GD50
Lecture 3: Match-3

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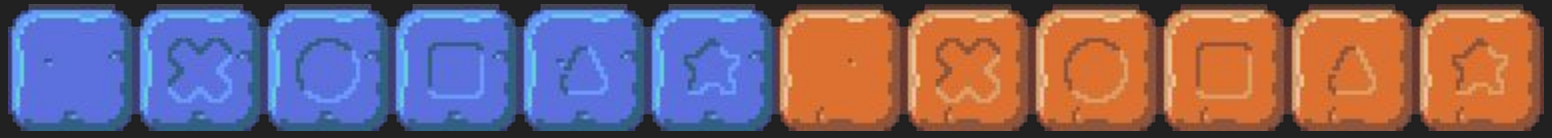


18,980
5
HINT
MENU
I drink lots of water.

22
~ 18 ~
3
0/2
Score:
5800

Topics

- Anonymous Functions
- Tweening
- Timers
- Solving Matches
- Procedural Grids
- Sprite Art and Palettes

But first, a demo!

Our Goal

Match 3
MATCH 3
Start
Quit Game

Untitled
Level 1

Match 3
Level: 1
Score: 0
Goal : 1250
Timer: 58

timer0

"The Simple Way"

timer1

“Also The Ugly Way”

timer2

"The Clean Way"

Timer library: functions

- Timer.every(interval, callback)
  - Calls `callback`, which is a function, every `interval`, where `interval` is measured in seconds; this happens indefinitely.
- Timer.after(interval, callback)
  - Calls `callback` after `interval`, but only does this one time.

https://github.com/airstruck/knife/blob/master/readme/timer.md

tween0

"The Simple Way"

tween1

"A Better Way"

Knife Library

https://github.com/airstruck/knife

Knife Modules

- `knife.behavior` (state machines)
- `knife.bind` (bind arguments to functions)
- `knife.chain` (flatten asynchronous code)
- `knife.convoke` (flatten coroutine-based async code)
- `knife.event` (dispatch and handle events)
- `knife.memoize` (for memoization)
- `Knife.serialize` (stores data structures as strings)
- `knife.system` (an entity-component system)
- `knife.test` (testing framework)
- `knife.timer` (timers and tweens)

tween2

"The Timer.tween Way"

Timer library: functions, p.2

- Timer.tween(duration, definition)
  - Interpolates values specified in the `definition` table over some length of time `duration`, where the values in `definition` are the final values of the transformation.

https://github.com/airstruck/knife/blob/master/readme/timer.md

chain0

"The Simple (and Hard... and Ugly) Way"

chain1

"The Better Way"

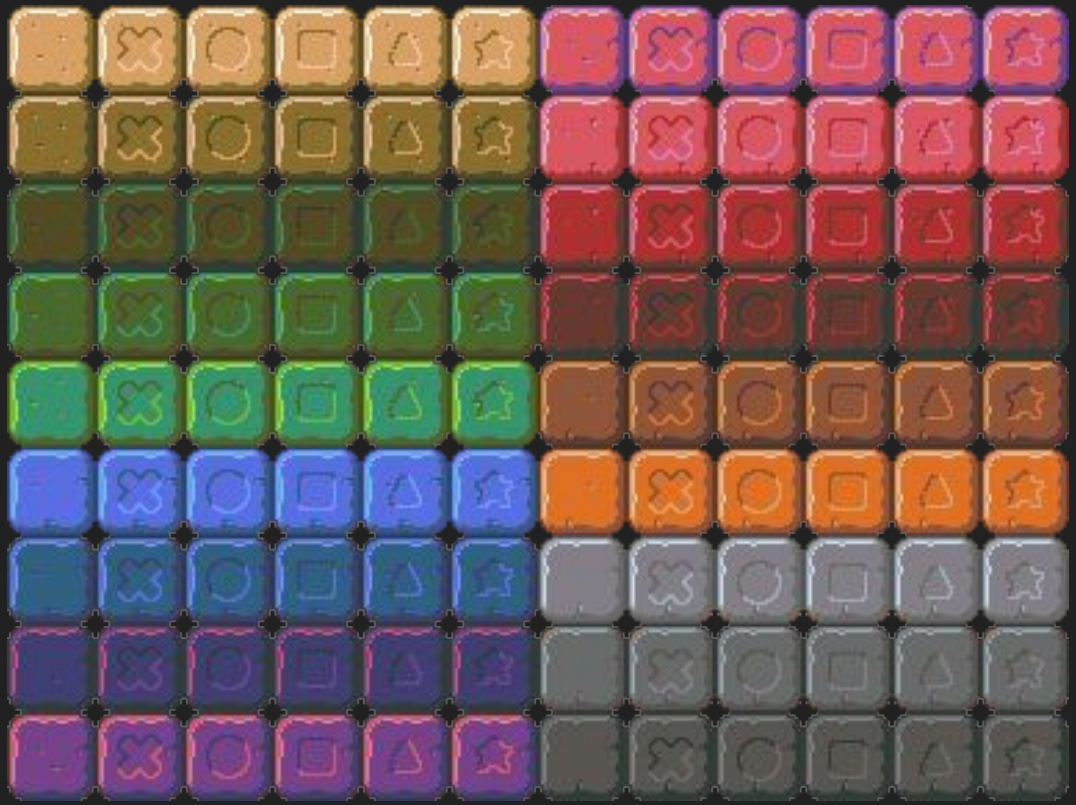
Timer library: functions, p.3

- `Timer:finish(callback)`
  - A function we can call after any `Timer` function (`tween`, `every`, `after`, etc.), which calls `callback` once that function has completed. Useful for chaining any of the aforementioned function types together.

https://github.com/airstruck/knife/blob/master/readme/timer.md

swap0

"Just a Board"



swap1

"The Static Swap"

swap2

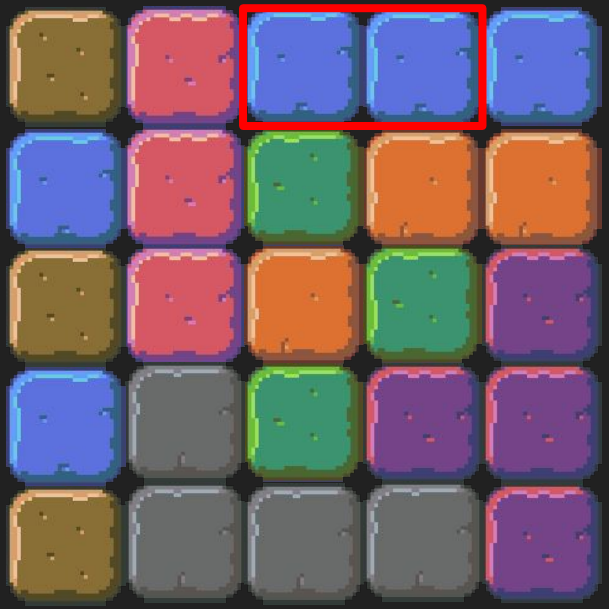
"The Tween Swap"

Calculating Matches

Calculating Matches

Calculating Matches

Calculating Matches



Calculating Matches

Match Found!

Calculating Matches

Calculating Matches

Calculating Matches

Calculating Matches

Calculating Matches

No Matches :(

Calculating Matches

Calculating Matches

Calculating Matches

Calculating Matches

Calculating Matches

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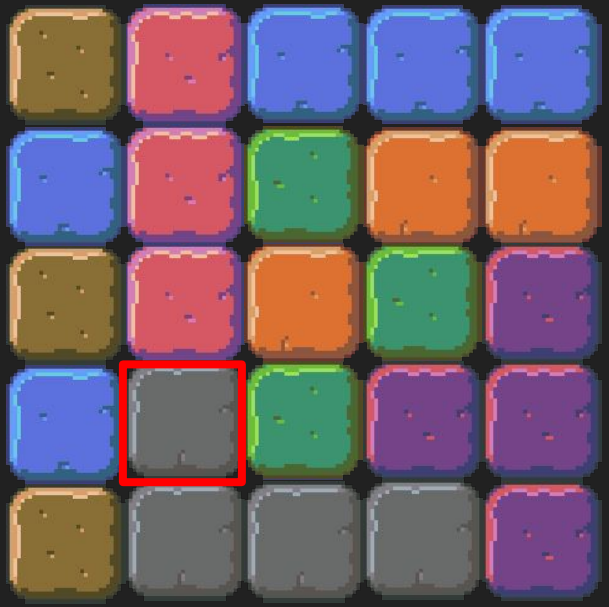
Calculating Matches

Calculating Matches



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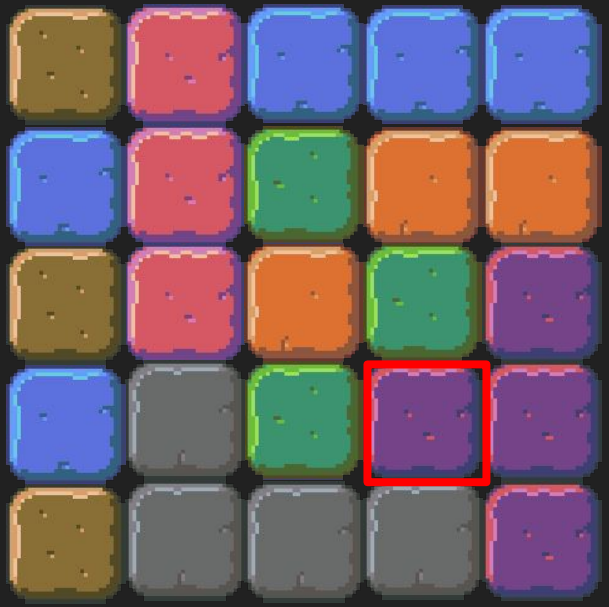

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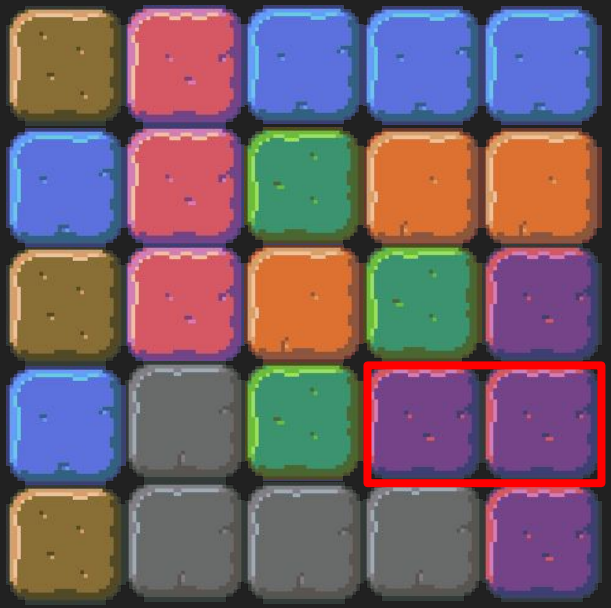

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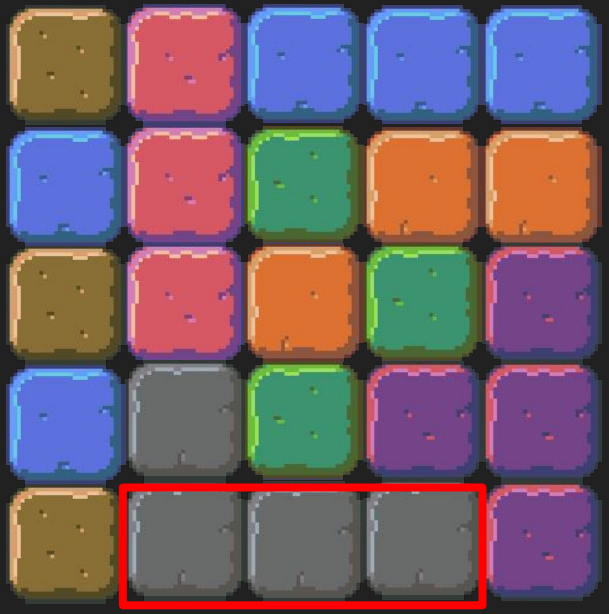
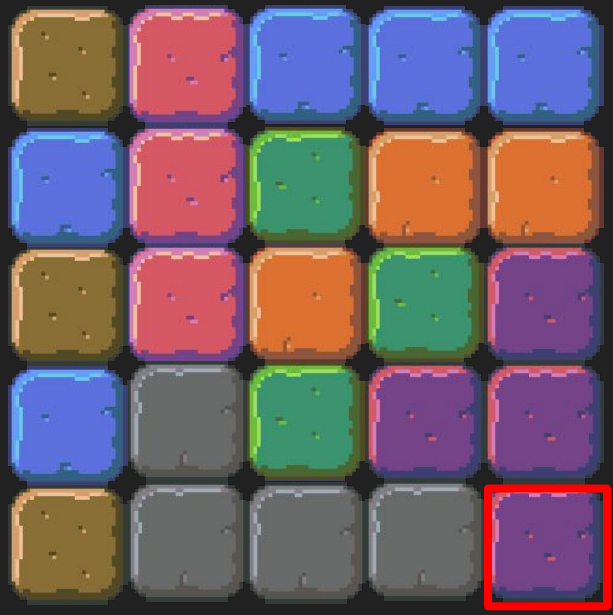
Calculating Matches



Match Found!

Calculating Matches



Calculating Matches, p.2

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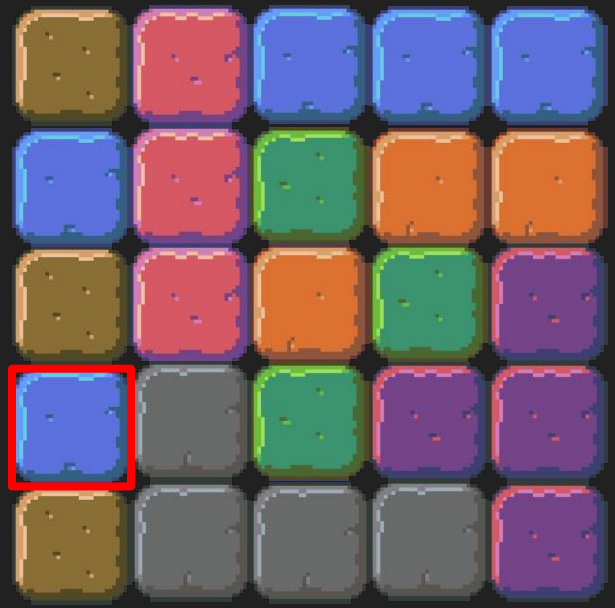
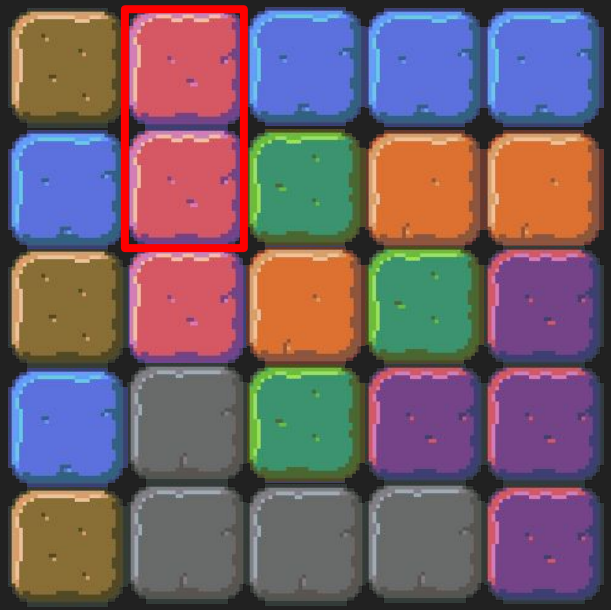


Calculating Matches, p.2

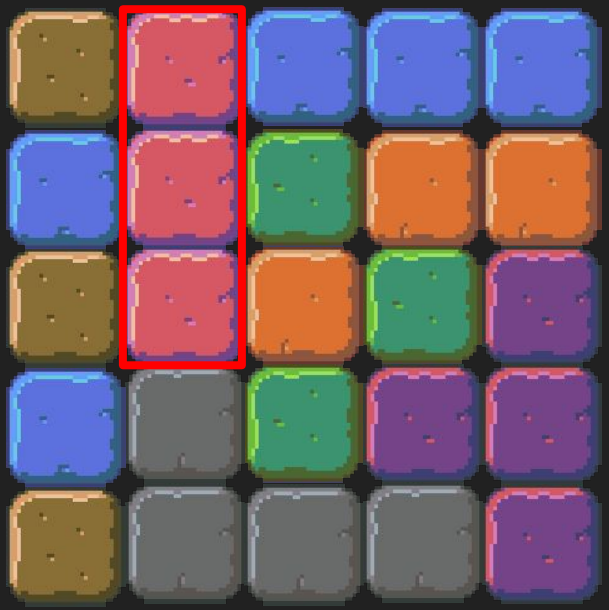
No Matches :(

Calculating Matches, p.2

Calculating Matches, p.2



Calculating Matches, p.2



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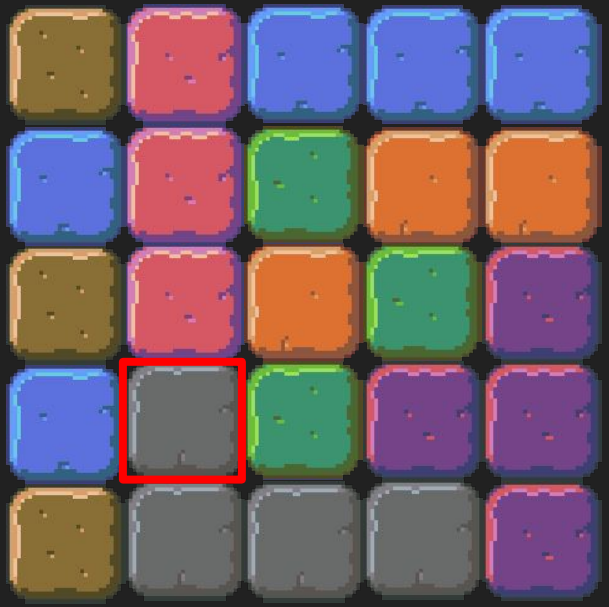

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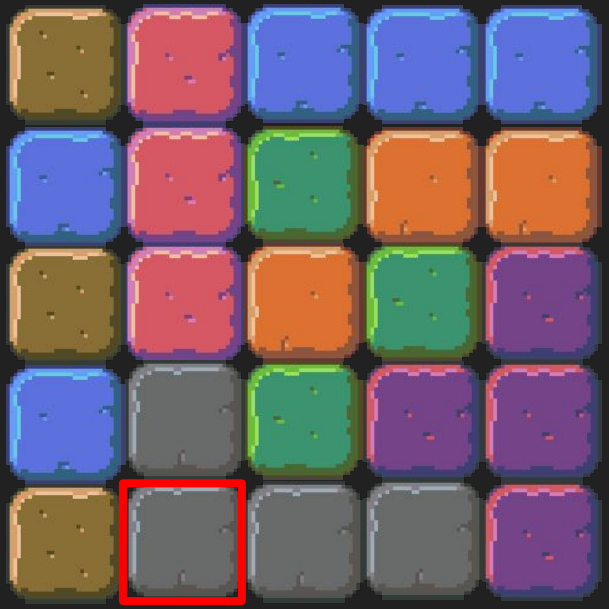

Calculating Matches, p.2

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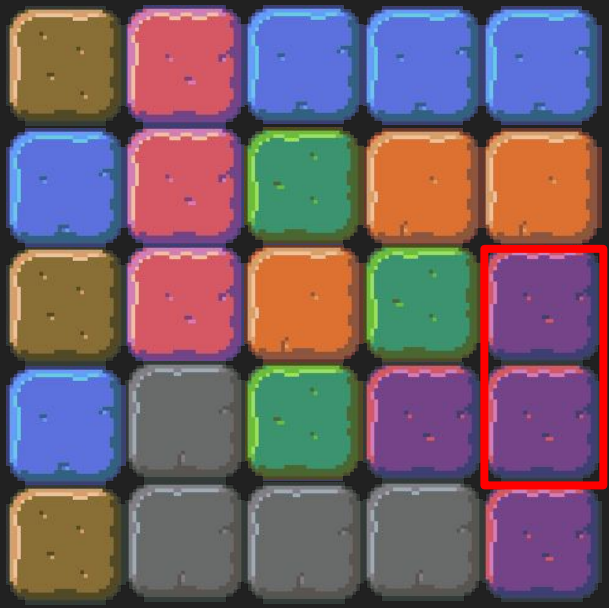

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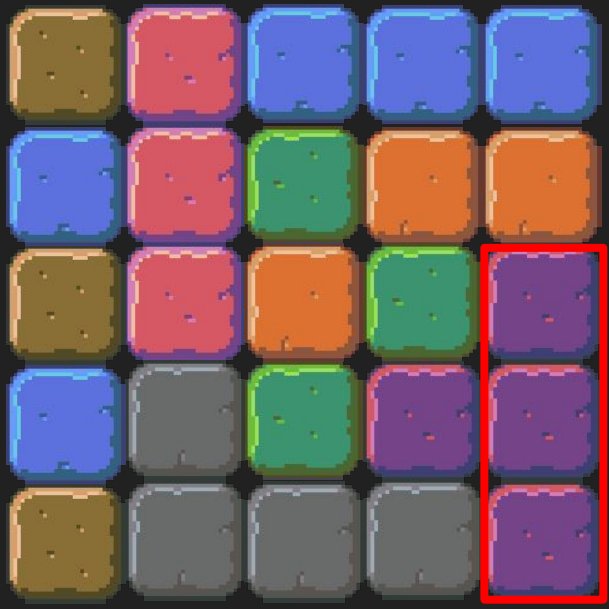
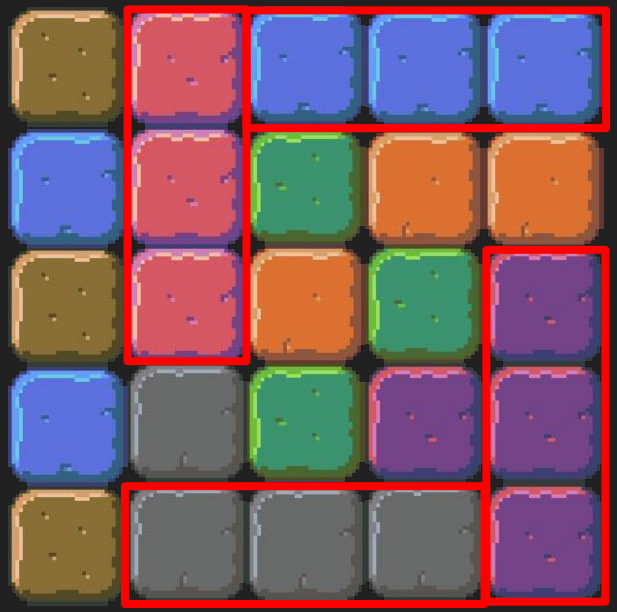
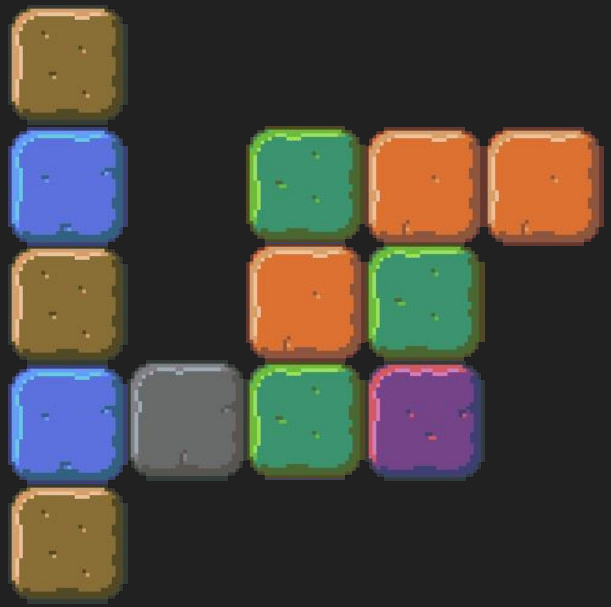


Match Found!

Removing Matches



Removing Matches



Removing Matches

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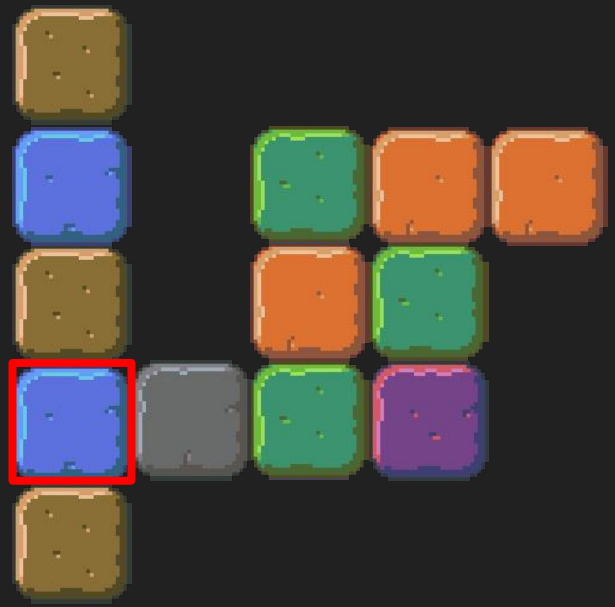

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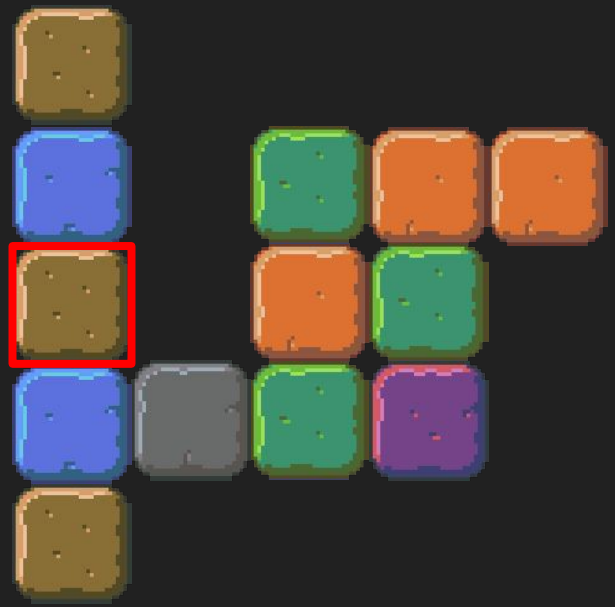

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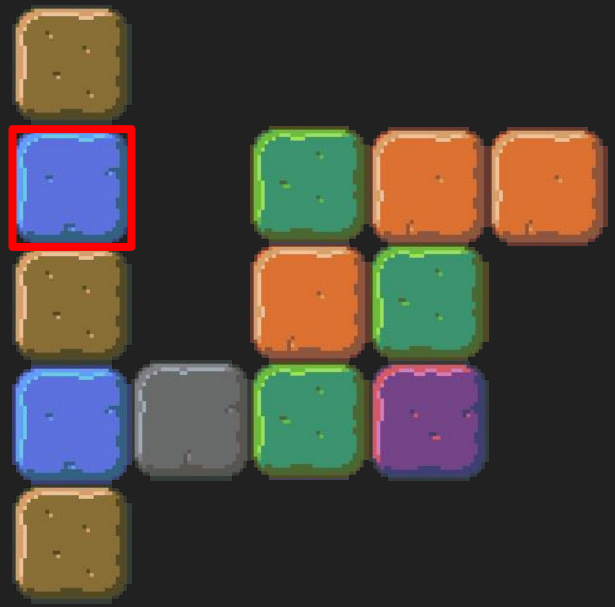

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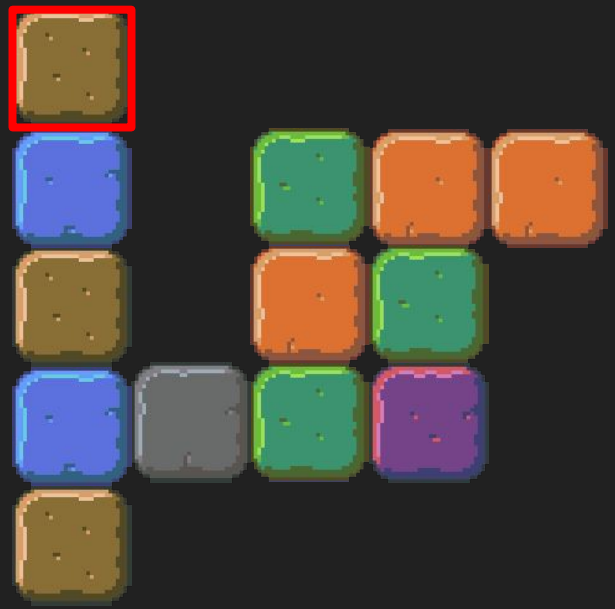
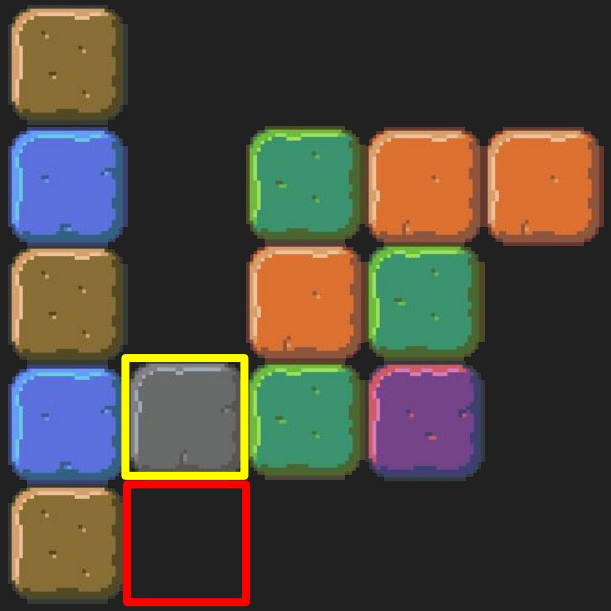


No spaces; column is stable!

Removing Matches

Space Found!

Removing Matches

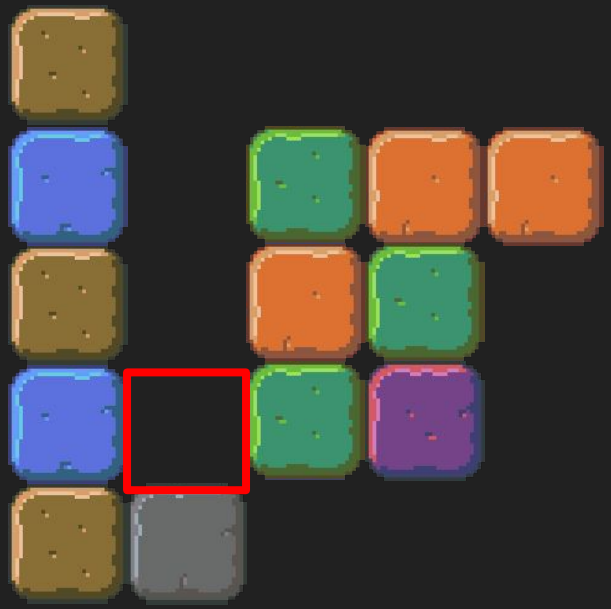


Tile Found! Shift Down!

Removing Matches

Restart loop from tile!

Removing Matches



Space Found!

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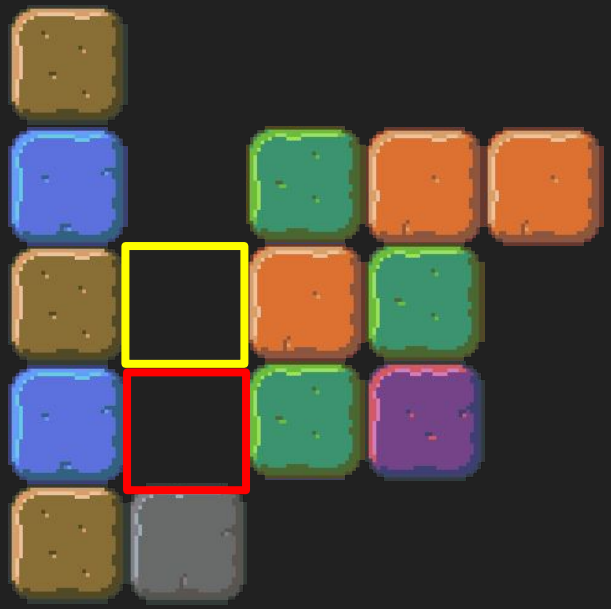

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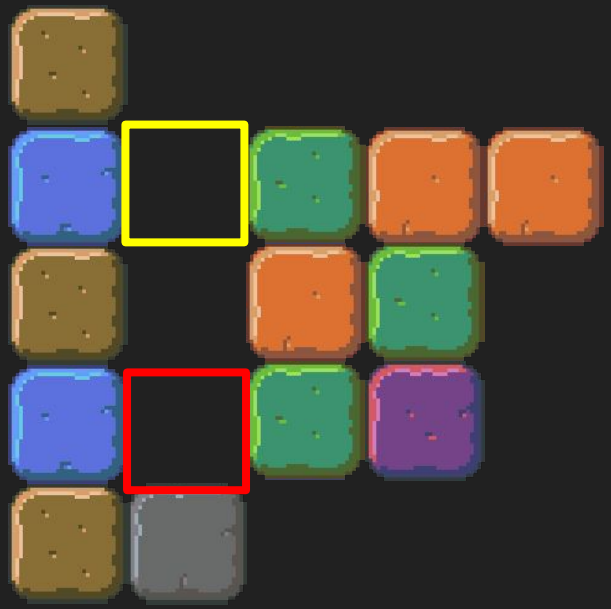

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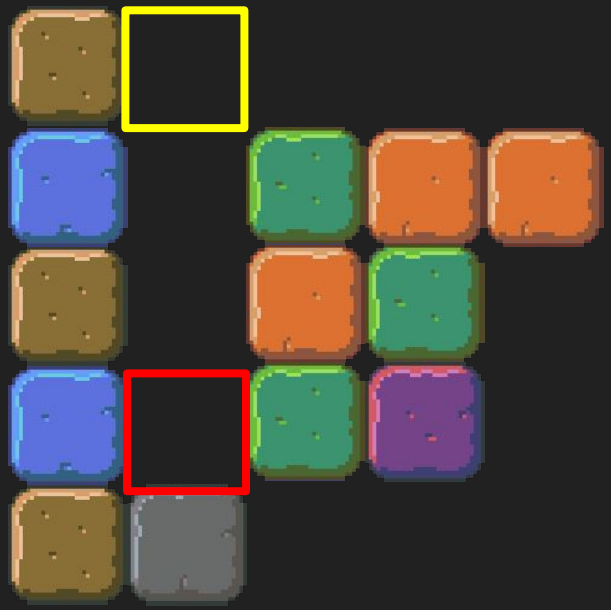
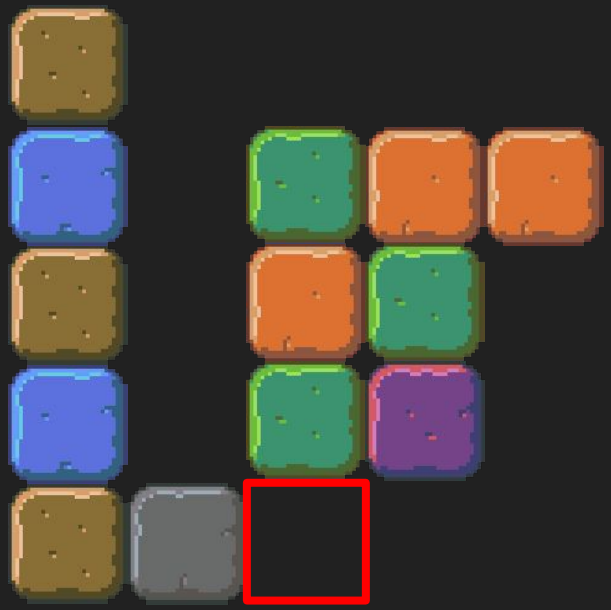


No more spaces found; column stable!

Removing Matches



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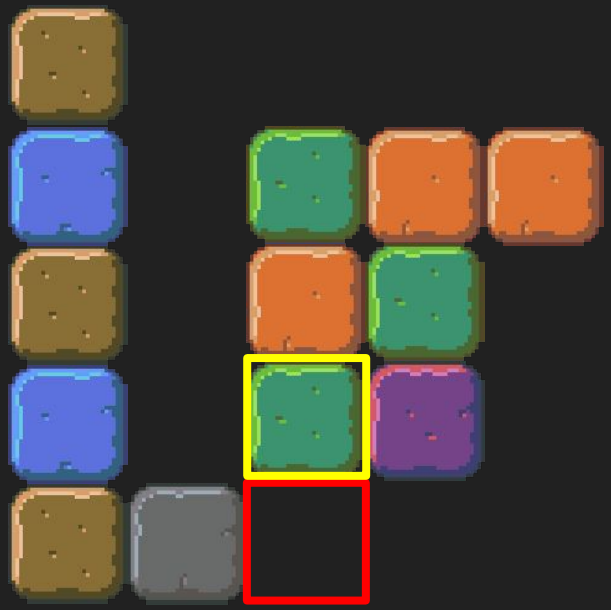
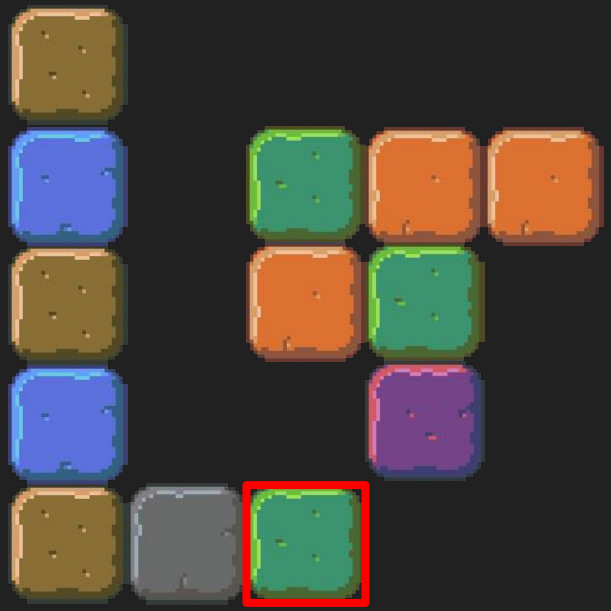


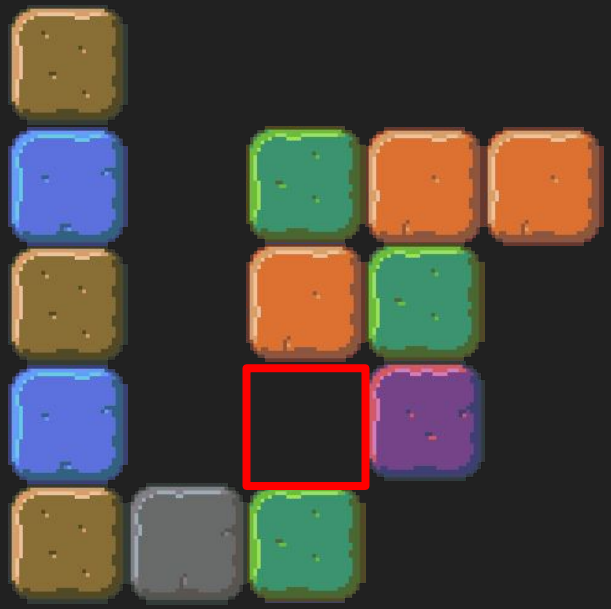
Tile Found! Shift Down!

Removing Matches



Restart loop from tile!

Removing Matches



Space Found!

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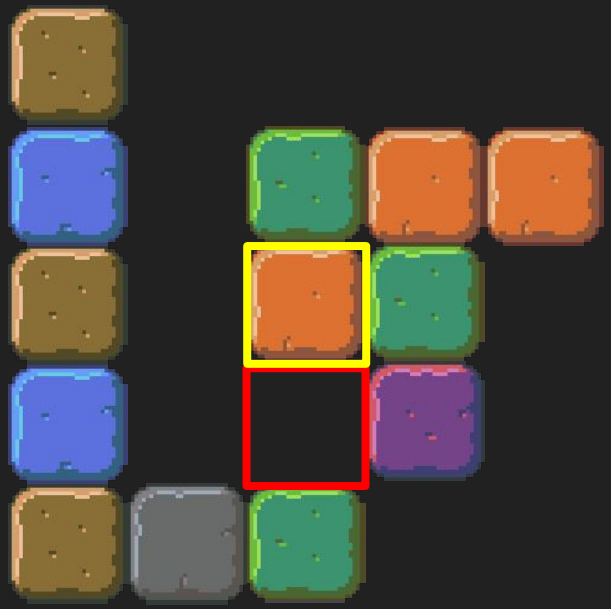
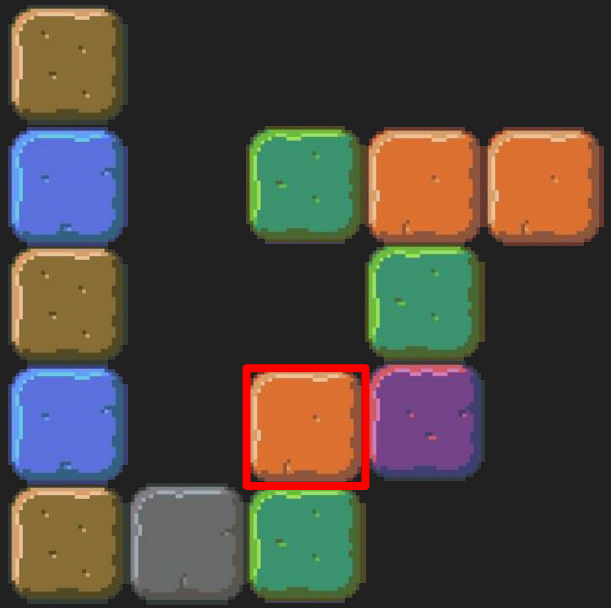


Tile Found! Shift Down!

Removing Matches



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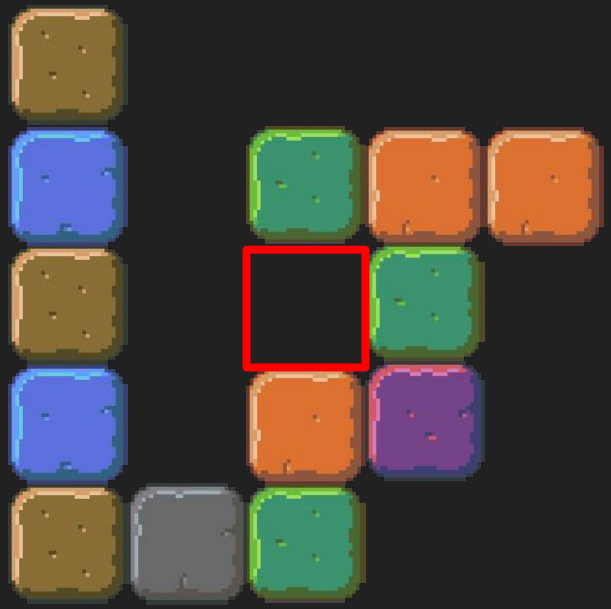

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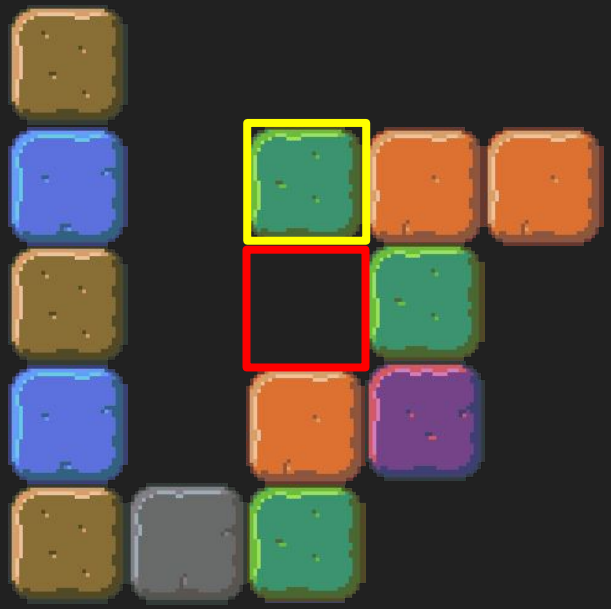

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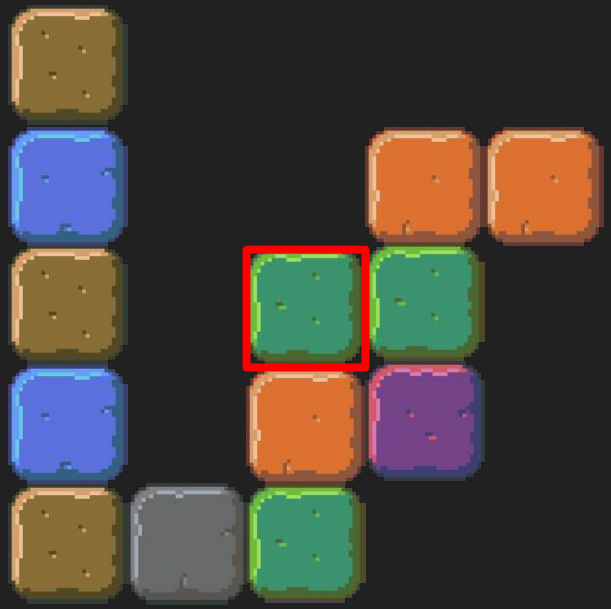

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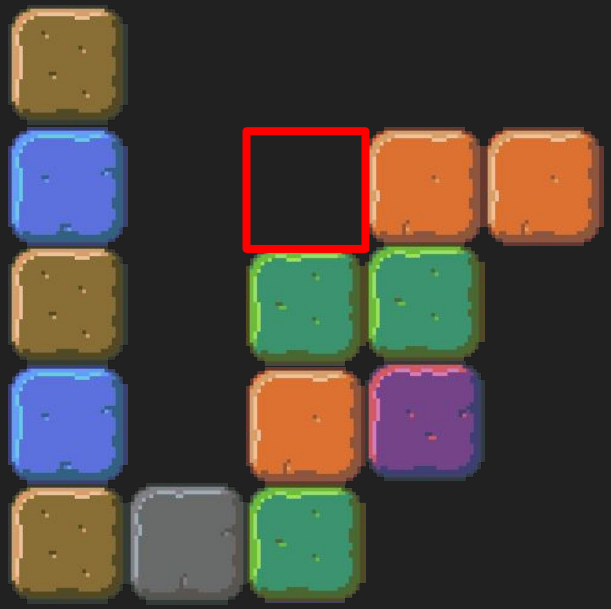

Space Found!

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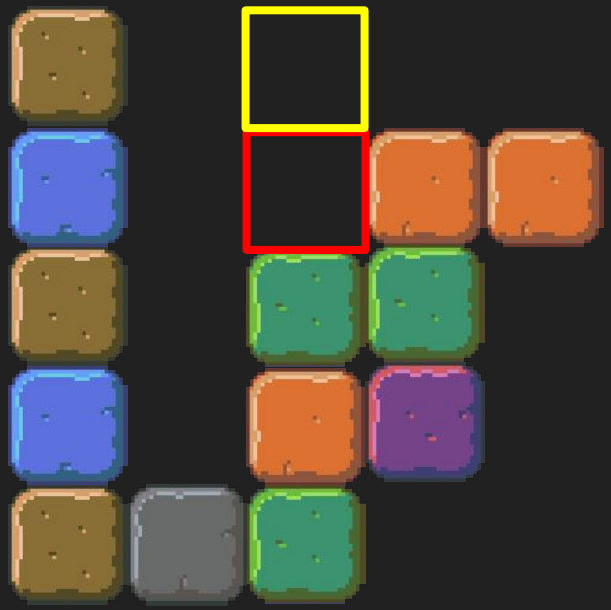
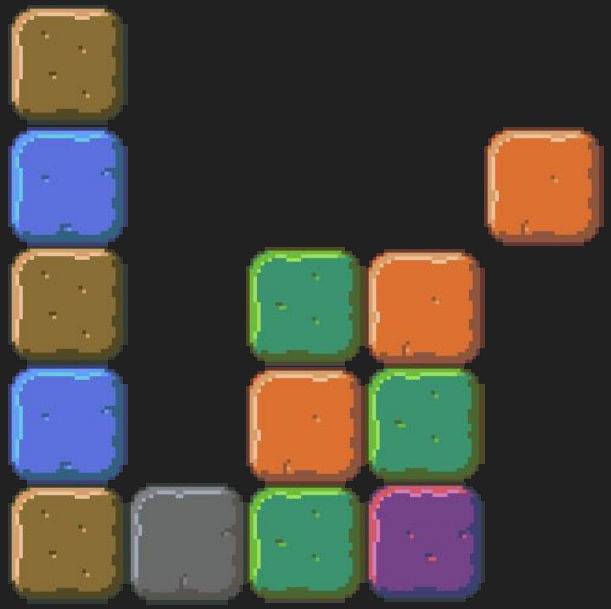


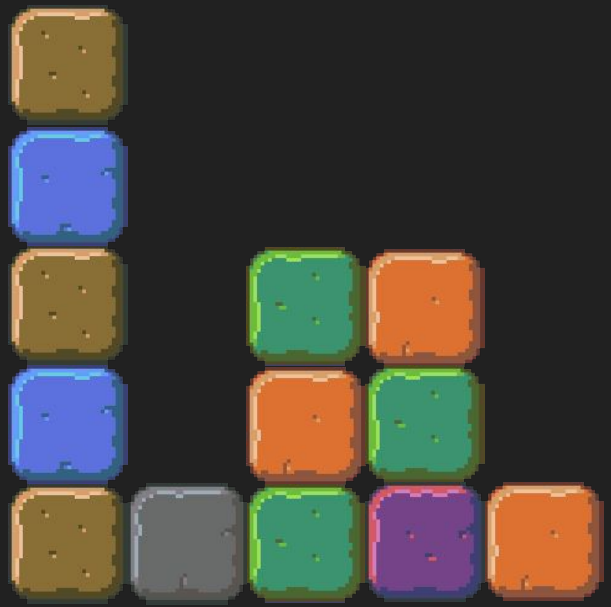
No more spaces found; column stable!

Removing Matches



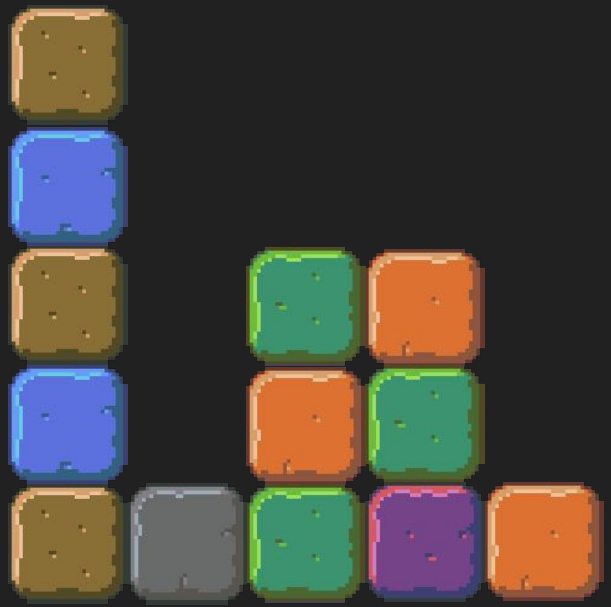
And so on...

Removing Matches

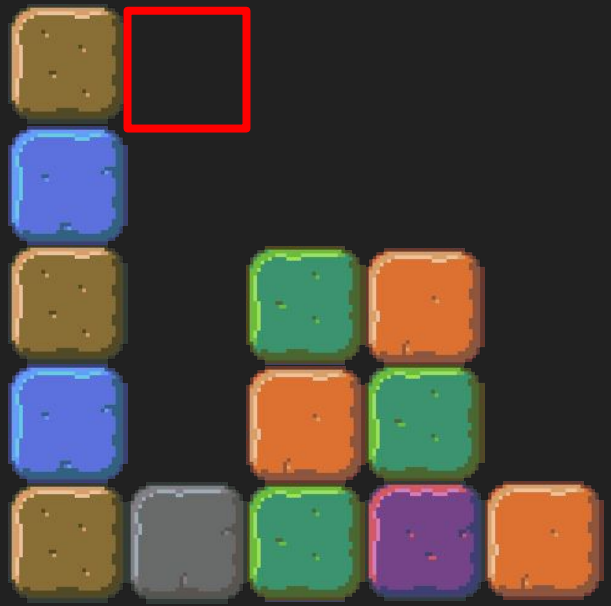


And so forth...

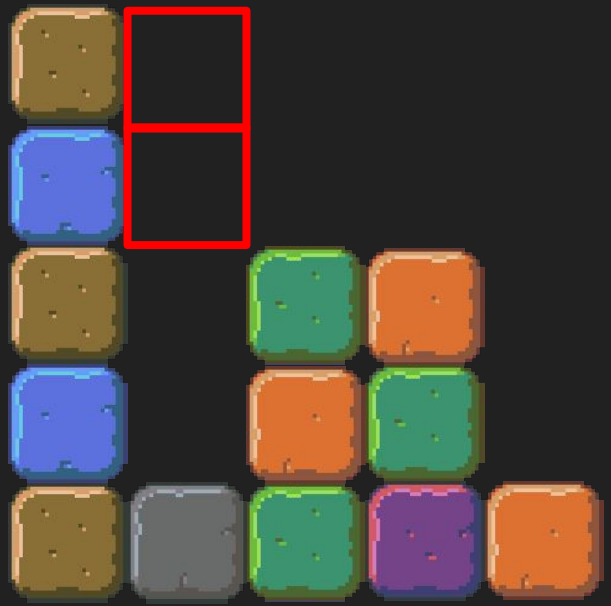
Replacing Tiles



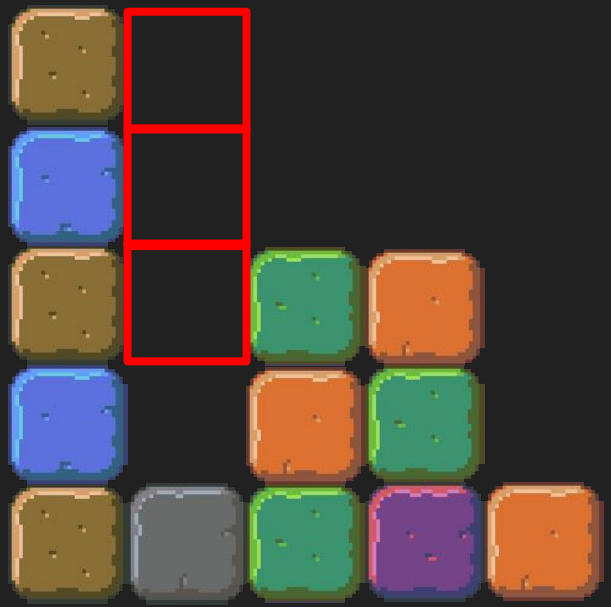
Replacing Tiles



Replacing Tiles



Replacing Tiles



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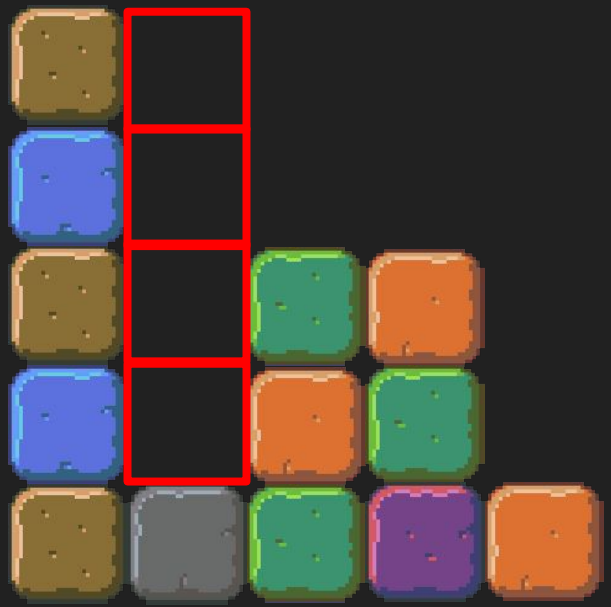
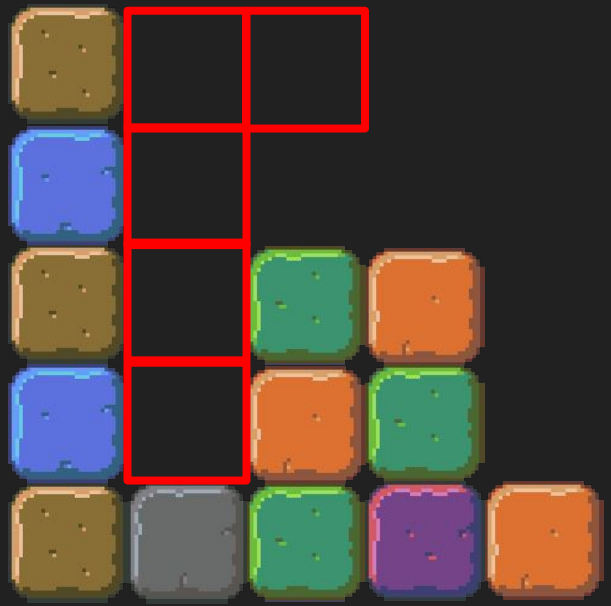


Replacing Tiles



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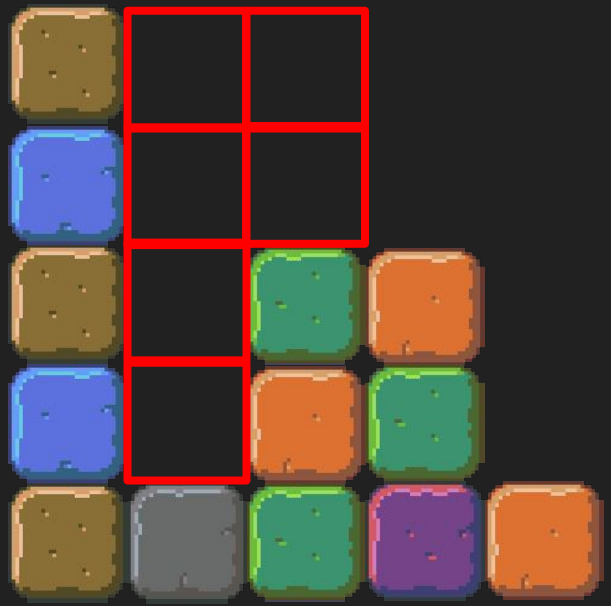

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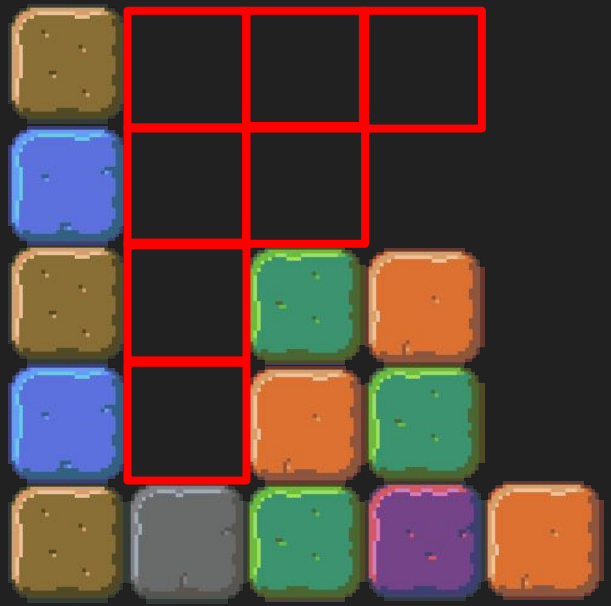
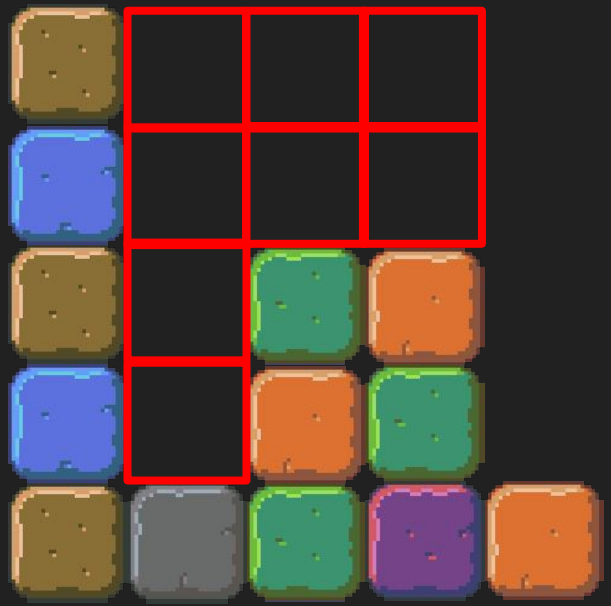


Replacing Tiles



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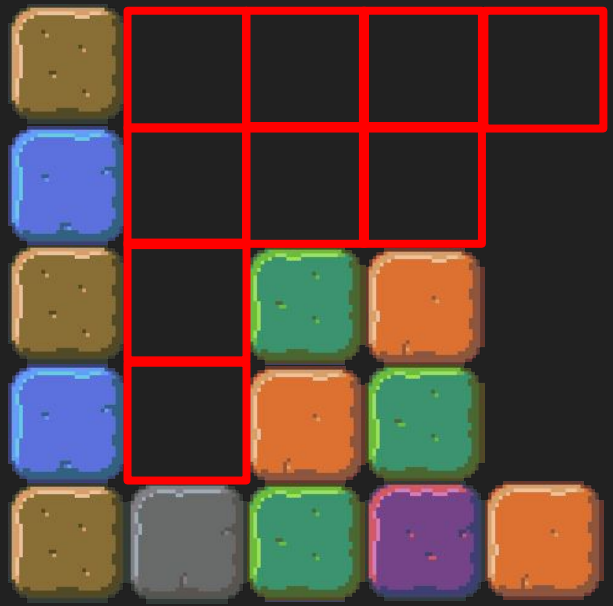

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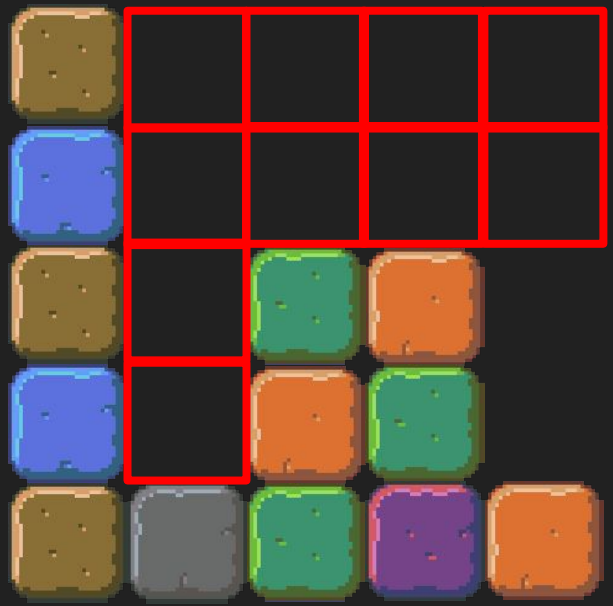

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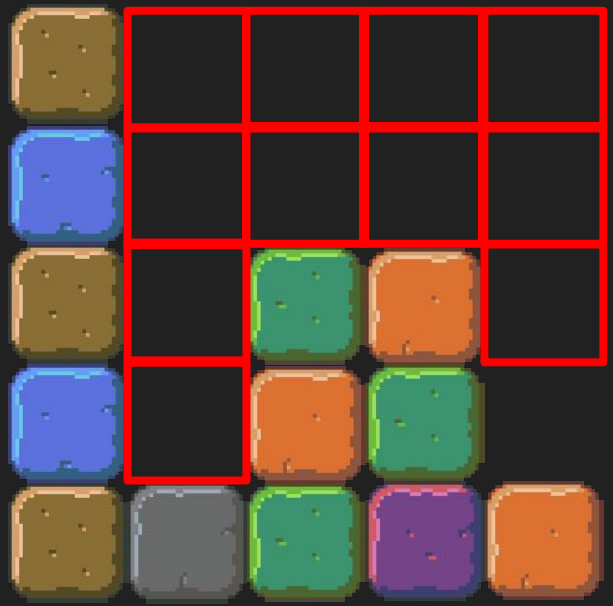

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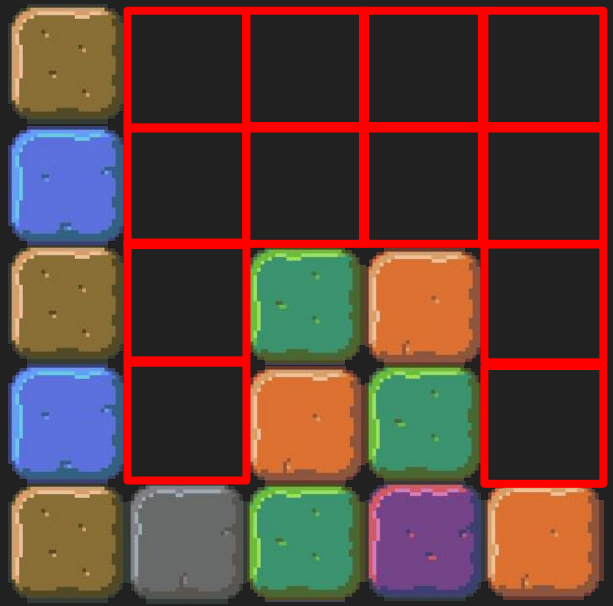

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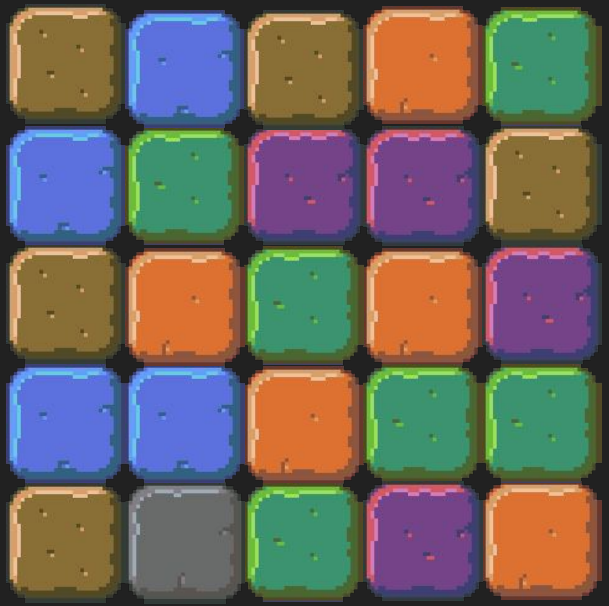
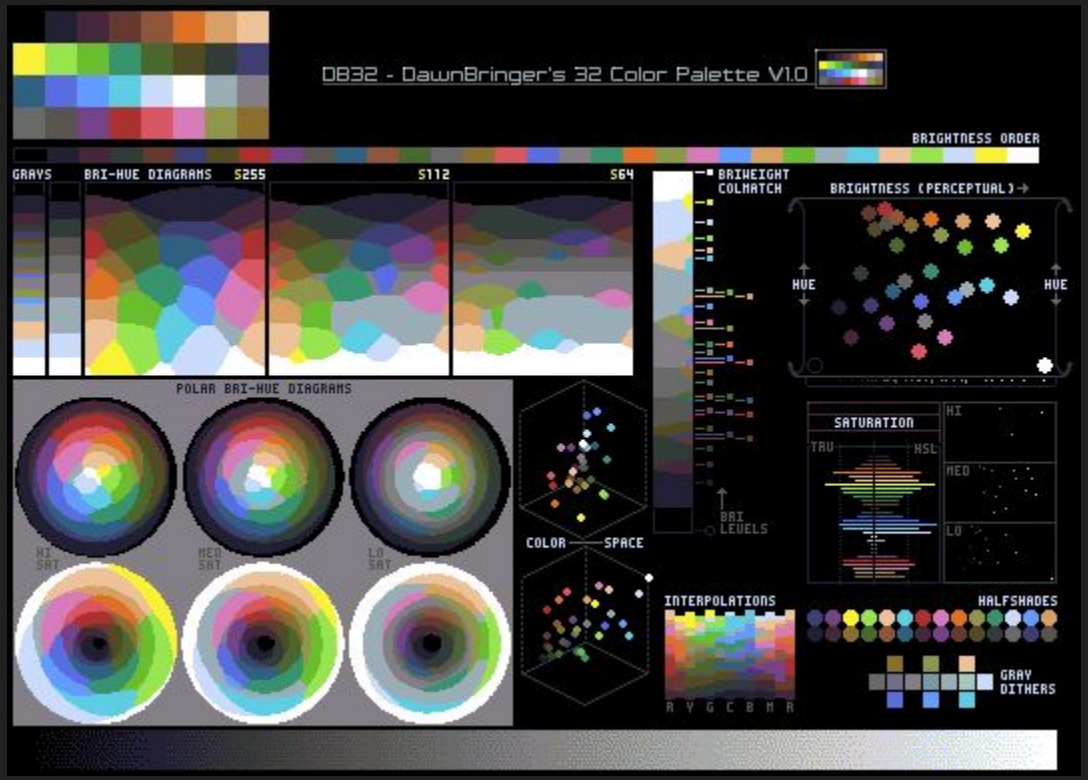


Palette



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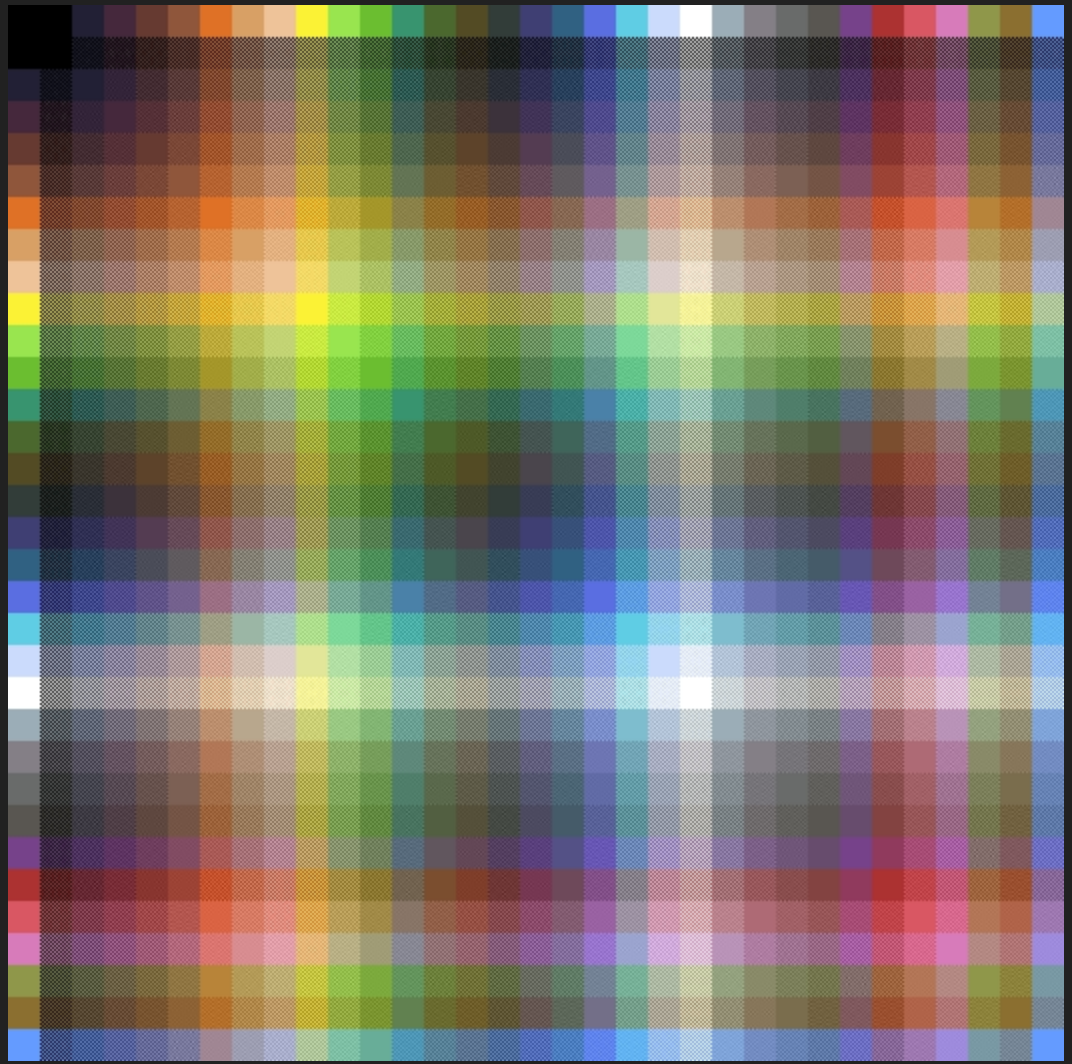

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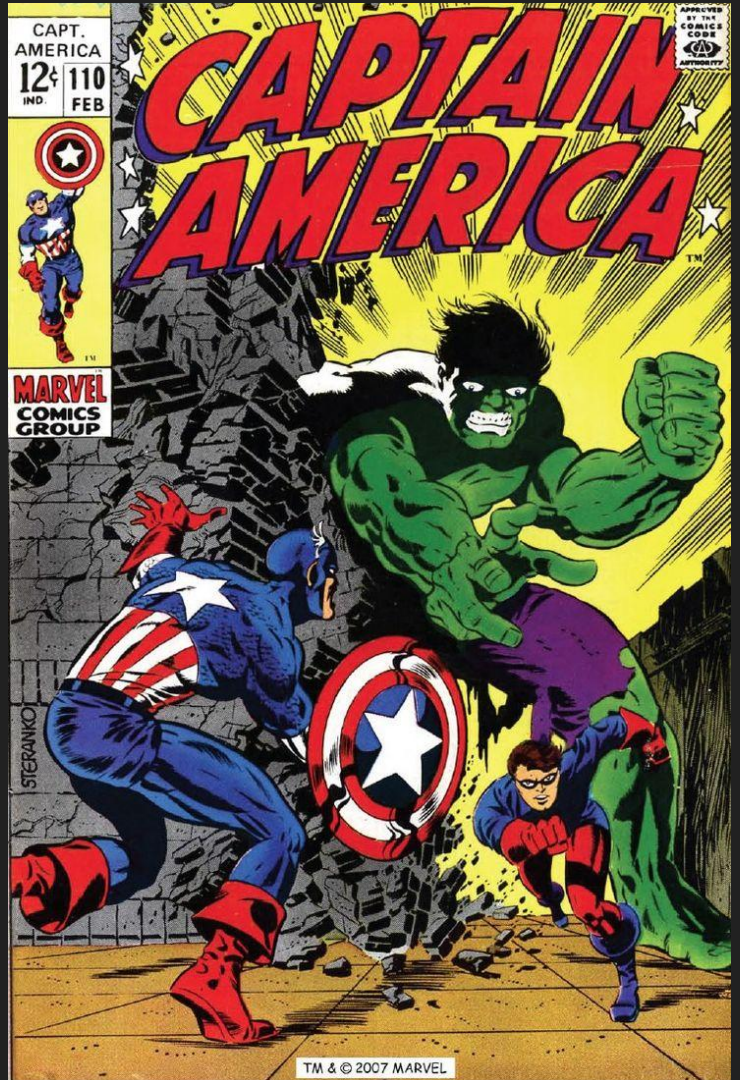
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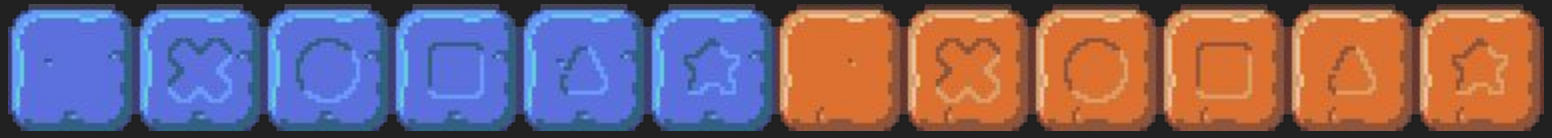
Palette Swap

Assignment 3

- ~~Implement time addition on matches, such that scoring a match extends the timer by 1 second per tile in a match.~~
- ~~Make it so that Level 1 starts with just simple flat blocks, with later levels generating the ones with patterns on them. These should be worth more points.~~
- ~~Create random shiny variants of blocks that will destroy an entire row when matched.~~
- ~~Only allow swapping when it results in a match. If there are no matches, reset the board.~~
- Optional: implementing matching with the mouse. (Hint: You'll need `push:toGame(x,y)`!

Next Time...

- Tile Maps
- 2D Animation
- Platformer Level Generation
- Platformer Physics
- Hurtboxes
- Powerups

https://opengameart.org/content/platformer-art-pixel-edition

See you next time!