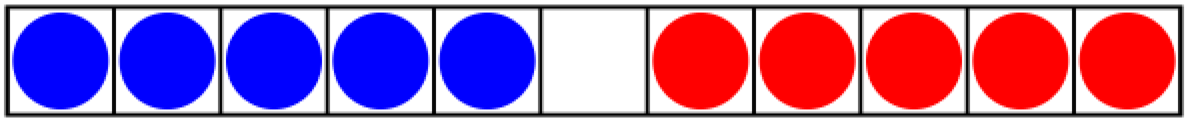
BALL-SWAP PUZZLE ALGORITHM

You will have N number of balls of two distinct color groups; red and blue. Each group of color will have (N/2) balls. In addition, you will have a board of horizontal squares tallying to (N+1) spaces.

This algorithm describes playing the game without moving any of the balls backwards at any instance.

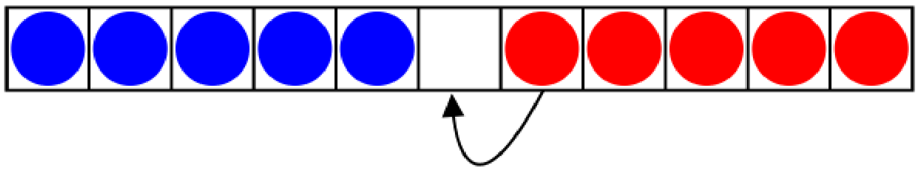
1. Arrange Balls on Squares

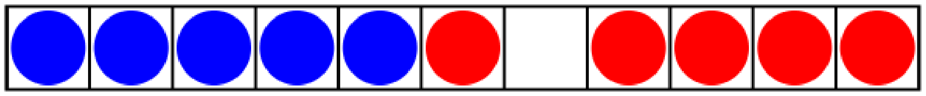
i. Arrange your group of balls on opposite ends of the board, leaving an empty space in the middle, between the closest balls.



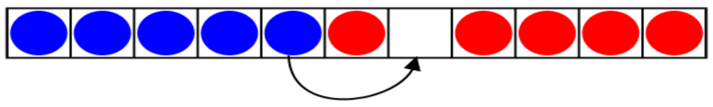
2. Move Balls till Solved

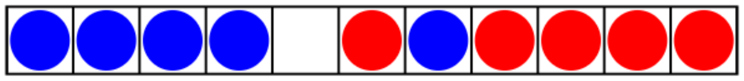
i. You may wish to start from either of the colors on the board. Select the nearest red ball to the empty square and move it one step into the square.



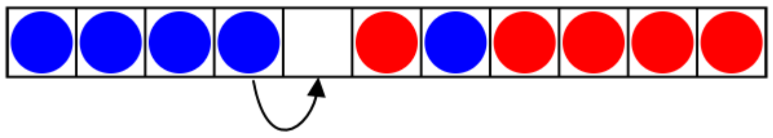


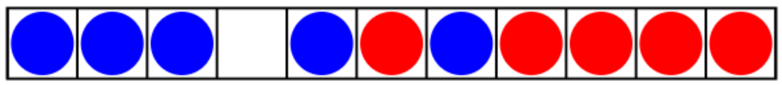
ii. Move the closest blue ball over the red ball and into the empty space that was left behind by the red ball.



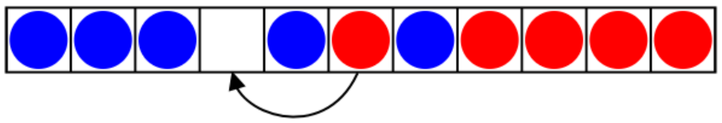


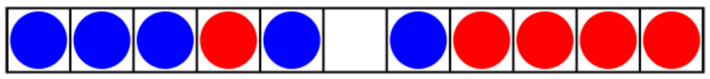
iii. Move the next blue ball one step forward into empty square space, making sure that the ball colors are alternating.



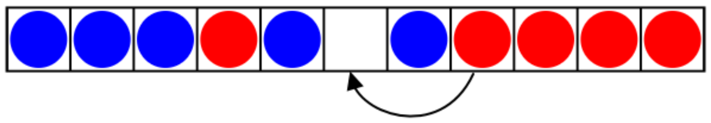


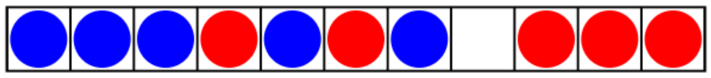
iv. Move the red ball over the blue ball and into the empty square space.

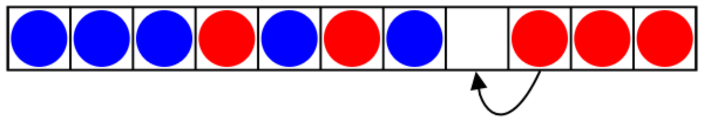




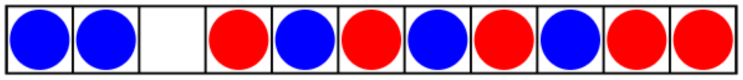
v. Do the same and move the next available red ball forward into the empty space left behind, making sure that the ball colors are alternating.



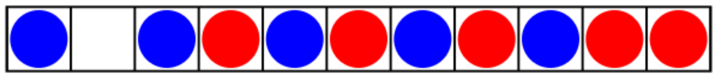




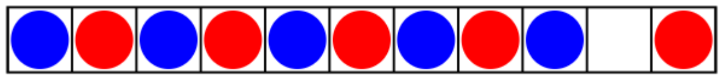
vi. Go back to step ii above and repeat until all the blue balls that can go over the red balls have moved to the next empty slot.

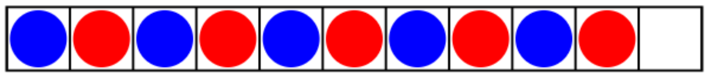


vii. Go back to step iii above for the next ball.

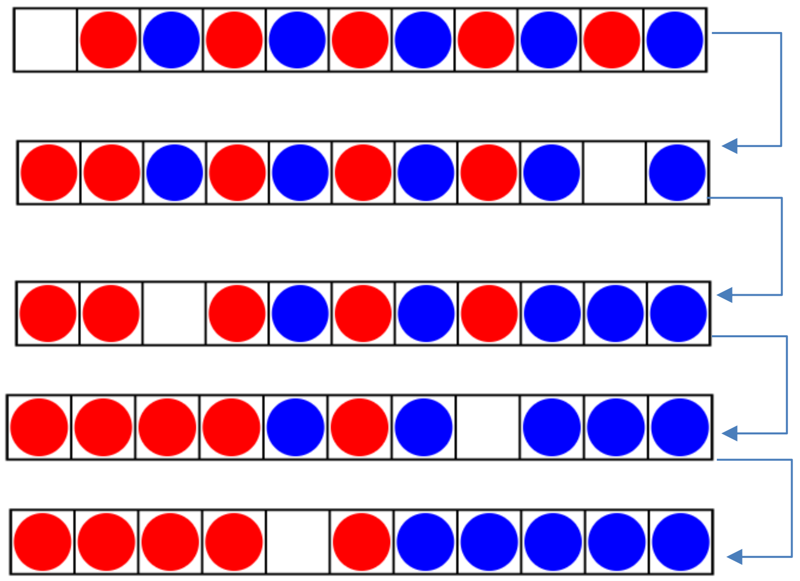


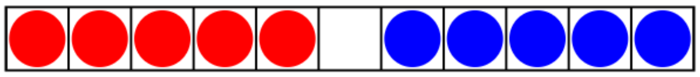
viii. Repeat step iv-vi for the red balls.





ix. Repeat steps vi to viii to move all blue balls to the empty space on the right side as well as move the red balls to the left side.





3. Exit Game

i. The game is complete, and you have won. Given the complexity or size of the game, you will have different number of moves to complete.

PSEUDOCODE

```
• Declare integer value for number of spaces: int N
• Declare the values for the steps: int blueSteps, redSteps
• Declare an array for the balls
• Declare an array for the spaces and pass in the value of N (spaceArray[N)
• Loop through the array for the balls: arrayBalls
  for( int i =0; i< arrayBalls.length; i++)
          blueSteps++

• Loop through the spaceArray
  for(int j=0; j< tiles.length; j++)
          redSteps--
```