Exponential Idle
Arrow Puzzle Guide

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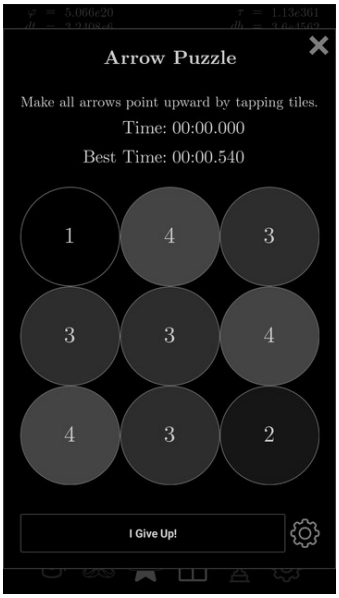
Contents

Easy Difficulty Algorithm

The algorithm is as follows:

1. Solve top row then the middle, tapping tiles below the row you are working with.
   (a) Make the center tile the same as one edge tile (press an edge tile below)
   (b) Make the row constant (press an edge tile below)
   (c) Solve row (press the center tile below)
2. Solve bottom row the same way, but using the middle row and cancelling unwanted changes to top two rows using the top row.

For example, consider the following puzzle:

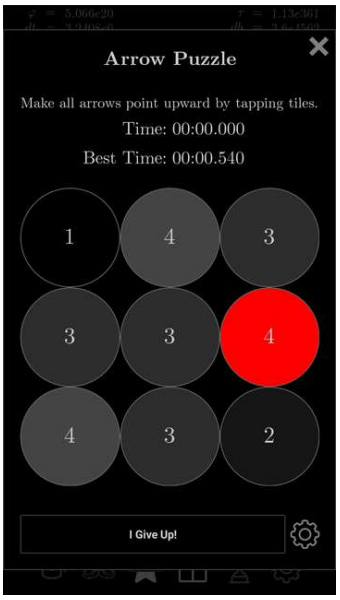


Sample puzzle

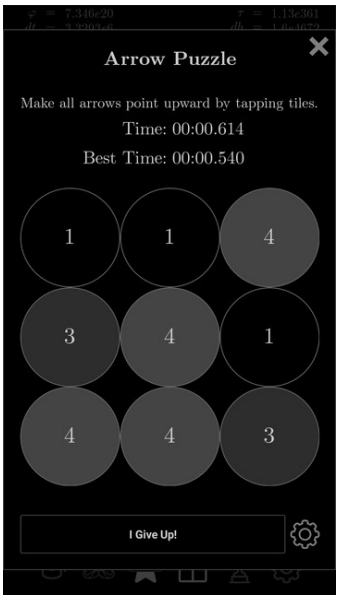
In the following pages, I mark the tile to tap as red, showing the board configuration before and after the move.

Step 1: Solving non-last row

Step 1.1: Make the center tile the same as one edge tile

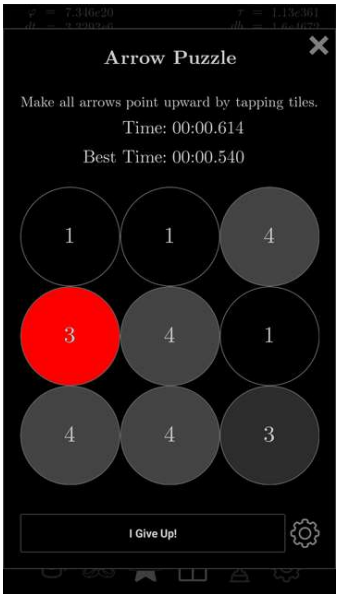


Before

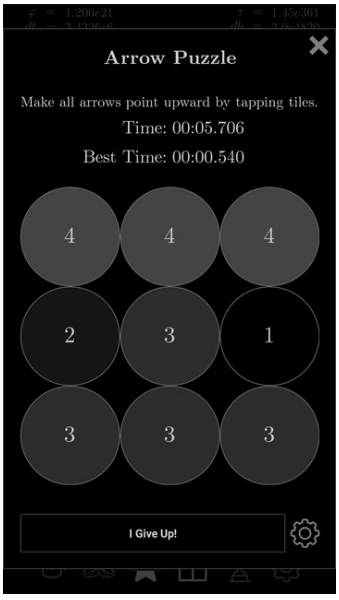


After

Step 1.2: Make the row constant

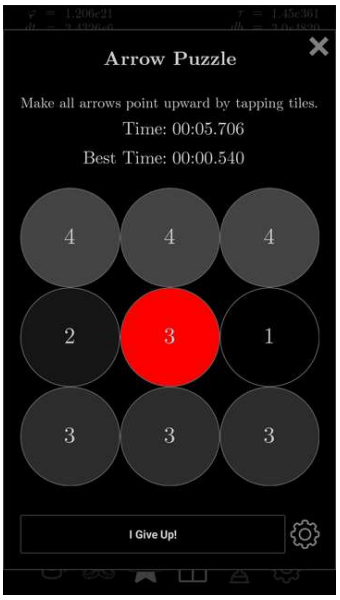


Before

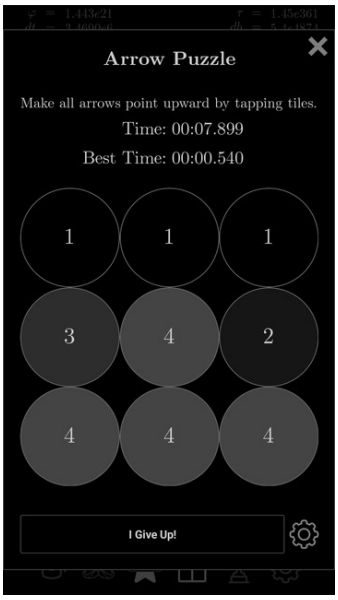


After

Step 1.3: Solve row

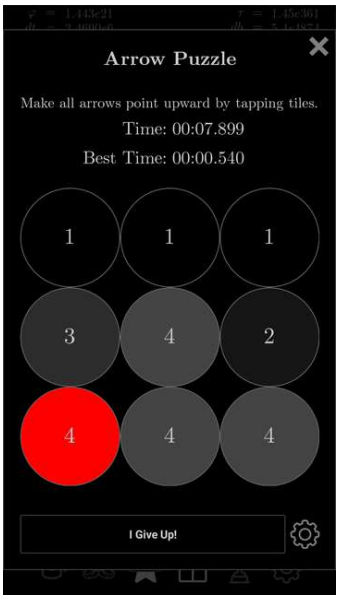


Before

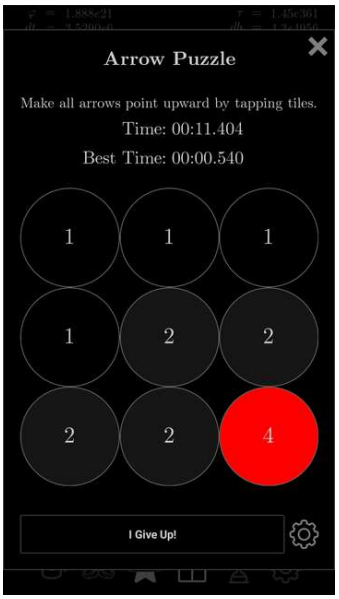


After

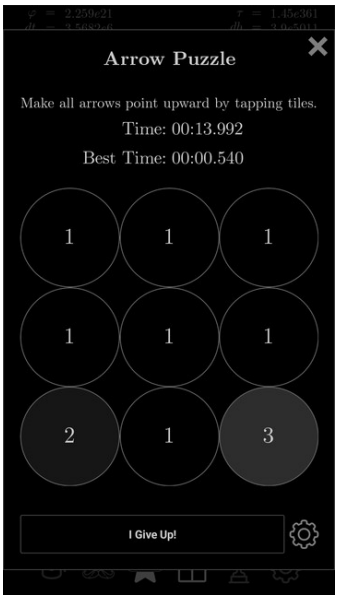
Step 1.4: Repeat for row 2



Step 1.1



Step 1.2

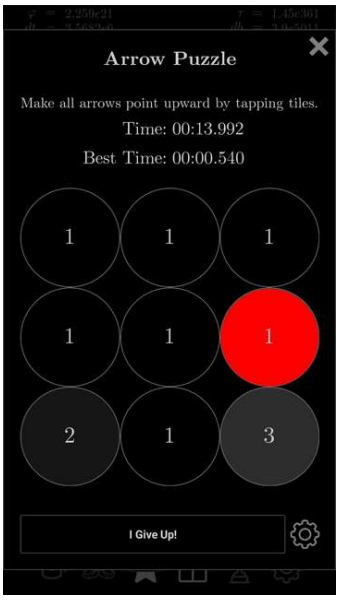


Done

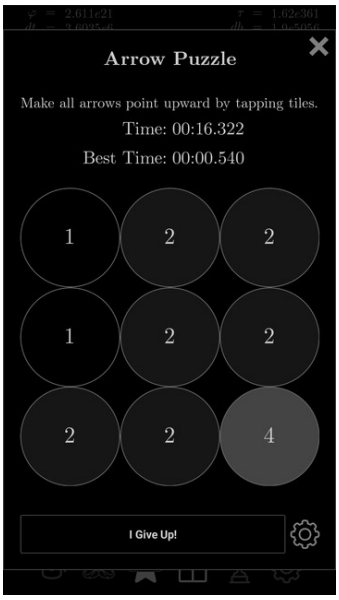
Note that Step 1.3 was fortunately skipped on row 2 for this puzzle because the entire row became 1 after step 1.2. Otherwise, we would tap the bottom-center tile.

Step 2: Solving last row

Step 2.1.1: Make the center tile the same as one edge tile

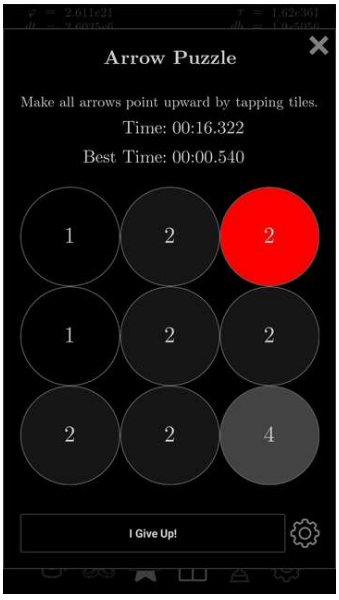


Before

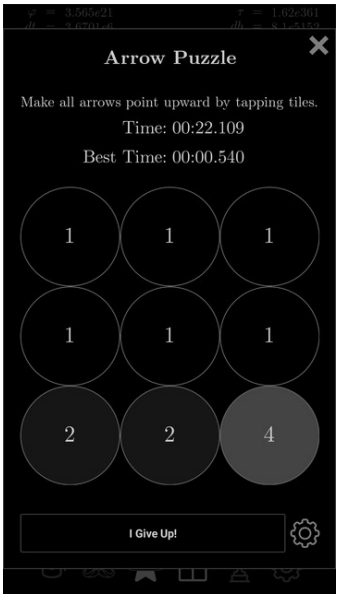


After

Step 2.1.2: Cancel upper row changes

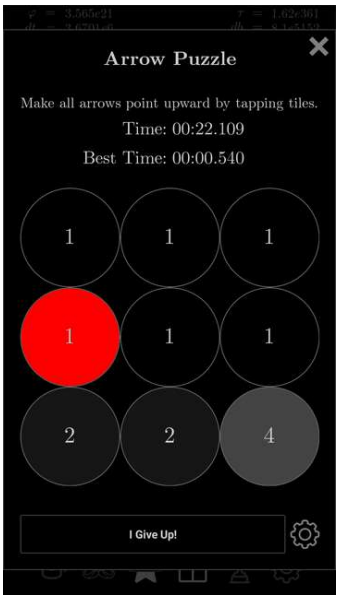


Before

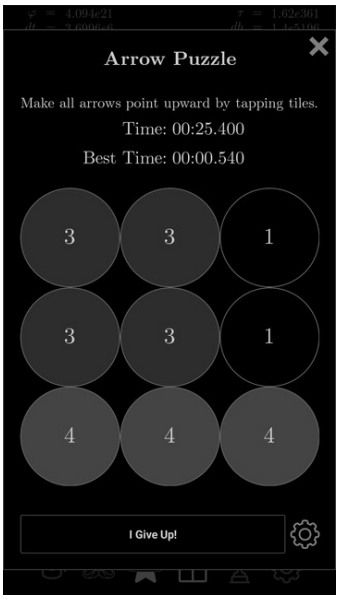


After

Step 2.2.1: Make the row the same

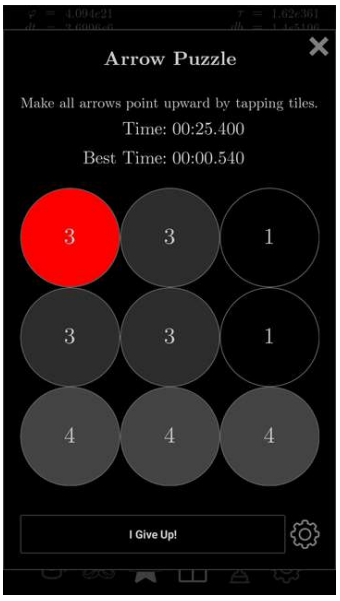


Before

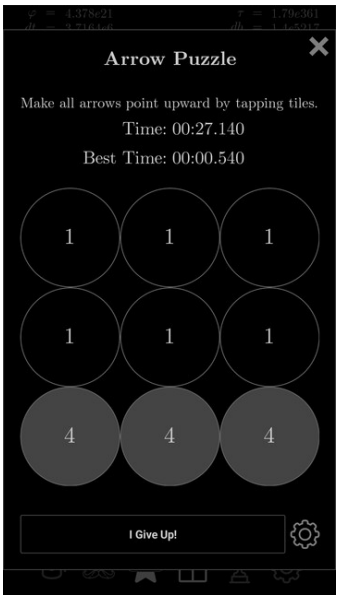


After

Step 2.2.2: Cancel upper row changes

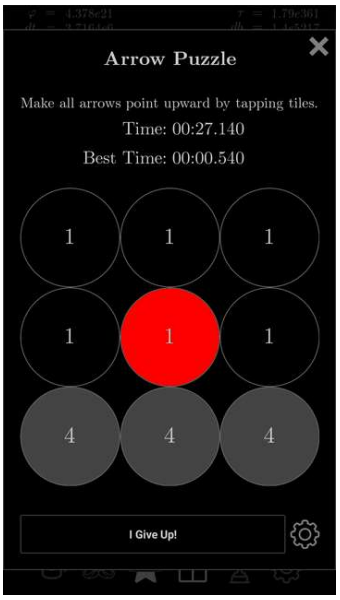


Before



After

Step 2.3.1: Solve row



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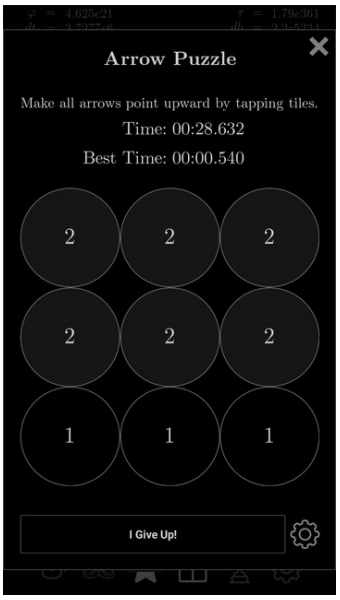
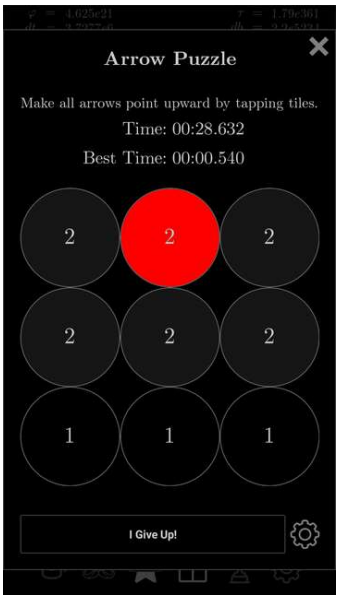
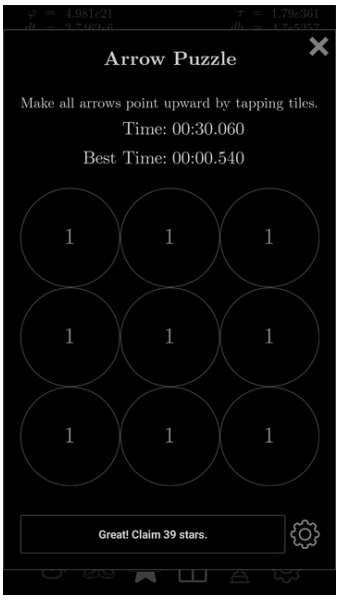


After

Step 2.3.2: Cancel upper row changes



Before



After

Medium Difficulty Algorithm

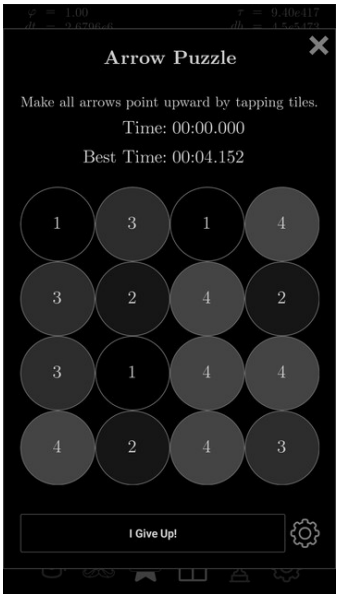
The algorithm is as follows:

1. Solve top three rows in sequence, tapping tiles below the row you are working with.
   (a) Make one center tile the same as its adjacent edge tile (press a center tile below)
   (b) Make the other center tile the same as its adjacent edge tile (press a center tile below)
   (c) Solve the left two tiles (press an edge tile below)
   (d) Solve the right two tiles (press an edge tile below)
2. Solve bottom row, but using the bottom row and cancelling unwanted changes to rows above using rows 2 and then row 1.

Tricks:

- When you cancel out, instead of canceling upwards, first tap row 1 the same number you tapped the bottom row, and then cancel out using row 2.
- When you tap two cells the same number of times, you could use two fingers. (e.g. trick above, or when you encounter a constant row)

For example, consider the following puzzle:

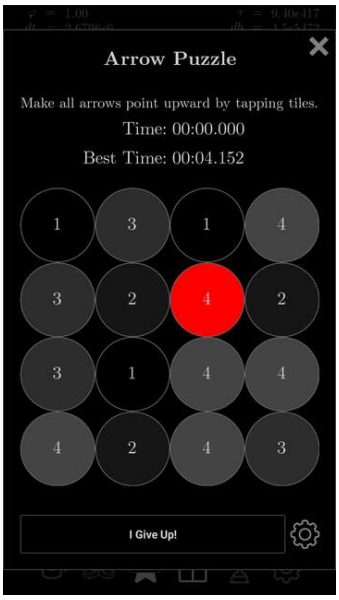


Sample puzzle

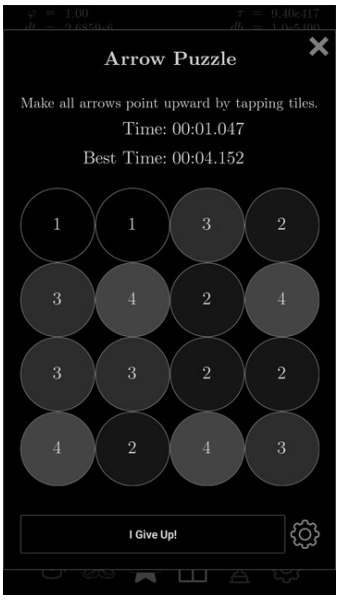
In the following pages, I mark the tile to tap as red, showing the board configuration before and after the move.

Step 1: Solving non-last row

Step 1.1: Make a center tile the same as its adjacent edge tile

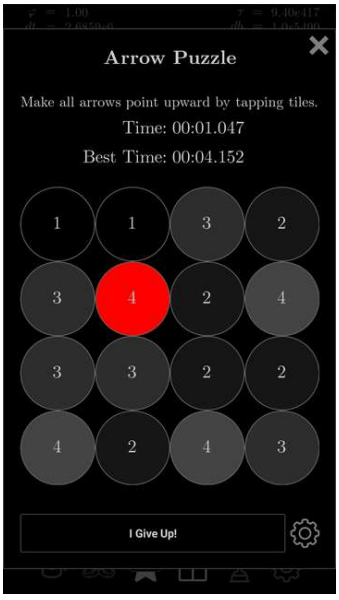


Before

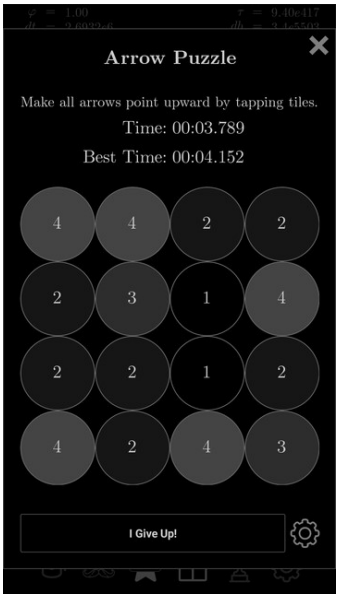


After

Step 1.2: Make the other center tile the same as its adjacent edge tile

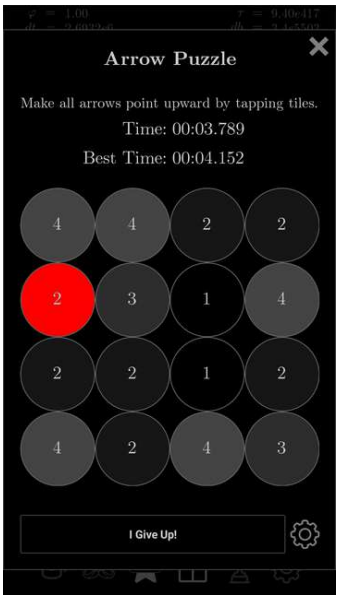


Before

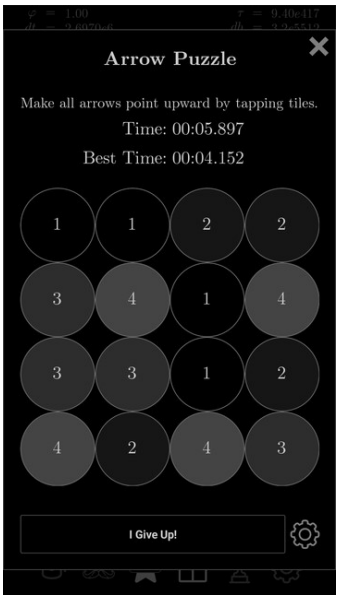


After

Step 1.3: Solve left two tiles

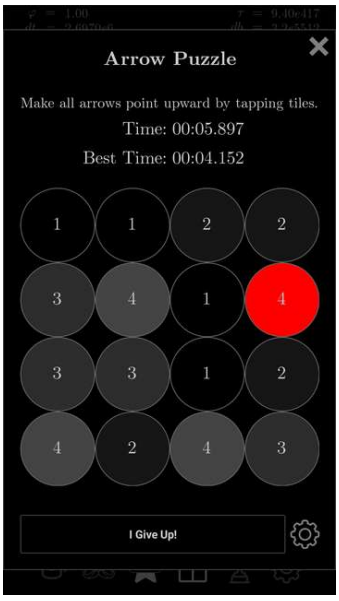


Before

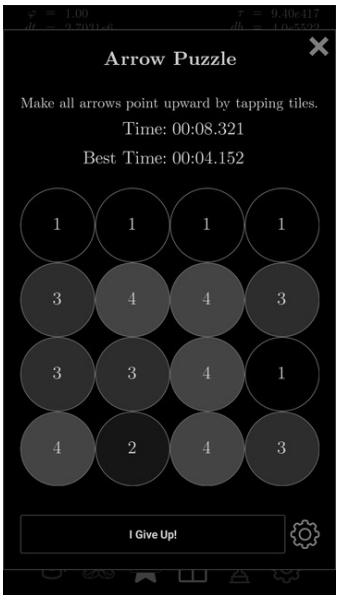


After

Step 1.4: Solve right two tiles

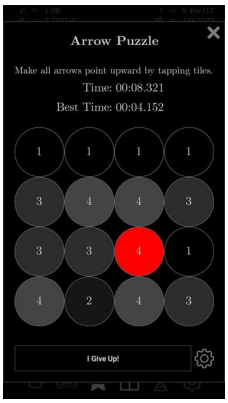


Before

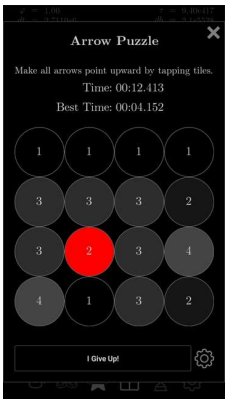


After

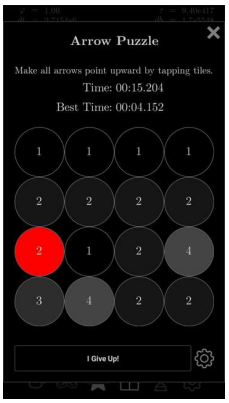
Step 1.5: Repeat for rows 2 and 3



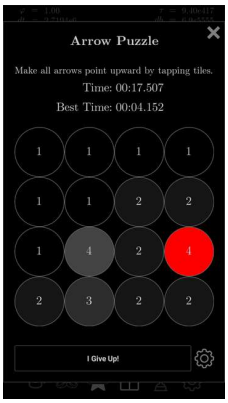
Step 1.1



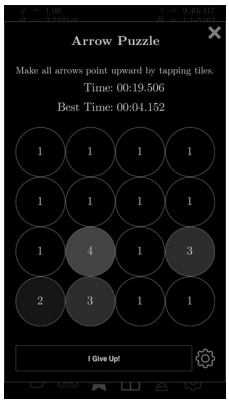
Step 1.2



Step 1.3

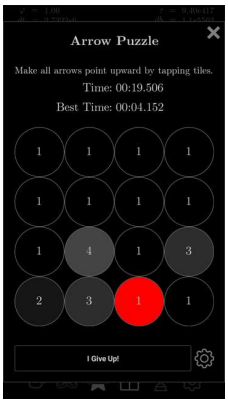


Step 1.4

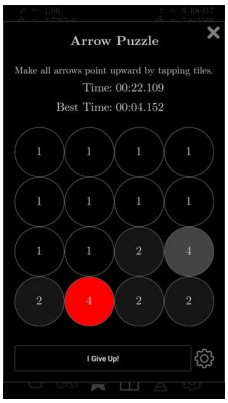


Done

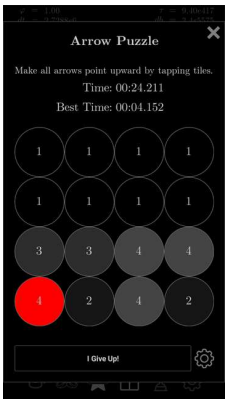
Solving row 2



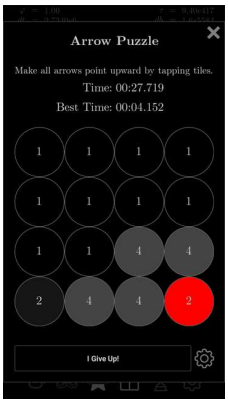
Step 1.1



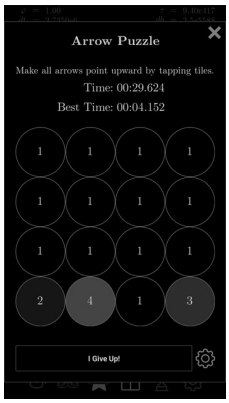
Step 1.2



Step 1.3



Step 1.4

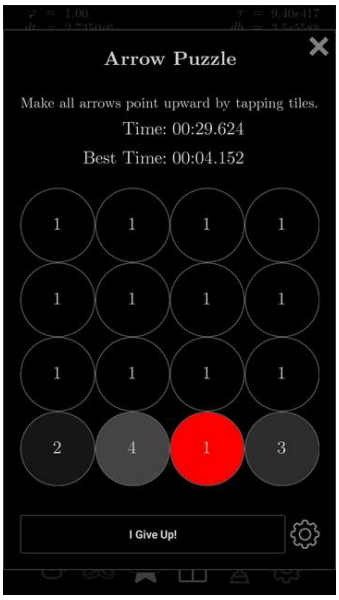


Done

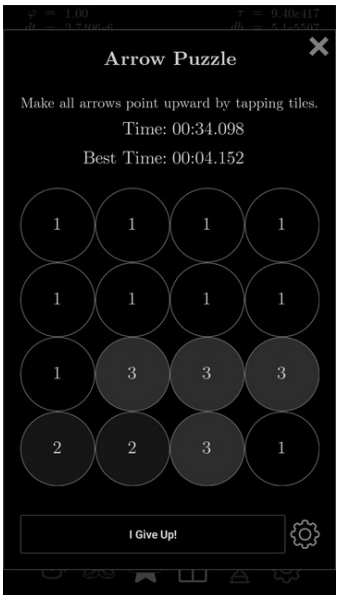
Solving row 3

Step 2: Solving last row

Step 2.1.1: Make a center tile the same as its adjacent edge tile

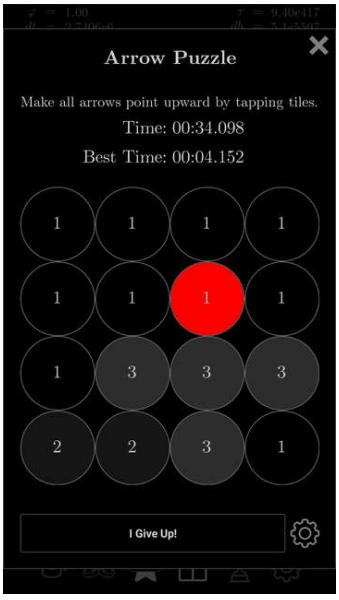


Before

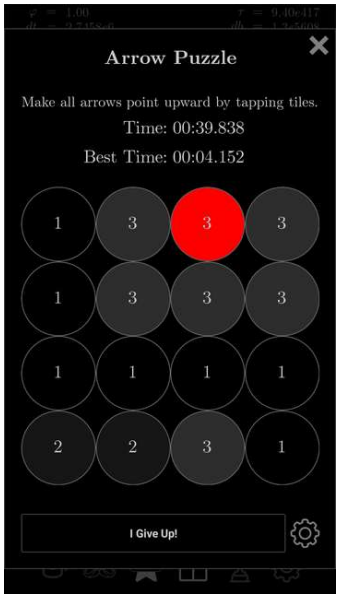


After

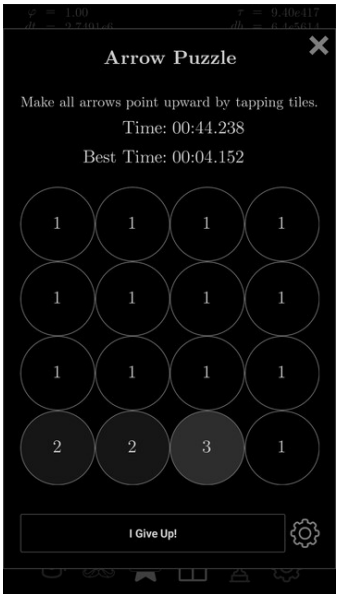
Step 2.1.2: Cancel upper row changes



Before

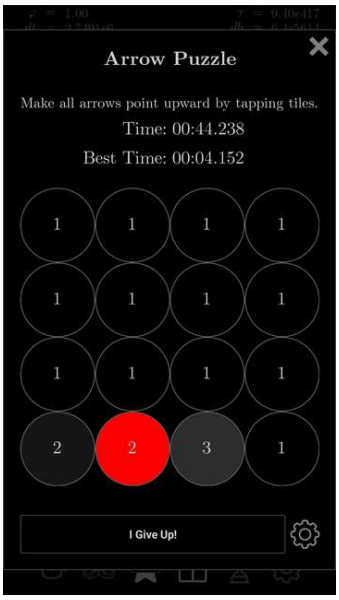


Row 3 cancel

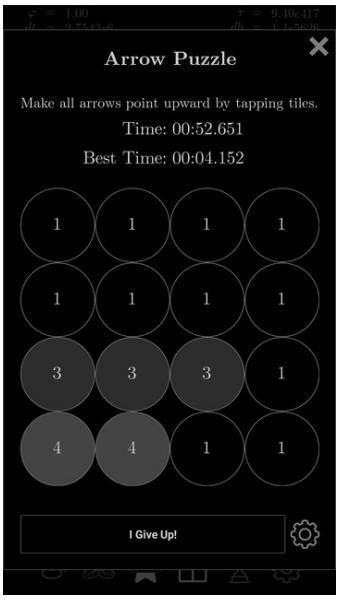


Row 1+2 cancel

Step 2.2.1: Make the other center tile the same as its adjacent edge tile

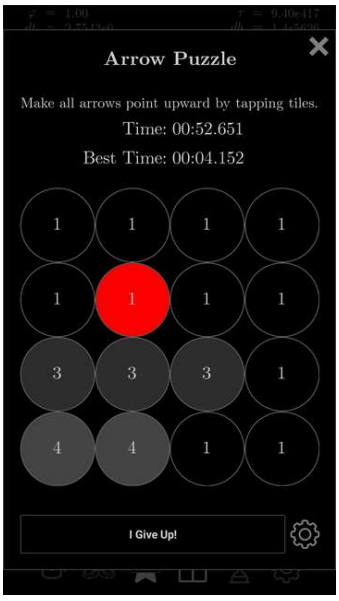


Before

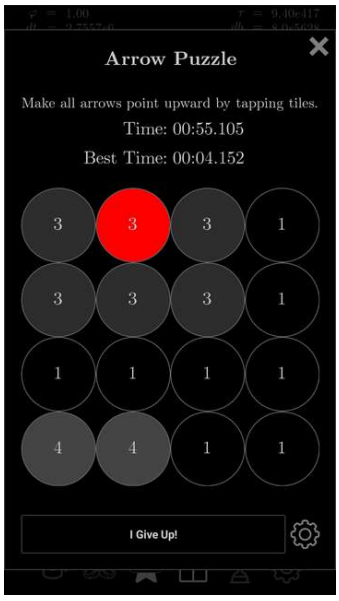


After

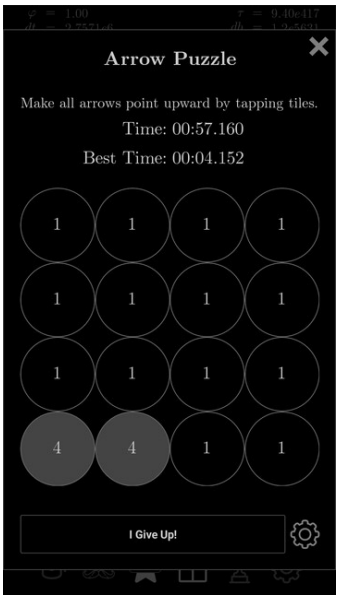
Step 2.2.2: Cancel upper row changes



Before

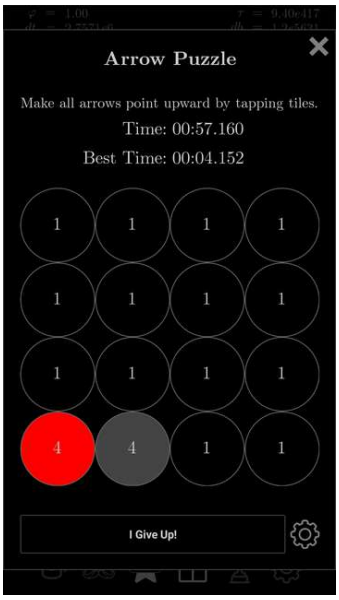


Row 3 cancel

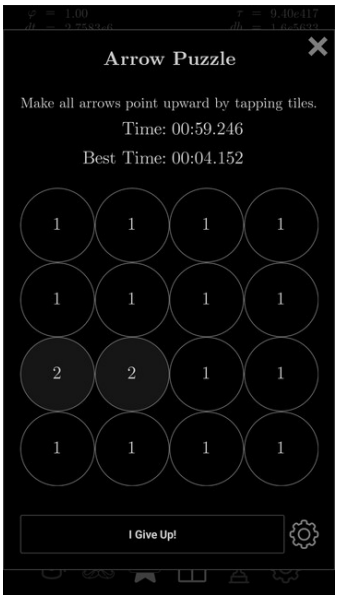


Row 1+2 cancel

Step 2.3.1: Solve left two tiles

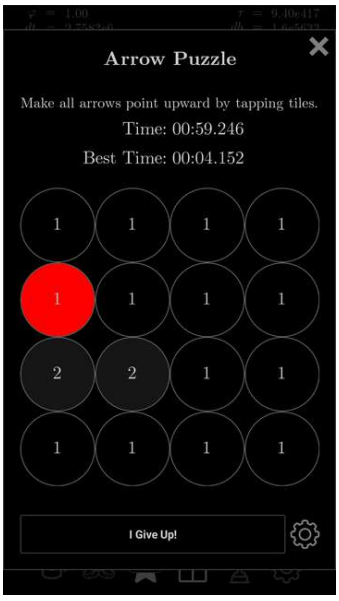


Before

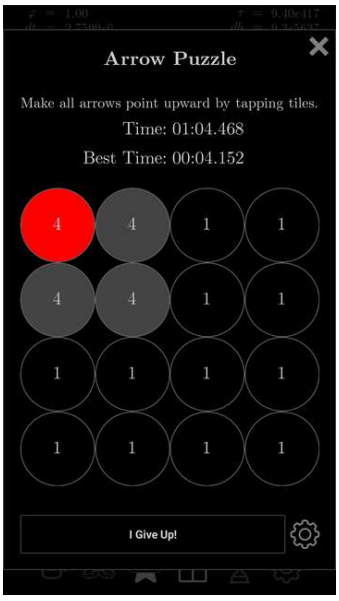


After

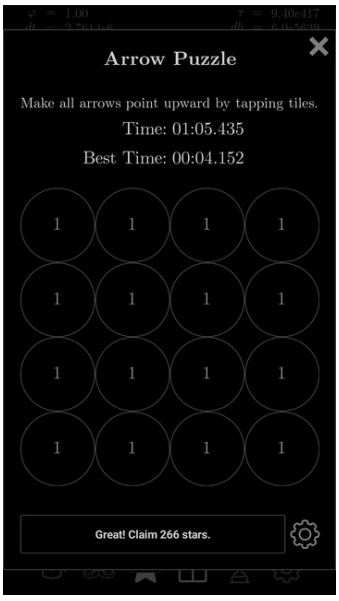
Step 2.3.2: Cancel upper row changes



Before



Row 3 cancel



Row 1+2 cancel

Step 2.4.1: Solve right two tiles

Step 2.4.2: Cancel upper row changes

The example given did not have two right tiles to solve because they were 1. However this proceeds identically to Steps 2.3.1 and 2.3.2.

Propagation Algorithm (for Hard and Expert)

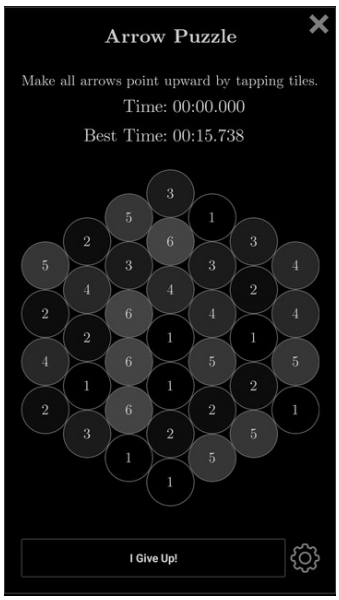
The algorithm is as follows:

1. Solve the top row, tapping the tiles directly below.
   (a) Solve the center tile (press center tile below)
   (b) Solve tile to the left of the center tile (press tile directly below it)
   (c) Solve tile two spaces left of the center tile (press tile directly below it)
   (d) Solve tile three spaces left of the center tile (press tile directly below it)
   (e) Repeat steps (b) - (e) but to the right.
2. Repeat step 1 to each row, ignoring the very bottom tiles.

To verify there is no mistake:

- When you're done, your board will be symmetric.
- The two tiles adjacent to the bottom center tile will always be 1 or 4.

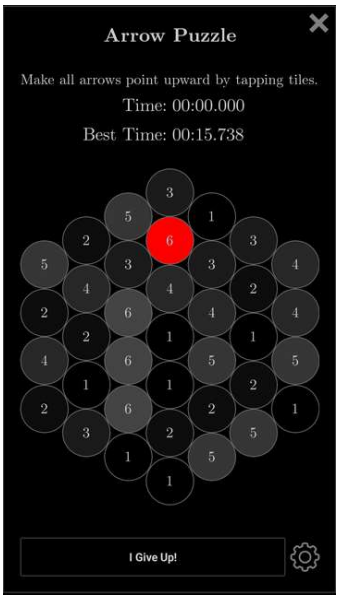
For example, consider the following puzzle:



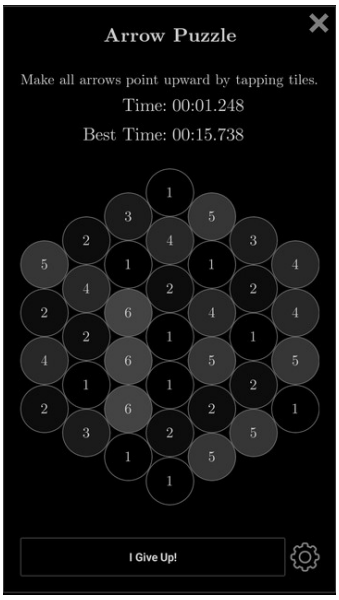
Sample puzzle

Step 1: Solving top row

Step 1.1: Solve the center tile

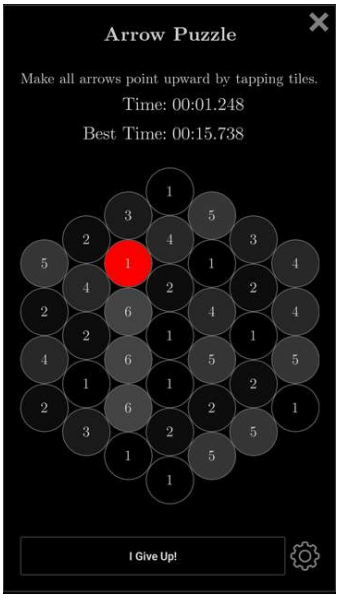


Before

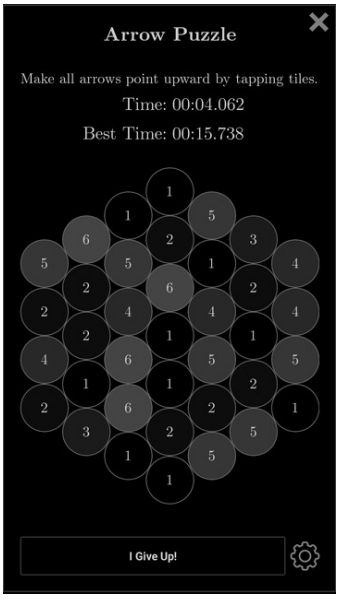


After

Step 1.2: Solve the tile to the left

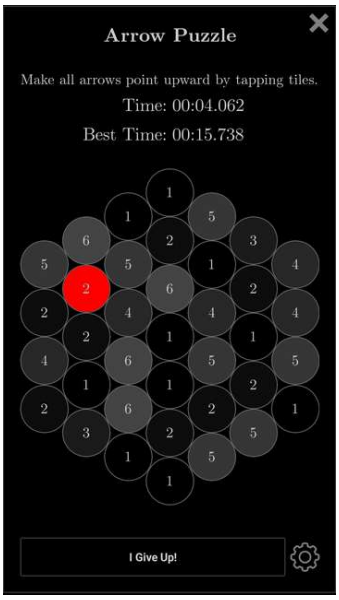


Before

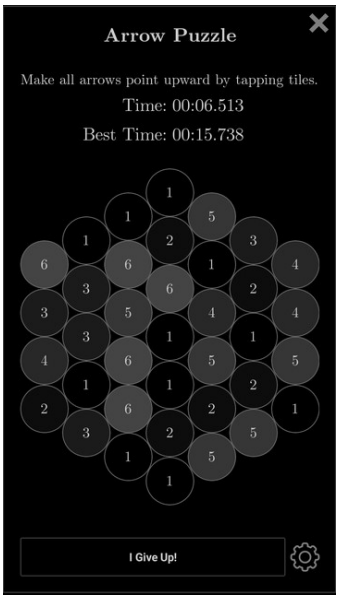


After

Step 1.3: Solve two tiles to the left

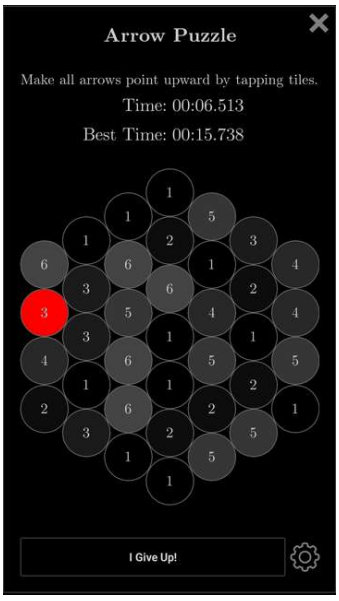


Before

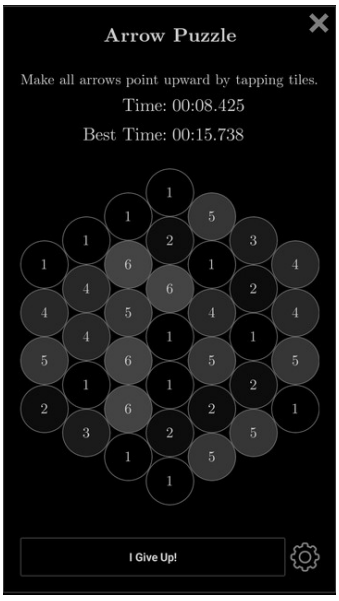


After

Step 1.4: Solve three tiles to the left

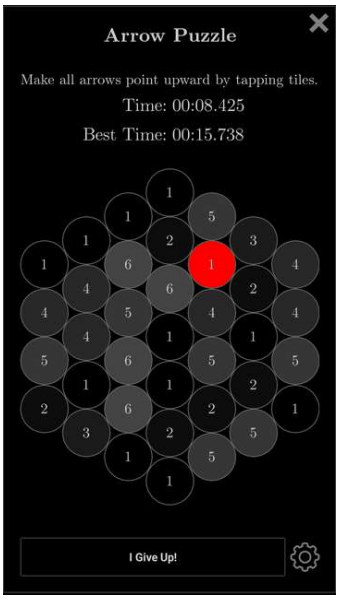


Before

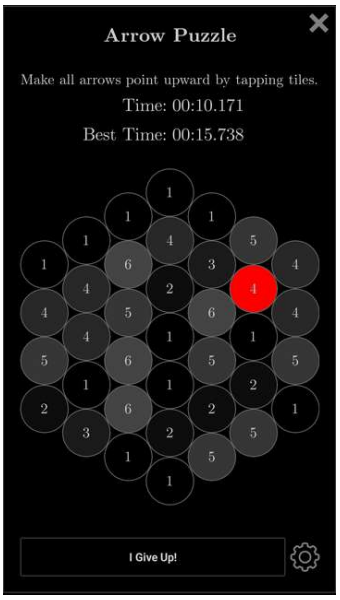


After

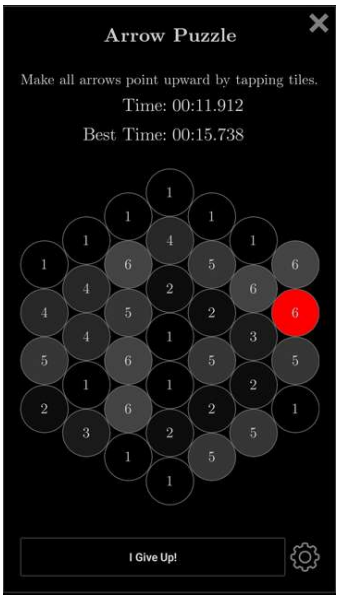
Step 1.5: Repeat on the right



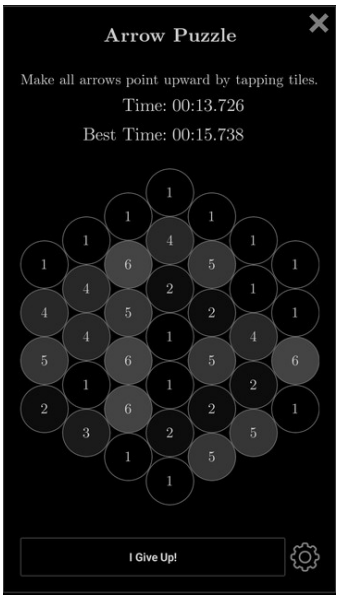
Step 1.2



Step 1.3

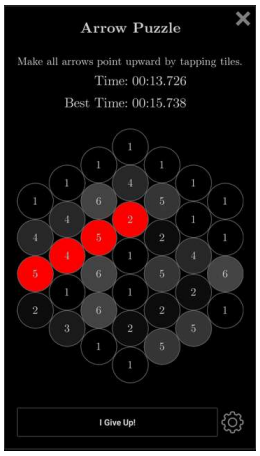


Step 1.4

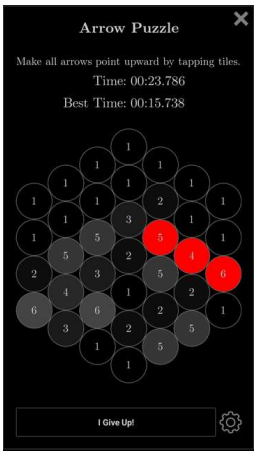


Done

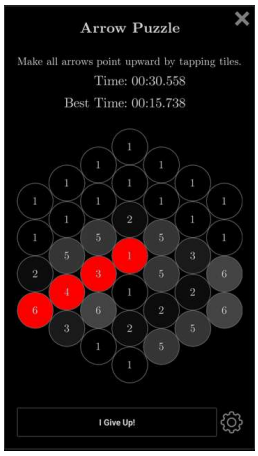
Step 2: Repeat for each row



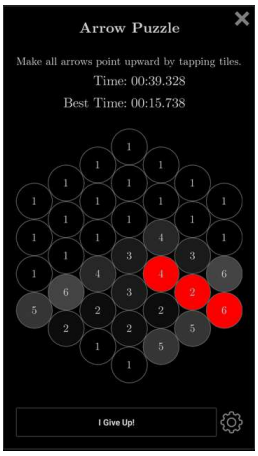
row 2: left



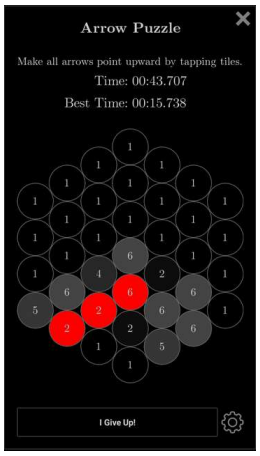
row 2: right



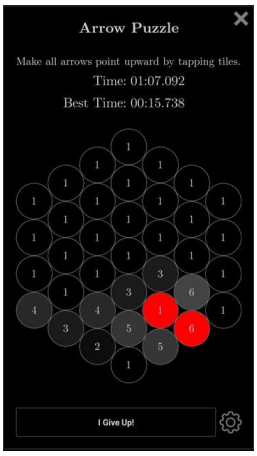
row 3: left



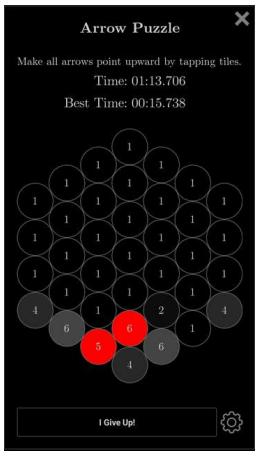
row 3: right



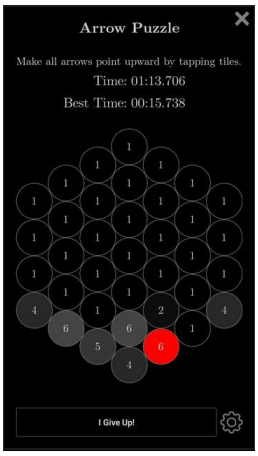
row 4: left



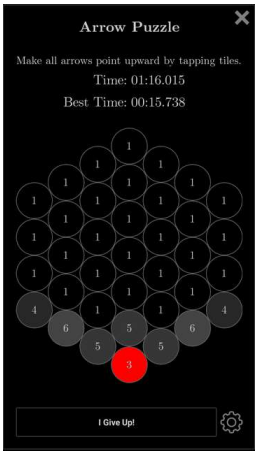
row 4: right



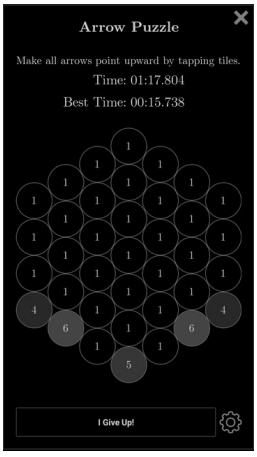
row 5: left



row 5: right



row 6: center



Done

Hard and Expert Difficulty Algorithm

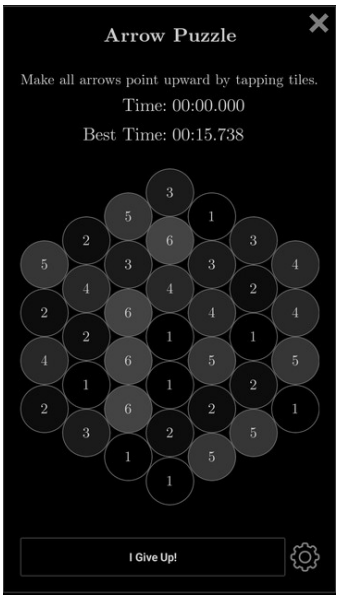
The algorithm is shared and is as follows:

1. Propagate.
2. Label the bottom right cells (from left to right), A, B, C, D. Label the top right cells (from left to right) a, b, c, d. We will be tapping the top row to encode the bottom row into it.
   (a) Tap a so that a is the same as C.
   (b) Tap b and d the number of times you would need to solve C.
   (c) Tap a the number of times you would need to solve D.
   (d) If $B + D$ is odd, tap c three times (once in Hard). Otherwise, skip this step.
3. Propagate.

Tricks:

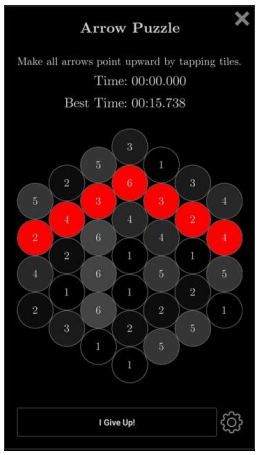
- step 2.b: You could tap b and d simultaneously until a is solved.
- step 2.d: For each tap in step 2.c, B would change by 3 (i.e. switch between 1 and 4). That is, in step 2.d, tap c three times if B would end up in a 4. You could count parity in step 2.c and use parity to deduce this step. It may help to think 'even = no change' and 'odd = change'.

For example, consider the following puzzle:

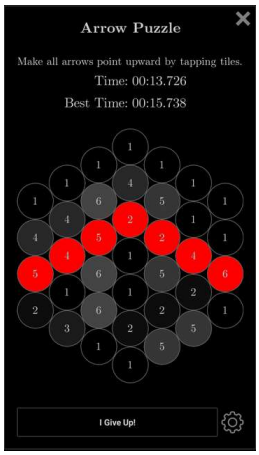


Sample puzzle

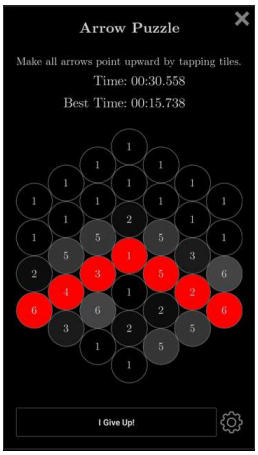
Step 1: Propagate



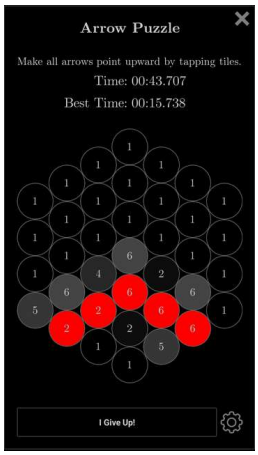
Row 1



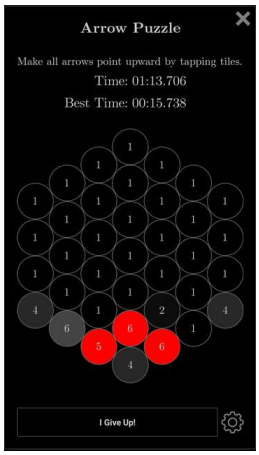
Row 2



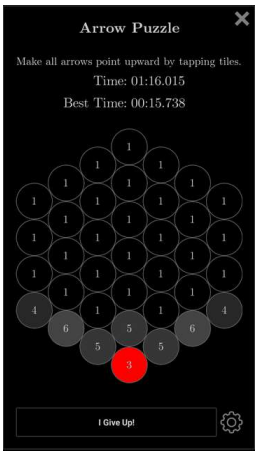
Row 3



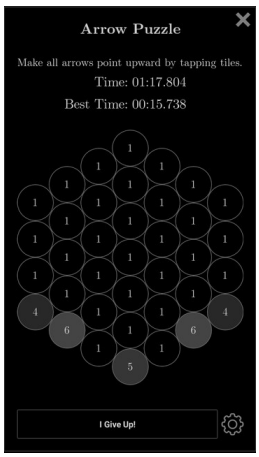
Row 4



Row 5



Row 6

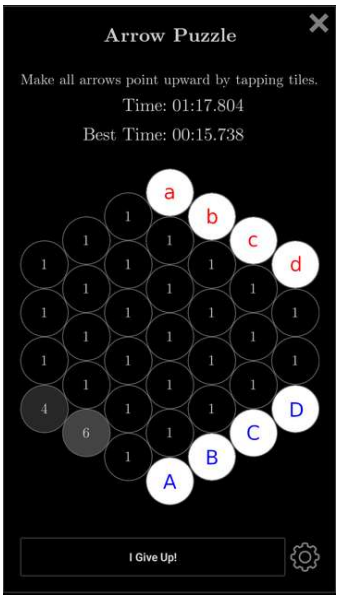


Done

Step 2: Encode

I also mark *reference tiles* as blue; in each step, we perform taps according to the value of the tile in blue.

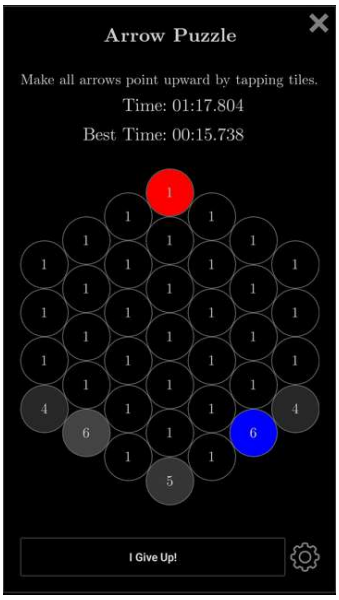
Clarification: Visual location of $ABCD$ and $abcd$ labels



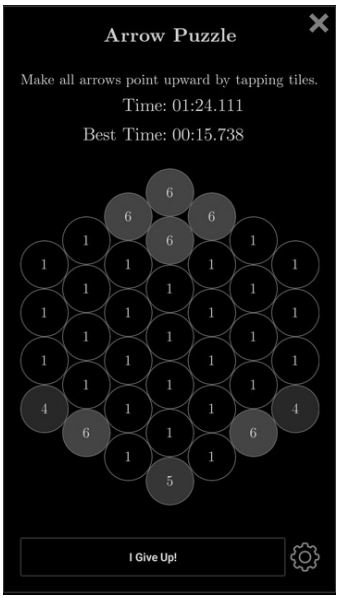
Labels

The top right tiles will be referred to as a, b, c, and d in that order (left to right), and the bottom right tiles will be referred to as A, B, C, and D (left to right).

Step 2.1: Tap a so that a is the same as C

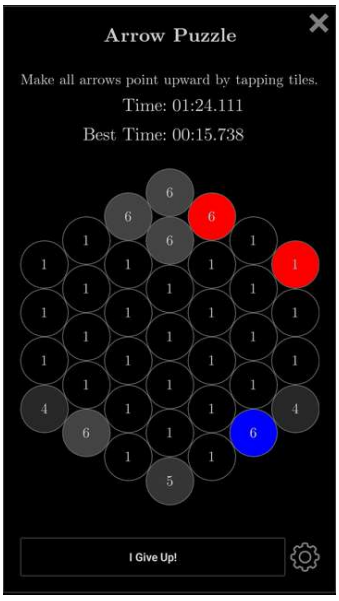


Before

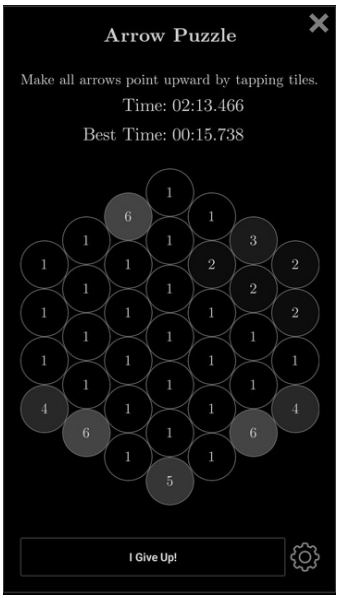


After

Step 2.2: Tap b and d the number of times you would need to solve C

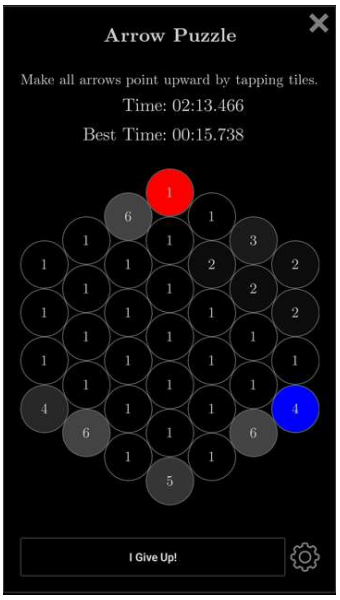


Before

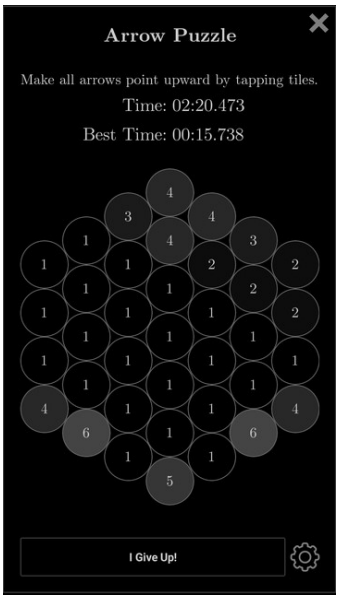


After

Step 2.3: Tap a the number of times you would need to solve D

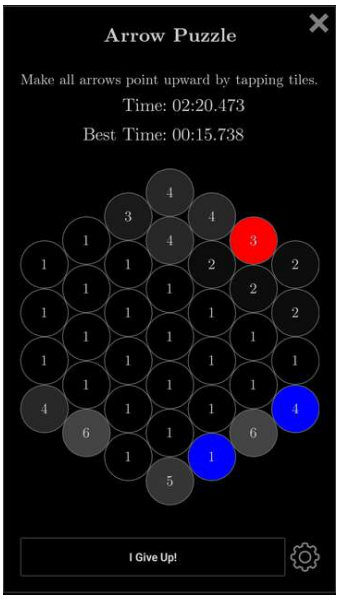


Before

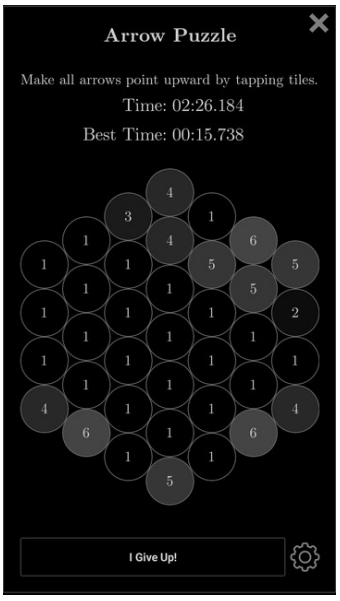


After

Step 2.4: If $B + D$ is odd, tap c three times

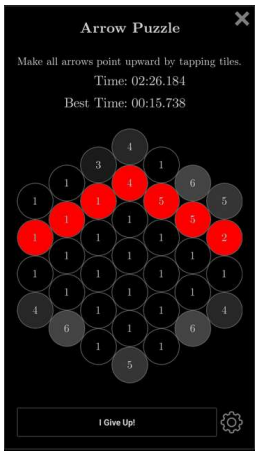


Before

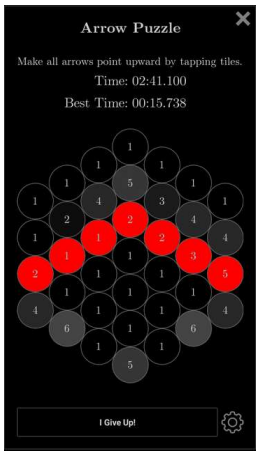


After

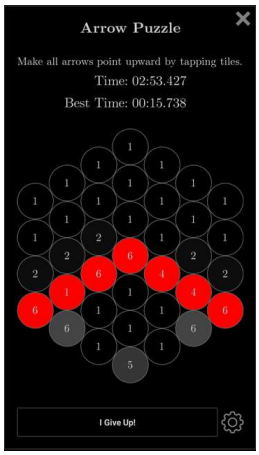
Step 3: Propagate



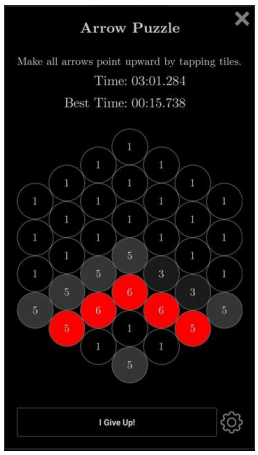
Row 1



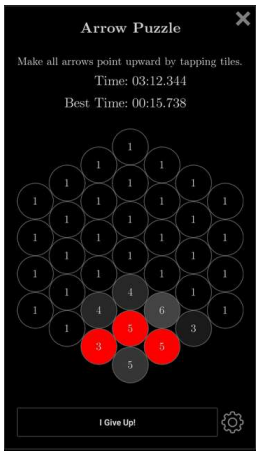
Row 2



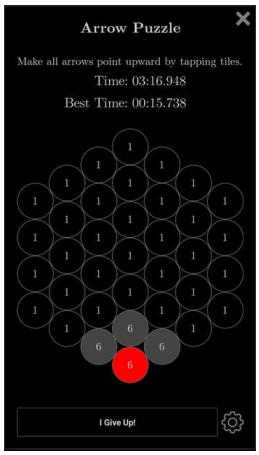
Row 3



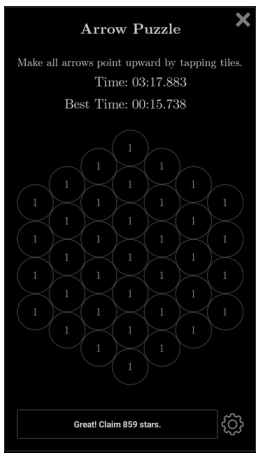
Row 4



Row 5



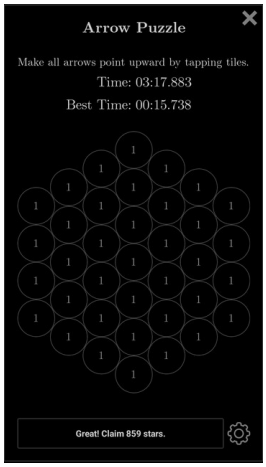
Row 6



Done

Lookup Table for Hard Difficulty

Instead of memorizing Step 2 for Hard, you may use this table to search which taps you should do. Out of all possible options, this list compiles ones with the fewest taps overall (which sometimes makes the taps extend to the entire top row).



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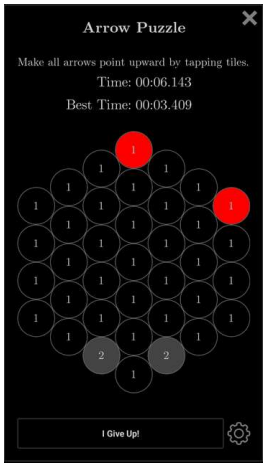

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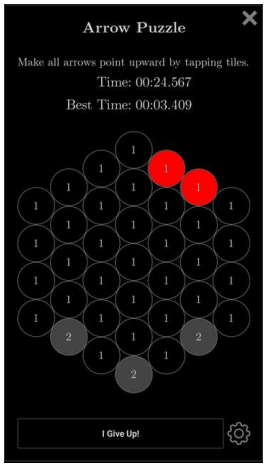

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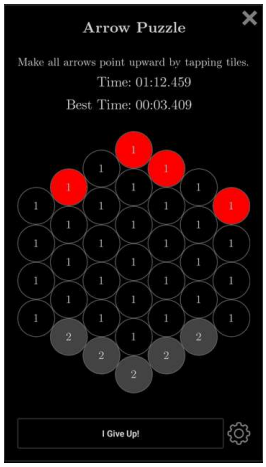

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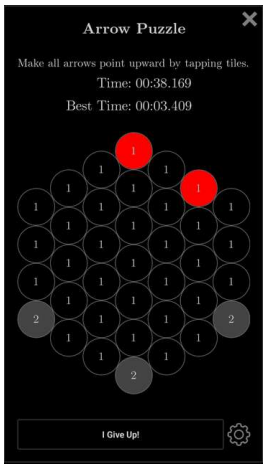

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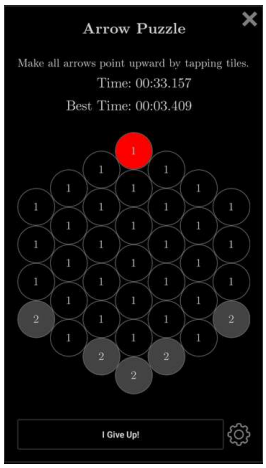

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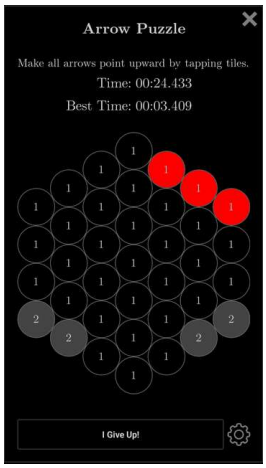

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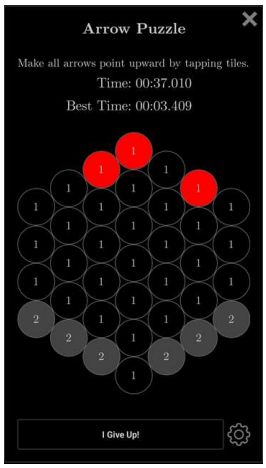

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