

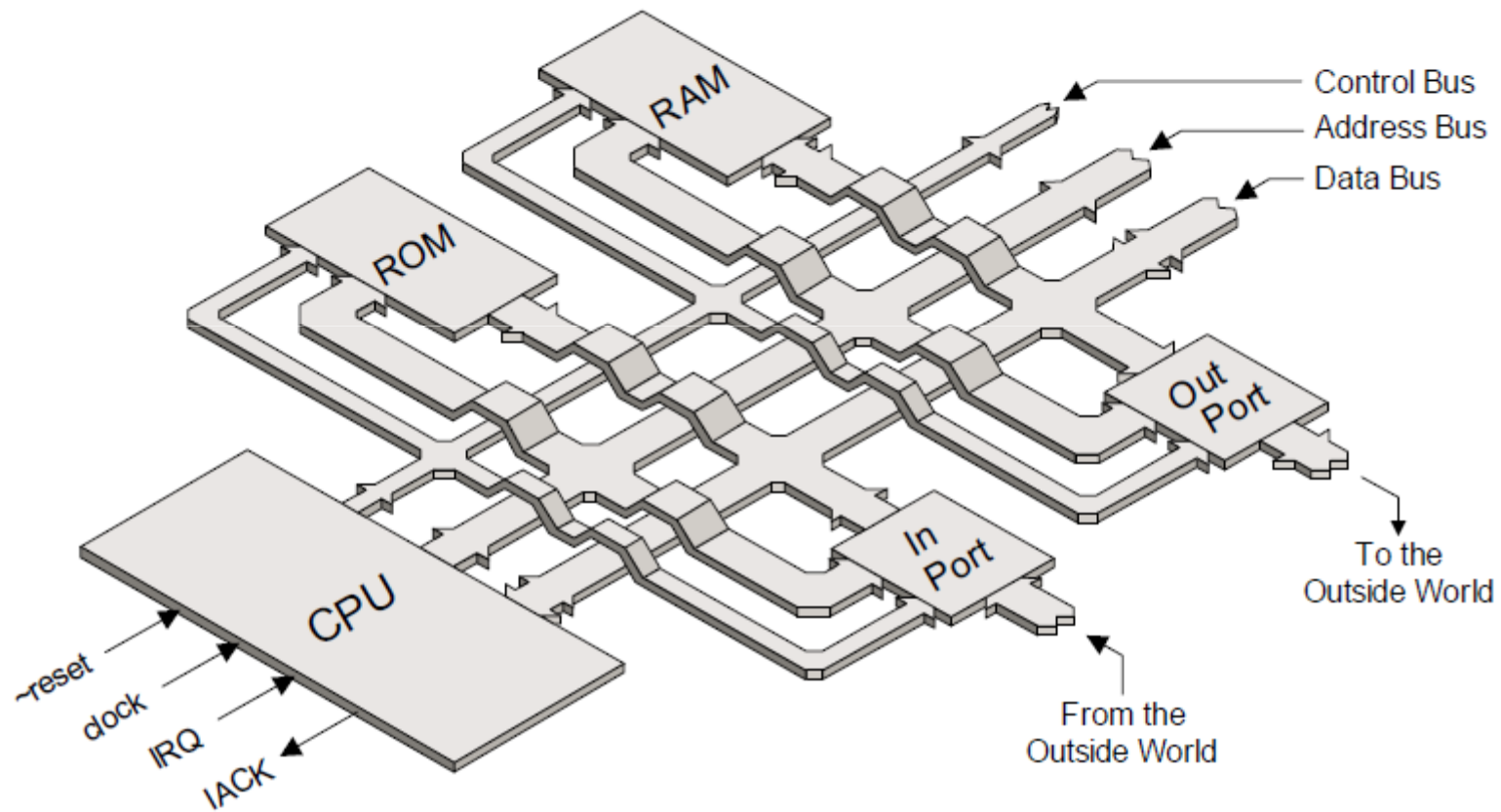
The architecture of DIY Calculator

Summarized by Imre Varga

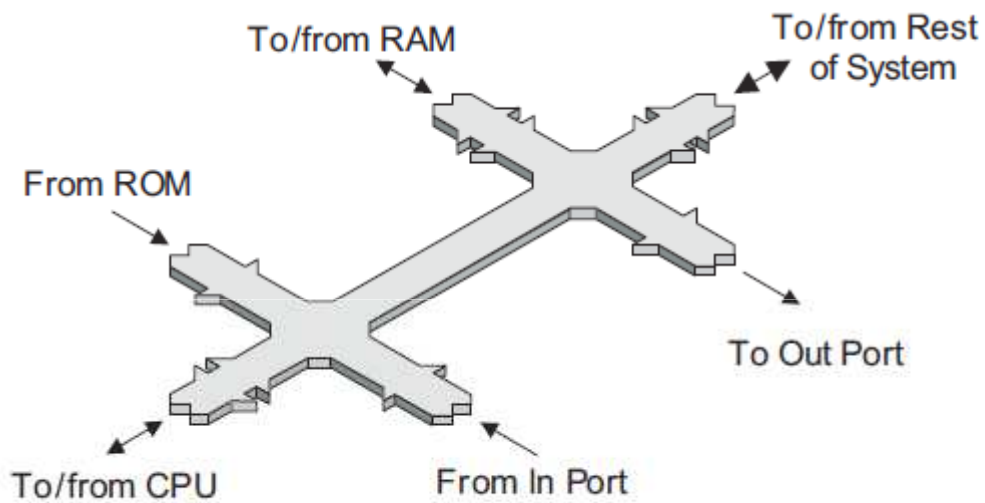


C. Maxfield, A. Brown:
A definitive guide to HOW COMPUTERS DO MATH

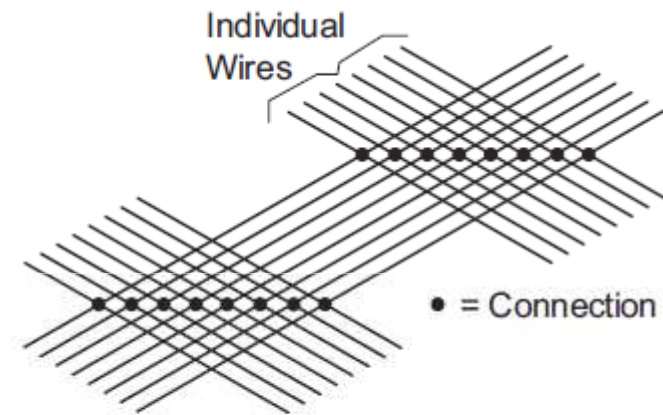
The system



Bus system



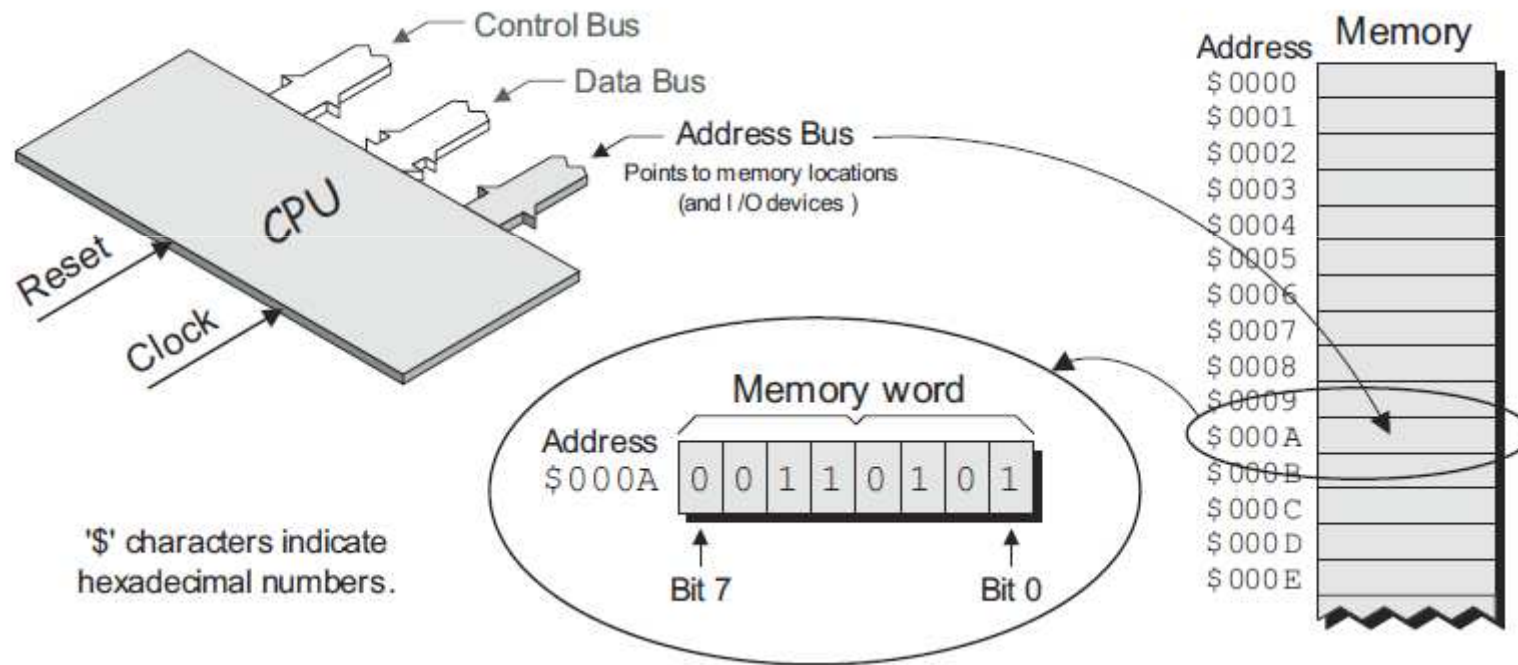
(a) Abstract view



(b) Less abstract view

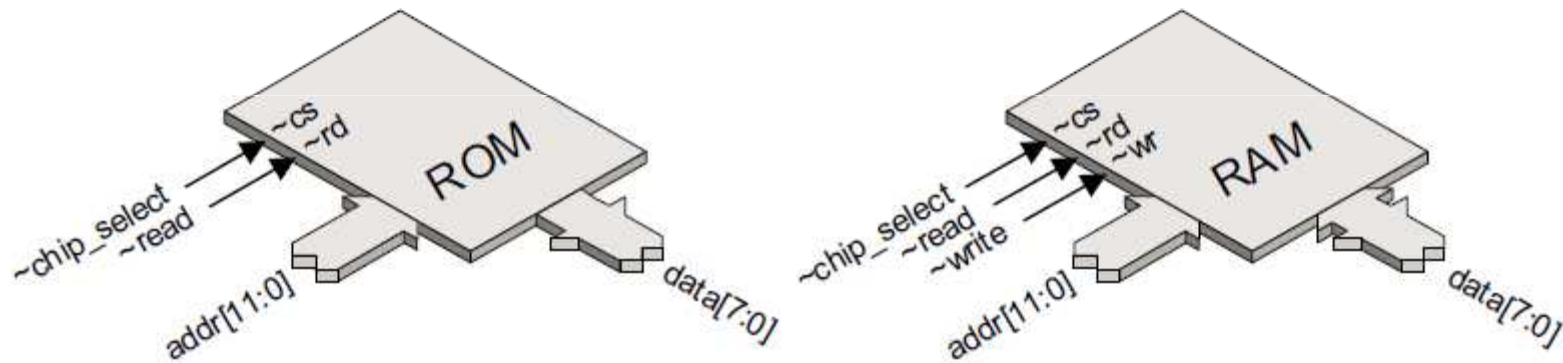
Data bus: 8 bit
Address bus: 16 bit
Control bus: 2 (+4) bit

Memory



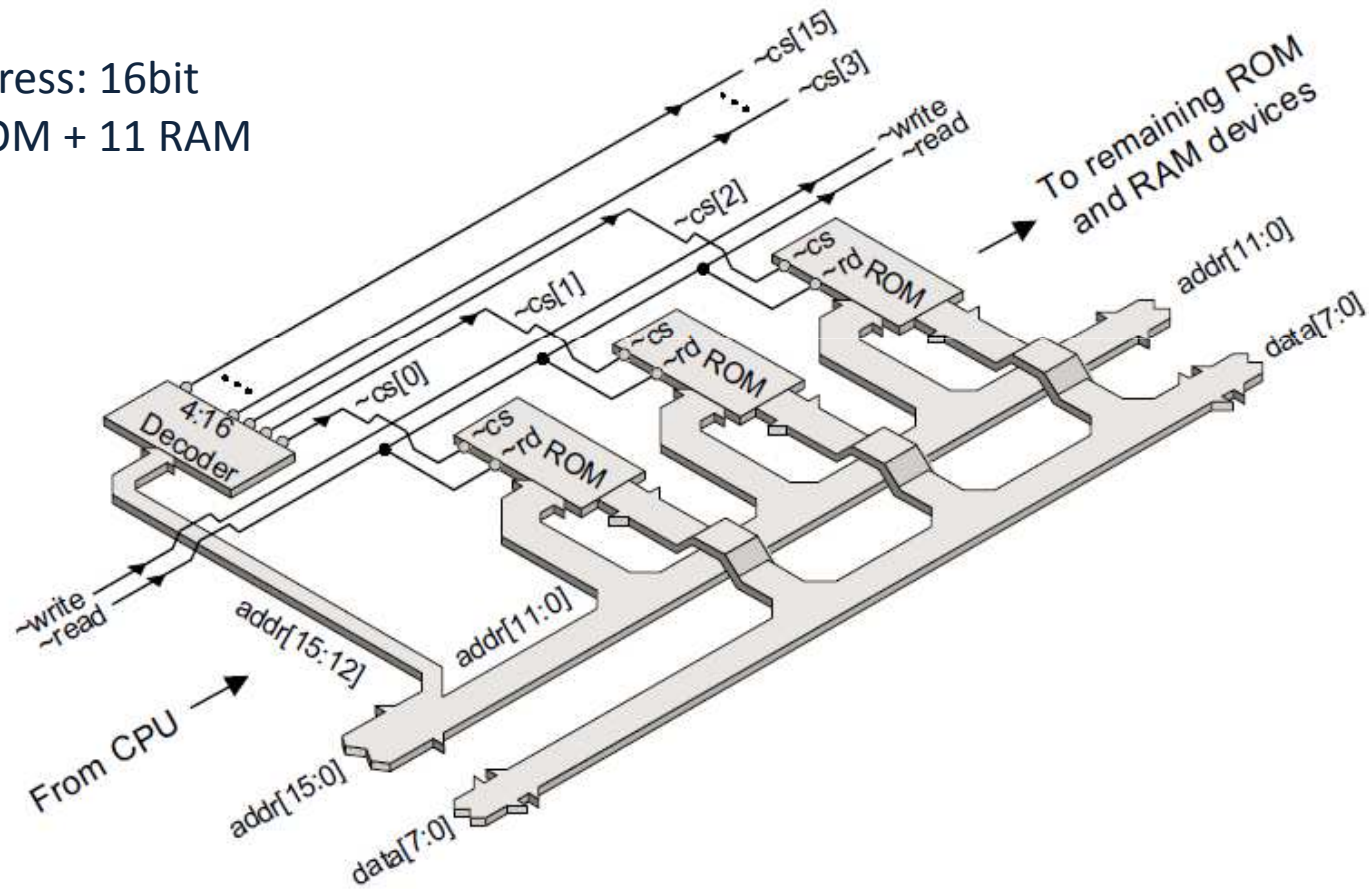
ROM & RAM

Capacity: 4kB
Address: 12bit



Memory

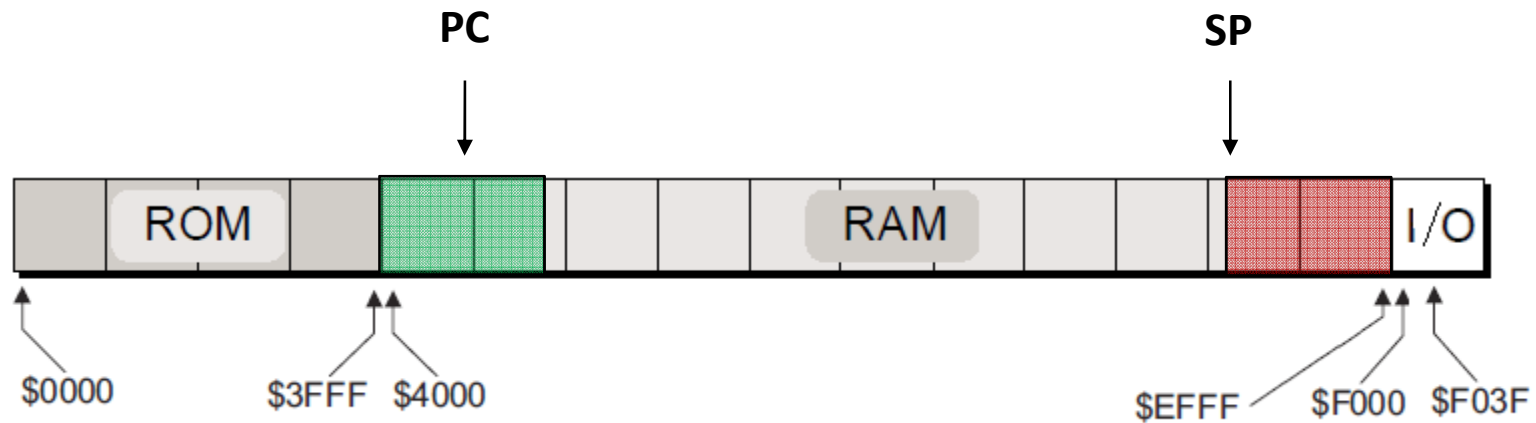
Address: 16bit
4 ROM + 11 RAM



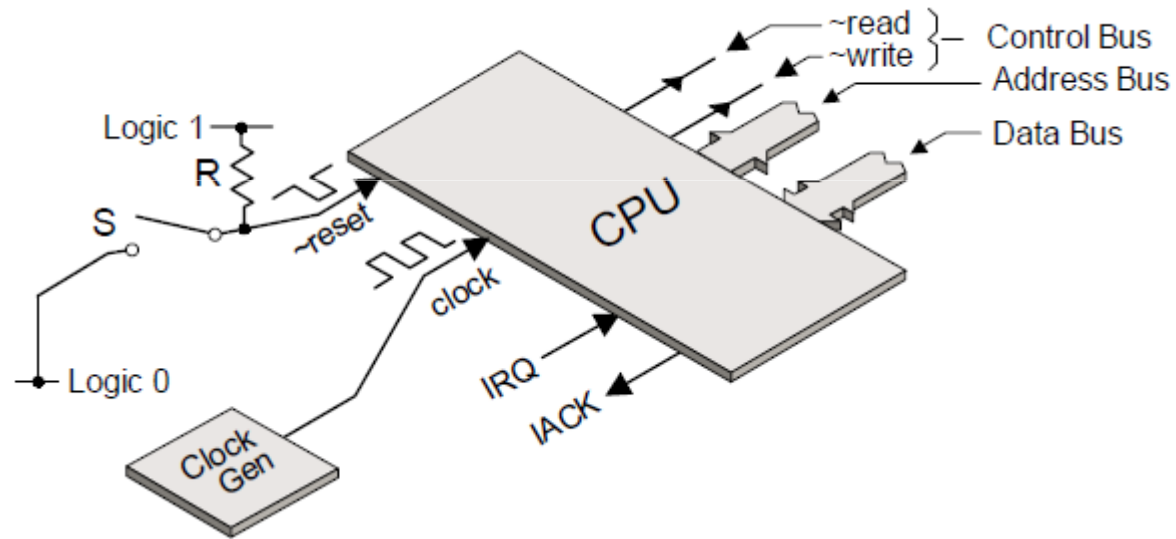
Memory

Address bus size: 16bit

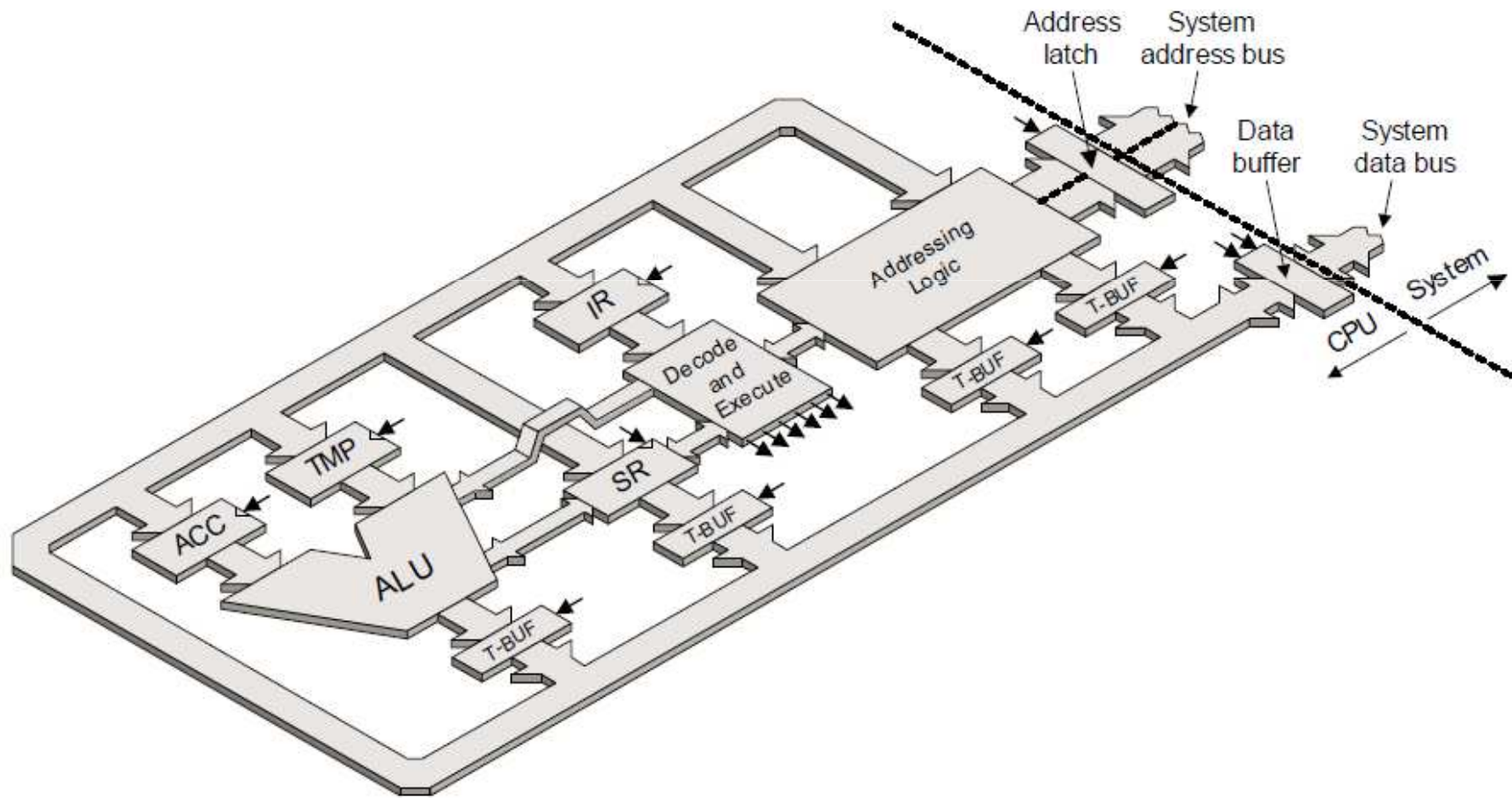
Address range: \$0000-\$FFFF (64kB)



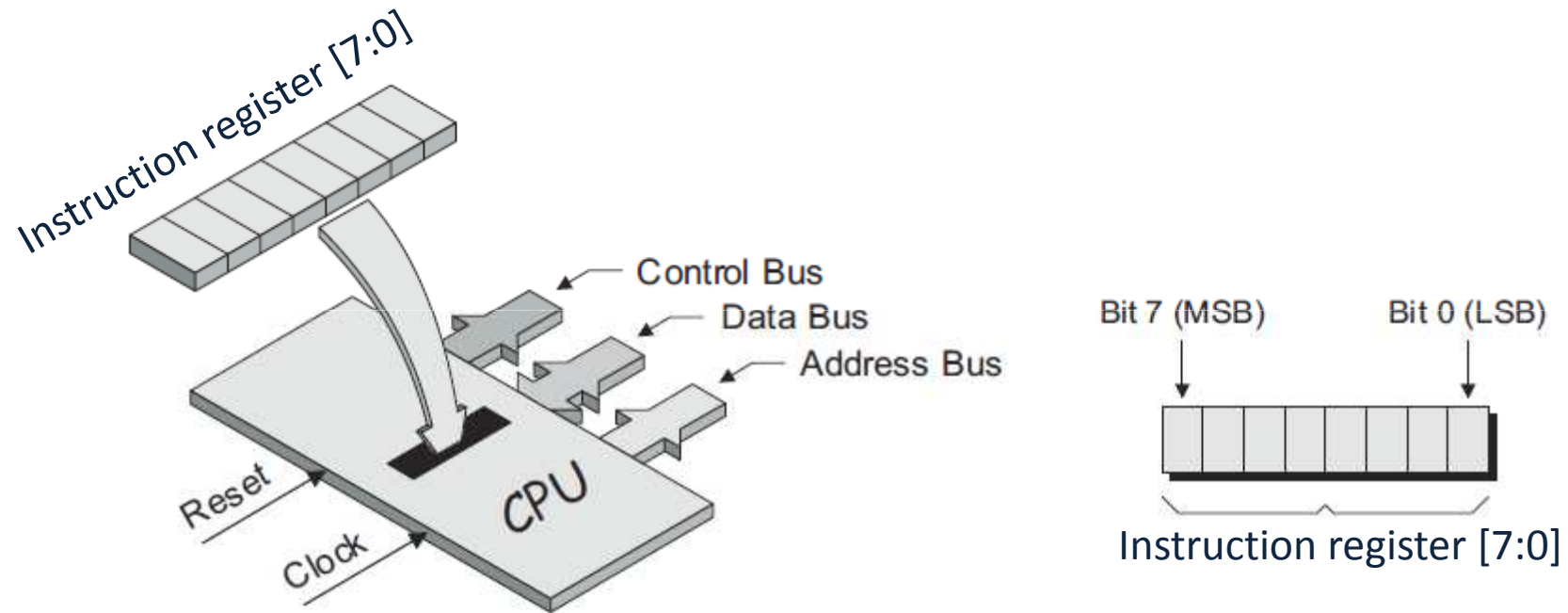
CPU



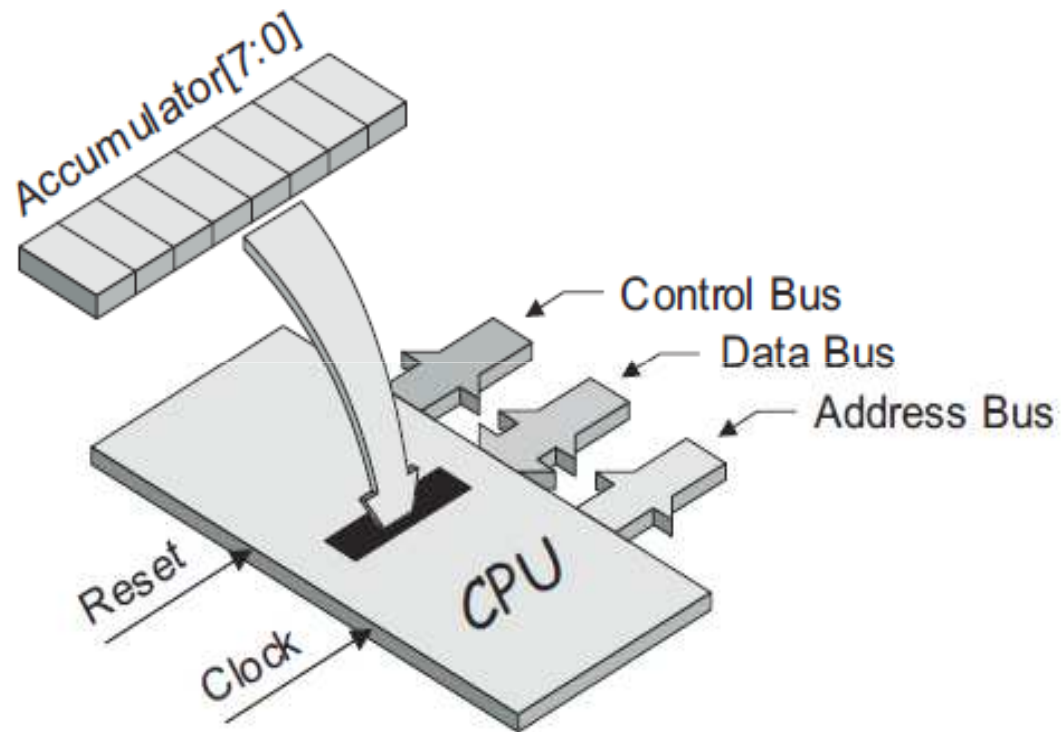
Inside CPU



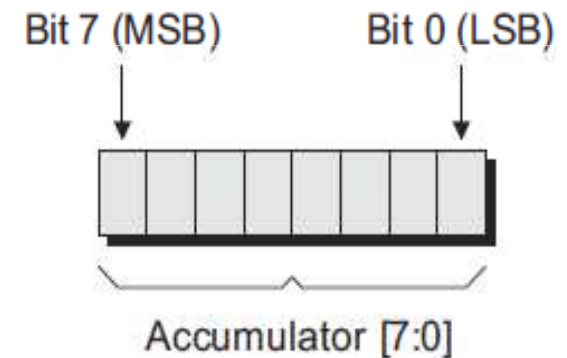
CPU: instruction register



CPU: accumulator register

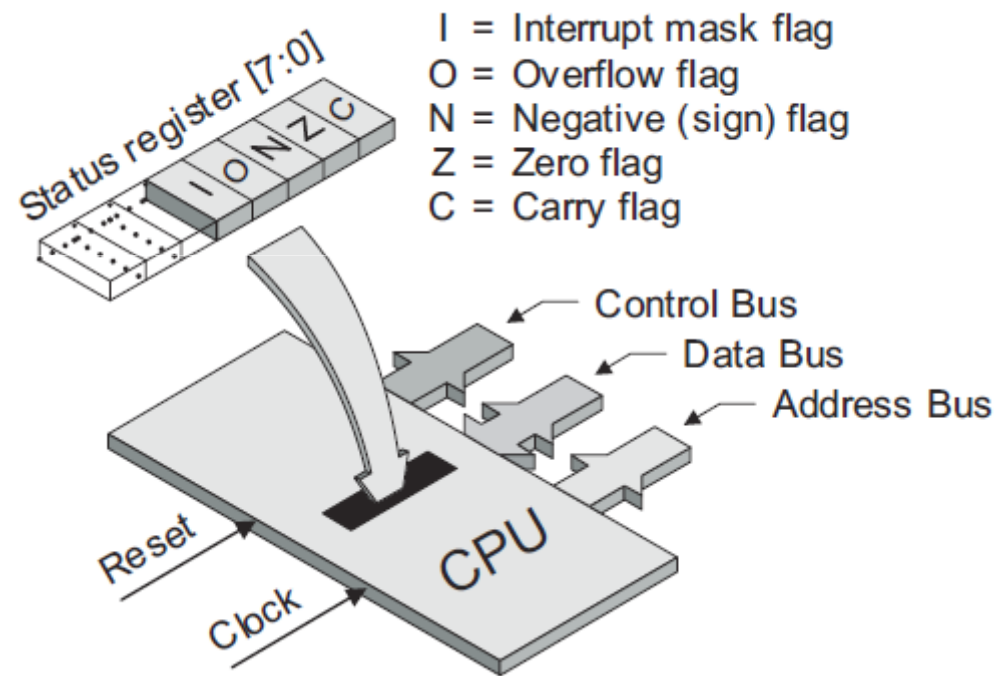


(a) The accumulator is an 8-bit register in the CPU

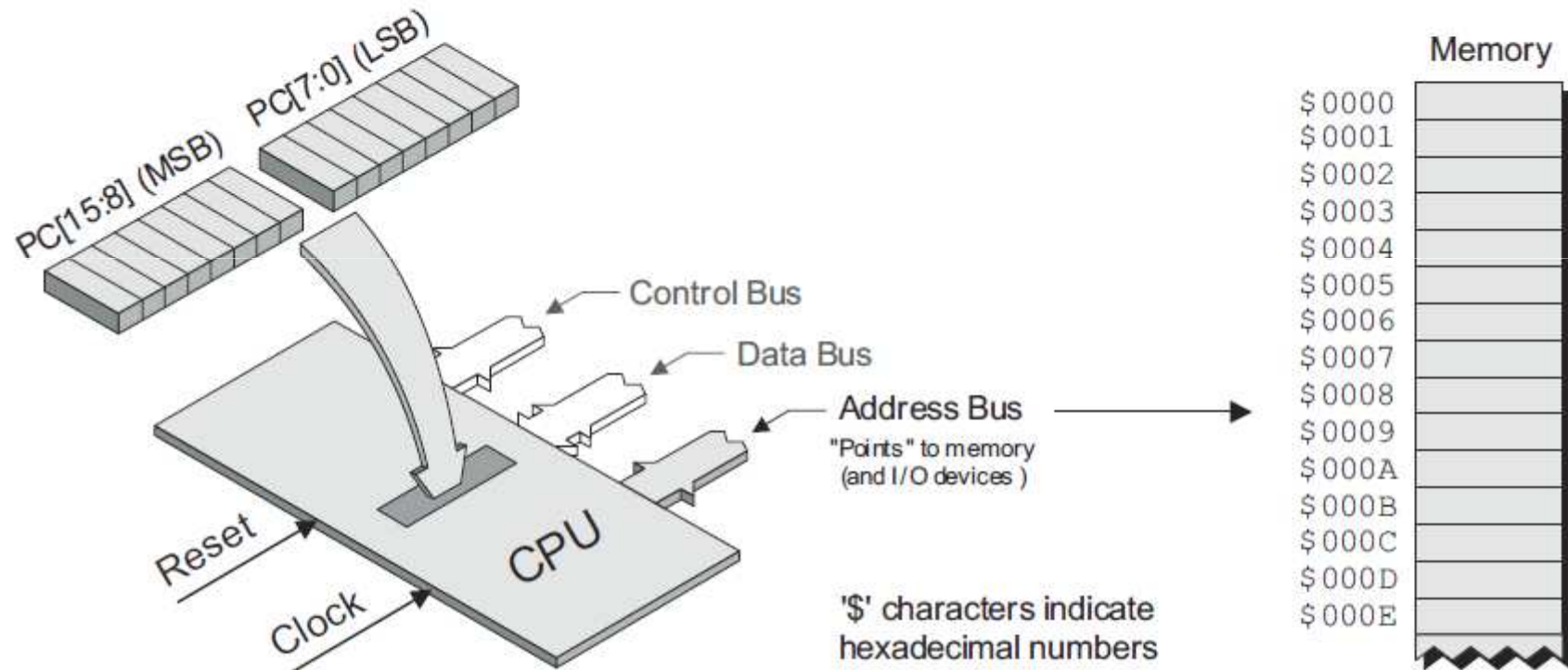


(b) Accumulator bit-numbering scheme

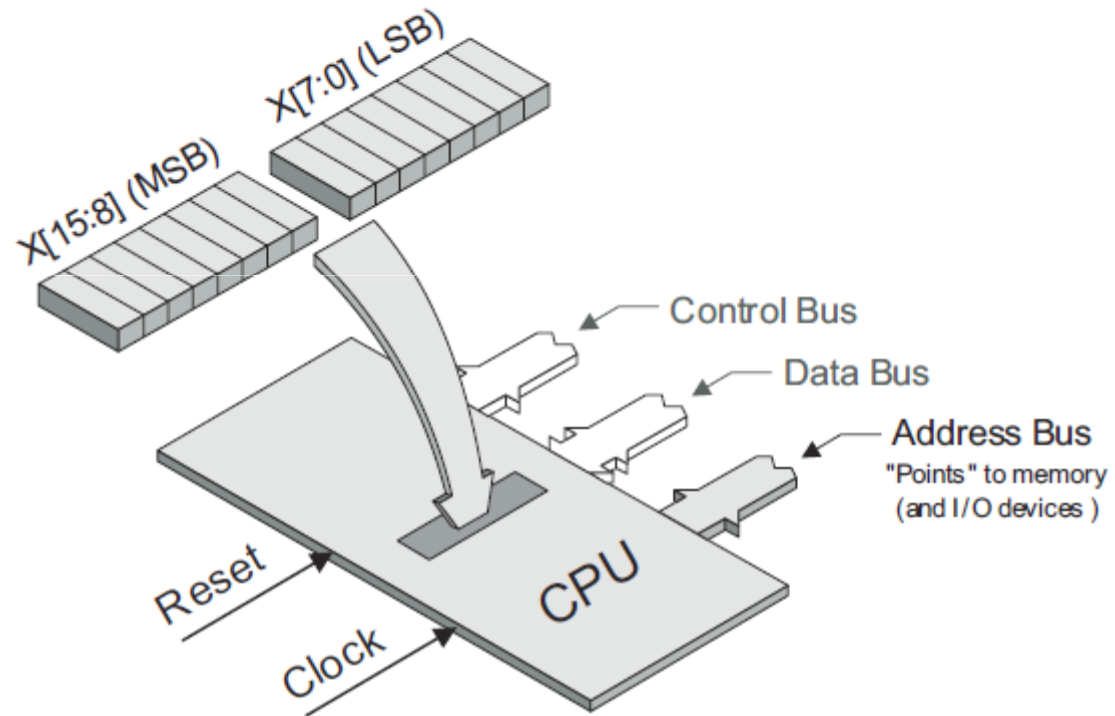
CPU: status register



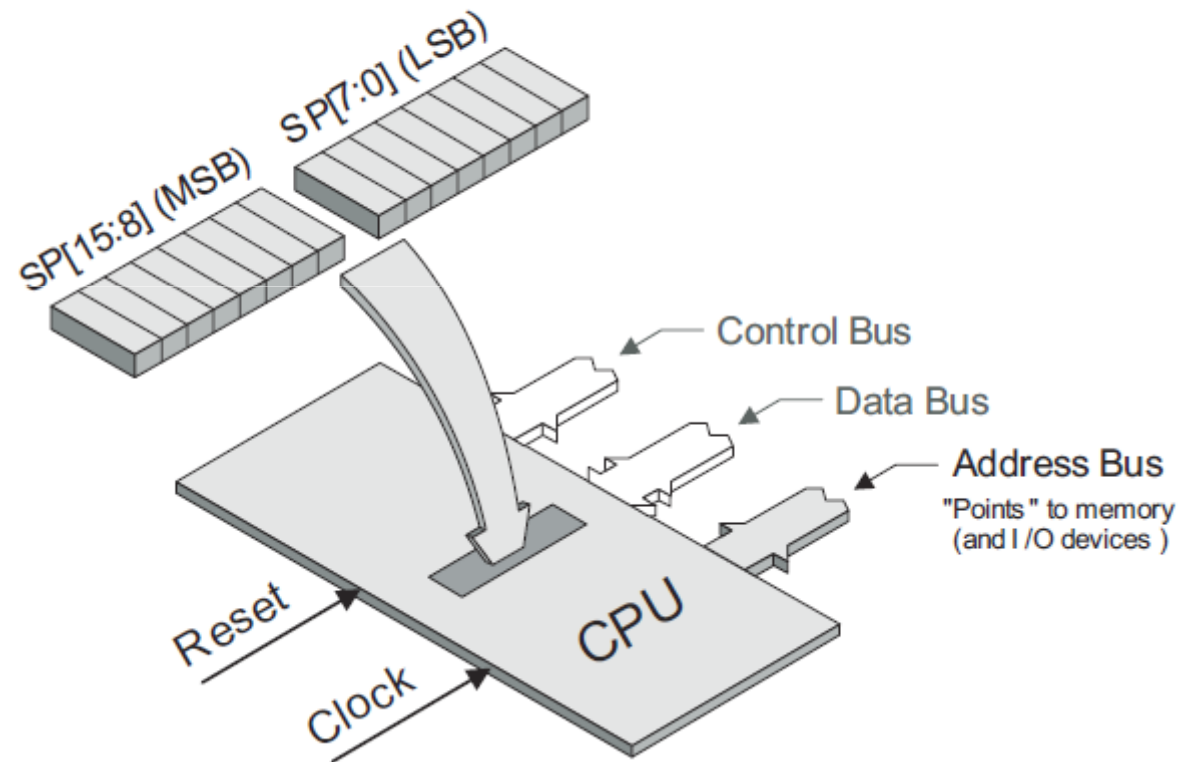
CPU: program counter register



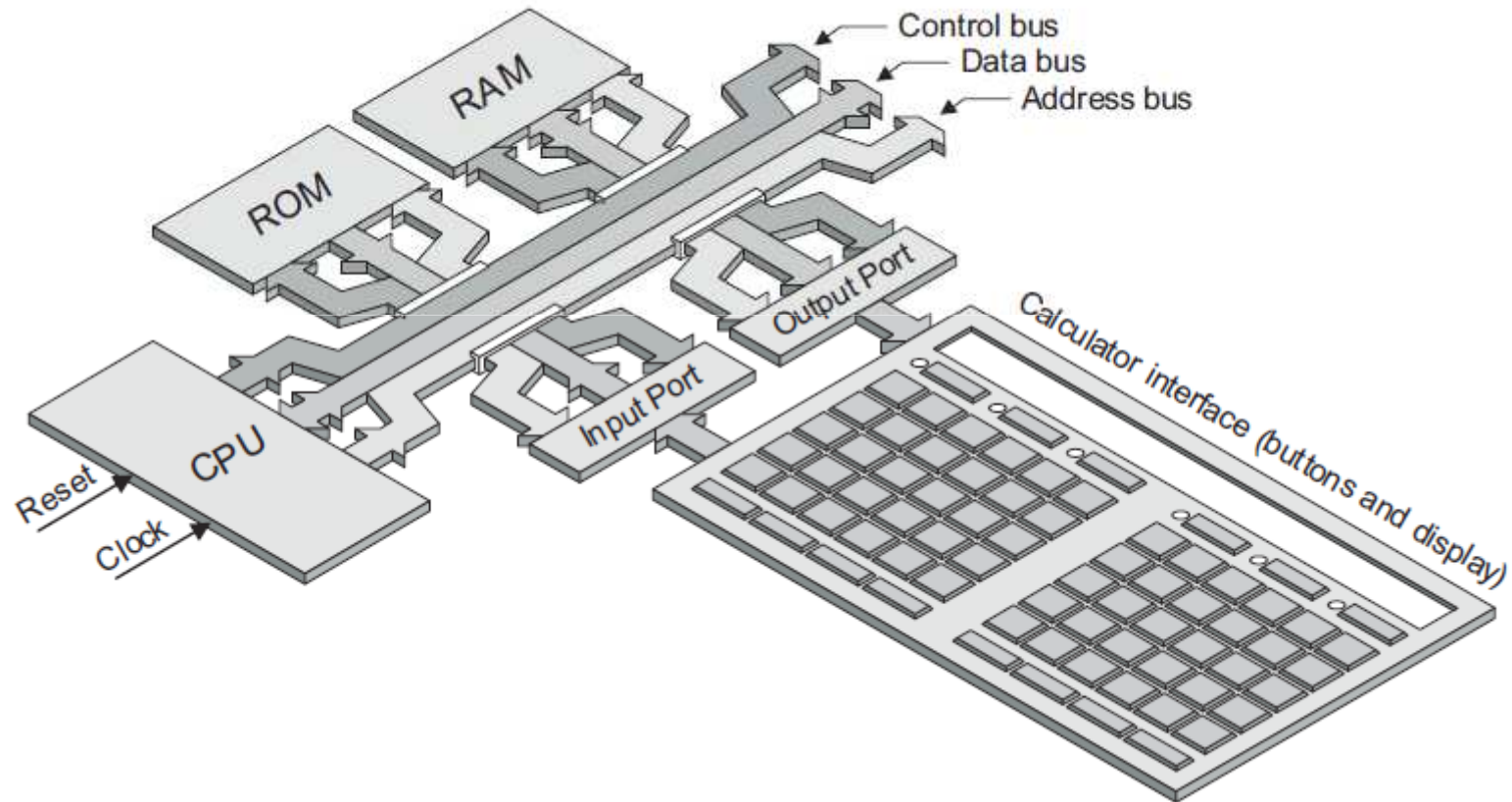
CPU: index register



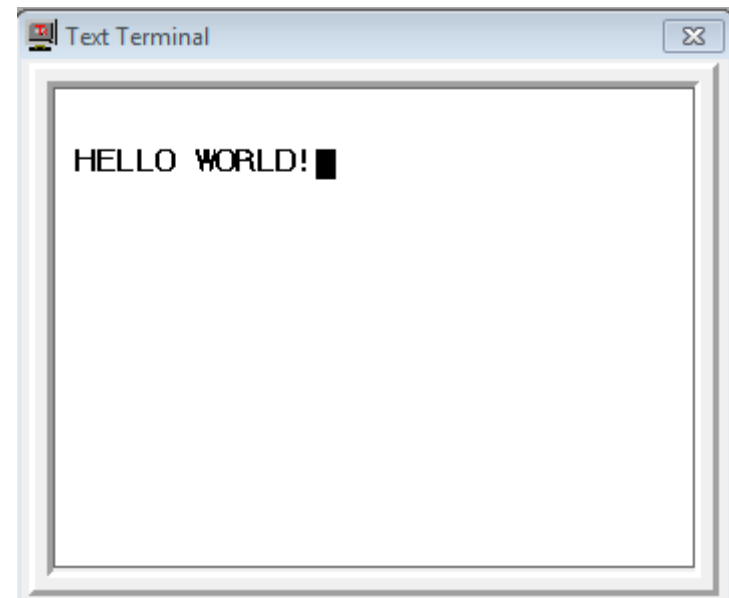
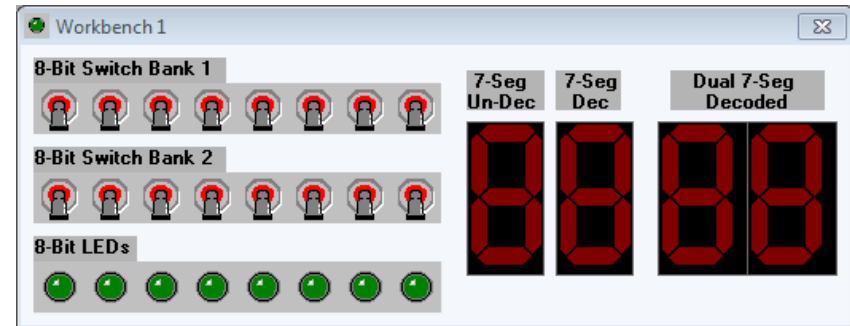
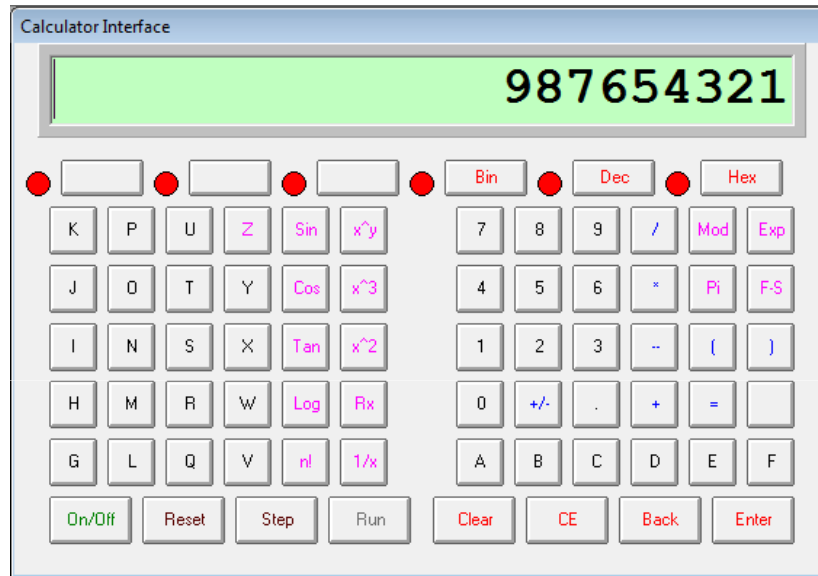
CPU: stack pointer



Input/Output ports



Peripheral



Signals & timing

Example: *generic read cycle*

