We can construct a multi-tape Turing machine to solve this in . Our Turing machine will have an alphabet of {0,1,□, ▷}, an input tape (containing whatever is the input to the program), a work tape we shall call , another work tape we’ll call , and an output tape.

First, we pre-process by copying the first cells of the input tape to (the start symbol ▷ plus the -long input). will function as the array A in the program. The reason we had to copy the input tape to is because we need to be able to edit it, which we can’t do to the input tape because input tapes are read-only.