Poker is any of a number of card games in which players wager over which hand is best according to that specific game‘s rules in ways similar to these rankings. The ranking depends on the pattern of hands. A common ranking hierarchy is defined as:
High Card < Pair < Two Pairs < Three of a Kind < Straight < Flush < Full House < Four of a Kind < Straight Flush < Royal Flush
The patterns bases on five cards. Followings are their definitions:
High Card: Five different cards
Pair: Two cards with the same face value.
Two pairs: Two pairs with different face value
Three of a Kind: Three cards with the same face value
Straight: Cards with five contiguous face values, including Ten Jack Queen King Ace
Flush: Five cards with the same suit color.
Full House: Three of a Kind with a Pair
Four of a Kind: Four cards with the same face value
Straight Flush: A straight with flush
Royal Flush: A Straight Flush ends with Ace (Ten Jack Queen King Ace).
Any hands which satisfy the requirement of the pattern in a high hierarchy are regarded as of that pattern.
Your goal is to write a program to determine the patterns of a combination of five cards.
Requirement: Provide a class for card and a class for hands of five cards. Prepare appropriate constructor for your classes, and encapsulate the method and possible face values and suit colors in your class. Separate your program in files of three categories: the class header file (.h), the class source code file (.cpp), and the file containing main function (.cpp).
Prohibited: Use C-style input/output.

Input

Each case contains ten integers in a single line, which represent the face value of the first card, the suit color of the first cards, the face value of the second card, the suit color of the second card, and so forth. The input ends with -1.

Output

For each case, output the string representing the five cards with the format:
F_1 of S_1, F_2 of S_2, F_3 of S_3, F_4 of S_4, and F_5 of S_5 are P
, where F_i and S_i are the face value and suit color of the i^{th} smallest card in hands, and P is the corresponding pattern. The thirteen face values are encoded as 0 for Ace, 1 for Two, 2 for Three, …, 10 for Jack, 11 for Queen, and 12 for King. The four suit colors are encoded as 0 for Spades, 1 for Hearts, 2 for Diamonds, and 3 for Clubs.

Sample Input

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0 0 2 1 4 2 6 3 8 0
0 0 0 1 2 3 3 0 11 1
2 0 3 1 11 1 2 2 11 3
2 0 11 1 8 3 2 2 2 1
10 0 0 1 9 1 11 1 12 2
3 2 0 2 4 2 10 2 12 2
2 0 11 1 2 2 11 0 2 3
10 0 10 3 11 2 10 2 10 1
4 1 8 1 6 1 7 1 5 1
10 2 9 2 0 2 12 2 11 2
-1
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Sample Output

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Three of Hearts, Five of Diamonds, Seven of Clubs, Nine of Spades, and Ace of Spades are High Card
Three of Clubs, Four of Spades, Queen of Hearts, Ace of Hearts, and Ace of Spades are Pair
Three of Diamonds, Three of Spades, Four of Hearts, Queen of Clubs, and Queen of Hearts are Two Pairs
Three of Diamonds, Three of Hearts, Three of Spades, Nine of Clubs, and Queen of Hearts are Three of a Kind
Ten of Hearts, Jack of Spades, Queen of Hearts, King of Diamonds, and Ace of Hearts are Straight
Four of Diamonds, Five of Diamonds, Jack of Diamonds, King of Diamonds, and Ace of Diamonds are Flush
Three of Clubs, Three of Diamonds, Three of Spades, Queen of Hearts, and Queen of Spades are Full house
Jack of Clubs, Jack of Diamonds, Jack of Hearts, Jack of Spades, and Queen of Diamonds are Four of a Kind
Five of Hearts, Six of Hearts, Seven of Hearts, Eight of Hearts, and Nine of Hearts are Straight Flush
Ten of Diamonds, Jack of Diamonds, Queen of Diamonds, King of Diamonds, and Ace of Diamonds are Royal Flush
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