Tech Talk 2:
Dumb multithreading algorithms

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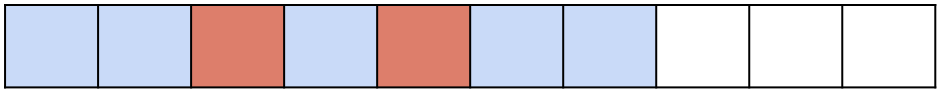
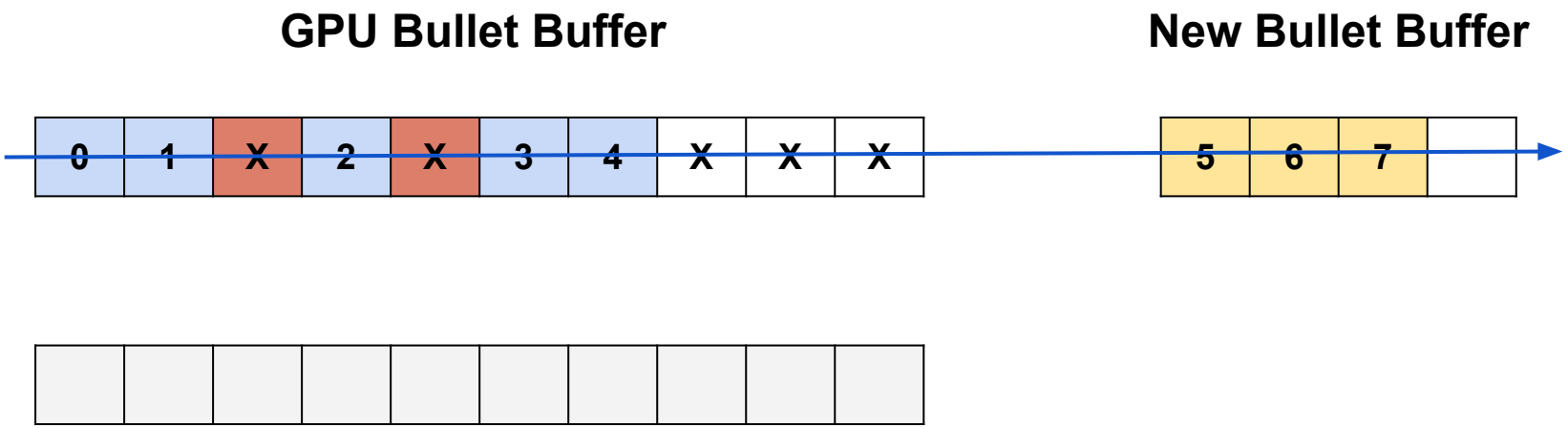
E190U

Last Episode…

GPU Bullet Buffer



New Bullet Buffer


GPU Bullet Buffer
New Bullet Buffer
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GPU Bullet Buffer

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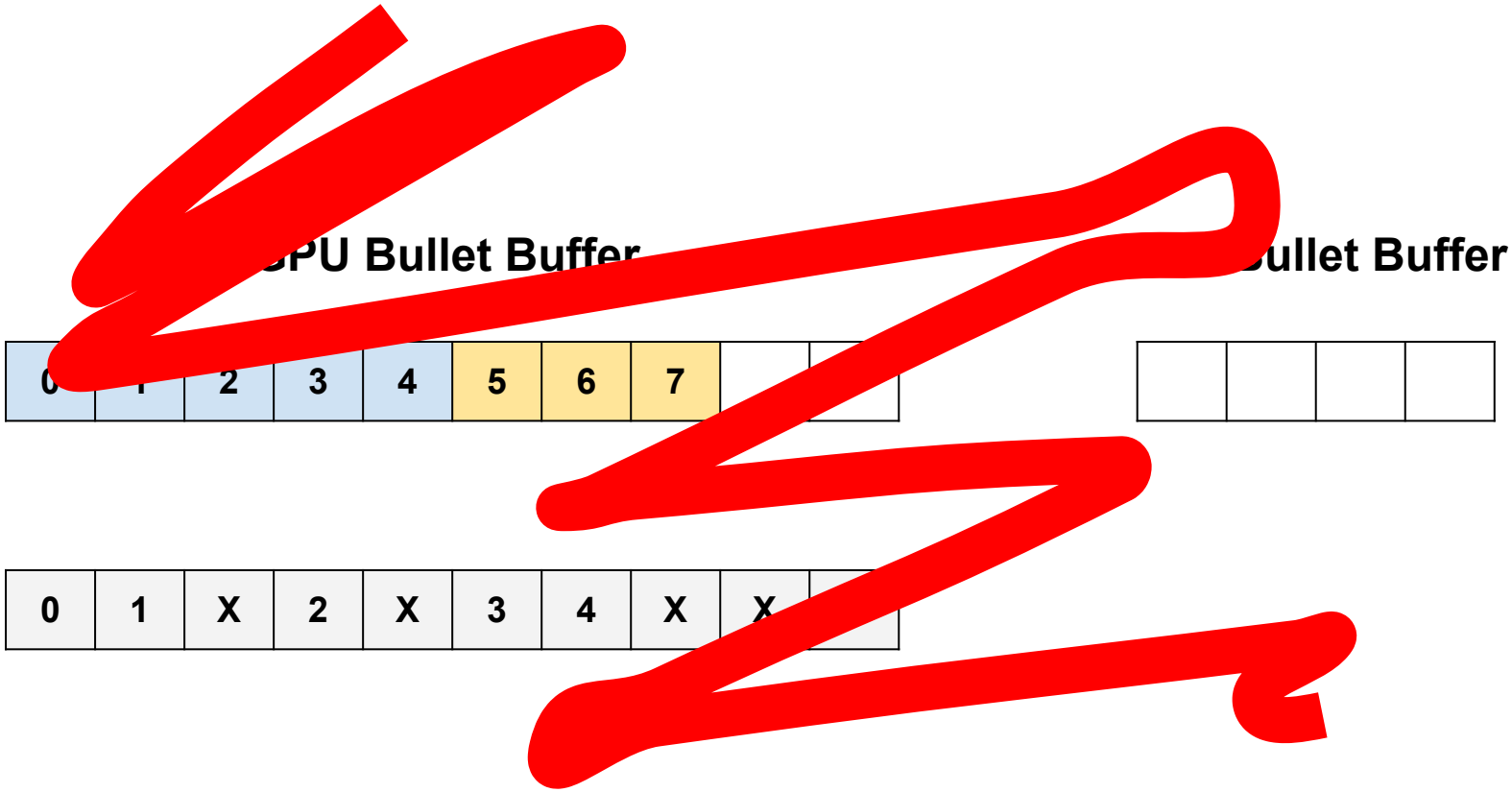
0	1	X	2	X	3	4	X	X	X

New Bullet Buffer


PU Bullet Buffer
ullet Buffer
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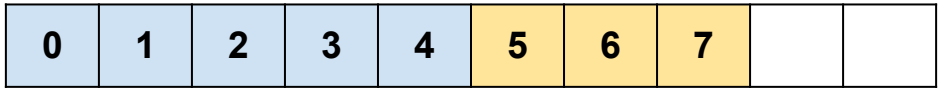
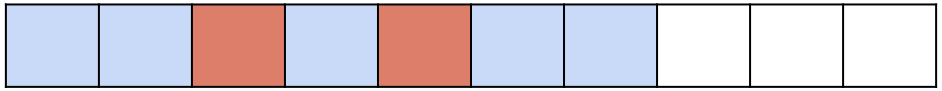
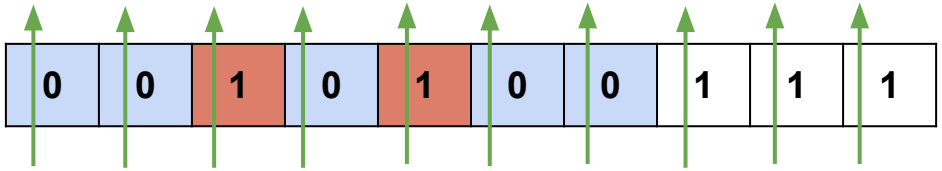
- No more single-threading bottleneck (on GPU)
- No more duplicate memory

GPU Bullet Buffer



GPU Bullet Buffer

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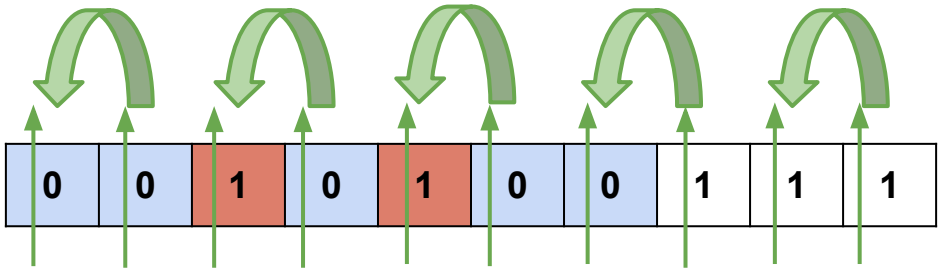
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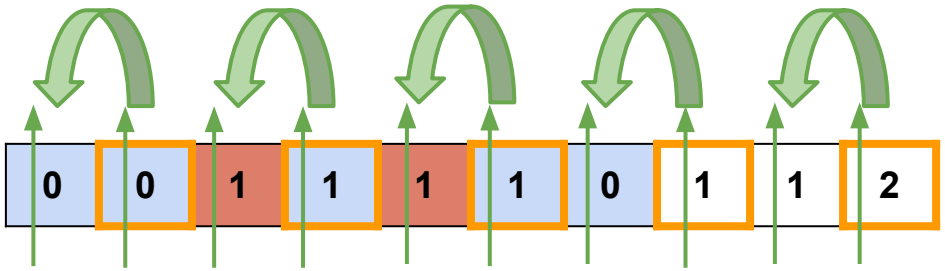
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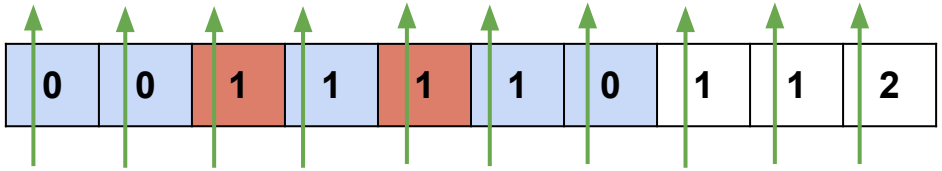
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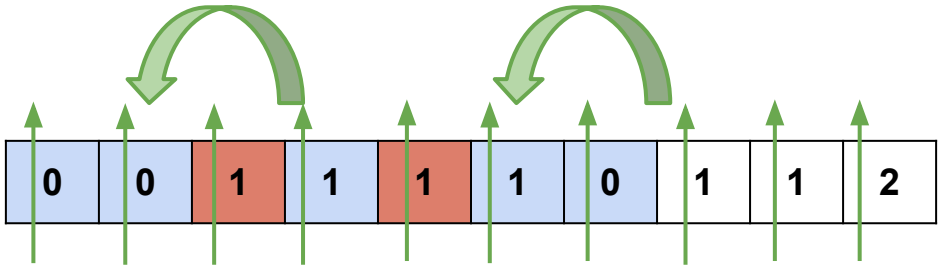
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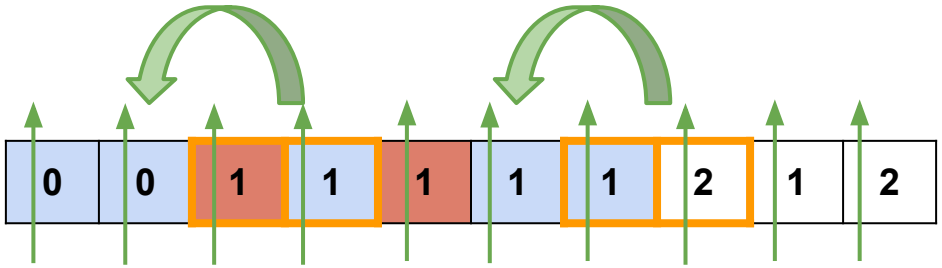
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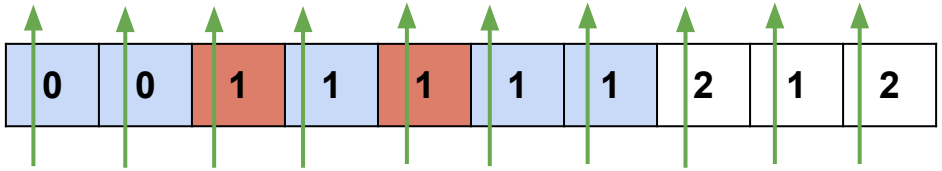
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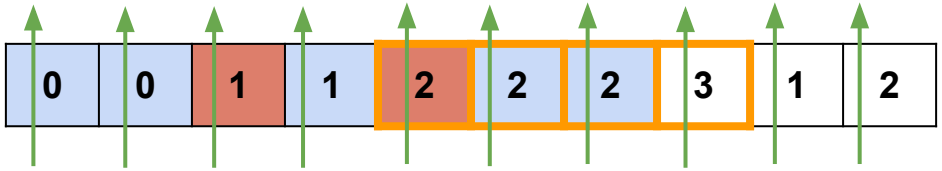
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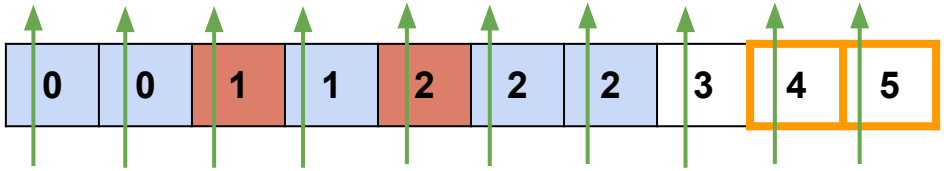
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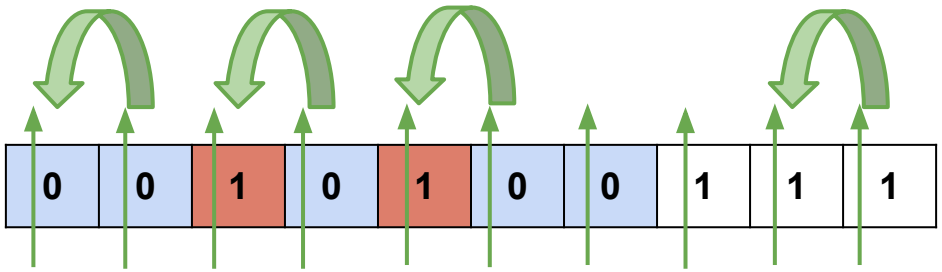
- Original Algorithm:
  - O(n)
- Multithread Algorithm:
  - O(log(n))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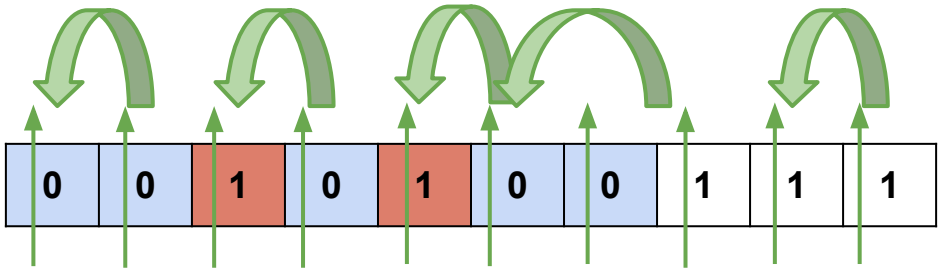
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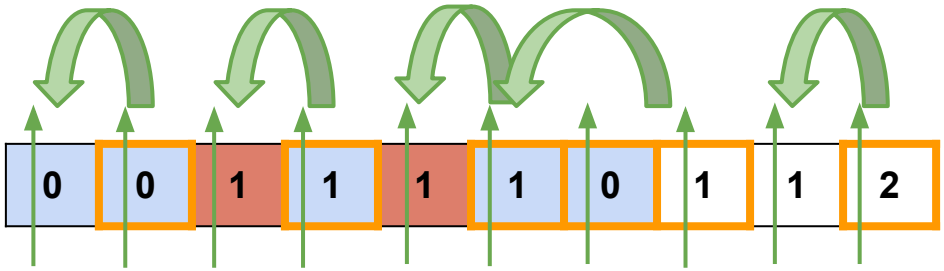
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__syncthreads()

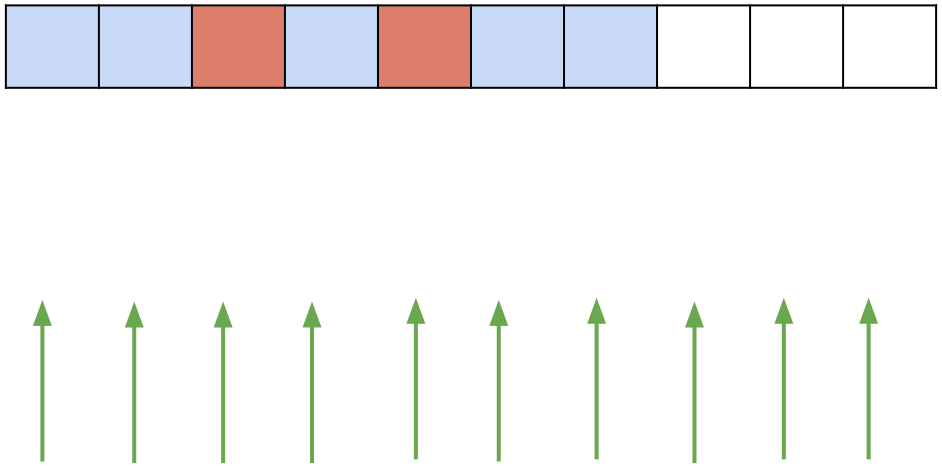
- Usage:

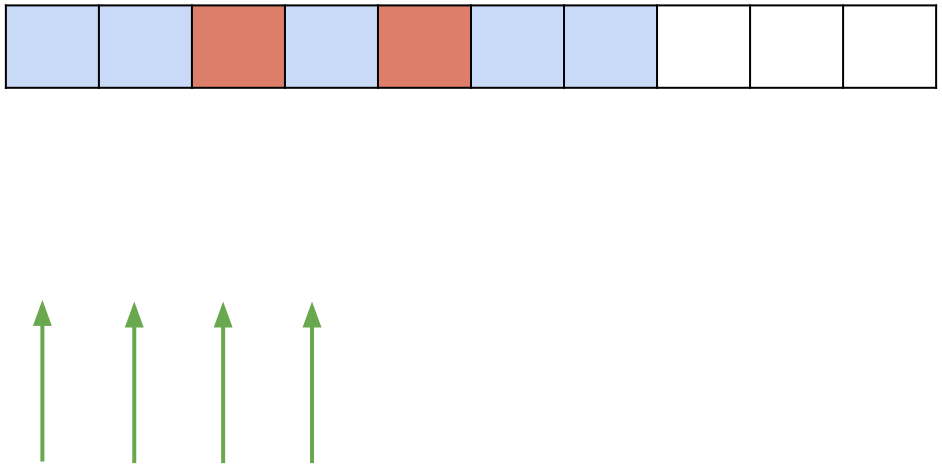
```
__global__ foo(...){
loop1(...);
__syncthreads();
loop2(...);
}
```

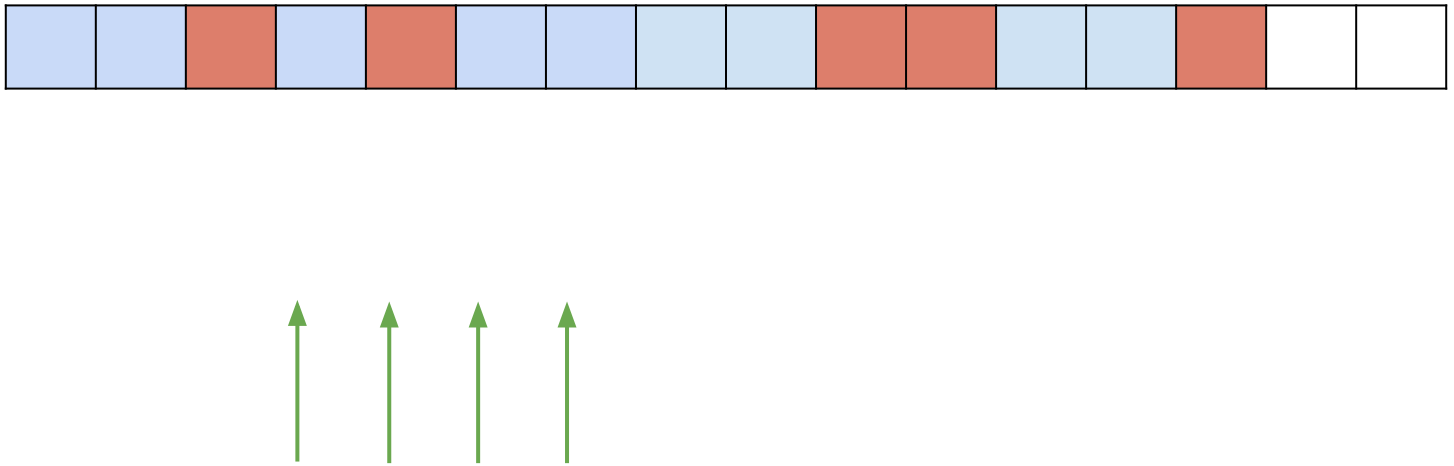
__syncthreads()

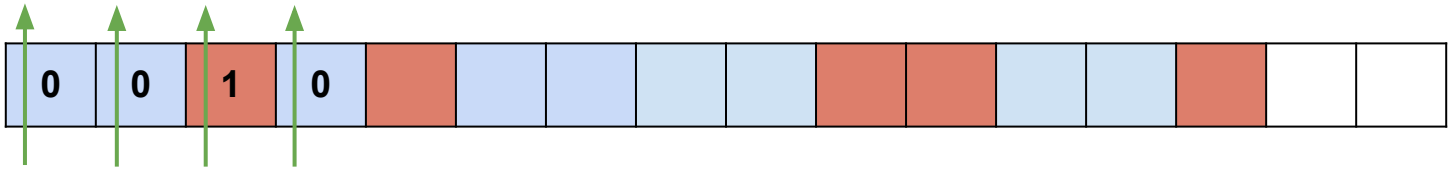
- Ensures all threads in a block will stop
- No effect outside of block
- Can cause deadlock if misused:

```
if(<non-trivial conditional>){
    __syncthreads(); //requires ALL threads to go
}
```





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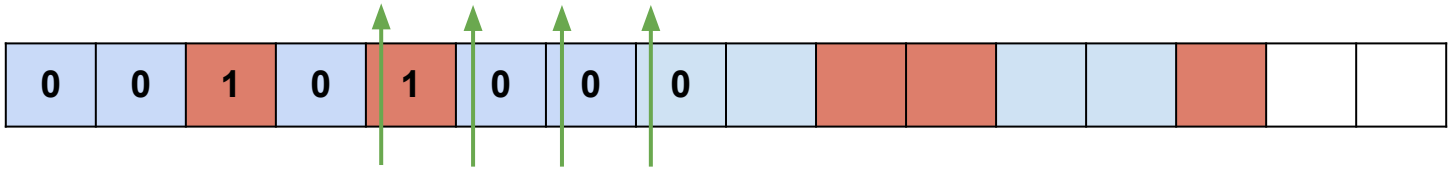
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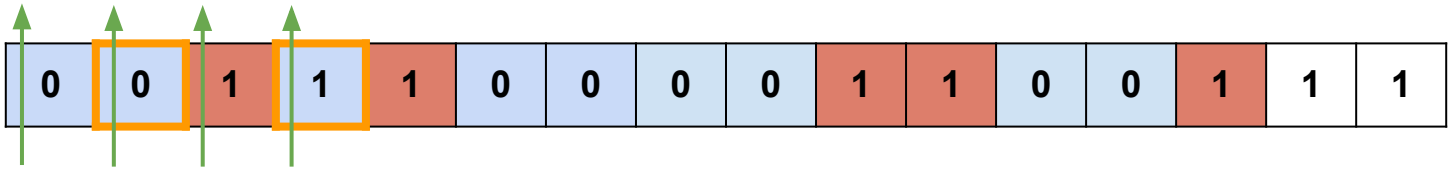
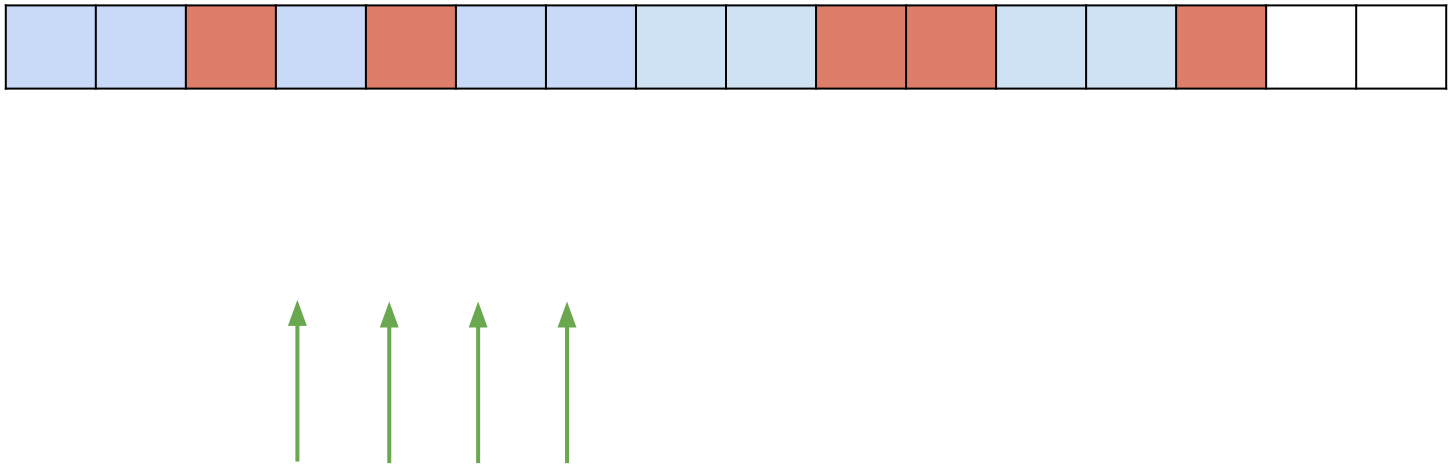
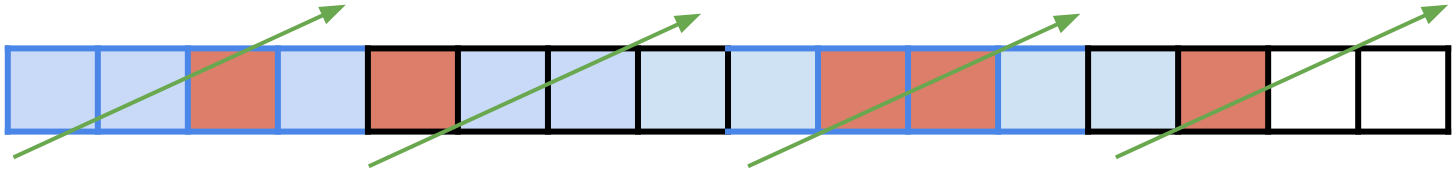
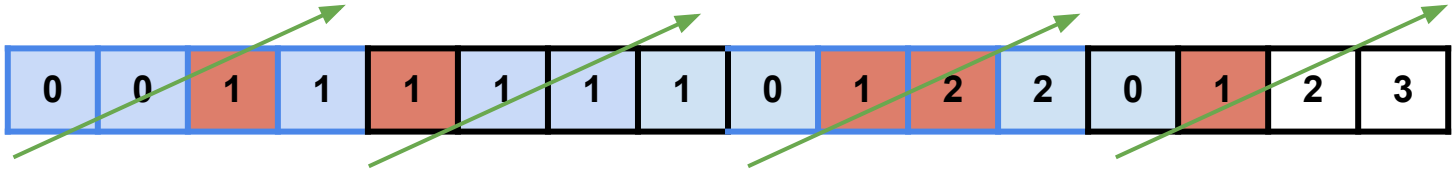
O(N/K*log(N))





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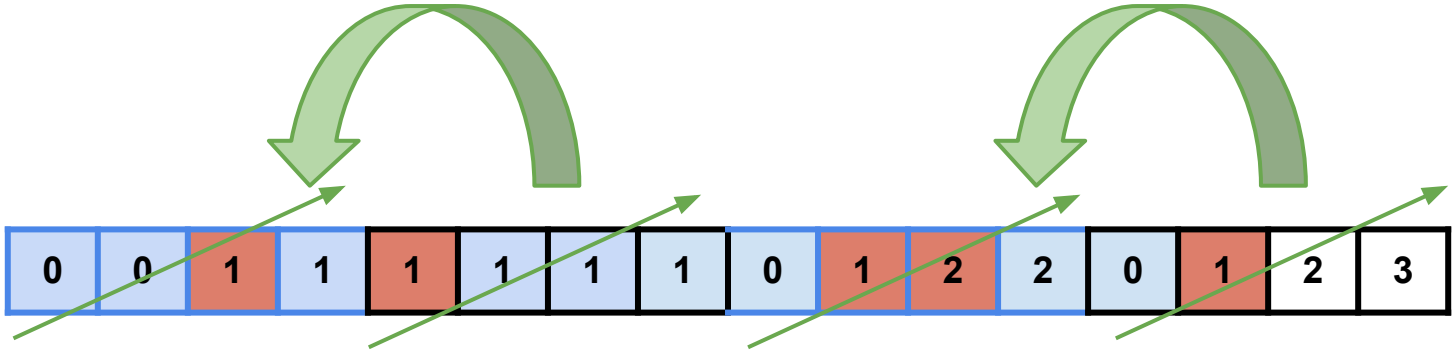
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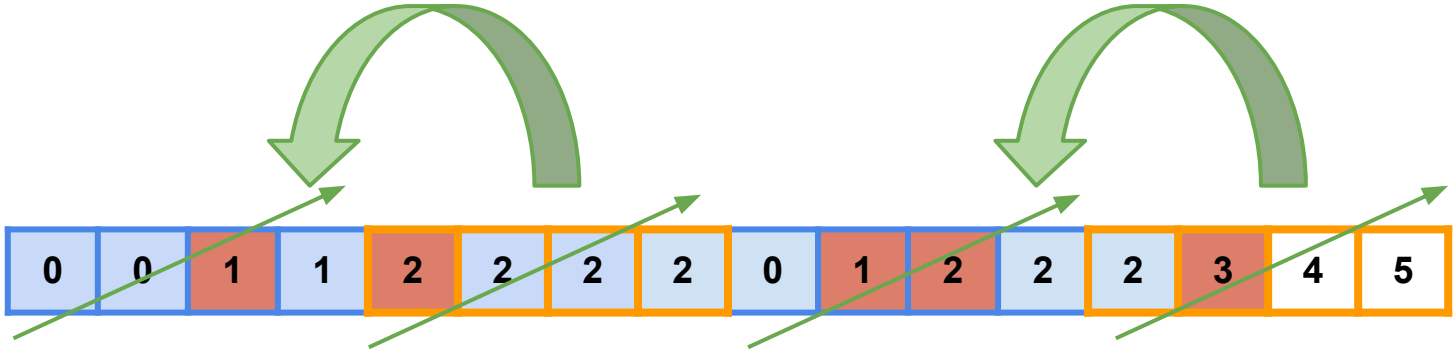
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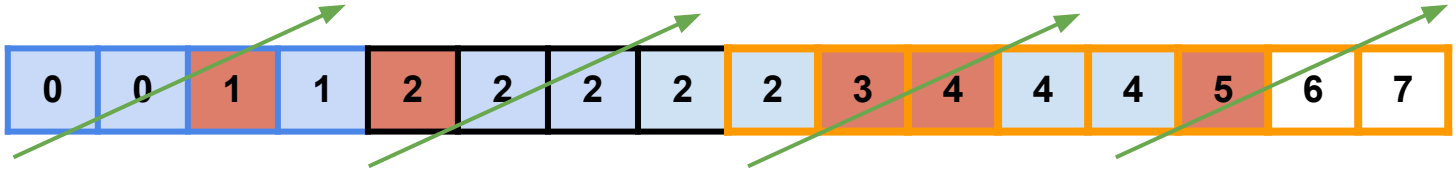
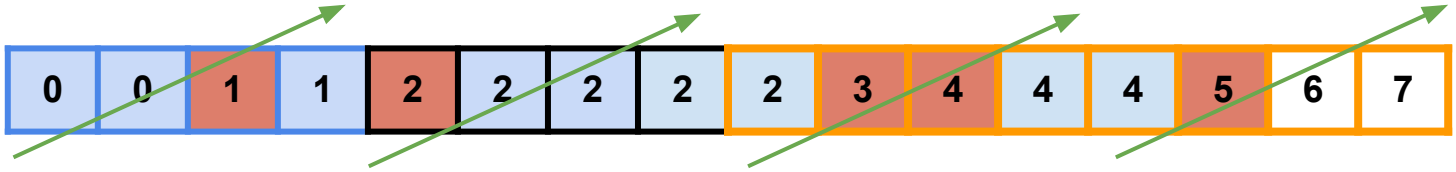
O(N/K*log(K))

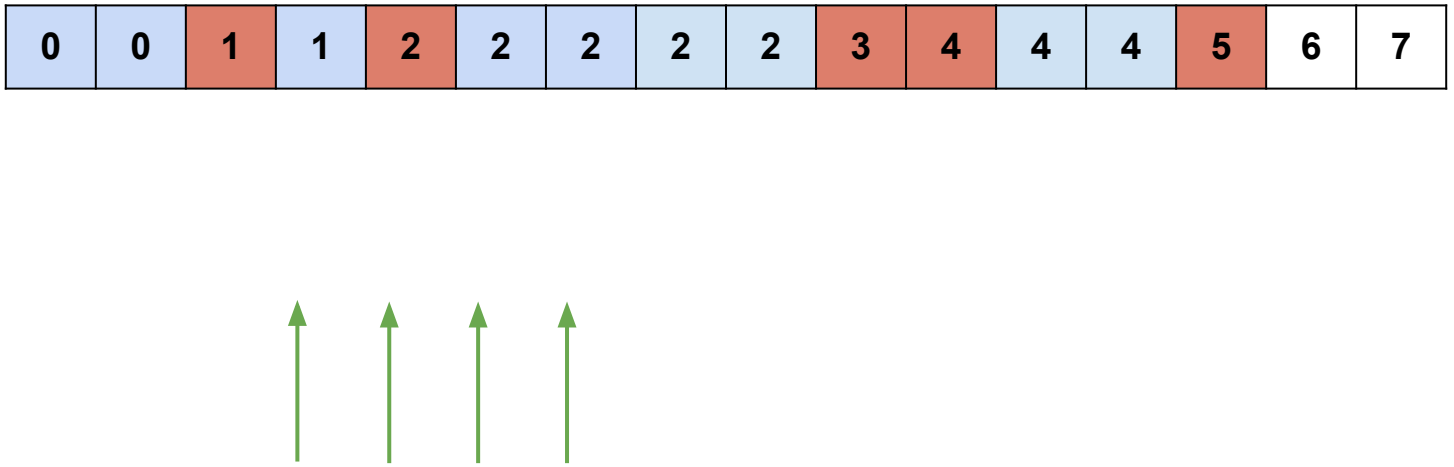


O((log(K)/K)*N)



__syncthreads()

- Reorganizing an array in parallel safely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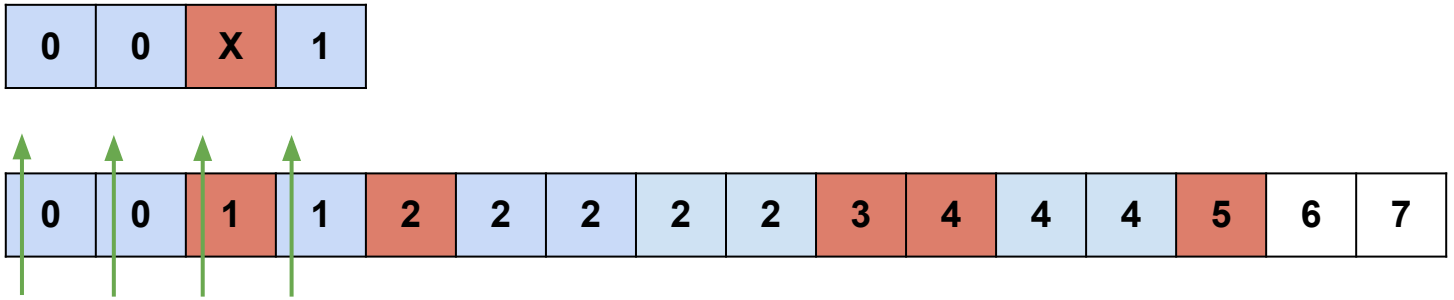
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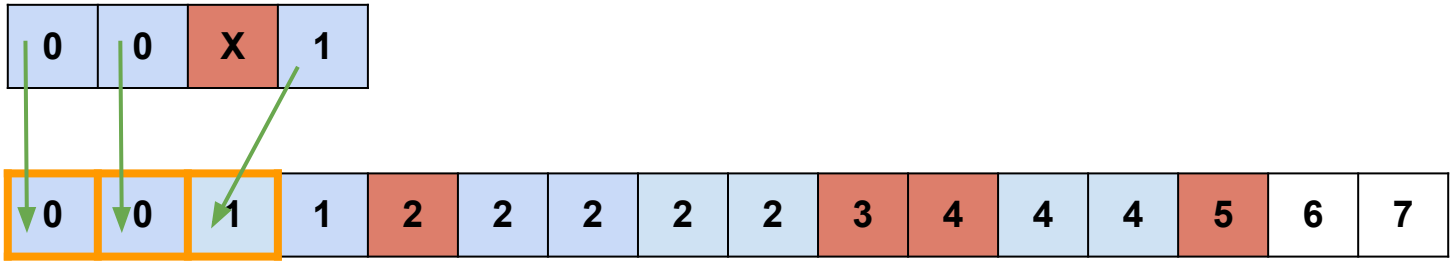
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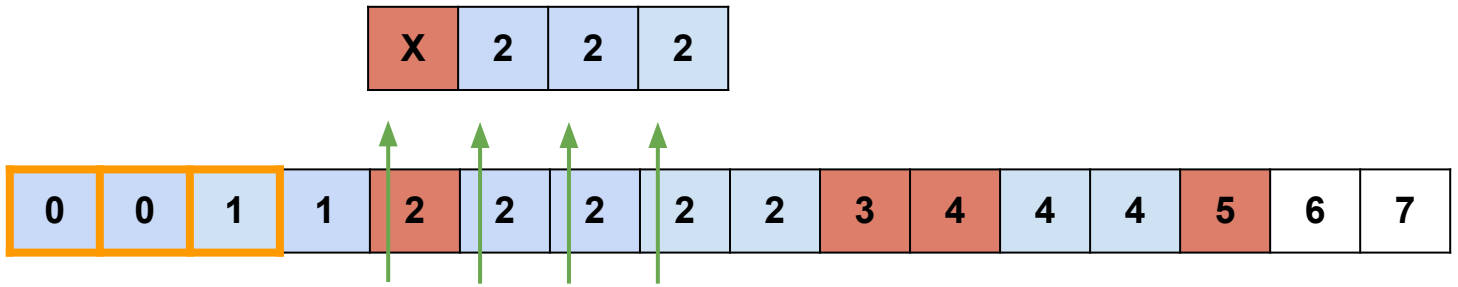
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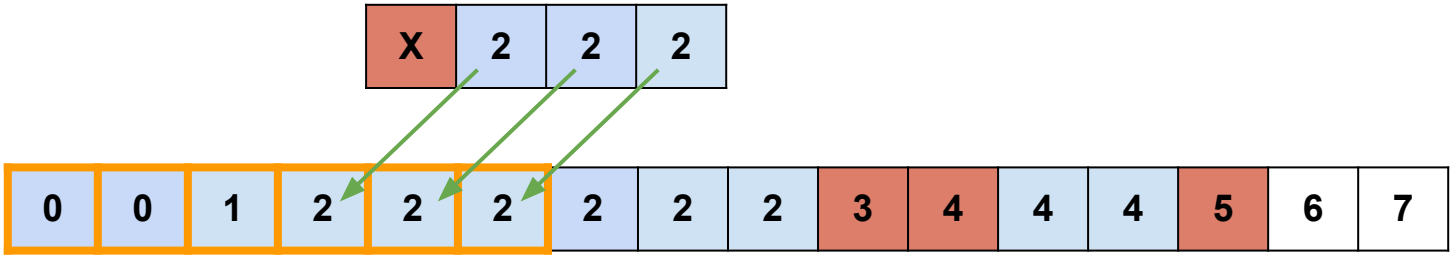
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