ACSL 2024 CONTEST 1
ACSL Tiles

PROBLEM STATEMENT:

ACSL Tiles is a one-person game played with rectangular tiles. Each tile has a single-digit number, 0-9, at each end. At the start of the game, there are 4 rows, each with a single-digit number from 0-9; thus the number 405 represents the starting numbers O, 4, O, 5. Tiles can be re-oriented; thus, the tiles 04 and 40 are the same tile.

Tiles, called the hand, are given to the player, and other tiles are put into a draw pile. The initial number of tiles in your hand and in the draw pile varies from game to game.

The goal of the game is to build rows by placing a tile from your hand at the right end of a row whose last number matches one of the numbers on the tile. If no tiles in your hand can be placed, tiles are added to the end of your hand from the drawPile, until a tile from the draw pile can be placed.

More specifically, on each turn, try to match your tiles starting with the first one in your hand. See if any can be added to one of the rows, starting with the row after the one where the last tile was placed, rotating back to Row 1 if necessary. Start looking at Row 1 when the game starts.

However, if the last tile placed was a double (i.e., both numbers are the same), another tile must be placed on that row before any other match can be considered. If you cannot place any tiles in your hand, add tiles from the draw pile to your hand until a tile can be placed.

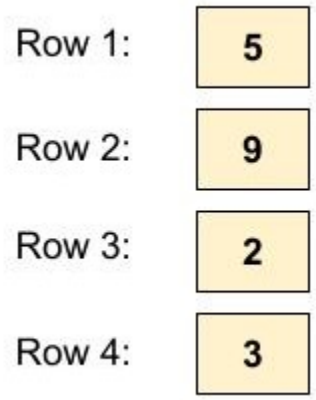
The game ends when you have placed all of the tiles in your hand OR you cannot place any of the tiles in your hand and you have exhausted the draw pile. At that point, find the sum of the single-digit numbers that are still in your hand.

EXAMPLE:

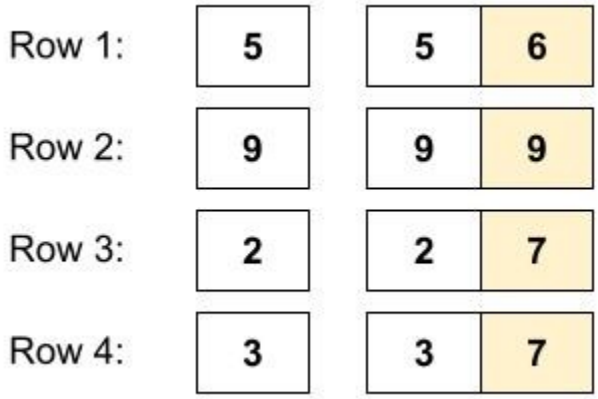
Input:
5923
56 27 73 34 99 45 32 17 64 57 18 11
36 92 22 50 82
Output:
16

Explanation:

The game starts with 4 rows having numbers 5, 9, 2, 3.

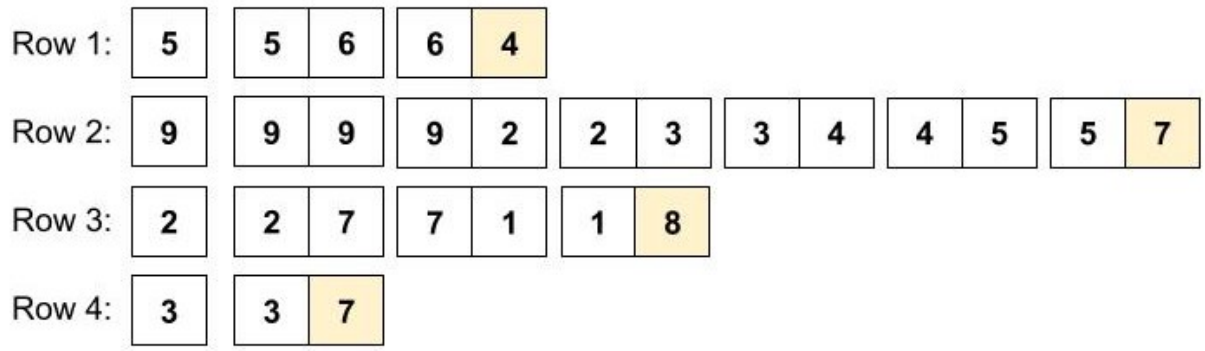


The tile 56 is placed on Row 1; the tile 27 is placed on Row 3; the tile 73 is placed on Row 4 (note that it's rotated, so that the 3 matches); the tile 34 is kept in your hand; and the tile 99 is placed on Row 2.

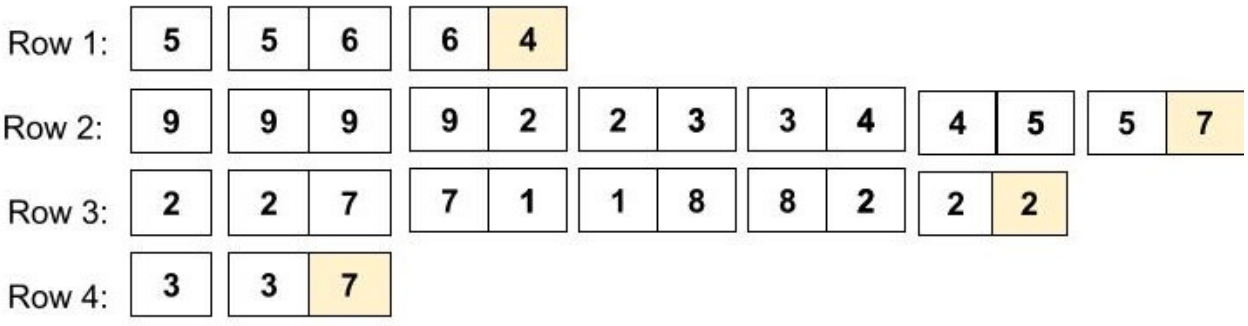


The 99 is a double, so the next tile to be placed must match a 9. None of the tiles in your hand match, so 36 is added to your hand from the draw pile. That tile cannot be placed, so it stays in your hand. Next the 92 is drawn; it can be placed on Row 2.

Your hand is now 34 45 32 17 64 57 18 11 36 and the draw pile is 22 50 82. The following moves are made: 32 on Row 2 (rotated), 34 on Row 2, 45 on Row 2, 17 on Row 3 (rotated), 64 on Row 1, 57 on Row 2, 18 on Row 3.
Here is what the board looks like:



The tiles left in your hand are 11 and 36; neither can be placed, so draw 22 (it cannot be placed), then 50 (it cannot be placed), and then 82. The 82 can be placed on Row 3. Your hand is now 11 36 22 50 and the draw pile is empty. The 22 tile can be placed and then the game is over! The final board is as follows:



Your hand is 11 36 50 so the sum of the single-digit numbers on those tiles is 1+1+3+6+5+0 = 16.

TASK:

Complete the function findHandSum

• The function has 3 parameters: an integer, originalRows, between O and 9999 inclusive, that gives the initial numbers from Row 1 to Row 4. a string of numbers. handTiles, from O to 99 inclusive, representing the tiles in your hand, and a string of numbers, drawPile from O to 99 inclusive. representing the tiles in the draw pile. The numbers in each string represent the two numbers on each tile: a single-digit number indicates that at least one of the numbers on the tile is a O. The numbers in the two strings are each separated by a single space.

• The function returns an integer representing the sum of all of the single-digit numbers on the tiles that are still in your hand when there is nothing more that can be played or drawn. You may create additional functions that are called from findHandSum if needed in solving the problem.

CONSTRAINTS:

The first input is between O and "99 inclusive and all other integers are between O and 99 inclusive.