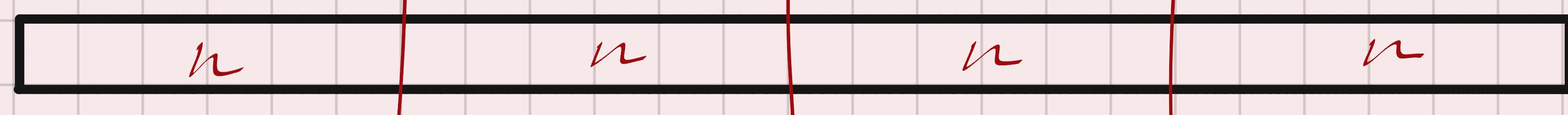


rank: 0

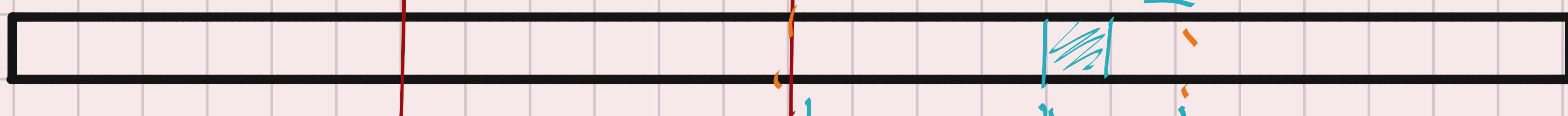
1

2

3



max_elem



max_owner = 2 (rank)

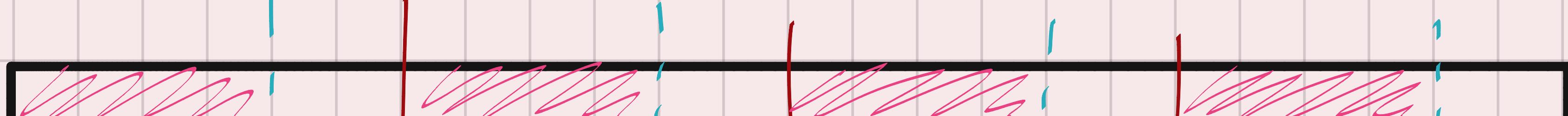


1 2 3 0 1

новая, пустая наше распределка элементов



общий кусокши размера $n-i$,
успешески введе на max-owner



общите кусокши размера i
успешески введе на max-owner + 1

внутри каждого процесса останося

чтобы сдвинуть влево на i



$$\text{rev}[x[y]] = \text{rev}(\text{rev}(x) | \text{rev}(y))$$

$$0123|45 = \text{rev}(3210|54) = 450123$$

rank 0

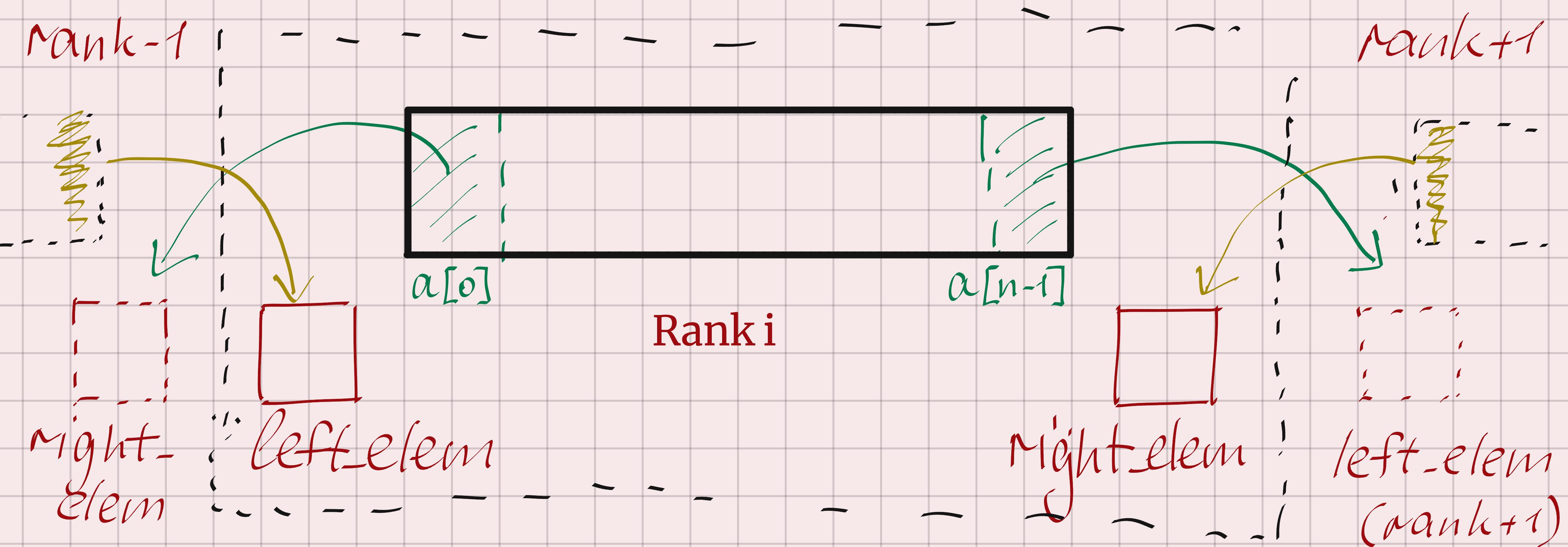
rank 1

rank 2

rank 3

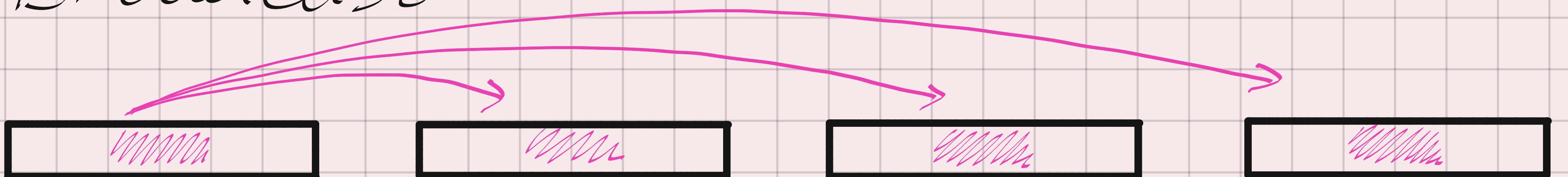
$$a_i = (a_{i-1} + a_{i+1}) / 2$$

Для внутренних элементов всё ОК - мы можем их считать. Для крайних элементов нужно получить крайний элемент другого процесса



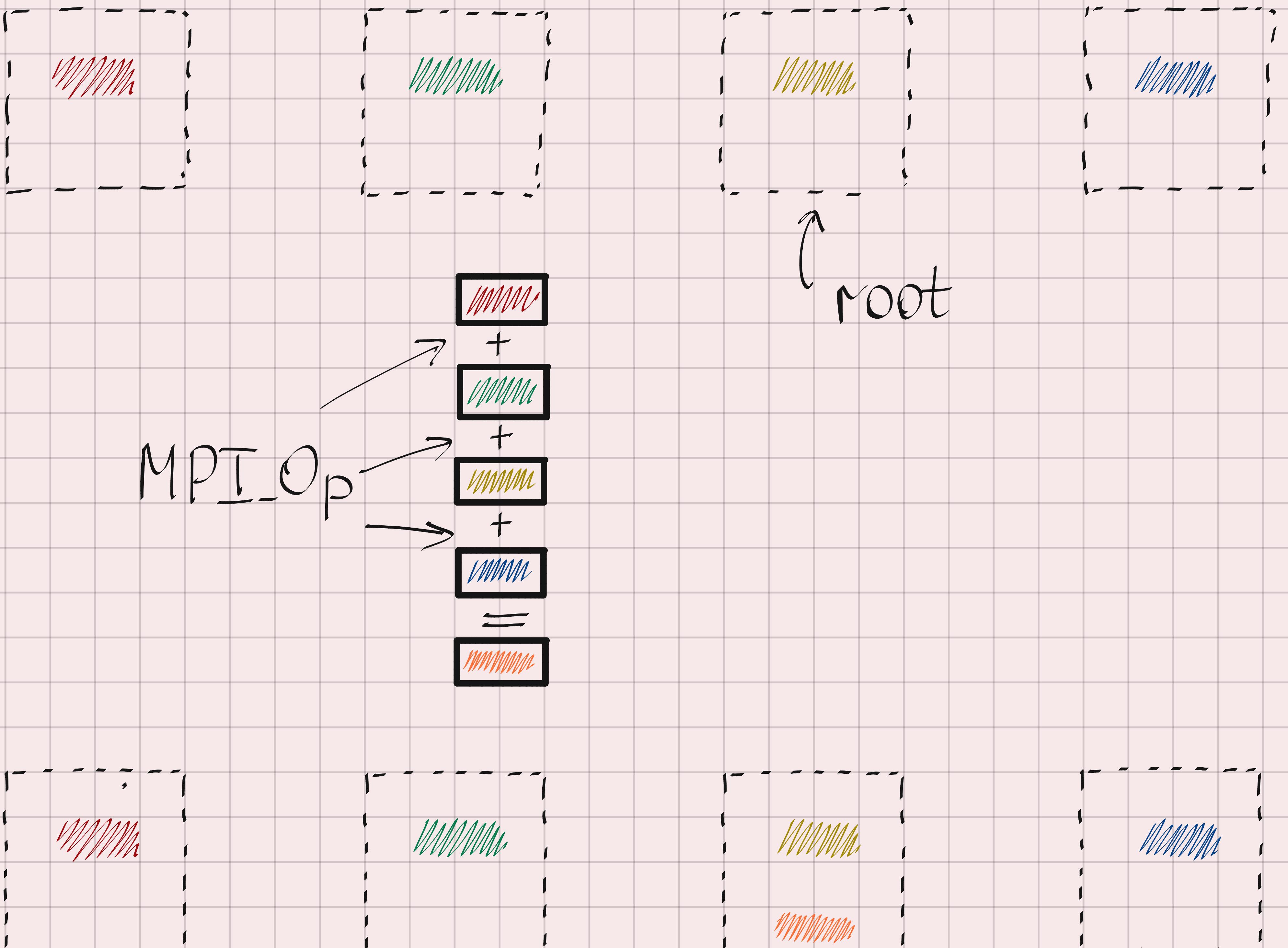
После того как получили соседние элементы `right_elem` и `left_elem`, можем пересчитать наши края

Broadcast



↑ root

Reduce

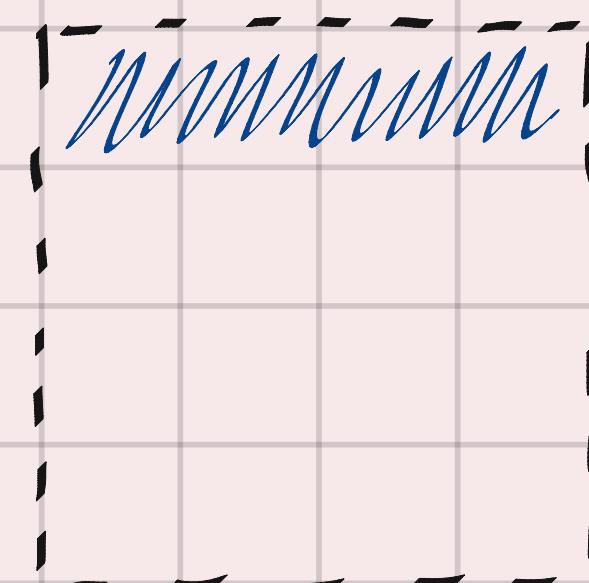
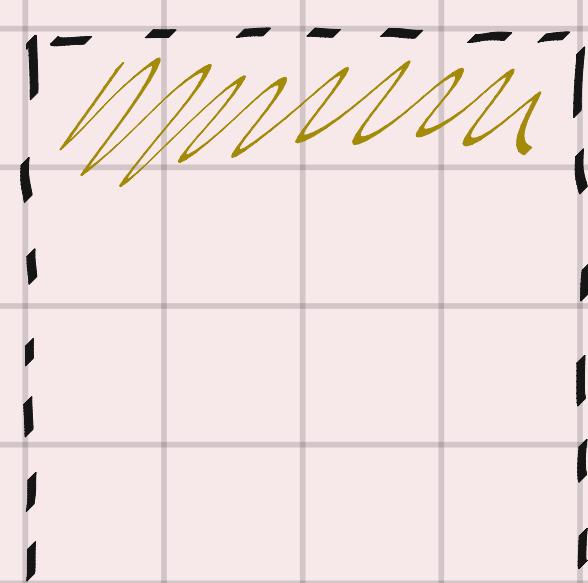
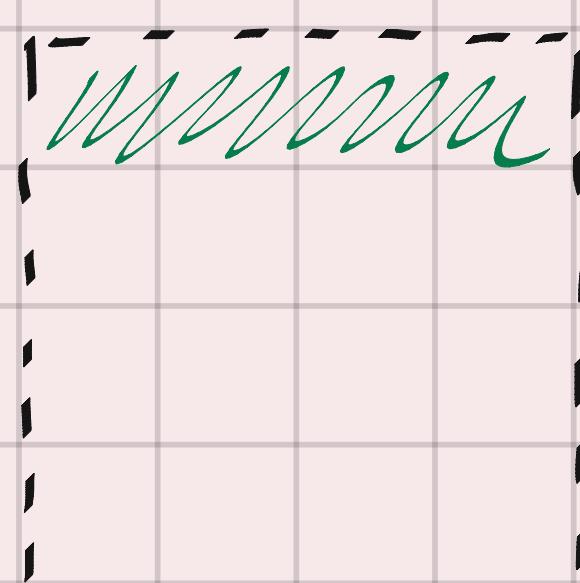
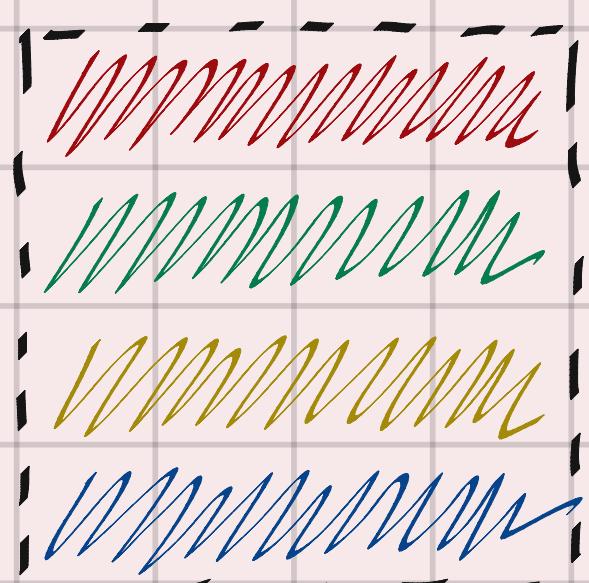
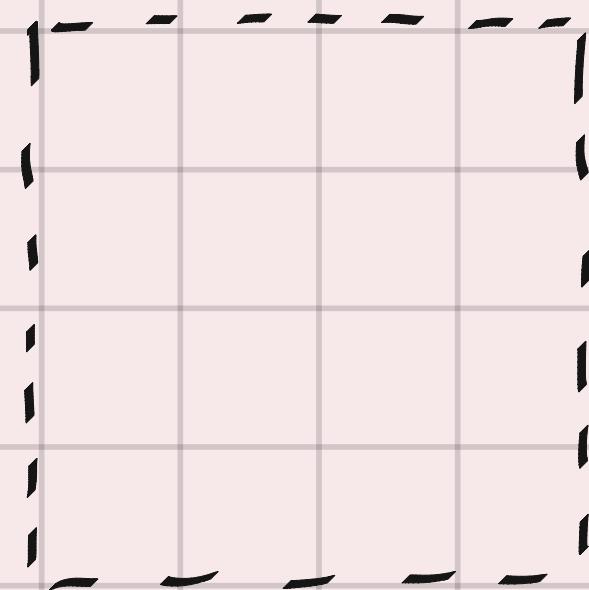
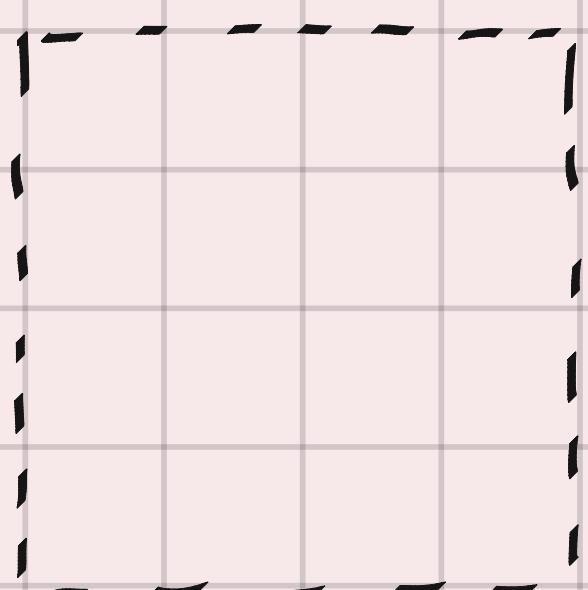
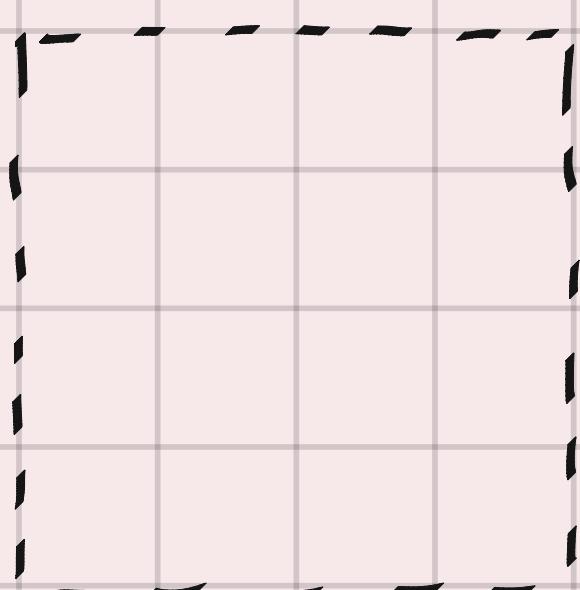
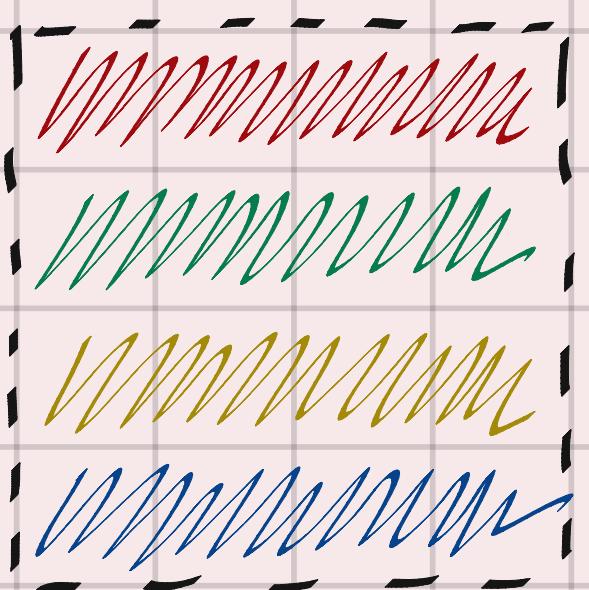


Allreduce (root's a hem)



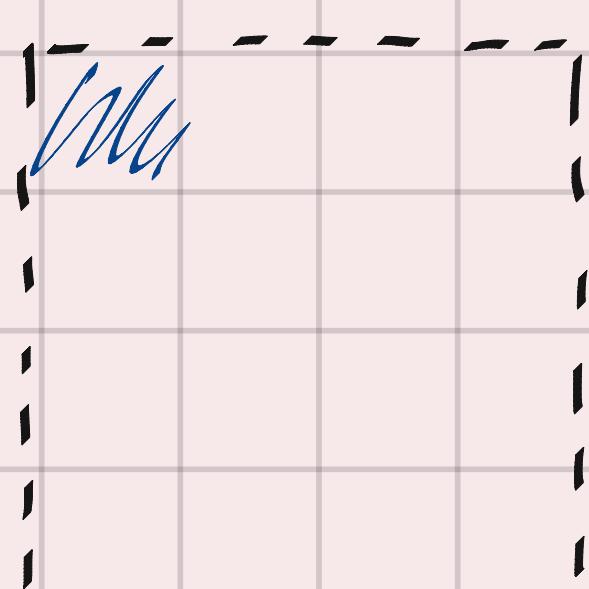
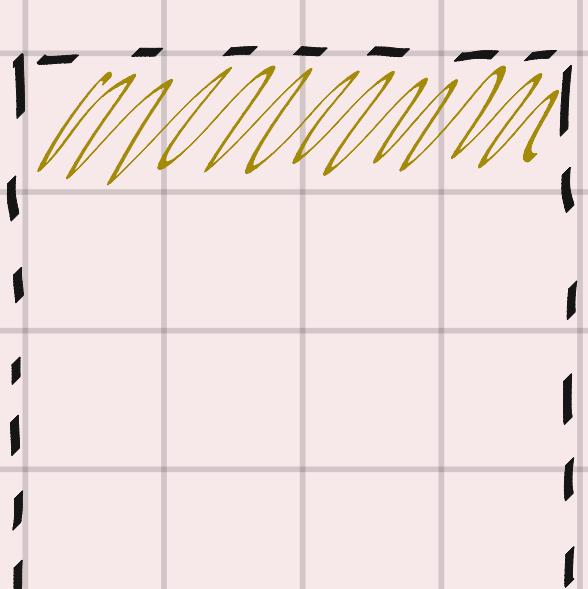
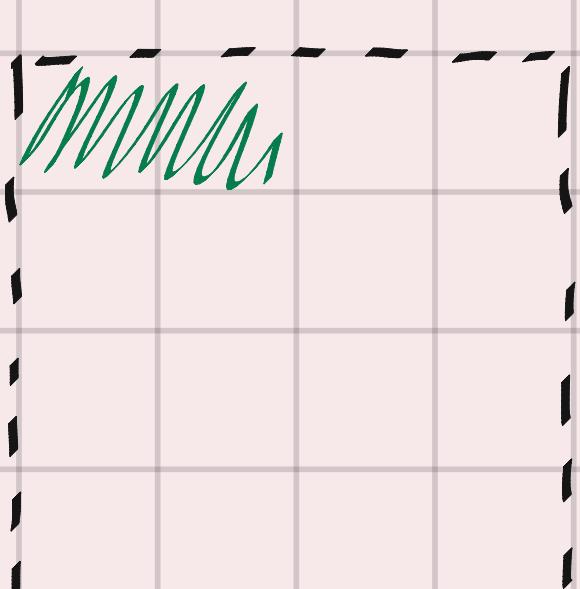
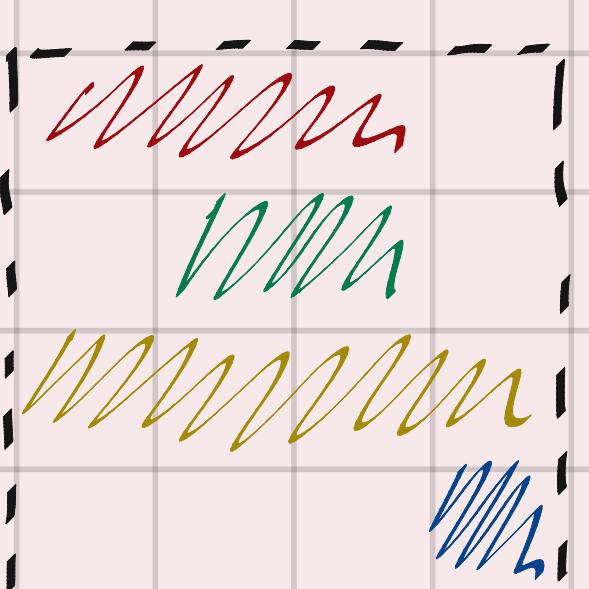
MPI_Scatter

root
↙

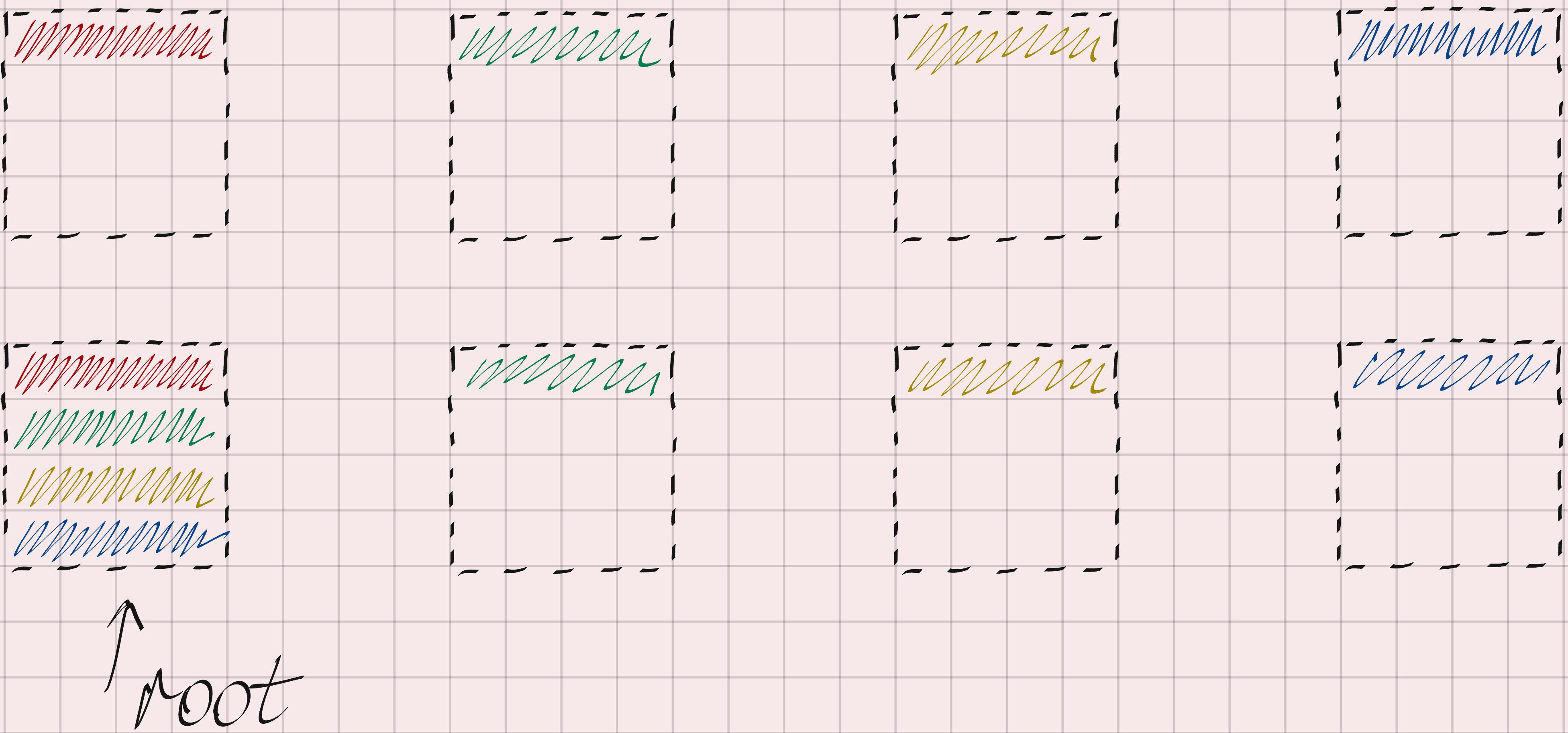


MPI_Scatterv

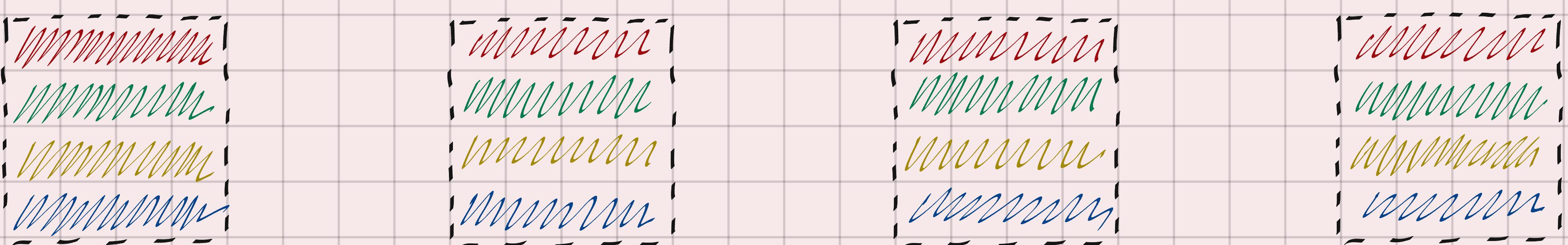
root



MPI_Gather



MPI_Allgather (rem root)



MPI_Gatherv

