

# ClassWork5

- Consider the following case:
  - In input we have a stream of  $k$  matrices of size  $N \times M$ . Let  $S$  be a vector representing an internal state having size  $M \times 1$ .
  - For each input matrix  $A$ , the program computes
    - $T = A * S$  (matrix vector product)
    - $s = \text{sum } T[i] \quad \forall i$  (getting the sum of all elements, reduce operation)
    - $S[i] += s \quad \forall i$  (updating the internal state with the result of the reduce)
  - At the end of the data stream, the result produced is  $s = \text{sum } S[i]$
- Give a parallel implementation of the problem by using the FastFlow pipeline and `ff_Map`. The first stage of the pipeline produces the  $k$  matrices.