Course: COMP282: Advanced Data Structures
Semester: Summer 2017
Instructor: Prof. Wiegley
Title: Project 01: Crazy Poker
Due: Tuesday, June 13, 2017 23:59:59

Submit: You may work in teams of two or less students. One team member is to submit all `.java` files needed to run your program.

All `.java` files must have authorship information for both team members as a comment header at the top of each file. For example:

```
// Team Member Name:   Picard, Jean luc
// Team Member Name:   Kirk, James
// Class:              COMP282
// Assignment:         Project 1
```

On a teachers salary it is necessary for your instructor to supplement his income by traveling to Las Vegas frequently to play Texas Hold-em, a form of Poker where each player is dealt two cards, all players share five community cards and the players make the best five card hand they can.

Poker hands typically consist of five cards from a 52 card deck. The cards are identified by their rank and by their suit. Ranks are 2, 3, 4, 5, 6, 7, 8, 9, 10 (T), Jack (J), Queen (Q), King (K), Ace (A). Suits are Hearts (h), Diamonds (d), Clubs (c), Spades (s).

In most forms of poker, hands are ranked according to the order:

1 Pair:	5♡8♢8♣J♣K♠	Cards contain two cards of identical rank (and do not make a better hand)
2 Pair:	5♡8♢8♣J♣J♠	Cards contain pairs of two different ranks (and no better hand can be made)
3 of a kind:	2♡7♢7♣7♠Q♢	Cards contain three of the same rank (and nothing better)
Straight:	T♢J♣Q♠K♡A♠	All five cards can be arranged in sequential order (and nothing better)
Flush:	3♠5♠9♠J♠K♠	All five cards are of the same suit
Full House:	K♠K♢A♠A♡A♢	One pair and one three of a kind simultaneously
Four of a kind:	3♠J♡J♢J♠J♣	you hold all the cards of one rank
Straight Flush:	2♠3♠4♠5♠6♠	Not only is it a straight... It's a flush too!!!

He hasn't been doing well so he has decided to change the game to make it more interesting (If you're going to play a losing game you might as well make it funny and confusing).

In Crazy Hold-em^{TM}the rules are changed as follows:

1. Each player is dealt three cards instead of two. This provides each player with a total of eight cards to make their hand from (including the usual five community cards).
2. Hands consist of six cards instead of five.

Of course this makes for weird possibilities that aren't possible in a five card hand such as two three of a kind (4♠4♢4♡J♠J♣J♡). So to make the game funnier (and to confuse opponents so Prof. wiegley wins more) the following hands and rankings have been established:

Non-Rainbow	2♣ 3♣ 4♣ 5♢ 8♢ J♡	You don't have at least one of each suit.
1 pair	J♣ J♢ 4♢ 8♡ 7♡ 5♢	You have two cards of the same rank.
Rainbow	8♣ 4♡ 6♢ Q♠ K♠ A♣	You have one of each suit.
2 pair	8♡ 8♢ A♡ A♣ 3♡ 7♣	You hold four cards that consist of only two ranks.
Three of a kind	2♡ 3♡ 4♣ 4♢ 4♣ 9♠	You have three cards of the same rank.
Swingers	K♠ Q♠ 8♢ 3♡ K♢ Q♢	You have two sets of suited Kings and Queens.
5 card straight	3♢ 7♡ 8♣ 9♠ T♡ J♢	You hold five cards in numerical sequence (A is either 1 or 13).
Monochromatic	8♢ 4♢ Q♡ 4♢ 9♡ K♢	Your cards are either all black or all red.
Full house	4♡ 4♢ 8♣ Q♠ Q♠ Q♠	You hold both a pair of something and three of a kind.
3 pair:	4♠ 4♢ 8♣ 8♢ 9♡ 9♠	Cards consist of exactly three unique ranks.
Monarchy:	4♠ 8♠ T♡ J♠ Q♠ K♠	A Jack, Queen and King of the same suit and no other face cards.
Even:	2♡ 4♠ 6♢ 8♣ T♣ T♡	All your cards are a 2,4,6,8 or 10.
6 card straight:	6♢ 7♡ 8♣ 9♠ T♡ J♢	You have six cards in numerical order (like 5 card straight but 6).
Four of kind:	6♣ 6♢ 6♠ 6♡ 8♡ 9♢	You hold four of a kind.
Odd:	3♠ 5♡ 7♢ 7♢ 9♣ 9♠	All of your cards are a 3,5,7 or 9.
Flush:	3♠ 5♠ 6♠ 7♠ J♠ Q♠	All six of your cards are the same suit.
Triplets:	3♠ 3♢ 3♡ T♢ T♣ T♡	You have two different three of a kinds.
Overfull house:	5♠ 5♢ 5♡ 5♣ J♠ J♣	Four of a kind and a pair.
Homosapiens:	J♠ J♢ J♣ Q♠ Q♢ K♣	All your cards are face cards.
Kingdom:	4♠ 8♠ T♠ J♠ Q♠ K♠	(Monarchy + flush) a Monarchy with remaining cards of the same suit!
5 card straight flush:	3♢ 7♢ 8♢ 9♢ T♢ J♢	5 cards straight but all six cards are the same suit.
6 card straight flush:	6♢ 7♢ 8♢ 9♢ T♢ J♢	6 cards straight all in the same suit.
Orgy:	J♠ J♢ J♣ J♡ Q♠ Q♡	All your cards are Jacks and Queens.
Politics:	J♠ J♢ Q♠ Q♢ K♠ K♢	You hold two Monarchys.
Dinner party:	Q♠ Q♢ Q♡ K♠ K♢ K♡	All your cards are suited kings and queens.

All hand descriptions assume that you cannot simultaneously make a better hand than the one described. For Example: A♠A♢4♣7♡8♡8♣ does not count as 1 pair because it could also be interpreted as 2 pair (And a rainbow too!). In other words a set off cards is always considered as the strongest pattern than it can make.

In Hold'em poker games the cards "speak"; which is to say that, players are not responsible for identifying what they have; the dealer does that.

Your task is to write a program that determines the ranked order of the hands and who beats who from a list of players.

The input to your program is simply a list of command line arguments that identify the cards that have been dealt. Your program will be executed as illustrated in the following example:

java CrazyPoker 2c 3s 6d 7s 8h Kh Jd 4d Jc Kc Qc Tc 9c Jh 9s 9h 9d Qs Ks Js

This example illustrates the input for five players playing a game. The first five cards (2♣3♠6♢7♠8♡) are the community cards and are shared by all players. The player's individual cards are:

Player 1:	K♡J♢4♢	(Non-rainbow)
Player 2:	J♣K♣Q♣	(Monarchy)
Player 3:	T♣9♣J♡	(6 Card Straight)
Player 4:	9♠9♡9♢	(Three of a kind)
Player 5:	Q♠K♠J♠	(Monarchy)

The output your program should generate is simply:

```
1: Player 3
2: Player 2
2: Player 5
4: Player 4
5: Player 1
```