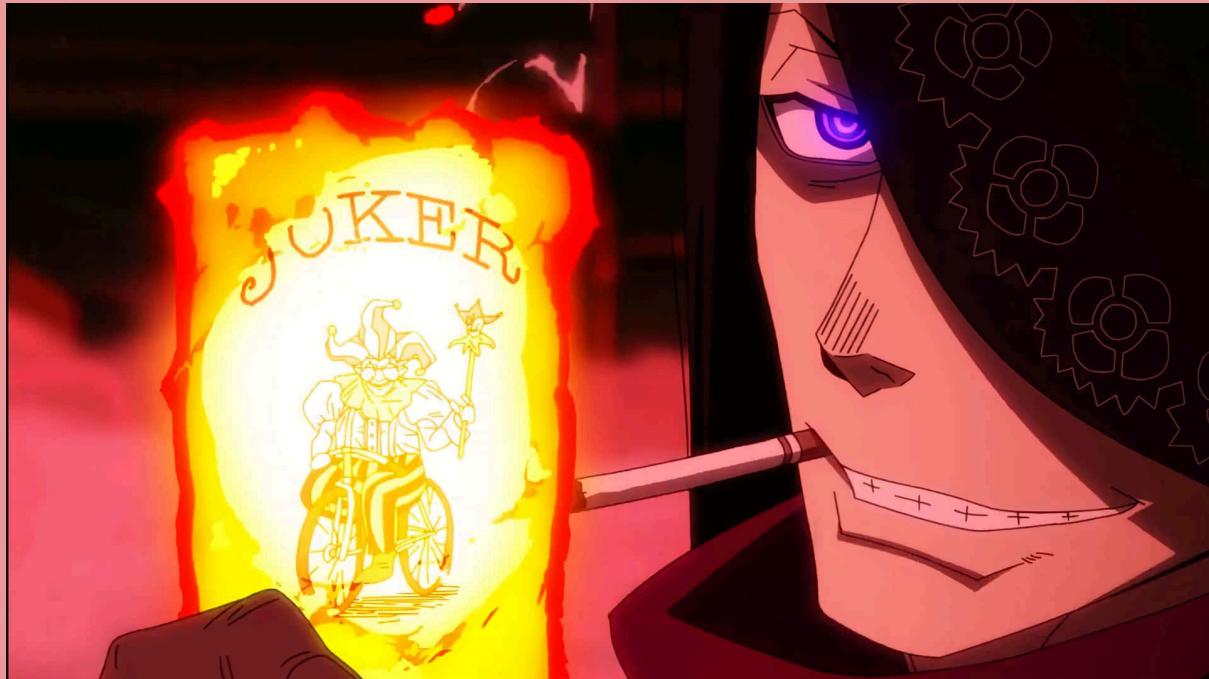


# 拖拉機

Author: Rengga

Time limit: 1s



*“The struggle itself towards the heights is enough to fill a man's heart.  
One must imagine Sisyphus happy.”*

Ren kecewa karena soal modul 1 yang dia buat, dianggap terlalu mudah. Untuk melewati waktu, Ren mencoba menemukan hobi baru. Suatu hari, ia menemukan game kartu remi yang sangat menyenangkan bernama *Tuō lā jī* (拖拉機). Pada dasarnya, *Tuō lā jī* (拖拉機) adalah permainan kartu berbasis poin yang dimainkan oleh empat orang secara bergiliran searah jarum jam. Dalam kasus ini, pemainnya adalah Arsud, Brsud, Crsud, dan Dusra, mereka duduk di meja bundar dalam urutan tersebut. Mereka kemudian akan dibagi menjadi 2 tim: Tim 1 (Arsud dan Crsud) dan Tim 2 (Brsud dan Dusra).

Permainan menggunakan dua set kartu remi standar (108 kartu, termasuk *Jokers*), dan berlangsung dalam beberapa ronde. Setiap tim akan memiliki **Current Rank** (CR) mereka tersendiri. Rank adalah peringkat atau urutan nilai kartu, yang dapat dilihat dari nilai angka ataupun gambar pada kartu (A (Ace), K (King), Queen (Q), ..., 2 (Two)). Setiap ronde memiliki satu jenis kartu utama (Trump) yang menentukan kekuatan kartu. Kartu Trump terdiri atas **Red Joker** (RJ), **Black Joker** (BJ), Main Suit (**Hearts** (H), **Diamonds** (D), **Clubs** (C), **Spades** (S), atau **None** (O)) dan CR dari tim yang berperan sebagai lead pada ronde tersebut, lead adalah pemain yang akan bergerak paling pertama. Pada umumnya, permainan terdiri atas beberapa ronde, di mana setiap ronde terdiri atas beberapa **trick**. Dalam suatu trick, pemain-pemain akan mengeluarkan beberapa kartu sesuai dengan peraturan yang akan diterapkan.

Pada setiap ronde, kartu akan diurut sebagai berikut:

**RJ > BJ > Main Suit and CR > Other Suit and CR > Other Ranks and Main Suit > Non-trumps**

Setiap kartu dengan main suit dan bukan ***CR***, maupun kartu yang bersifat non-trump akan diurut berdasarkan ***rank*-nya** ( $A > K > Q > J > T > 9 > 8 > \dots > 2$ ).

Sebagai contoh, perhatikan kasus berikut di mana ***CR*** adalah 7 dan ***Main Suit*** adalah ***Hearts*** (H). Maka urutan kartu adalah sebagai berikut:

- ***RJ***
- ***BJ***
- ***H7***
- ***S7 = C7 = D7***
- ***HA***
- ***HK***
- ***HQ***
- ***HJ***
- ***HT***
- ***H9***
- ***H8***
- ***H6***
- ***H5***
- ***H4***
- ***H3***
- ***H2***
- ***SA = CA = DA*** (Aces)
- ***SK = CK = DK*** (Kings)
- ***SQ = CQ = DQ*** (Queens)
- ***SJ = CJ = DJ*** (Jacks)
- ***ST = CT = DT*** (Tens)
- ***S9 = C9 = D9***
- ***S8 = C8 = D8***
- ***S6 = C6 = D6***
- ***S5 = C5 = D5***
- ***S4 = C4 = D4***
- ***S3 = C3 = D3***
- ***S2 = C2 = D2***

Perhatikan bahwa kartu yang tertulis dengan ***bold***, merupakan kartu ***Trump***.

Untuk kasus di mana Main Suit adalah ***None*** (O), maka kartu dapat diurut seperti berikut:

- ***RJ***
- ***BJ***
- ***H7 = S7 = C7 = D7***
- ***HA = SA = CA = DA***
- ***HK = SK = CK = DK***
- ***HQ = SQ = CQ = DQ***
- ***HJ = SJ = CJ = DJ***
- ***HT = ST = CT = DT***
- ***H9 = S9 = C9 = D9***
- ***H8 = S8 = C8 = D8***
- ***H6 = S6 = C6 = D6***
- ***H5 = S5 = C5 = D5***
- ***H4 = S4 = C4 = D4***
- ***H3 = S3 = C3 = D3***
- ***H2 = S2 = C2 = D2***

Setiap trick akan dipimpin oleh seorang **lead** dan diikuti oleh pemain lainnya (**follow**) searah jarum jam. Setiap trick akan diawali oleh lead yang akan mengeluarkan satu atau beberapa kartu yang berstruktur sebagai berikut:

- **Single:** Satu kartu single (C3).
- **Pair:** Dua kartu dengan suit dan rank yang sama (S2S2).
- **Tractor:** Dua atau lebih **pair** yang diurut secara strictly increasing berdasarkan nilai urutan (seperti pada contoh sebelumnya), dengan ketentuan semuanya adalah “trump” atau semuanya “non-trump” dengan jenis (suit) yang sama. Sebagai contoh, jika Main Suit adalah H dan CR lead adalah 7, maka (**H6H6 H8H8 H9H9**) adalah sebuah tractor, sementara (**H2H2 H4H4 H6H6**) bukan tractor, karena tidak bersifat strictly increasing.
- **Throw:** Gabungan dari struktur-struktur di atas, dengan ketentuan semuanya adalah “trump” atau semuanya “bukan trump” dengan jenis (suit) yang sama. Setiap **single**, **pair**, atau **tractor** dalam sebuah **throw** merupakan komponen dari **throw** tersebut.

Sebuah **throw** dapat dianggap sebagai **himpunan komponen yang berbeda**. Sebagai contohnya, pada permainan dengan CR ’7’ dan Main Suit ’H’, H2H2H3H3H4H4H5H5H6H6H9 dapat dianggap sebagai sebuah throw dengan himpunan komponen 1 tractor dan 1 single (H2H2H3H3H4H4H5H5H6H6 (Tractor) + H9 (Single)), namun juga bisa dianggap sebagai himpunan komponen 1 tractor, 2 pair, dan 1 single (H2H2H3H3H4H4 (Tractor) + H5H5 (Pair) + H6H6 (Pair) + H9 (Single)), dan kombinasi-kombinasi lainnya. Namun untuk lead, struktur throw akan dibentuk berdasarkan komponen terpanjang yang memungkinkan, sehingga lead akan menganggap kasus diatas sebagai himpunan komponen 1 tractor dan 1 single. Ini bertujuan agar struktur lead bersifat unik.

Dalam sebuah trick, pemain-pemain yang berperan sebagai follow harus mengikuti struktur yang dimainkan oleh lead, dengan catatan jika lead memainkan non-trump dan follow juga mengeluarkan non-trump, follow harus mengikuti suit yang digunakan oleh lead. **Jika hal-hal tersebut tidak terpenuhi, maka struktur follow tidak dapat dianggap valid.** Perlu dicatat juga, bahwa **lead pasti akan memainkan struktur yang valid**, sehingga tidak mungkin terdapat kasus di mana lead akan mengeluarkan tractor atau throw yang merupakan campuran dari trump dan non-trump ataupun struktur non-trump dengan suit yang berbeda.

Pada umumnya, pemain yang memainkan kartu dengan urutan tertinggi akan memenangkan trick. Namun, untuk struktur throw terdapat beberapa peraturan tambahan.

- Lead **pasti akan memenangkan trick** jika throw merupakan **Trump Throw**.
- Jika lead mengeluarkan **Non-trump Throw**, maka **hanya bisa dikalahkan jika** follow mengeluarkan **Trump Throw**.
- Follow disusun sesuai struktur lead untuk memaksimalkan urutan "**honor card**" tertinggi dalam komponen terpanjang dari throw. Pemenang trick adalah pemain dengan "**honor card**" tertinggi, atau yang lebih dulu memainkannya jika ada lebih dari satu pemain dengan honor card tertinggi.
- **Honor card** adalah kartu dengan urutan nilai tertinggi dari komponen terpanjang dalam struktur throw mereka.

Pemain yang memenangkan trick akan menjadi pemimpin (lead) pada trick selanjutnya.

### **Format Input:**

- Baris pertama berisi 4 masukan, yaitu lead trick, main suit, CR Tim 1, dan CR Tim 2.
- Baris kedua berisi struktur kartu lead ( $1 \leq \text{Cards} \leq 27$ ,  $1 \leq \text{strlen(s)} \leq 54$ ).
- 3 baris selanjutnya adalah struktur follow pertama, kedua, dan ketiga sesuai urutan duduk searah jarum jam.
- $\text{strlen(followersTrick)} == \text{strlen(leadTrick)}$

### **Format Output:**

- Print nama lead trick selanjutnya.

#### **Contoh Input 1:**

```
Crsud H 7 4
S2S2S3S3SA
H3H3H4H4RJ
D7D7H7H7H5
S7S7SQSJ6
```

#### **Contoh Output 1:**

```
Arsud
```

#### **Penjelasan:**

Crsud berperan sebagai lead dan Current Rank yang digunakan adalah CR dari tim Crsud (Tim 1), sehingga urutan pemain arah jarum jam adalah sebagai berikut:

```
Crsud → Dusra → Arsud → Brsud
```

1. Crsud mengeluarkan struktur throw yang terdiri atas 1 tractor (S2S2S3S3) dan 1 single (SA). Struktur throw yang dikeluarkan Crsud bersifat non-trump, sehingga masih dapat dikalahkan oleh follow jika follow mengeluarkan throw dengan komponen yang sama dan bersifat trump.
2. Dusra dan Arsud berhasil mengeluarkan throw trump, namun Brsud tidak mempunyai kartu-kartu yang dapat menyamakan struktur Crsud.
3. Walaupun Dusra memiliki kartu dengan nilai tertinggi (**RJ**), peraturan **honor card** menyatakan bahwa pemenang ditentukan berdasarkan nilai kartu tertinggi pada komponen terpanjang. Komponen terpanjang Dusra adalah **H3H3H4H4** dan komponen terpanjang Arsud adalah **D7D7H7H7**. Sehingga, honor card Arsud (**H7**) memiliki nilai yang lebih tinggi dari Dusra (**H4**).

**Contoh Input 2:**

Crsud S 9 9
H2H2H5H5
S4S4S5S5
D2D3D5D6
H3H3H6H6

**Contoh Output 2:**

Dusra
-------

**Penjelasan:**

Crsud mengeluarkan throw non-trump dengan struktur 2 pair (H2H2 + H5H5). Dusra satu-satunya follow yang dapat mengeluarkan struktur serupa yang bersifat trump, di mana tractor Dusra juga dapat dianggap sebagai 2 pair (S4S4 + S5S5).

**Contoh Input 3:**

Arsud O 3 3
H2
C3
S3
H5

**Contoh Output 3:**

Brsud
-------

**Penjelasan:**

Brsud (C3) dan Crsud (S3) mengeluarkan kartu yang bernilai sama ketika Main Suit adalah None (O) dan CR adalah 3, sehingga C3 = S3. Namun, karena secara urutan Brsud mengeluarkan kartunya terlebih dahulu, maka pemenangnya adalah Brsud.

# 拖拉機

Author: Rengga

Time limit: 1s



*“The struggle itself towards the heights is enough to fill a man's heart.  
One must imagine Sisyphus happy.”*

Ren was disappointed because the problem he made for Module 1 was considered too easy. To pass the time, Ren tried to find a new hobby. One day, he discovered a very enjoyable playing-card game called *Tuō lā jī* (拖拉機). Basically, *Tuō lā jī* (拖拉機) is a point-based card game played by four people taking turns in a clockwise manner. In this case, the players are Arsud, Brsud, Crsud, and Dusra, seated around a circular table in that order. They are then divided into two teams: Team 1 (Arsud and Crsud) and Team 2 (Brsud and Dusra).

The game uses two standard decks of playing cards (108 cards, including Jokers) and is played over several rounds. Each team will have their own **Current Rank** (CR). A rank is the value of a playing card, which is determined by its number or face value (A (Ace), K (King), Queen (Q), ..., 2 (Two)). Each round has one trump suit, which determines card strength. The trump cards consist of **Red Joker** (RJ), **Black Joker** (BJ), Main Suit (**Hearts** (H), **Diamonds** (D), **Clubs** (C), **Spades** (S), or **None** (O)), and the CR of the team acting as lead in that round, a lead is the player who will be the first to play. Generally, the game consists of multiple rounds, and each round contains several **tricks**. In each trick, players will play a number of cards according to the rules described below.

In every round, the cards are ordered as follows:

**RJ > BJ > Main Suit and CR > Other Suit and CR > Other Ranks and Main Suit > Non-trumps**

Every card with the main suit but not the CR, as well as non-trump cards, will be ordered based on its **rank** (A > K > Q > J > T > 9 > 8 > ... > 2).

For example, consider the following case where ***CR*** is 7 and the **Main Suit** is ***Hearts (H)***. Then the order of the cards is as follows:

- ***RJ***
- ***BJ***
- ***H7***
- ***S7 = C7 = D7***
- ***HA***
- ***HK***
- ***HQ***
- ***HJ***
- ***HT***
- ***H9***
- ***H8***
- ***H6***
- ***H5***
- ***H4***
- ***H3***
- ***H2***
- ***SA = CA = DA*** (Aces)
- ***SK = CK = DK*** (Kings)
- ***SQ = CQ = DQ*** (Queens)
- ***SJ = CJ = DJ*** (Jacks)
- ***ST = CT = DT*** (Tens)
- ***S9 = C9 = D9***
- ***S8 = C8 = D8***
- ***S6 = C6 = D6***
- ***S5 = C5 = D5***
- ***S4 = C4 = D4***
- ***S3 = C3 = D3***
- ***S2 = C2 = D2***

Note that every card written in **bold**, is a ***Trump*** card. For a similar case where the Main Suit is ***None (O)***, then the order of the cards is as follows:

- ***RJ***
- ***BJ***
- ***H7 = S7 = C7 = D7***
- ***HA = SA = CA = DA***
- ***HK = SK = CK = DK***
- ***HQ = SQ = CQ = DQ***
- ***HJ = SJ = CJ = DJ***
- ***HT = ST = CT = DT***
- ***H9 = S9 = C9 = D9***
- ***H8 = S8 = C8 = D8***
- ***H6 = S6 = C6 = D6***
- ***H5 = S5 = C5 = D5***
- ***H4 = S4 = C4 = D4***
- ***H3 = S3 = C3 = D3***
- ***H2 = S2 = C2 = D2***

Each trick will be led by a **lead** player and followed by the other players clockwise. A trick begins with the lead playing one or more cards in a specific structure, defined as follows:

- **Single:** One single card (**C3**).
- **Pair:** Two cards with the same suit and rank (**S2S2**).
- **Tractor:** Two or more consecutive **pairs** that are strictly increasing based on the order of the cards (shown in the example above), with the requirement that all cards are either trump or all non-trump of the same suit. For example, in a case where Main Suit is H and the lead's CR is 7 then a structure of (**H6H6 H8H8 H9H9**) is a tractor, while (**H2H2 H4H4 H6H6**) is not a tractor, because it is not strictly increasing.
- **Throw:** A combination of the structures above, with the requirement that all cards are either trump or all non-trump of the same suit. Each **single**, **pair**, or **tractor** in a **throw** is considered a component of the **throw**.

A throw can be viewed as a set of different components. For example, in a game where the CR is '7' and the Main Suit is 'H', the set of cards H2H2H3H3H4H4H5H5H6H6H9 can be considered as a throw with a component set of **1 tractor and 1 single** (H2H2H3H3H4H4H5H5H6H6 (Tractor) + H9 (Single)), but it can also be viewed as a component set of **1 tractor, 2 pairs, and 1 single** (H2H2H3H3H4H4 (Tractor) + H5H5 (Pair) + H6H6 (Pair) + H9 (Single)), and other combinations. However, for the lead, the structure of the throw must be based on the longest possible component grouping, so the lead must treat the example above as 1 tractor and 1 single. This ensures that the lead's structure is unique.

In a trick, the follow players must match the structure played by the lead. Additionally, if the lead plays a non-trump structure and the follow also plays non-trump, the follow must follow the suit used by the lead. **If these conditions are not met, the follow's structure is considered invalid. It is also noted that the lead will always play a valid structure**, so there will never be a case where the lead plays a tractor or throw that mixes trump and non-trump cards, or mixed non-trump suits.

Generally, the player who plays the highest-ranking card will win the trick.

However, for a throw, additional rules apply:

- The **lead automatically wins** the trick if the throw is a **Trump Throw**.
- If the lead plays a **Non-trump Throw**, it **can only be beaten** if a follow plays a **Trump Throw**.
- Follows are arranged according to the lead's structure to maximize the highest-ranked **honor card** in the longest component of the throw. The winner of the trick is the player with the highest honor card, or if tied, the one who played it earliest.
- An **honor card** is defined as the highest-ranked card from the longest component in the throw structure.

The player who wins the trick becomes the **lead** for the next trick.

### **Input Format:**

- The first line consists of four inputs: the trick lead, the main suit, the CR of Team 1, and the CR of Team 2.
- The second line contains the lead's card structure ( $1 \leq \text{Cards} \leq 27$ ,  $1 \leq \text{strlen(s)} \leq 54$ ).
- The next three lines contain the card structures of the first, second, and third followers, in clockwise order from the lead.
- $\text{strlen(followersTrick)} == \text{strlen(leadTrick)}$

### **Output Format:**

- Print the name of the next trick's lead.

### **Sample Example 1:**

```
Crsud H 7 4
S2S2S3S3SA
H3H3H4H4RJ
D7D7H7H7H5
S7S7SQSJS6
```

### **Sample Example 1:**

```
Arsud
```

### **Explanation:**

Crsud acts as the lead, and the Current Rank used is the CR of Crsud's team (Team 1). Therefore, the order of play in clockwise direction is as follows:

```
Crsud → Dusra → Arsud → Brsud
```

1. Crsud plays a throw structure consisting of 1 tractor (S2S2 S3S3) and 1 single (SA). The throw played by Crsud is non-trump, so it can still be beaten by a follow if the follow plays a throw with the same components and trump status.
2. Dusra and Arsud manage to play trump throws, but Brsud does not have the cards required to match Crsud's structure.
3. Although Dusra has the overall highest card (RJ), the **honor card** rule states that the winner is determined based on the highest-ranked card in the longest component. The longest component of Dusra is **H3H3H4H4**, while the longest component of Arsud is **D7D7H7H7**. Therefore, Arsud's honor card (**H7**) has a higher rank than Dusra's (**H4**).

**Sample Input 2:**

Crsud S 9 9
H2H2H5H5
S4S4S5S5
D2D3D5D6
H3H3H6H6

**Sample Output 2:**

Dusra
-------

**Explanation:**

Crsud plays a non-trump throw with the structure of 2 pairs (H2H2 + H5H5). Dusra is the only follow who can play a similar structure in trump form, where Dusra's tractor can also be considered as 2 pairs (S4S4 + S5S5).

**Sample Input 3:**

Arsud O 3 3
H2
C3
S3
H5

**Sample Output 3:**

Brsud
-------

**Explanation:**

Brsud (C3) and Crsud (S3) played cards with the same value when the Main Suit is None (O) and the CR is 3, so C3 = S3. However, since Brsud played their card first, the winner is Brsud.