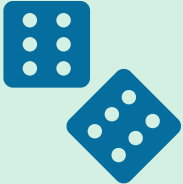


# PROBLEM 1: Match-making

[50points]

For the first portion of this problem, you will implement a simple version of our game Ochos Locos. For this simplified version, there will be three players. The rules of the game are as follows:



## Basic Rules of the game Ochos Locos

### **Setup:**

- The game starts with a shuffled deck of 32 cards (given to you).
- Each player is dealt 5 cards and one card is upturned in the discard pile.
- The remaining cards from the deck are placed in a draw pile

### **Play:**

- On a player's turn, they must play a card (if one exists) that matches either the colour or number of the card played just before:
  - If the player has more cards in their hand of the matching number than they do of the matching colour:
    - They will choose to play a card of matching number. (e.g. 4)
    - They will play the card of that number that they have which comes first in rainbow order: red-yellow-green-blue. (i.e. R4-Y4-G4-B4)
  - If the player equal or more cards in their hand of the matching colour than they do of the matching number:
    - They will choose to play a card of matching colour.
    - They will play the card of that colour that they have which comes first counting order: 1-2-3-4-5-6-7-8.
- If a player does not have a card that they are able to play, they pick up a new card from the top of the draw pile (if one exists, pass if not).

**Example 1 (more cards of matching number):**

Suppose the upturned card in the discard pile is a Green-3 (**G3**) and that the player's hand has the following cards in it:

**R3** **R7** **Y3** **Y7** **G8** **B3** **B7** **B8**

The player will look at their hand and count the number of red cards (2 red cards: **R3** & **R7**) and the number of 3s (three: **R3**, **Y3** & **B3**).

- Since they have more threes than red cards, they will choose to play a three card, but which colour?
  - They have a red, yellow and blue 3, so they choose to play the red because it comes first in rainbow order (**red-yellow-green-blue**), choosing first red then yellow, then green and lastly blue.

The player will choose to play the card **R3**.

**Example 2 (equal or more cards of matching colour):**

Suppose this time the upturned card in the discard pile is a Blue-8 (**B8**) and that the player's hand is the same as before with the following cards in it:

**R3** **R7** **Y3** **Y7** **G8** **B7** **B8**

The player will look at their hand and count the number of blue cards (3 blue cards: **B7** & **B8**) and the number of 8s (two eights: **G8** & **B8**).

- Since they have at least as many blue cards as eights, they will choose to play a blue card, but which number?
  - They have a blue 7 and a blue 8. Since 7 comes before 8 in counting order, they will choose to play the 7.

The player will choose to play the card **B7**.

**Example 3 (no match in hand):**

Suppose this time the upturned card in the discard pile is a Yellow-4 (**Y4**) and that the player's hand has the following cards in it:

**R1** **R2** **G3** **G5** **B6** **B7** **B8**

The player has no cards that match they Yellow-4 in either colour or number (i.e. they have no cards they are either yellow or the number 4). They must DRAW a card from the draw pile.

## Input

- Hand of player one (initially 5 cards)
- Hand of player two (initially 5 cards)
- Hand of player three (initially 5 cards)
- First card in the discard pile on which to you play on (1 card)
- Remaining cards in the draw pile (top to bottom, all remaining cards)

## Processing

1. Output the starting card on the discard pile.
2. Starting with player one, decide which card they will play (or pick up from the draw pile) and output their choice (or **DRAW** if they have no match and must try to pick up a card from the draw pile).
3. Repeat this for each player until a player has no more cards in their hand. This player becomes the winner of the game.

## Output format

0: {First/starting card on the discard pile}

1: {Card played by player 1\*}

2: {Card played by player 2\*}

3: {Card played by player 3\*}

1: {Card played by player 1\*}

2: {Card played by player 2\*}

3: {Card played by player 3\*}

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{N}: {Last card played by player N} (**WINNER**)

Where N = 1,2, or 3, the player first able to play all of their cards and empty their hand

\* If no card is able to be played by a player, output **DRAW** on their turn and pick up a card from the draw pile (if one exists).

Sample input	Sample output	New hand after play
Y3 Y7 Y8 B1 B7 R8 Y1 G4 G8 B8 R3 R4 R7 Y6 B5 B3 <b>R2 G5</b> B6 Y5 G3 G2 ... Y4 R1 G1 Y2 G6 ... B4 R5 G7 R6 B2	0: B3 1: B1 2: B8 3: B5 1: B7 2: DRAW 3: R7 1: Y7 2: Y1 3: Y6 1: Y3 2: DRAW 3: R3 1: DRAW 2: R2 3: R4 (WINNER)	-- 1: Y3 Y7 Y8 <del>B1</del> B7 2: R8 Y1 G4 G8 <del>B8</del> 3: R3 R4 R7 Y6 <del>B5</del> 1: Y3 Y7 Y8 <del>B7</del> 2: <u>R2</u> R8 Y1 G4 G8 3: R3 R4 <del>R7</del> Y6 1: Y3 <del>Y7</del> Y8 2: R2 R8 <del>Y1</del> G4 G8 3: R3 R4 <del>Y6</del> 1: <del>Y3</del> Y8 2: R2 R8 G4 <u>G5</u> G8 3: <del>R3</del> R4 1: Y8 2: <del>R2</del> R8 G4 G5 G8 3: <del>R4</del>
R1 R4 G2 G8 B2 R2 R8 Y7 Y8 B3 R3 R6 Y3 G4 G5 B6 <b>Y2</b> B7 Y1 G6 Y5 G7 ... R5 R7 G1 Y4 B5 G3 ... B1 B8 B4 Y6	0: B6 1: B2 2: B3 3: R3 1: R1 2: R2 3: R6 1: R4 2: R8 3: DRAW 1: G8 2: Y8 3: Y2 1: G2 (WINNER)	-- 1: R1 R4 G2 G8 <del>B2</del> 2: R2 R8 Y7 Y8 <del>B3</del> 3: <del>R3</del> R6 Y3 G4 G5 1: <del>R1</del> R4 G2 G8 2: <del>R2</del> R8 Y7 Y8 3: <del>R6</del> Y3 G4 G5 1: <del>R4</del> G2 G8 2: <del>R8</del> Y7 Y8 3: <u>Y2</u> Y3 G4 G5 1: G2 <del>G8</del> 2: Y7 <del>Y8</del> 3: <del>Y2</del> Y3 G4 G5 1: <del>G2</del>

**Note:** In the “New hand after play” column, cards are shown (for fun!) in their colour. An underlined card (e.g. B7) was just added to the player's hand and a card with a strikethrough (e.g ~~R2~~) was just played from the player's hand. I have made bold (e.g **Y2**) any draw pile cards that were used.