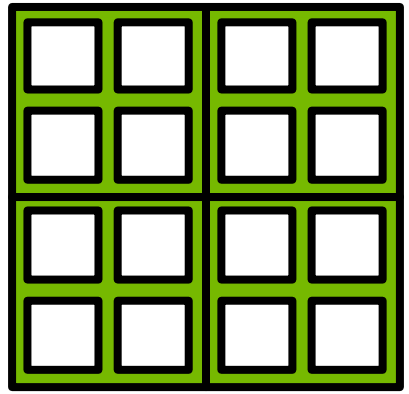
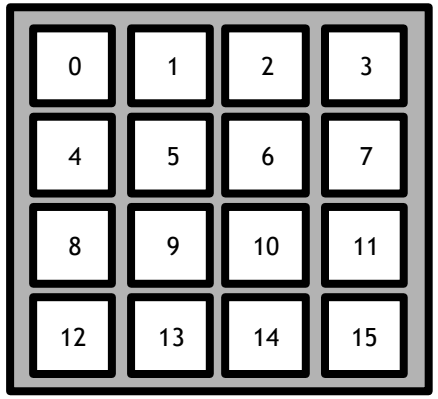
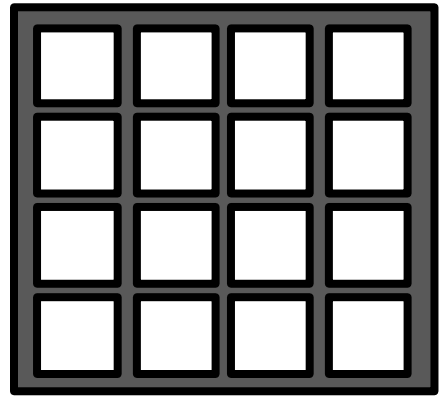
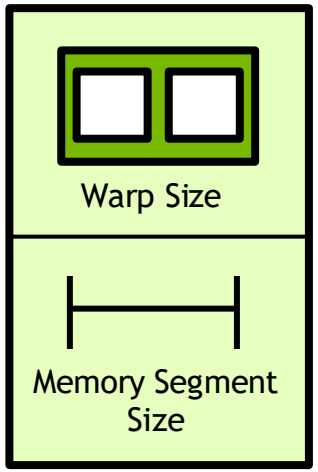
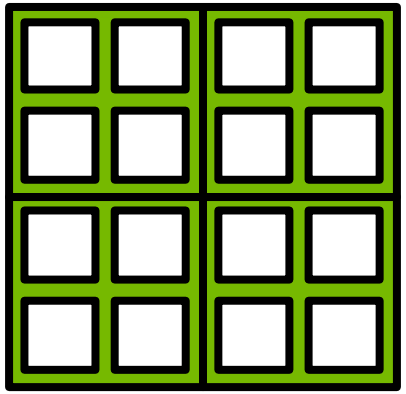
(2, 2)
(2, 2) (4,4)





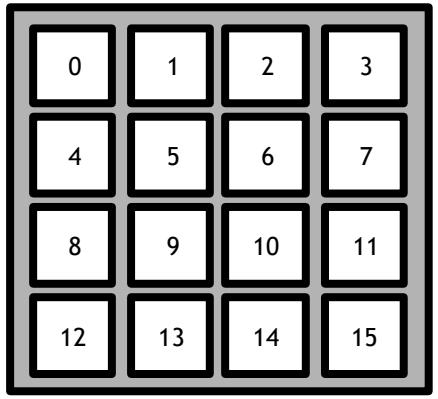


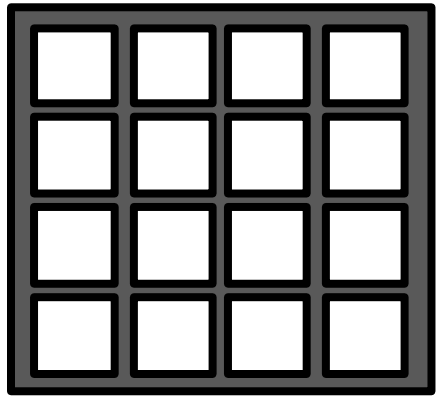


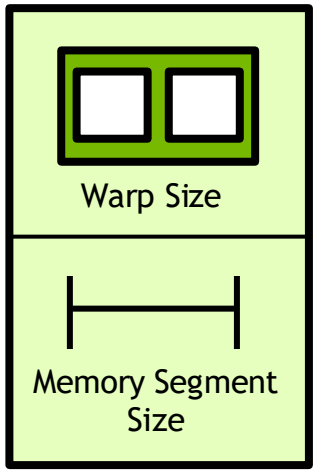


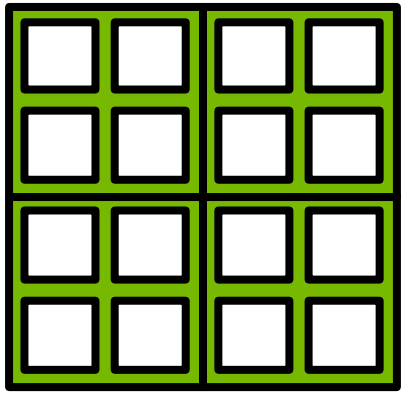
Warp

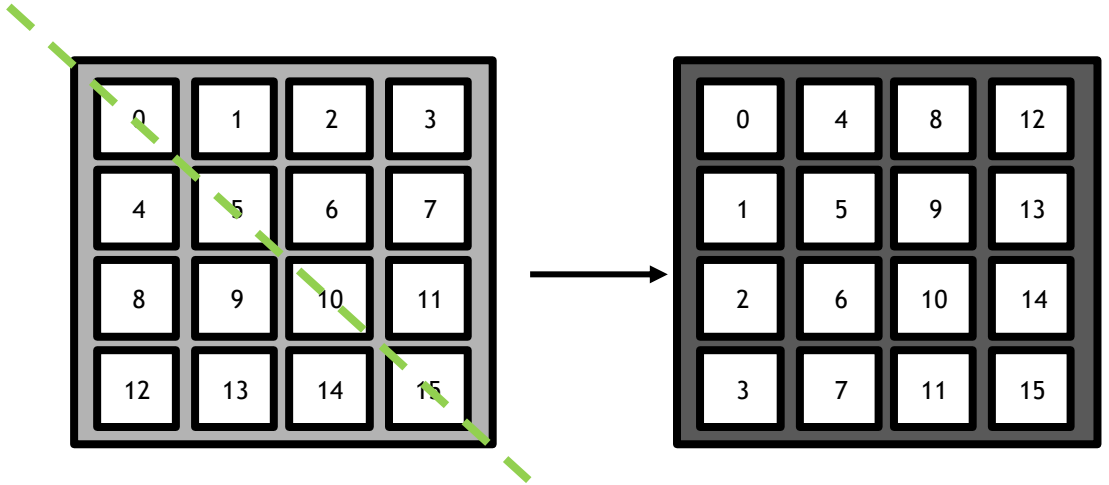
2 2

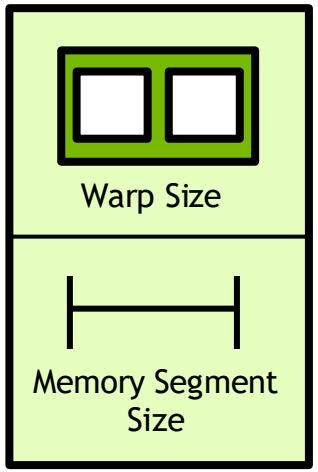


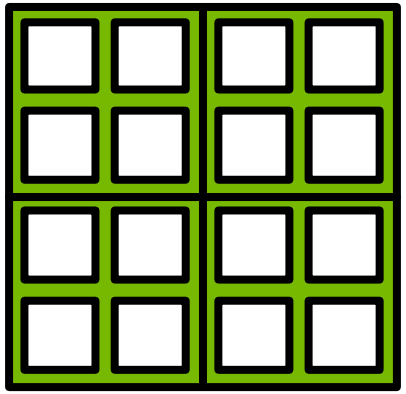










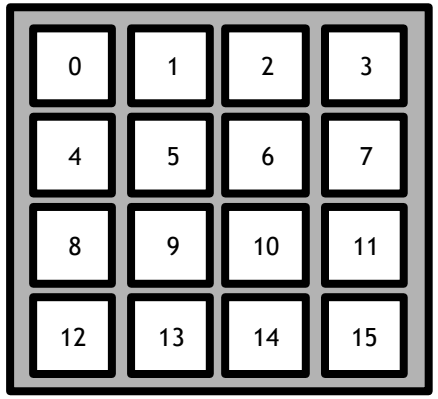


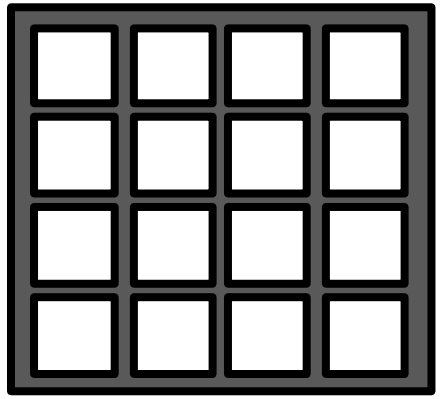
助

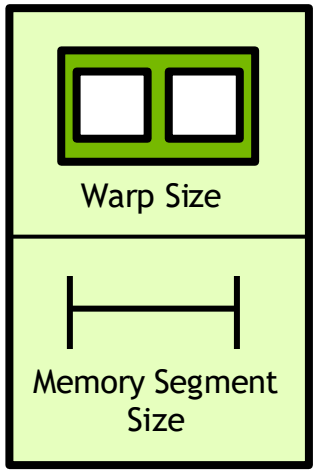
1

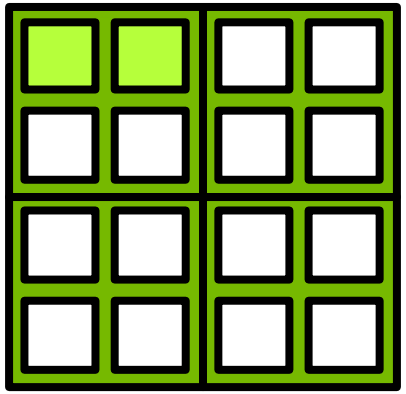
```
x, y = cuda.grid(2)

out[x][y] = in[y][x]
```





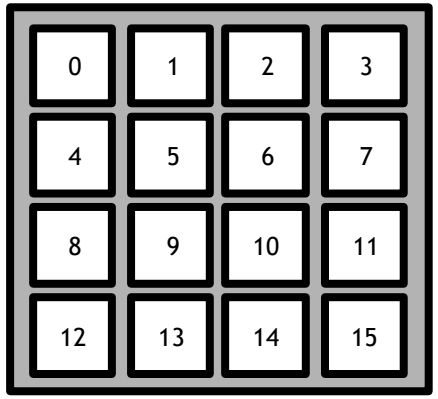


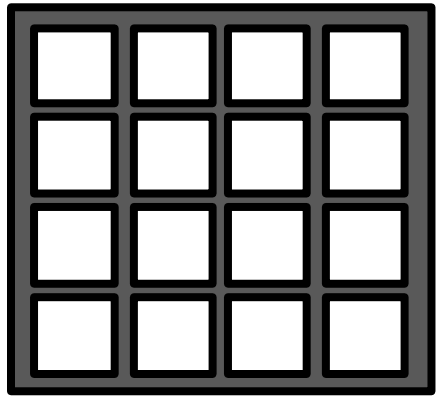


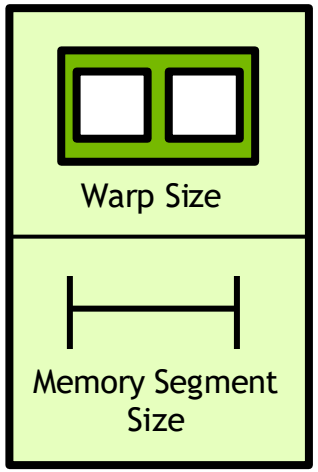
Warp

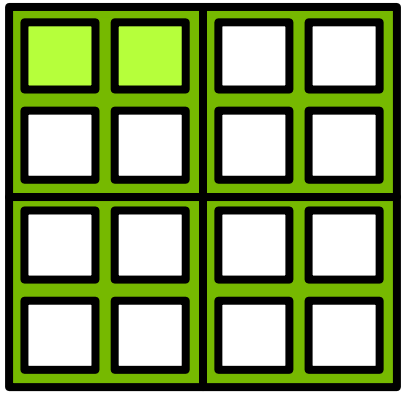
```
x, y = cuda.grid(2)

out[x][y] = in[y][x]
```









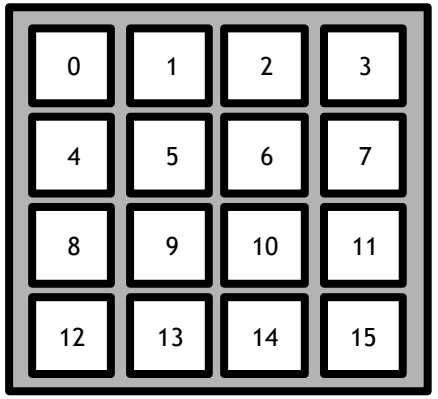
warp

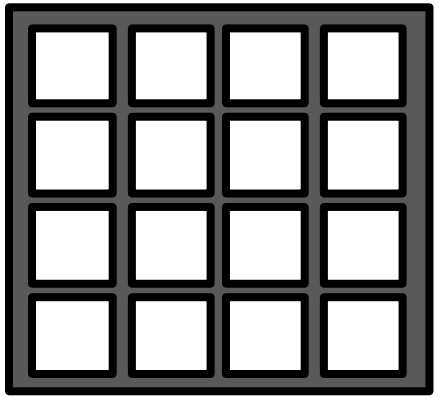
x

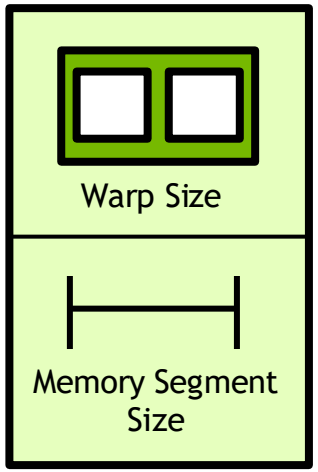
```
x = blockIdx.x * blockDim.x + threadIdx.x

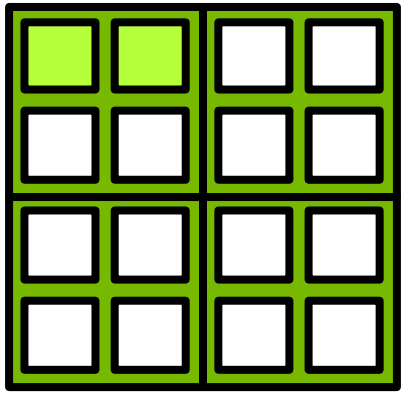
y = blockIdx.y * blockDim.y + threadIdx.y

out[x][y] = in[y][x]
```





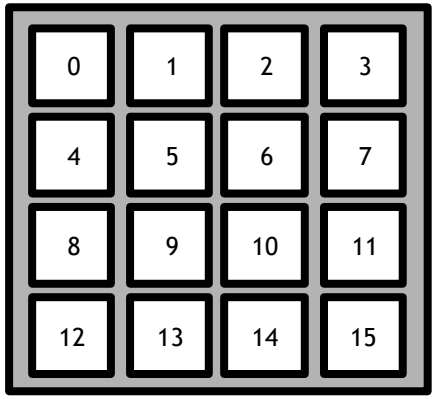


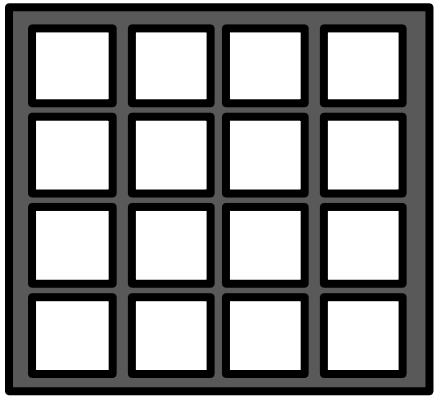


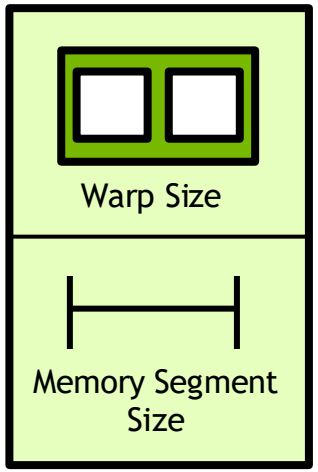
```
x = blockIdx.x * blockDim.x + threadIdx.x

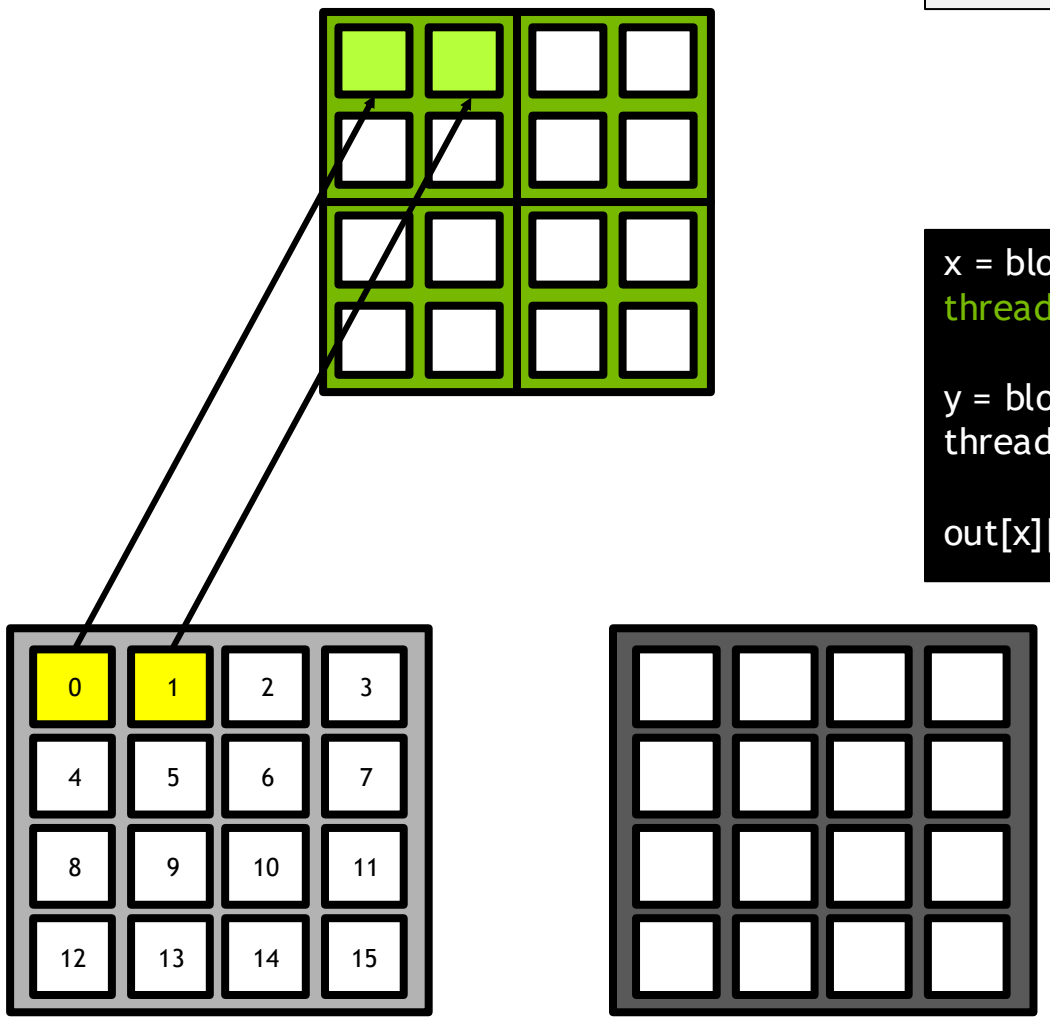
y = blockIdx.y * blockDim.y + threadIdx.y

out[x][y] = in[y][x]
```





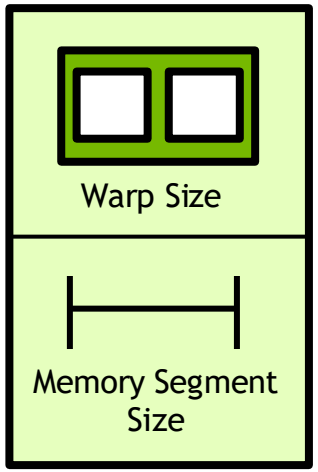


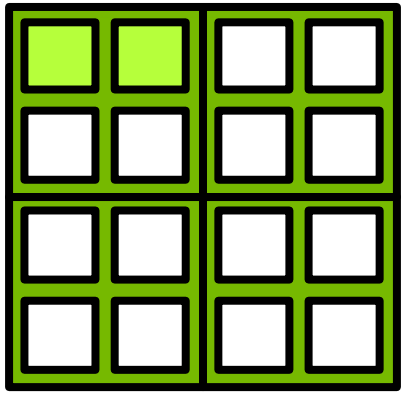



```
x = blockIdx.x * blockDim.x + threadIdx.x

y = blockIdx.y * blockDim.y + threadIdx.y

out[x][y] = in[y][x]
```



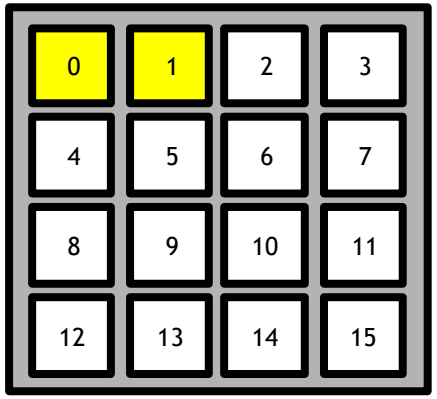


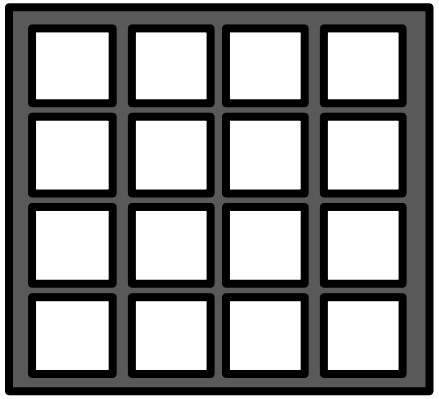
Warp

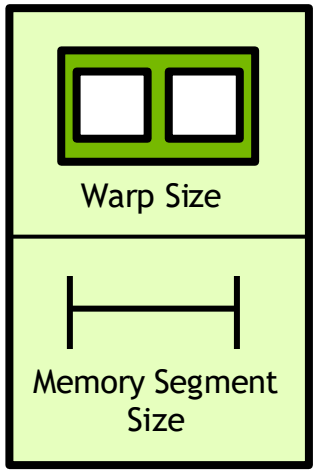
```
x = blockIdx.x * blockDim.x          +
threadIdx.x

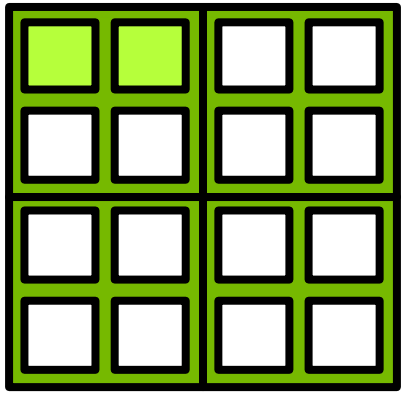
y = blockIdx.y * blockDim.y          +
threadIdx.y

out[x][y] = in[y][x]
```







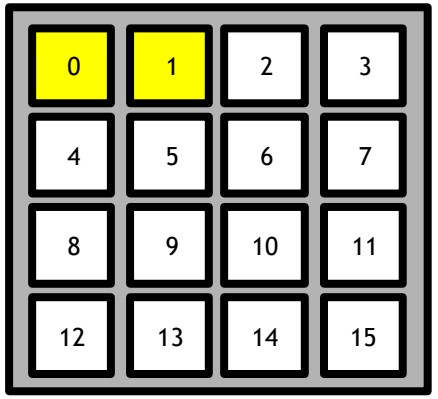


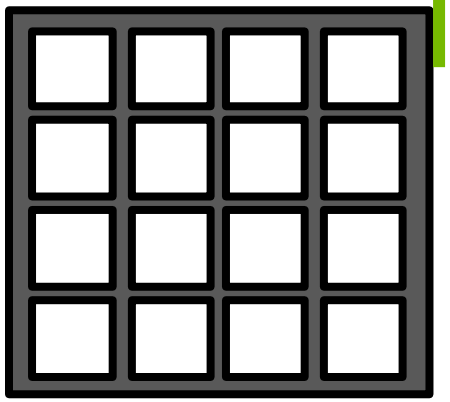
Warp

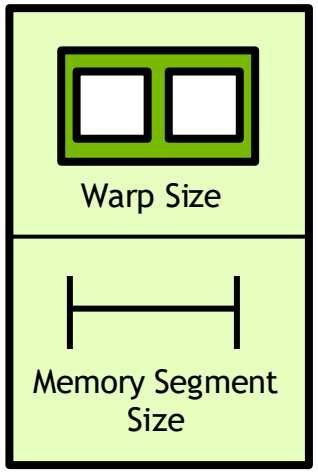
```
x = blockIdx.x * blockDim.x + threadIdx.x

y = blockIdx.y * blockDim.y + threadIdx.y

out[x][y] = in[y][x]
```







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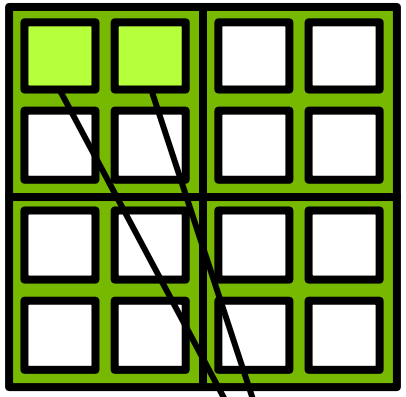
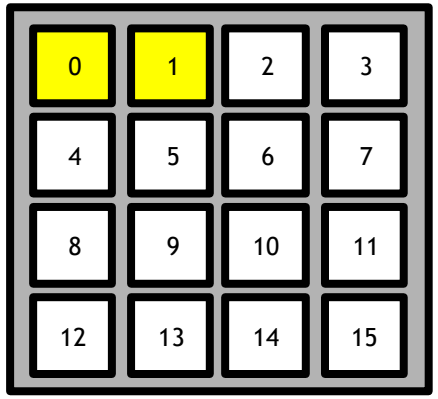
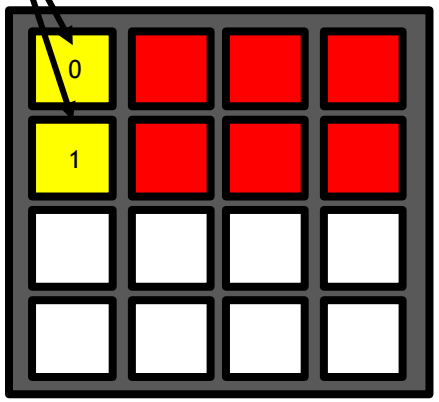


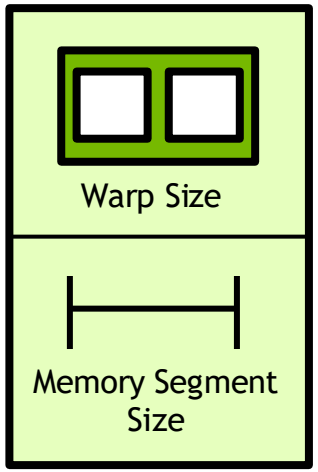
```
x = blockIdx.x * blockDim.x + threadIdx.x

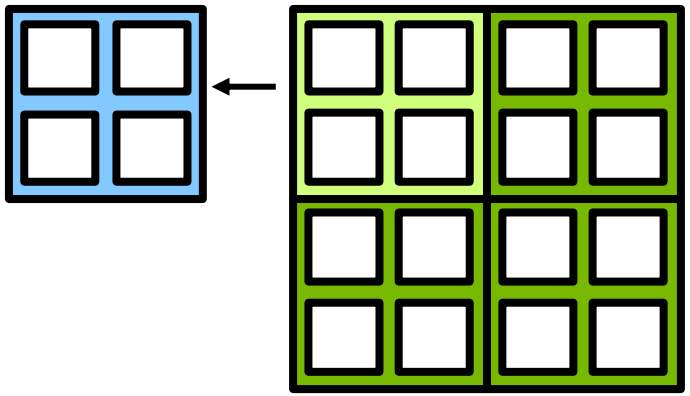
y = blockIdx.y * blockDim.y + threadIdx.y

out[x][y] = in[y][x]
```



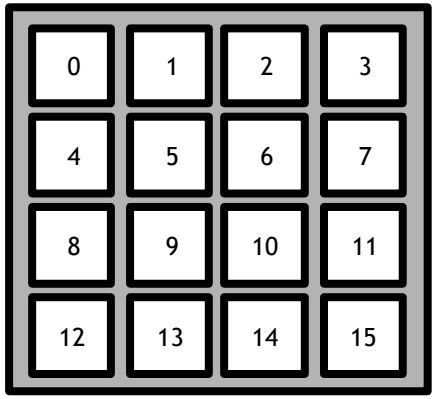


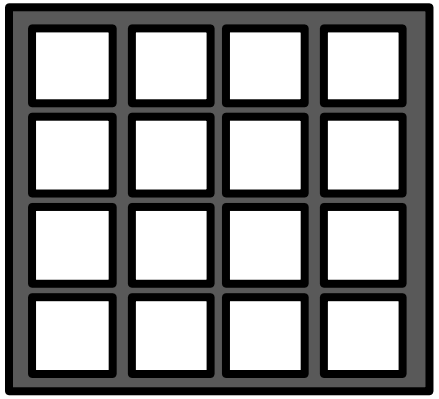


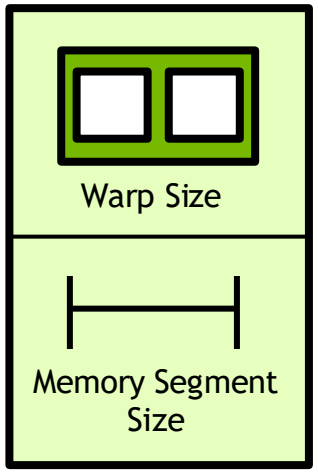


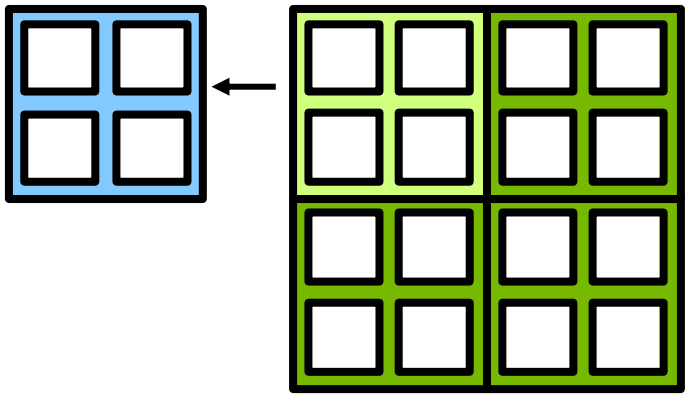
2,2

```
tile = cuda.shared.array(2,2)
```





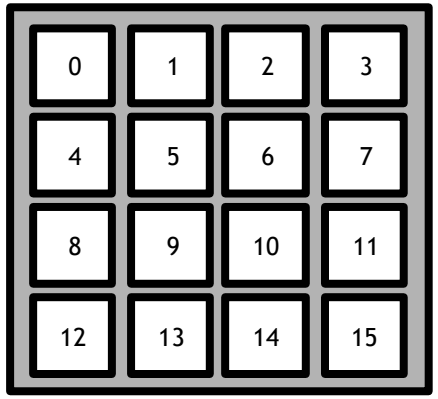


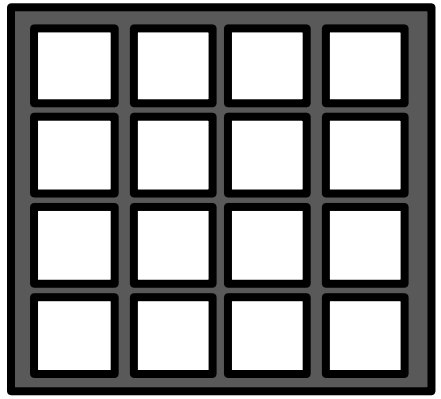


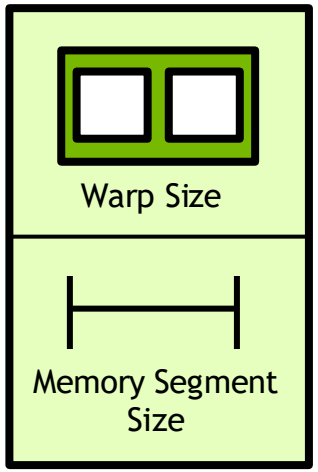
Warp 2

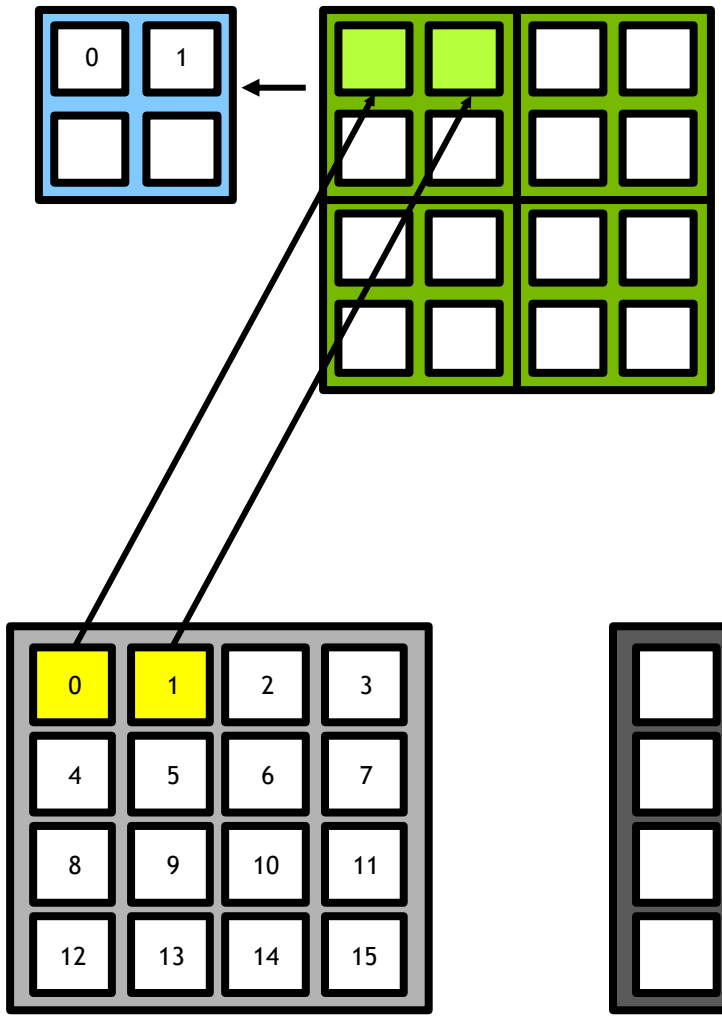
Warp 32

```
tile = cuda.shared.array(2,2)
```



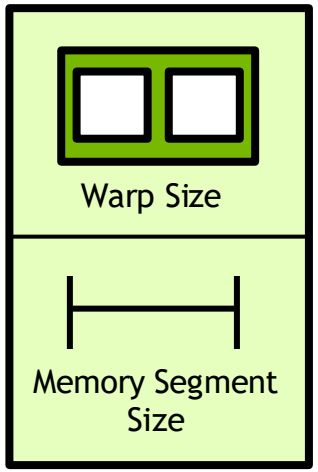


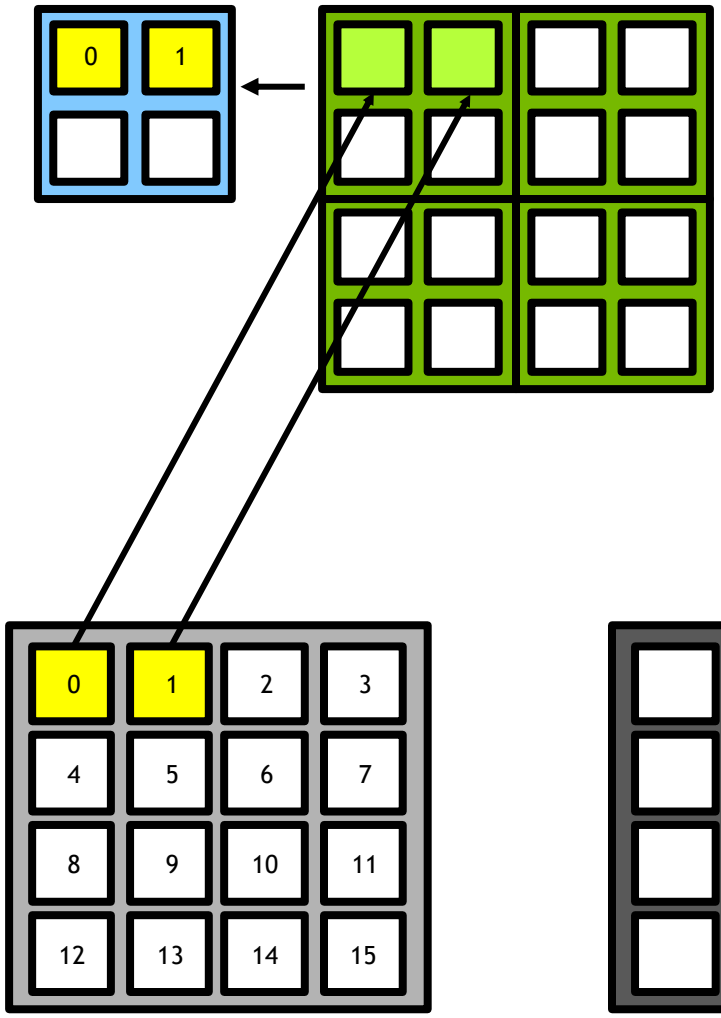





```
tile = cuda.shared.array(2,2)
x, y = cuda.grid(2)

tile[tIdx.y][tIdx.x] = in[y][x]
```





)与

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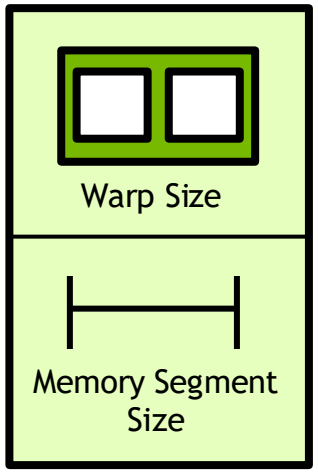
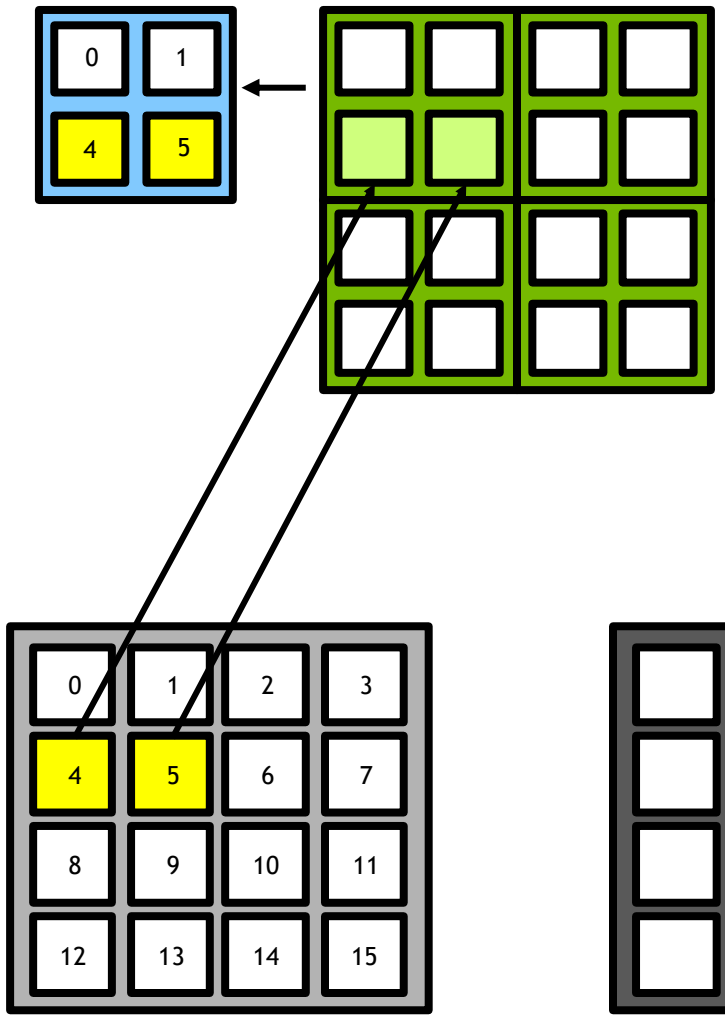
```
tile = cuda.shared.array(2,2)
x, y = cuda.grid(2)

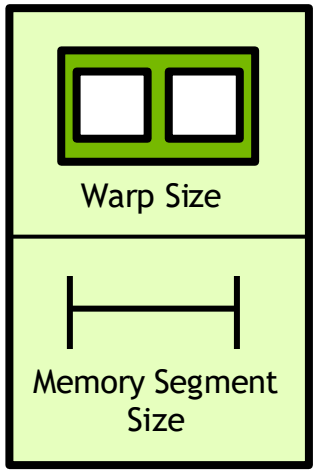
tile[tIdx.y][tIdx.x] = in[y][x]
```

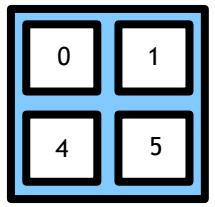


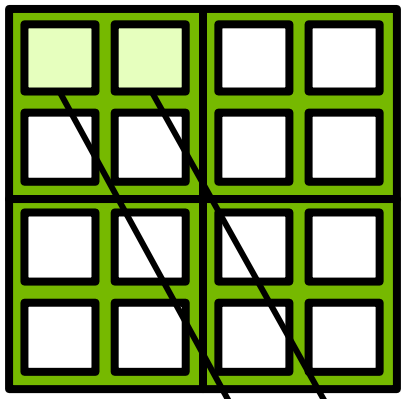



```
tile = cuda.shared.array(2,2)
x, y = cuda.grid(2)

tile[tIdx.y][tIdx.x] = in[y][x]
cuda.syncthreads()
```





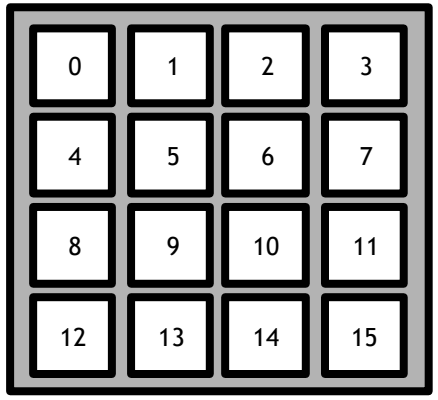


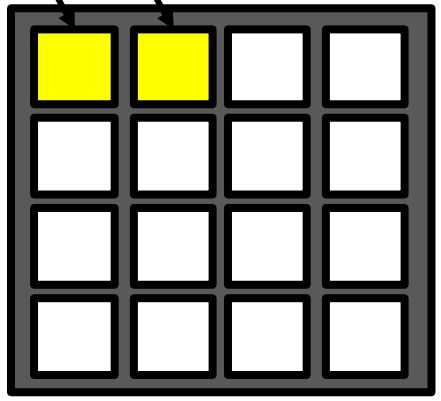
Warp

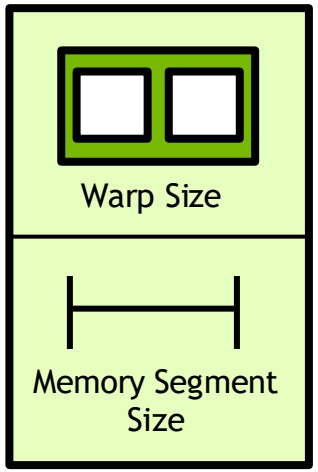
```
tile = cuda.shared.array(2,2)
x, y = cuda.grid(2)

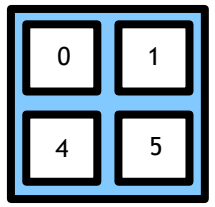
tile[tIdx.y][tIdx.x] = in[y][x]
cuda.syncthreads()

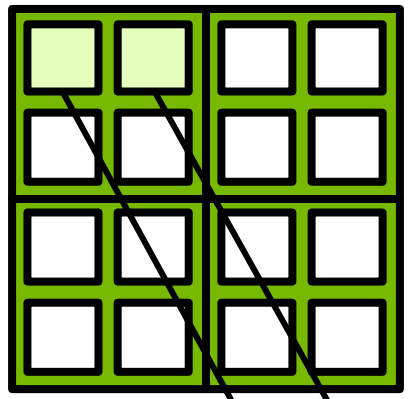
o_x = bId.y*bDim.y + tId.x
o_y = bId.x*bDim.x + tId.y
```











blockIdx.y blockDim.y
x .....

```
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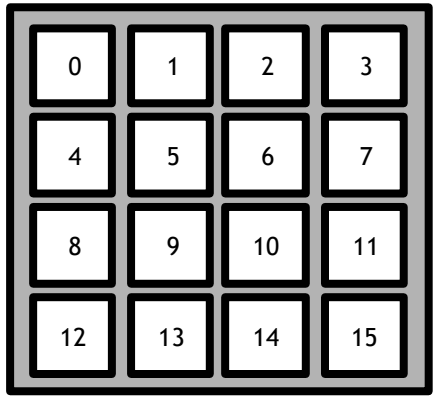
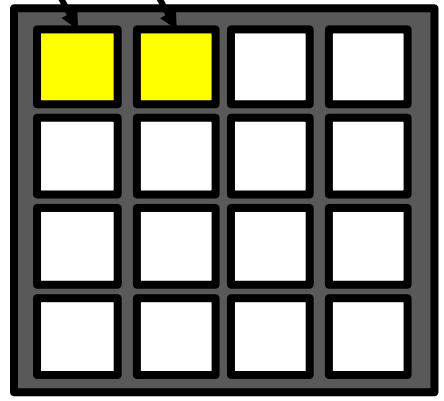
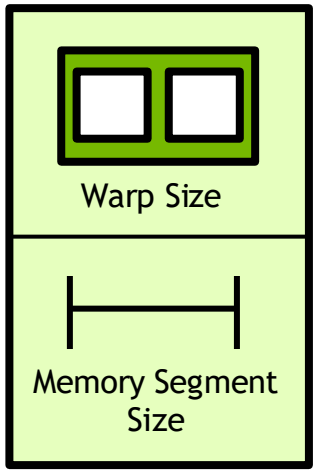
x, y = cuda.grid(2)

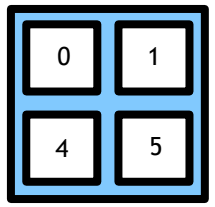
tile[tIdx.y][tIdx.x] = in[y][x]
cuda.syncthreads()

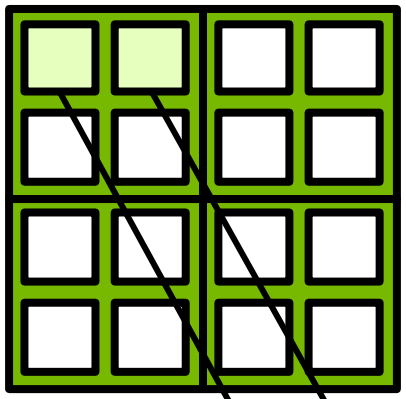
o_x = bId.y*bDim.y + tId.x
o_y = bId.x*bDim.x + tId.y
```

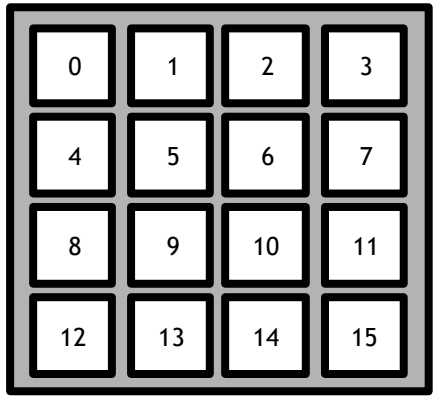


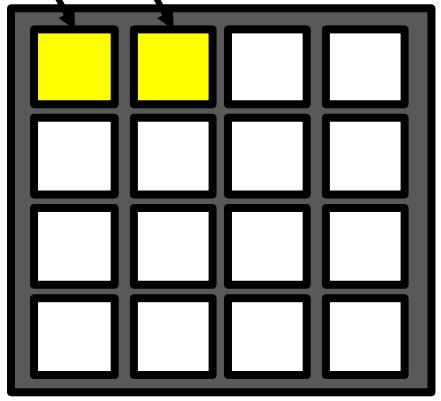










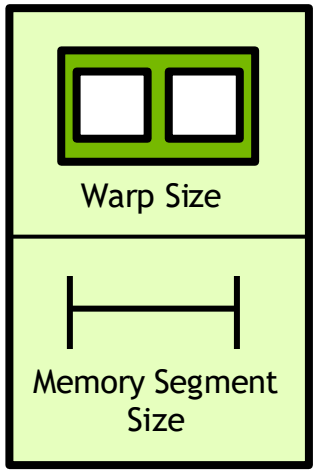


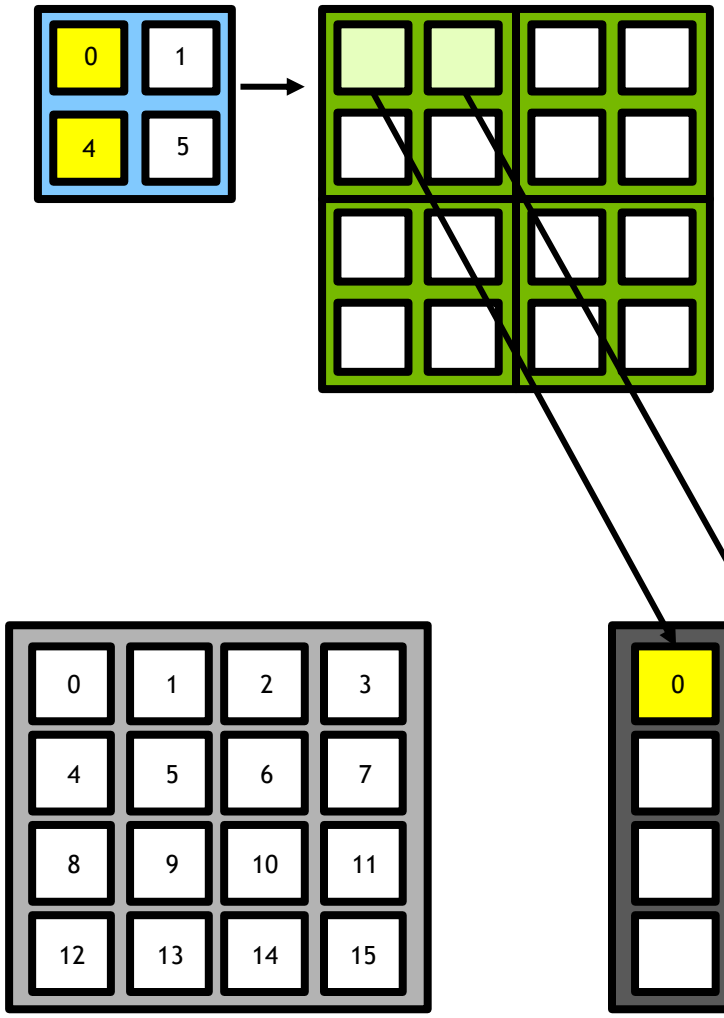
... 我 从
x
threadIdx.x

```
tile = cuda.shared.array(2,2)
x, y = cuda.grid(2)

tile[tIdx.y][tIdx.x] = in[y][x]
cuda.syncthreads()

o_x = bId.y*bDim.y + tId.x
o_y = bId.x*bDim.x + tId.y
```



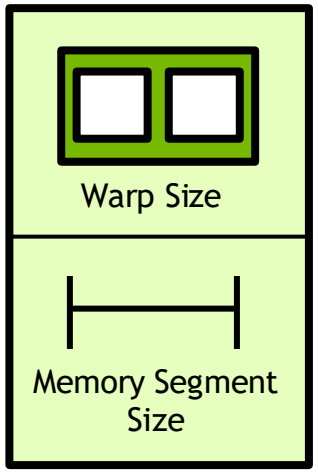


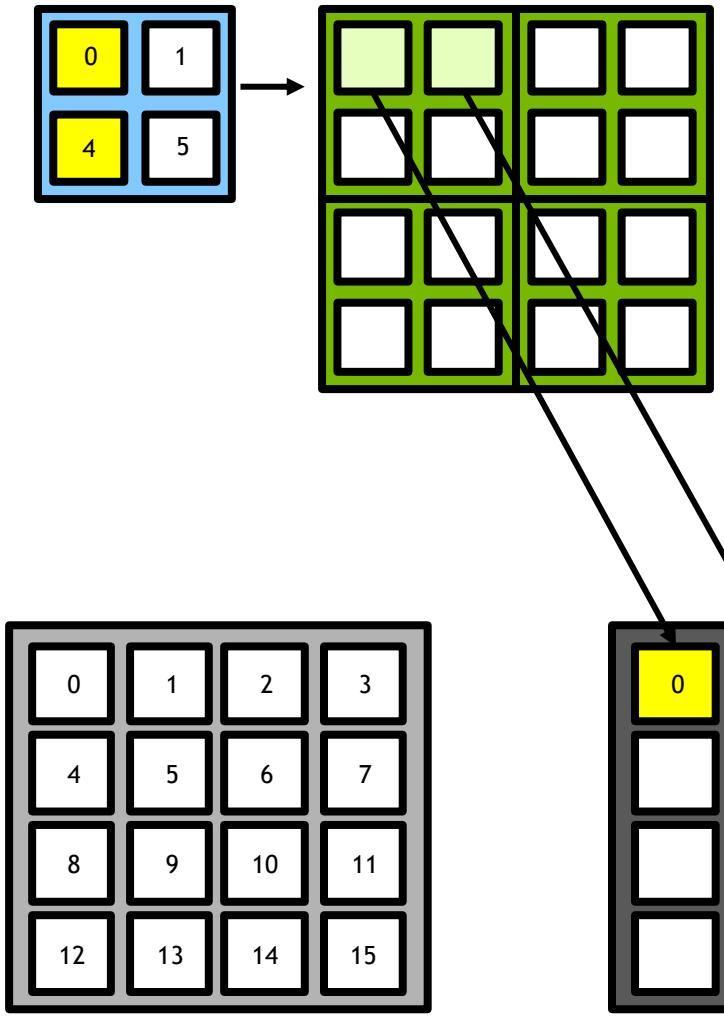
Warp

```
tile = cuda.shared.array(2,2)
x, y = cuda.grid(2)

tile[tIdx.y][tIdx.x] = in[y][x]
cuda.syncthreads()

o_x = bId.y*bDim.y + tId.x
o_y = bId.x*bDim.x + tId.y
o[o_y][o_x] = tile[tIdx.x][tIdx.y]
```





/

```
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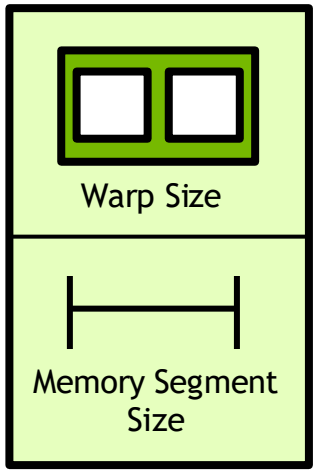
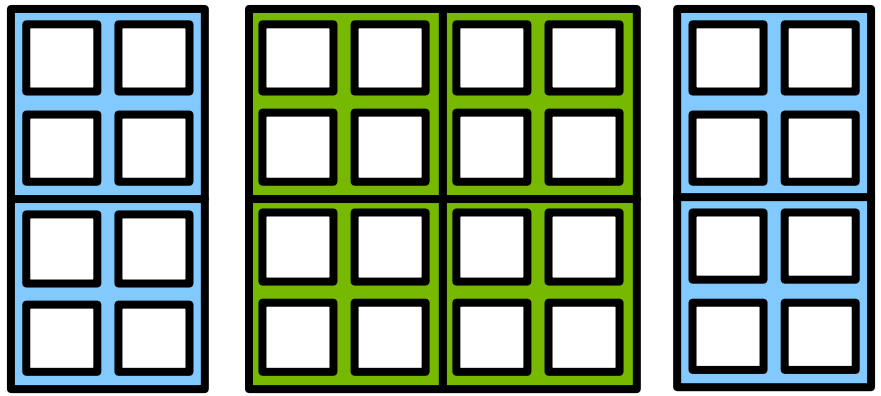
o[o_y][o_x] = tile[tIdx.x][tIdx.y]
```





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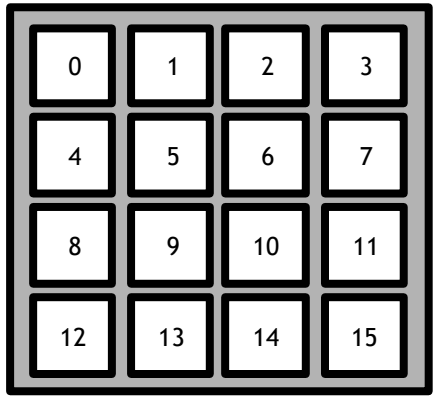

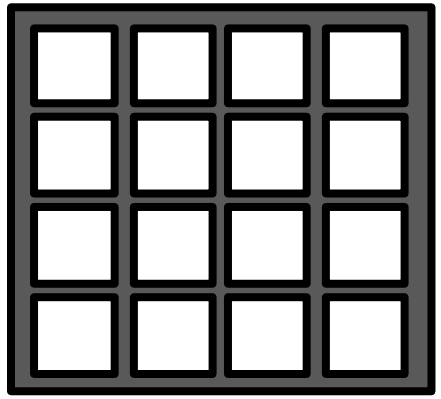

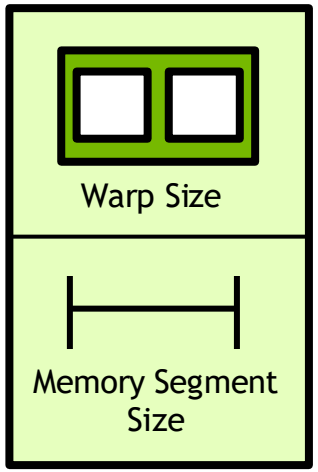

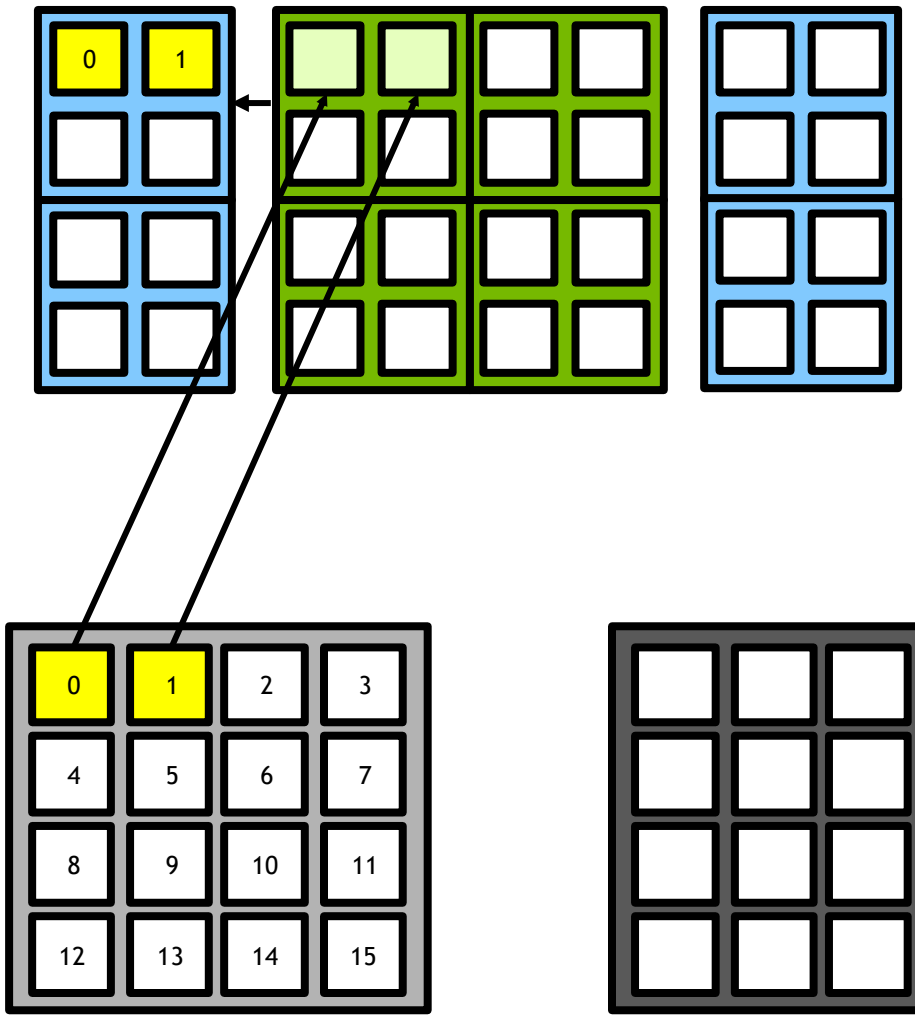


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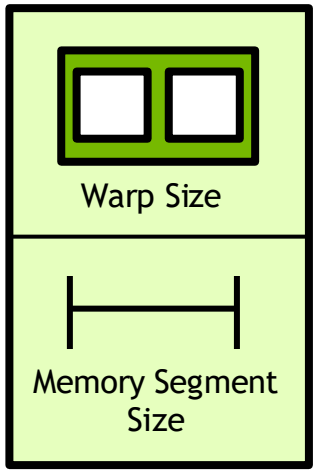

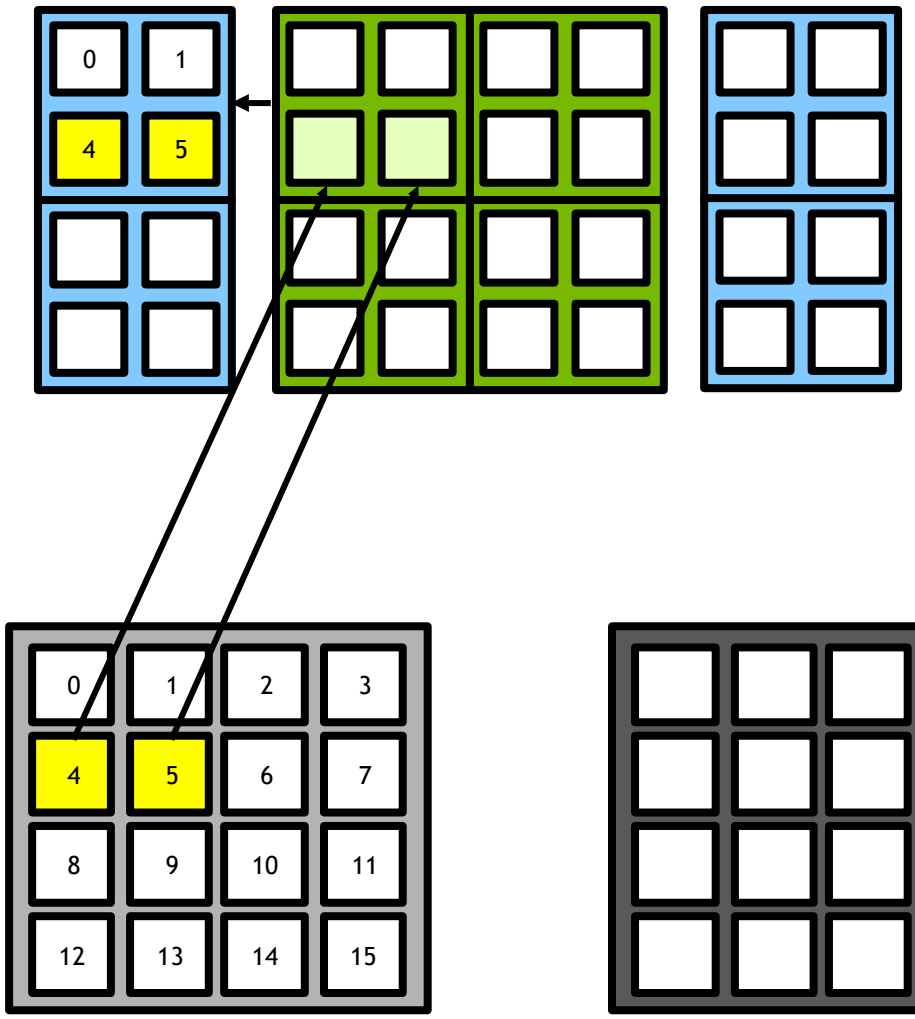


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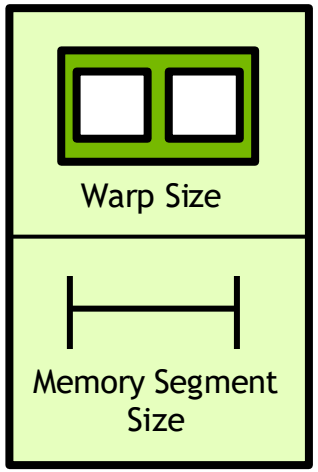

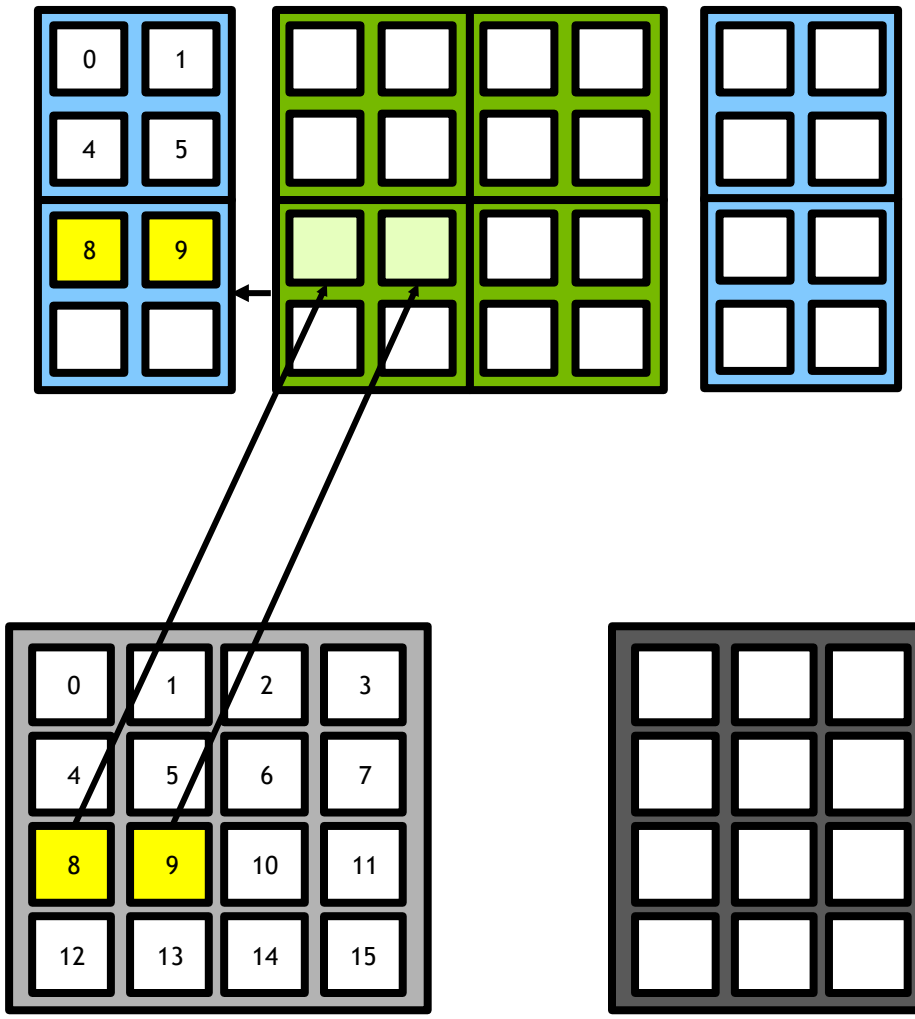


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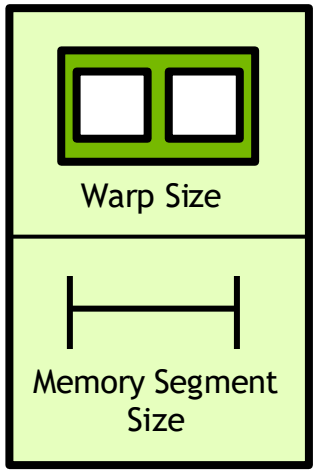

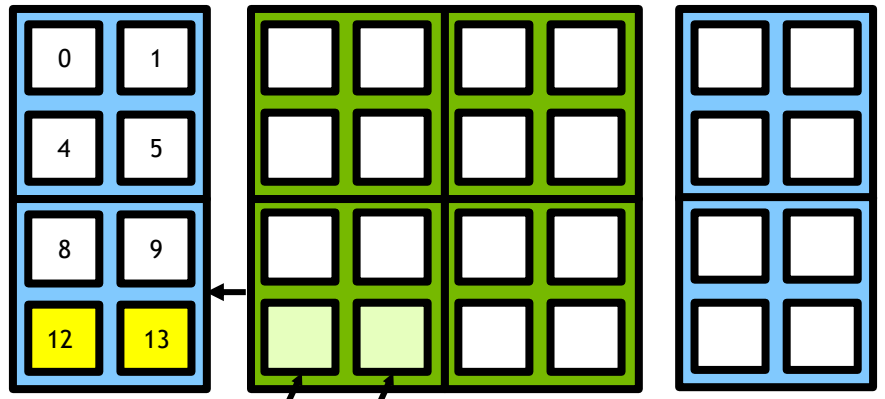

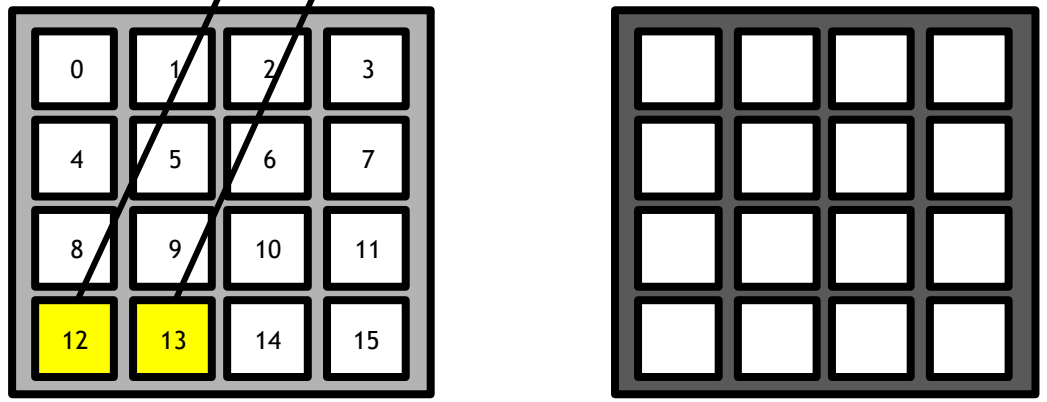


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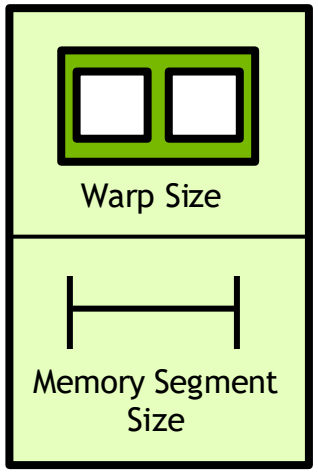

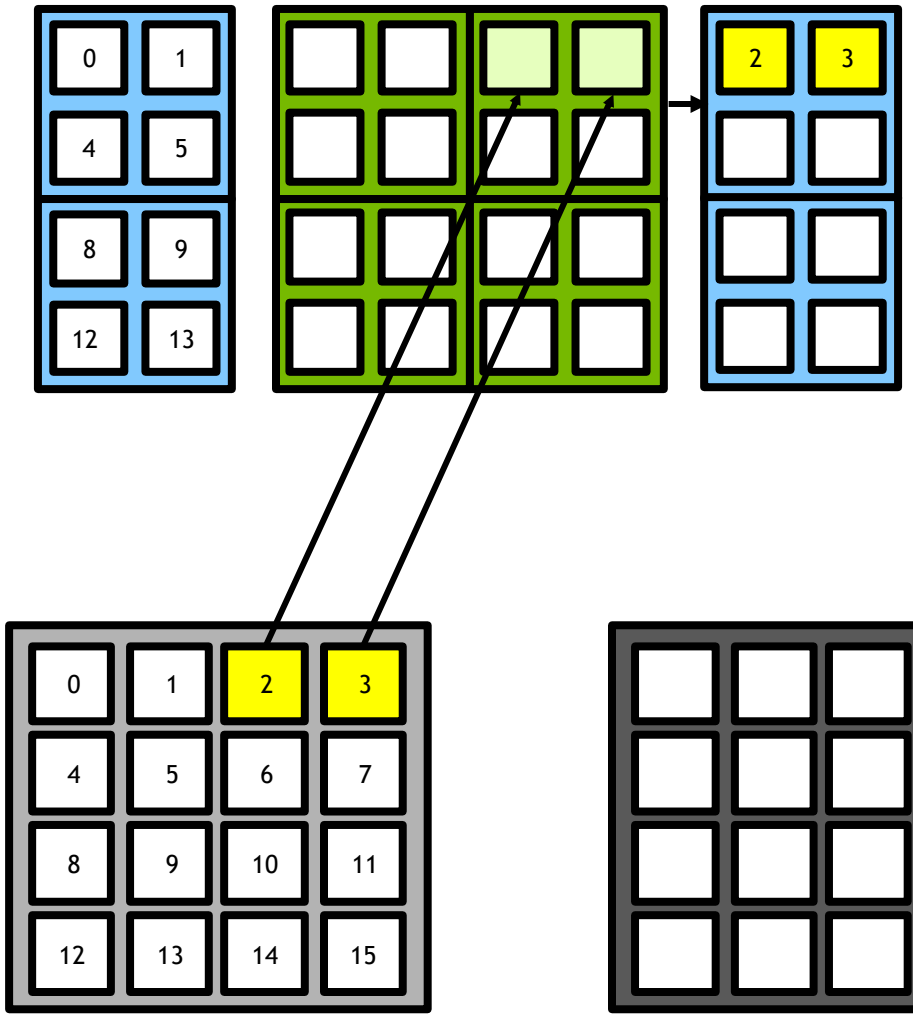


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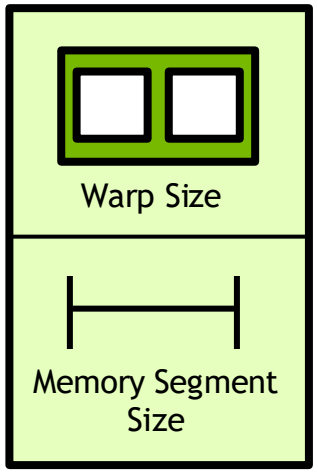

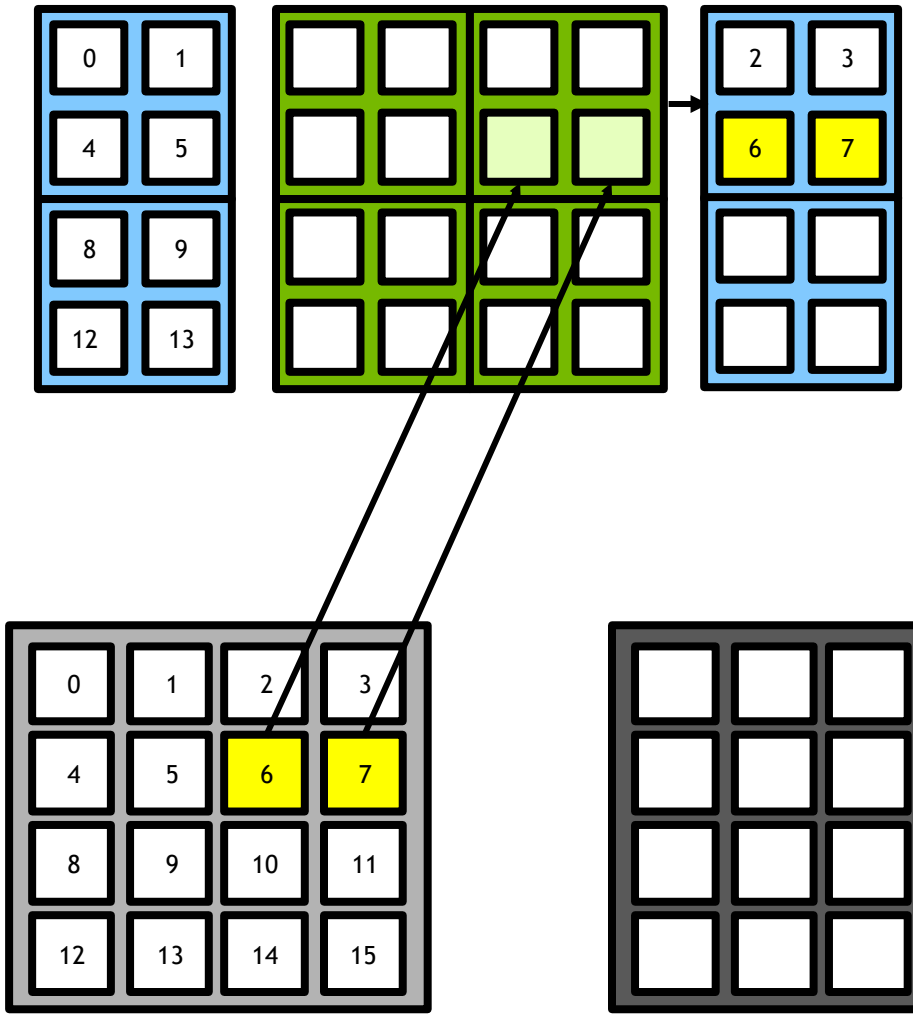


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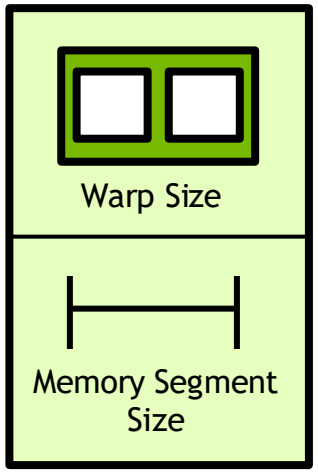

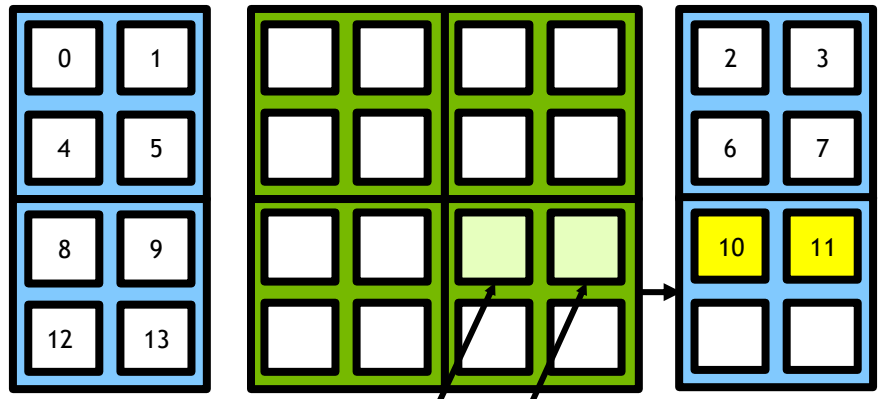


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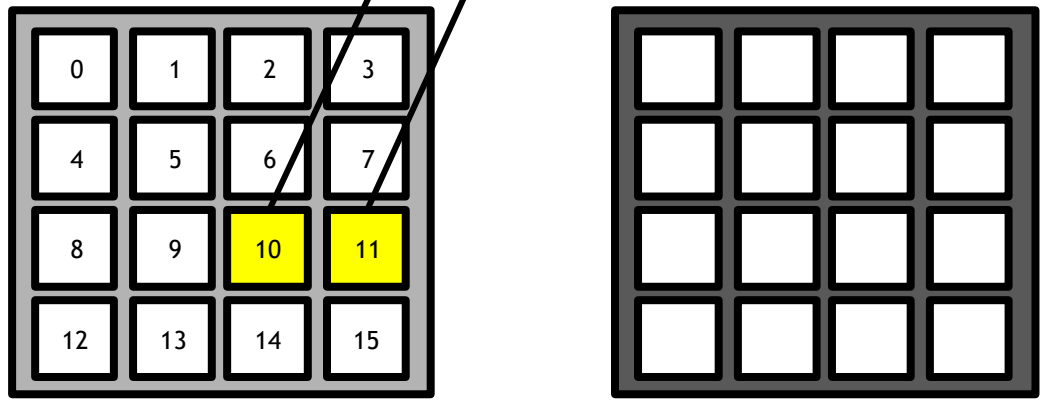

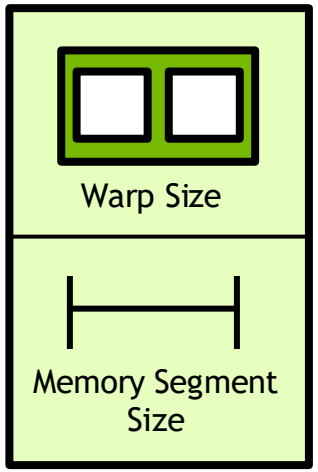

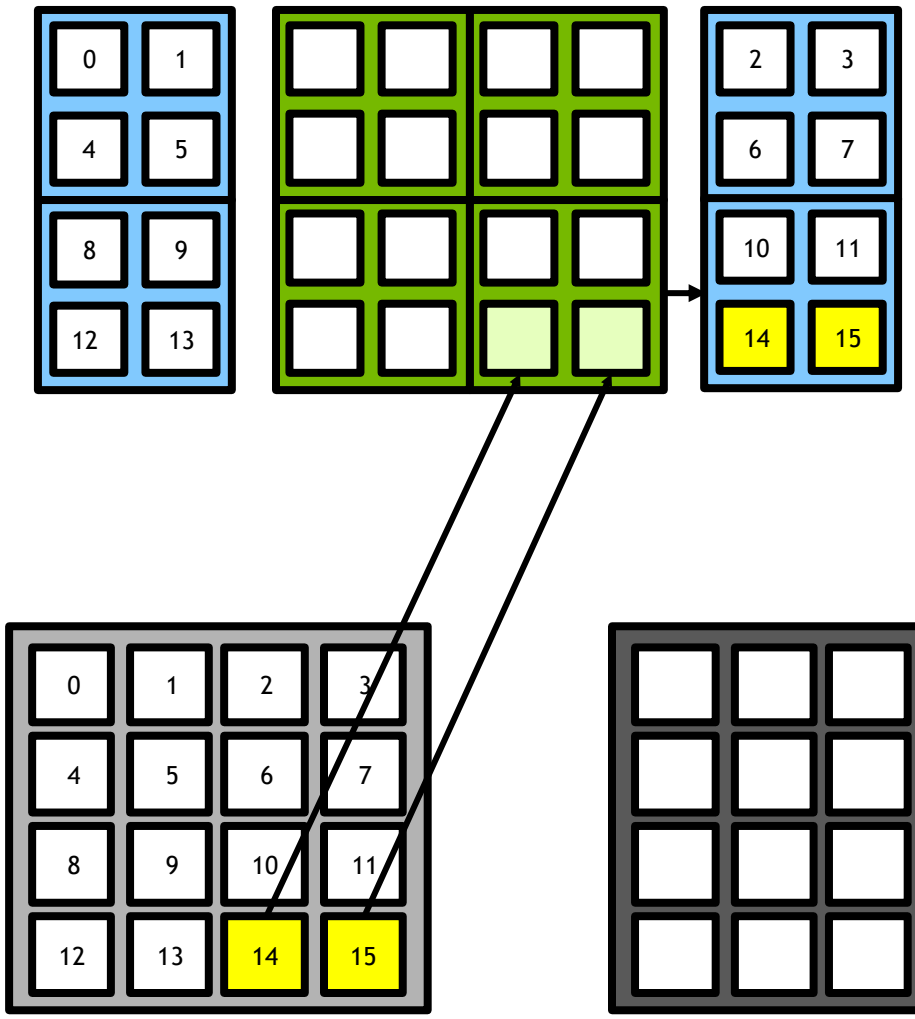


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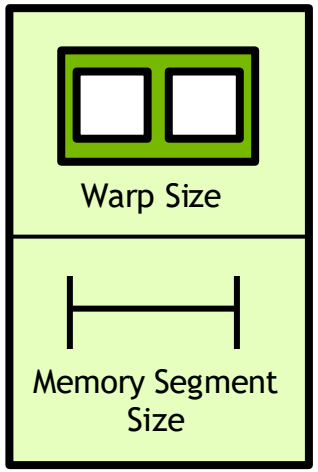
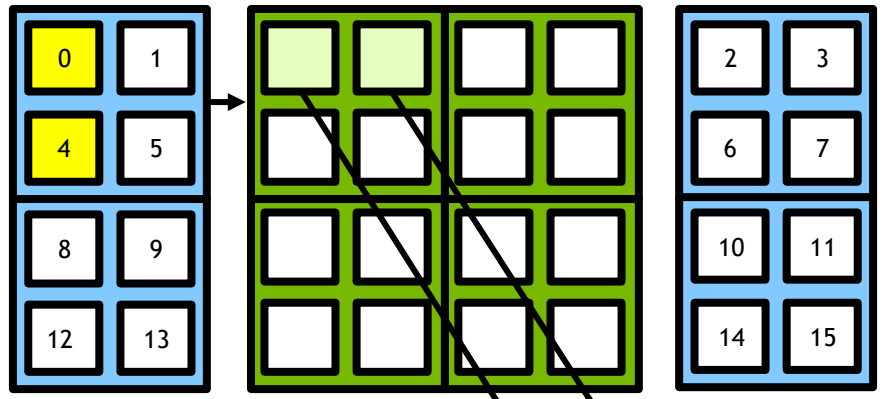
```



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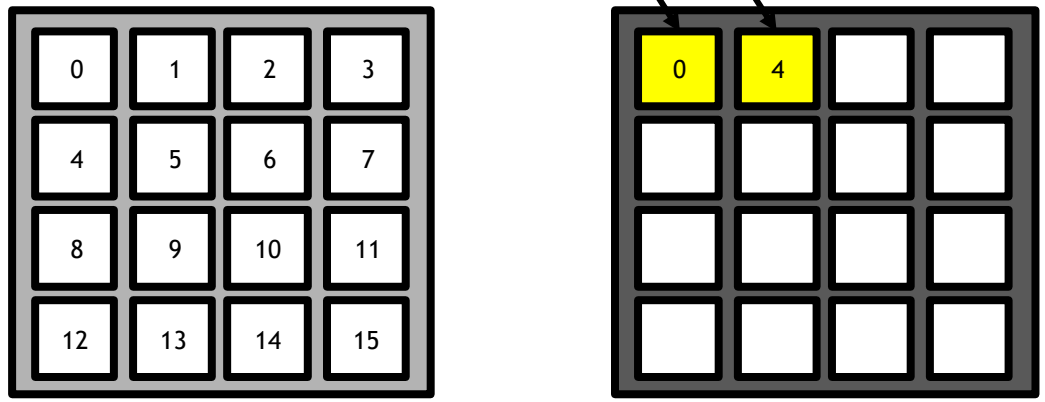
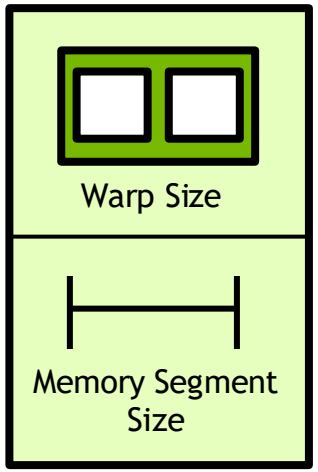
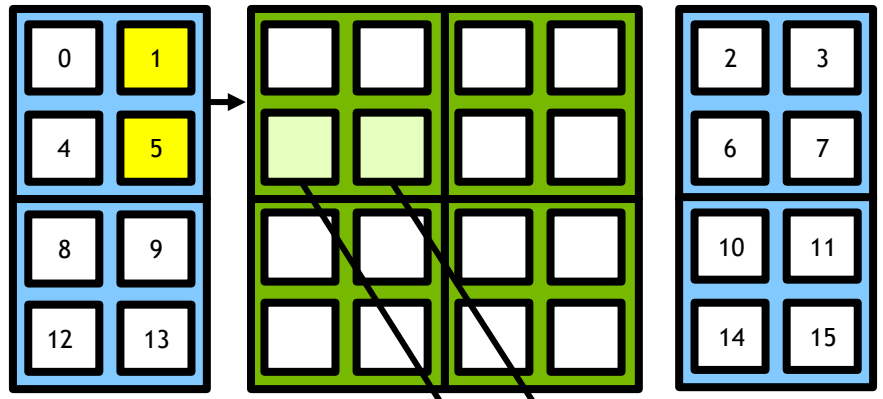
```





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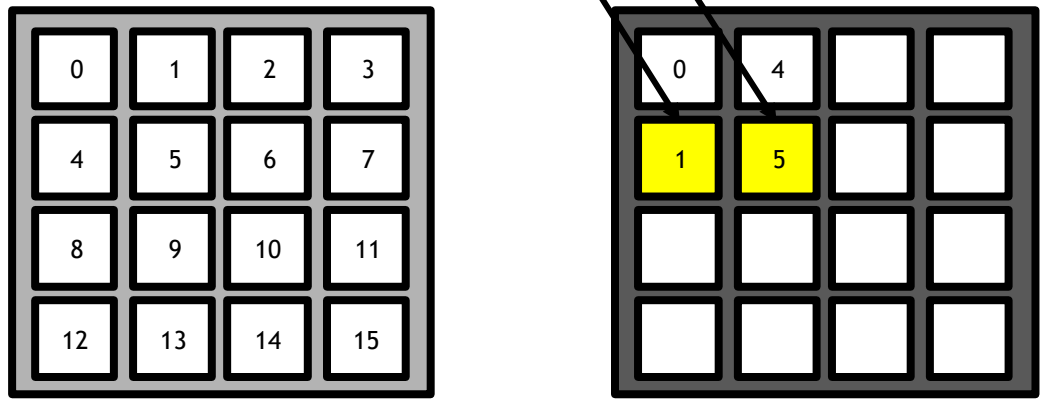

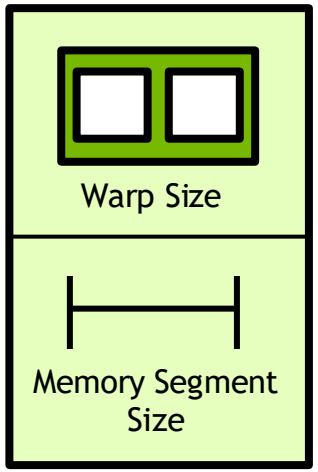

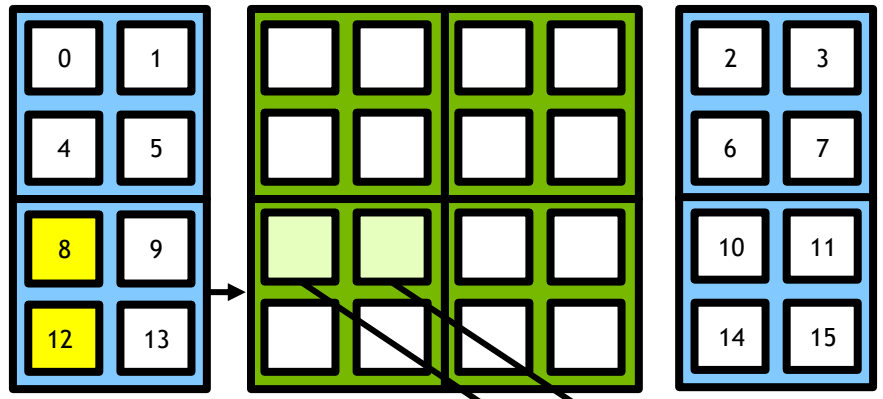


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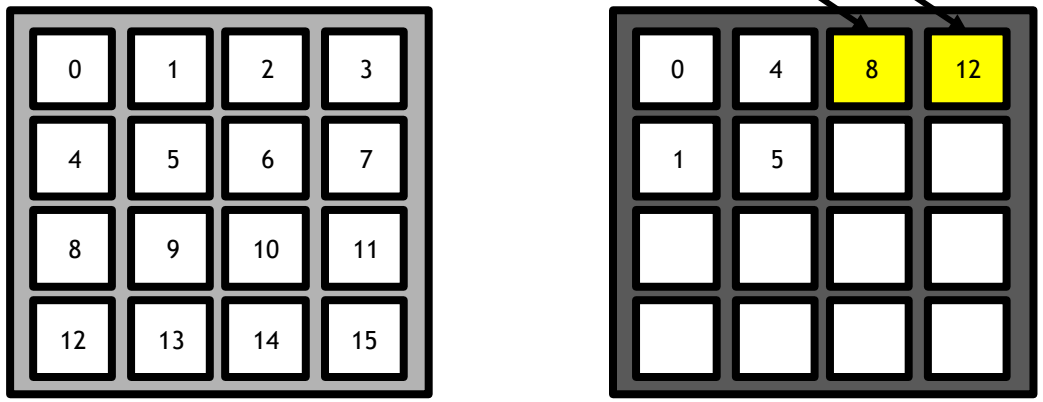

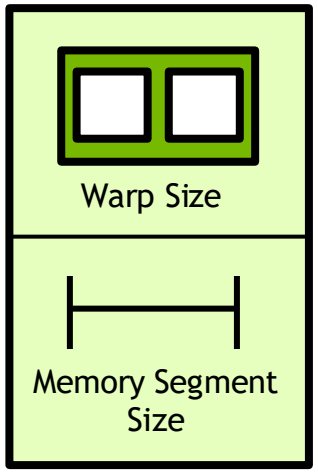

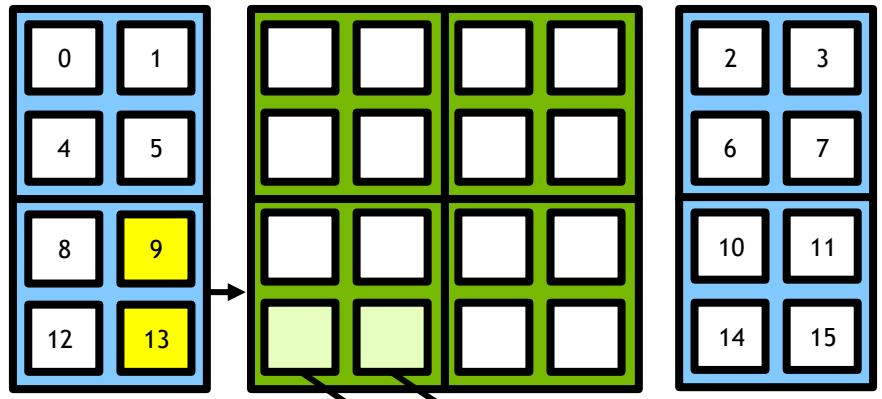


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tile = cuda.shared.array(2,2)
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tile[tIdx.y][tIdx.x] = in[y][x]
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o_x = bId.y*bDim.y + tId.x
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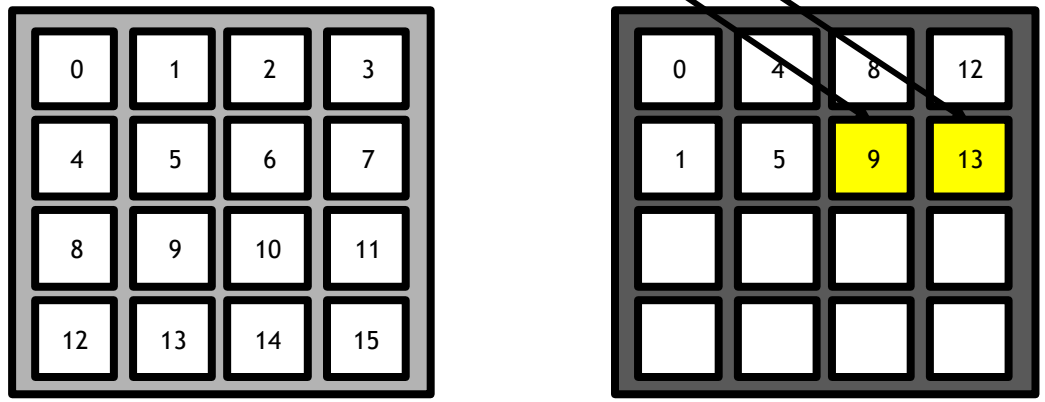
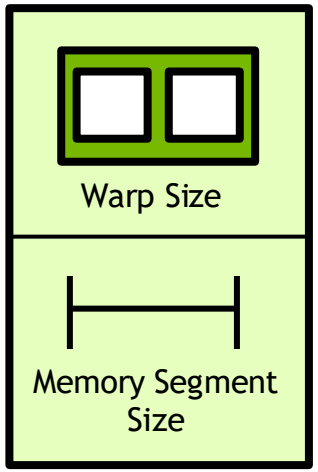
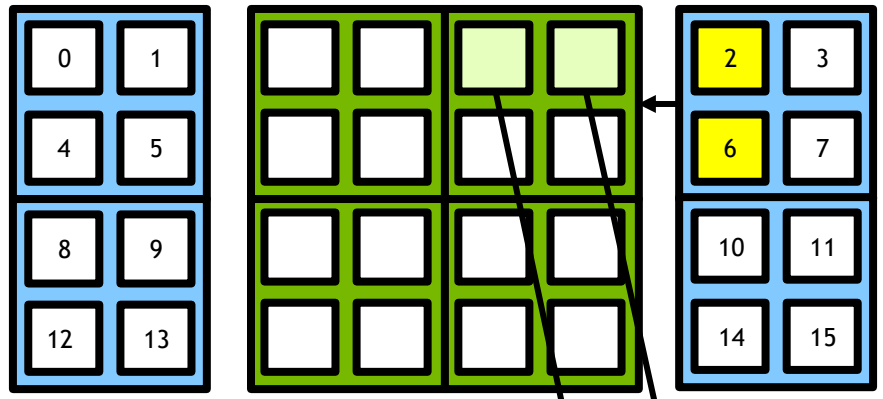
o[o_y][o_x] = tile[tIdx.x][tIdx.y]
```





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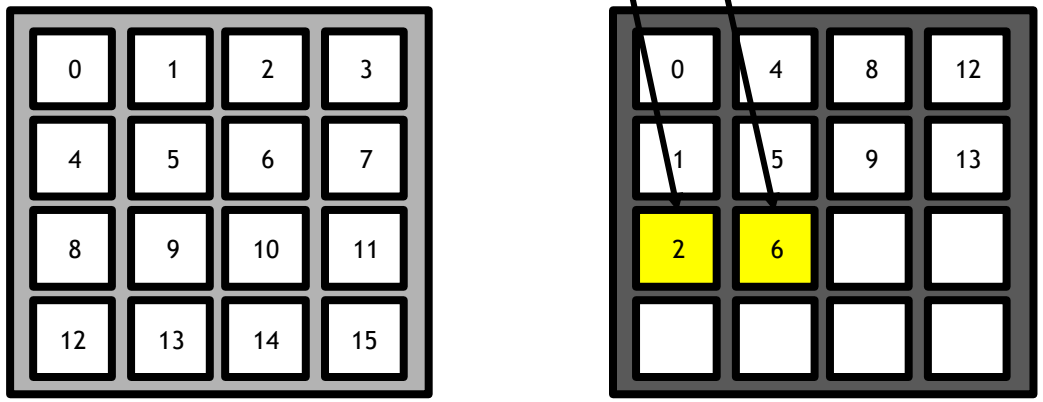

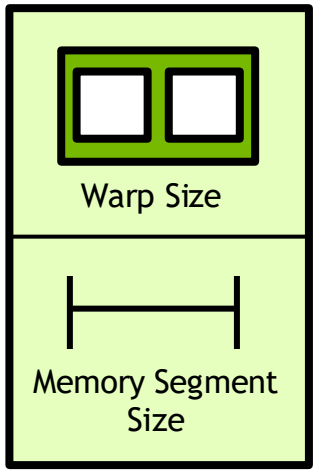

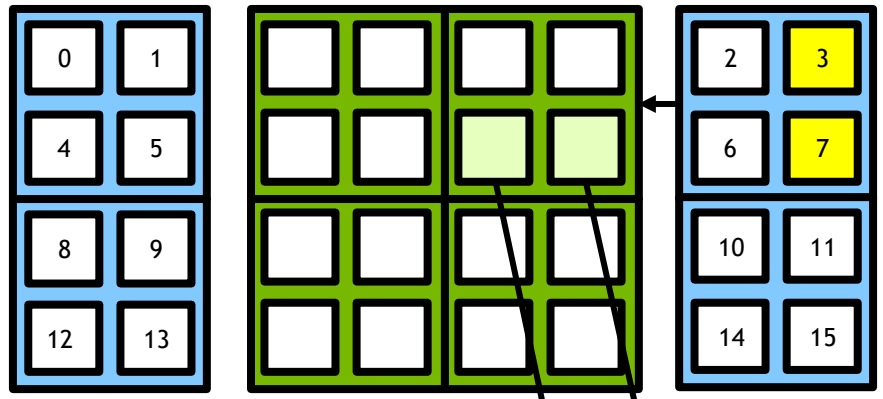


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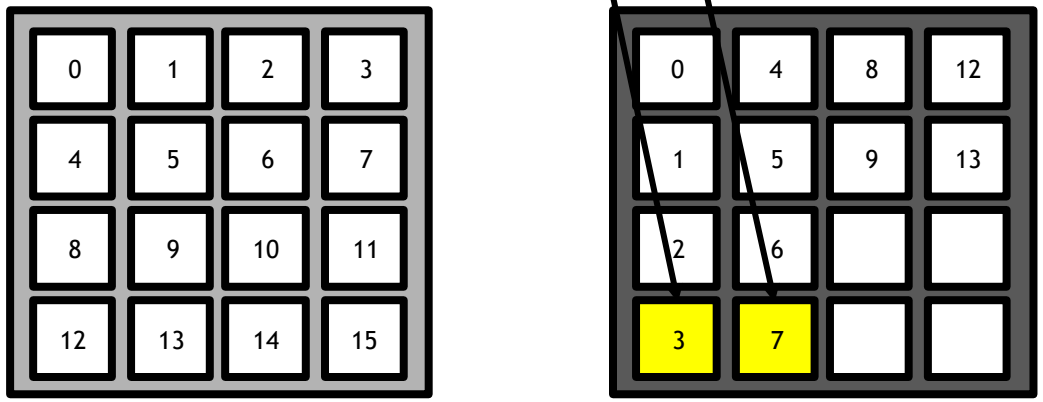

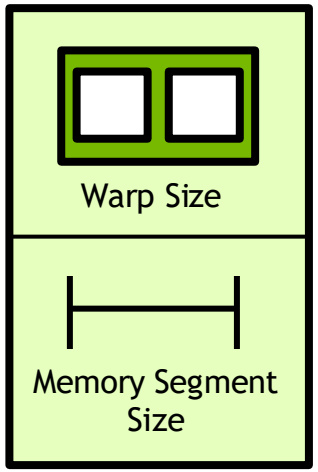

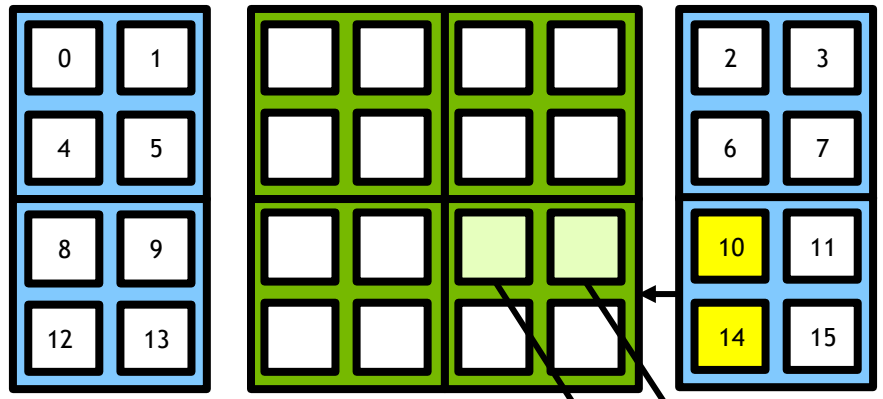


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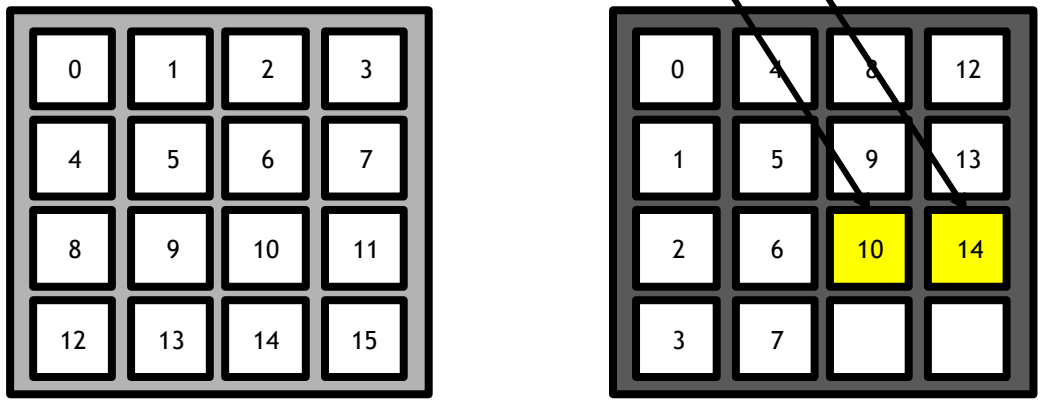

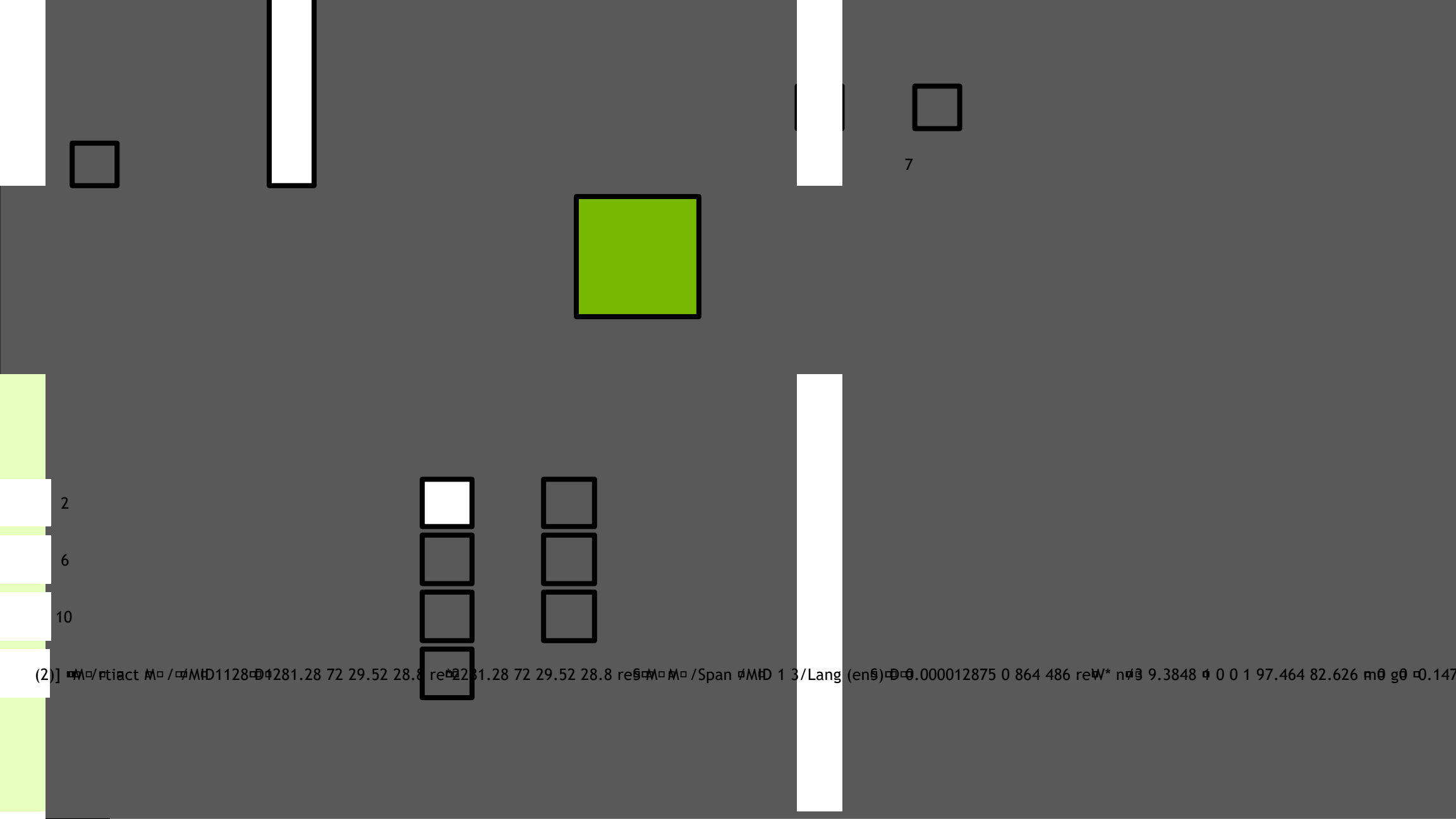

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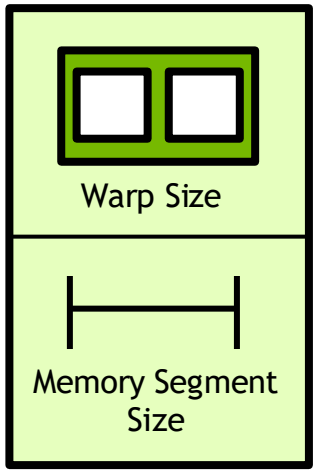

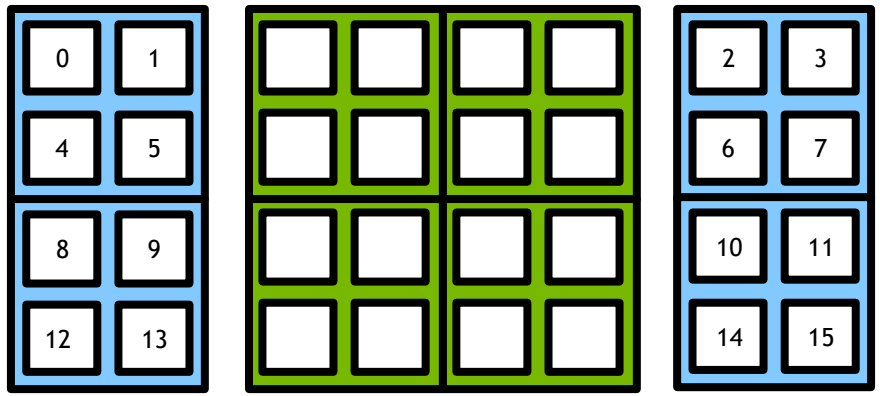


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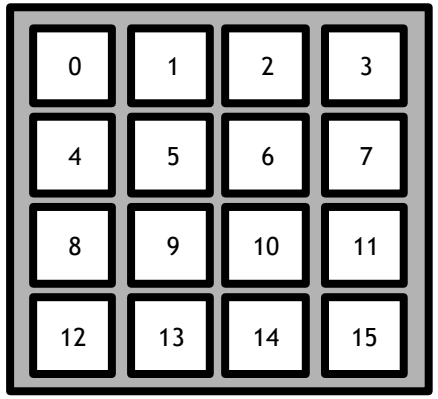

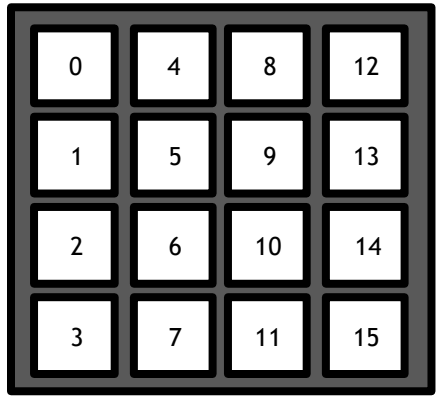

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