E03

The program first opens a file called `input.in` using the `fopen()` function, and checks if a problem has occurred during the opening operation.

The workload is split among 3 threads: the `main()` thread performs the Input operations, the `processing_routine()` performs the Processing operations, and the `output_routine()` performs the Output operations.

At each iteration, the Input thread reads a `char` from the file using the `getc()` function, and creates a Processing thread and an Output thread, and synchronizes with them using `pthread_join()`. At the end of each iteration, the global variables `next`, `this` and `last` are updated according to the specifications.

In the first iteration we don’t have the Processing and Output thread (since we have to wait for the completion of the Input thread), while in the second iteration we don’t have the Output thread, which is still waiting for the Processing thread to complete its work.

The last two iterations (which only involve the Processing and Output operations) are unrolled from the loop.