- **MARIE**: **M**achine **A**rchitecture that is **R**eally **I**ntuitive and **E**asy.

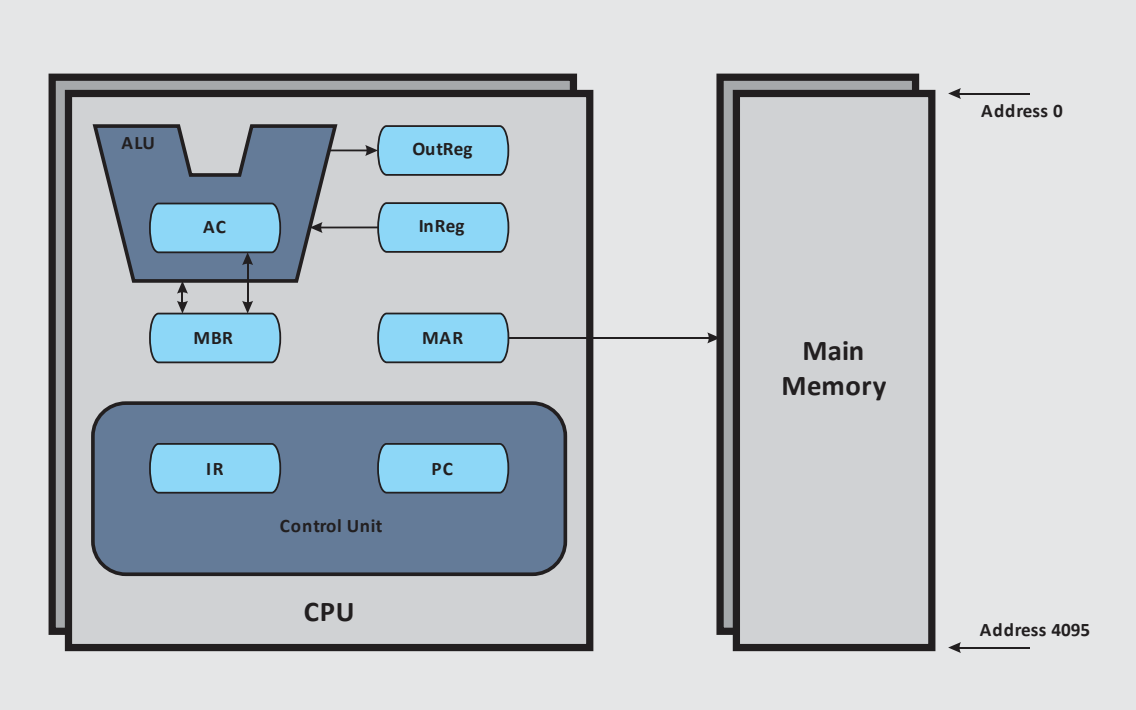

Figure 4.8 MARIE's Architecture

Acronym	Name	Description
ALU	Arithmetic and Logic Unit	Performs all computations and address arithmetic.
Control Unit	Control Unit	Fetches, decodes, and directs the execution of instructions.
AC	Accumulator	Used by the ALU to add, subtract, increment, and decrement.
MAR	Memory Address Register	Employed by the ALU to specify the address in Main Memory where the value at that address is to be read or overwritten.
MBR	Memory Buffer Register	• Receives the value in main memory at the address given in the MAR. • Contains the value to be stored at the address in main memory given in the MAR
PC	Program Counter	Contains the address of the next instruction to fetch.
IR	Instruction Register	Contains the value – the instruction opcode and its operand. Employed by the Control Unit to decode the instruction.
OutReg	Out Register	Employed by the ALU to send a byte to an output device.

InReg	In Register	Employed by the ALU to receive a byte from an input device.