Análisis de Complejidad

Time Complexity

The iniciarPartida method has a time complexity of O(n), where n is the number of cards in the deck. This is because the method performs the following steps:

Shuffles the deck using the Collections.shuffle method, which has a time complexity of O(n).

Creates a new ArrayList to store the players and adds each player to the list. The time complexity of this step is O(m), where m is the number of players.

Iterates through the deck and deals 7 cards to each player. The time complexity of this step is O(n), where n is the number of cards in the deck.

Creates a new Cola object to store the discard pile and adds the first card from the deck to the pile. The time complexity of this step is O(1).

Therefore, the overall time complexity of the iniciarPartida method is O(n) + O(m) + O(n) + O(1), which simplifies to O(n) since n is much larger than m.

Space Complexity

The iniciarPartida method has a space complexity of O(n), where n is the number of cards in the deck. This is because the method creates a new ArrayList to store the players, which has a space complexity of O(m), where m is the number of players. However, since m is much smaller than n, the space complexity of the ArrayList can be ignored.

The method also creates a new Cola object to store the discard pile, which has a space complexity of O(1).

Therefore, the overall space complexity of the iniciarPartida method is O(n) due to the creation of the new ArrayList to store the players.

Time Complexity

The crearMazo method has a time complexity of O(nc), where n is the number of colors and c is the number of cards per color. This is because the method performs the following steps:

Iterates through each color and creates a new Cola object to store the cards of that color. The time complexity of this step is O(n).

Iterates through each card number from 0 to 9 and adds a card of that number and color to the corresponding Cola. The time complexity of this step is O(c).

Adds two special cards (CAMBIAR\_COLOR and MAS\_CUATRO) to the Cola for the black color. The time complexity of this step is O(1).

Repeats steps 2 and 3 for each color. The time complexity of this step is O(nc).

Therefore, the overall time complexity of the crearMazo method is O(n) + O(c) + O(1) + O(nc), which simplifies to O(nc) since nc is much larger than n, c, or 1.

Space Complexity

The crearMazo method has a space complexity of O(nc), where n is the number of colors and c is the number of cards per color. This is because the method creates a new Cola object for each color and adds c cards to each Cola.

Therefore, the overall space complexity of the crearMazo method is O(nc) due to the creation of the Cola objects to store the cards.