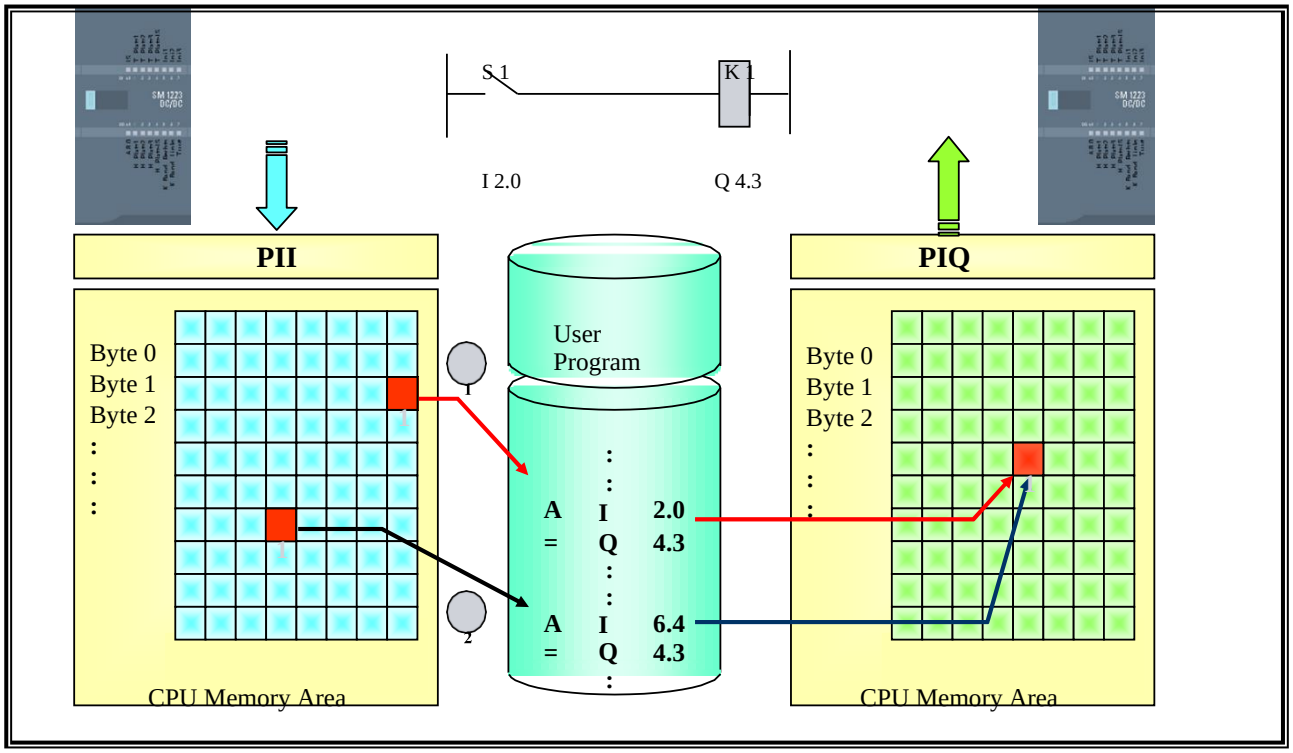
# Programming languages of PLC and sample program in Ladder diagram language

# Process Images



Process Images

For the storage of all digital input and output states, the CPU has reserved memory areas: the process-image input table (PII) and the process-image output table (PIQ). During program execution, the CPU accesses these memory areas exclusively. It does not access the digital input and output modules directly.

PII

The Process-Image Input table is the memory area in which the states of all digital inputs are stored. The image is read in from the digital input modules at the beginning of the cycle. If inputs are queried in the user program (for example, A I 2.0), then the state of this input that is stored in the PII is queried from the PII. This state cannot change within a cycle since the PII is only updated or read in at the beginning of a cycle. This guarantees that when there are multiple queries of the input in one cycle, the same result is always delivered.

PIQ

The Process-Image Output table is the memory area in which the states of all digital outputs are stored. The image is output to the digital output modules at the end of the cycle. Outputs can be assigned as well as queried in the program. If an output is assigned a state in several locations in the program, then only the state that was assigned last is transferred to the particular output module (see slide). As a rule, these types of double assignments are programming errors.

These are the different programming languages of PLC.

- Ladder diagram- LD,
- functional block diagram- FBD,
- structured text- St,
- instruction list- IL,
- structured control language- SCL,
- sequential function chart- SFC,
- continuous function chart -CFC, S7 graph.

These are the only 8 programming languages which are used by PLC.