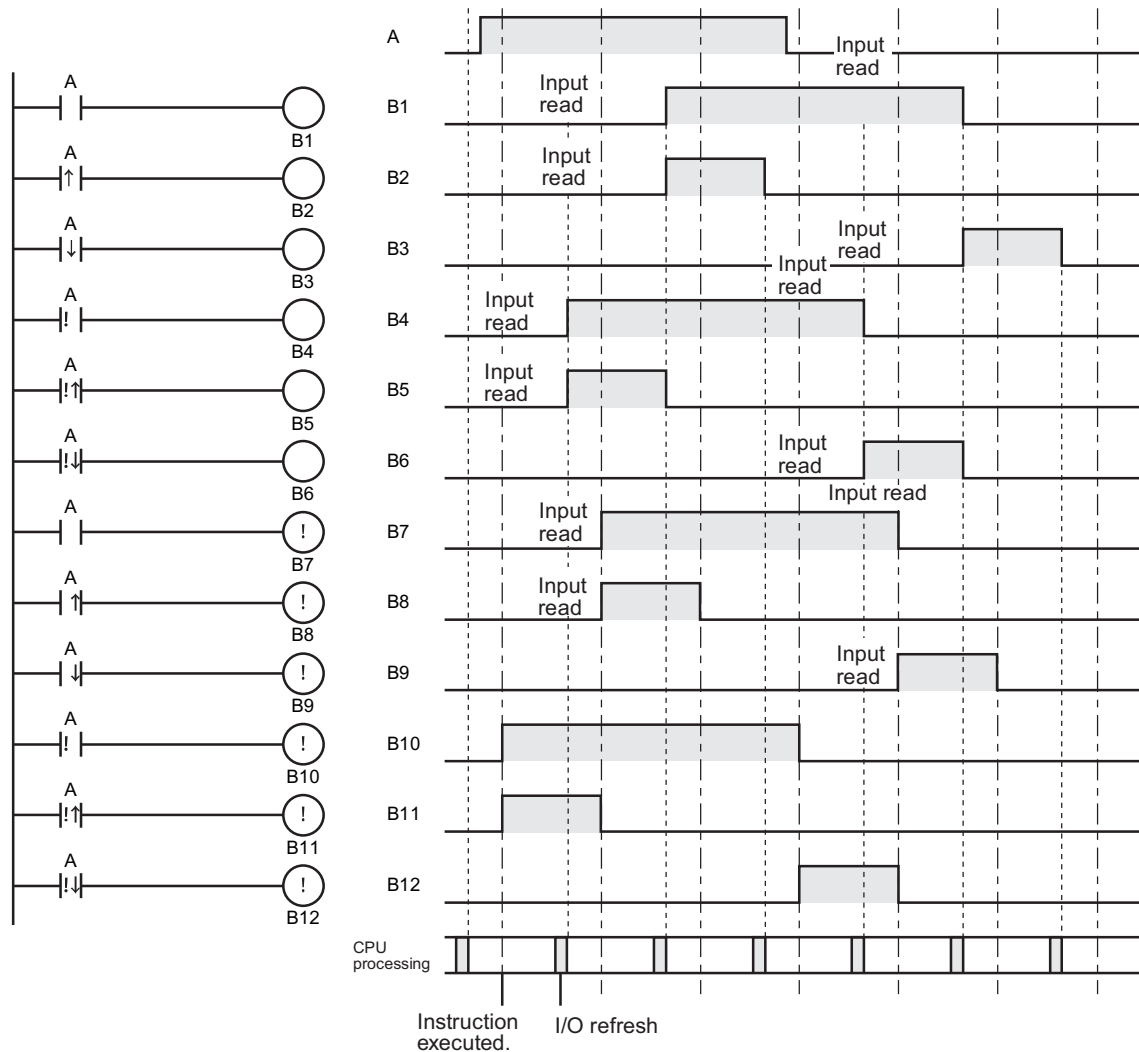# I/O Instruction Timing

The following timing chart shows different operating timing for individual instructions using a program comprised of only LD and OUT instructions.

● **Differentiated Instructions**

- A differentiated instruction has an internal flag that tells whether the previous value is ON or OFF. At the start of operation, the previous value flags for upwardly differentiated instruction (DIFU and @ instructions) are set to ON and the previous value flags for downwardly differentiated instructions (DIFD and % instructions) are set to OFF. This prevents differentiation outputs from being output unexpectedly at the start of operation.

- An upwardly differentiated instruction (DIFU or @ instruction) will output ON only when the execution condition is ON and flag for the previous value is OFF.