that determines the best two card poker hand in a group of hands based on the above rules.

Input
The first line of input will contain a single integer n that indicates the number of data sets to process. The remainder of the input consists of those n data sets.

Each data set will consist of two parts. The first part of a data set is a single integer m that indicates how many hands of cards are in this data set. The next m lines of the data set are the hands. Both cards in the hand appear on the same line, separated by a comma and a single space. The cards in a hand are not in any particular order.

Each data set is assumed to be dealt from a standard deck so in a given data set no card (unique combination of suit and rank) will appear more than once. It is possible for the same card to appear in multiple data sets.

Output
For each data set, print one line. On that line print out what type of hand the highest ranking hand in the data set is using capital letters. The three possible types of hands are: PAIR, FLUSH, and HIGH CARD. Then print a single space and the number of hands in the data set that qualify as the highest hand. This is not the same as the number of hands in the data set that are the same type as the highest hand. For example if a data set contains 3 pairs, but only two of those three are the highest hand print out 2, not 3.

Example Input File
```
5
1
Two of Clubs, Three of Clubs
3
Two of Clubs, Three of Clubs
Two of Hearts, Two of Spades
Ace of Hearts, King of Spades
4
Three of Spades, Ace of Spades
Ace of Hearts, Three of Hearts
Ace of Clubs, Three of Clubs
Ace of Diamonds, Two of Diamonds
4
Ace of Spades, Ace of Hearts
King of Diamonds, King of Hearts
Ace of Clubs, King of Clubs
Ace of Diamonds, King of Spades
5
Six of Diamonds, Seven of Clubs
Seven of Hearts, Five of Diamonds
Seven of Diamonds, Four of Clubs
Seven of Spades, Six of Clubs
Six of Hearts, Five of Spades
```

Example Output to Screen
```
FLUSH 1
PAIR 1
FLUSH 3
PAIR 1
HIGH CARD 2
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