

Learning Microcomputers and Microprocessors

The problem

Software Simulator

```
Assembly code:
1 / Addition Calculator
2 / by the HARTIS Team
3 / Copyright (C) 2024. Licensed under the MIT License
4
5 Input
6 Store X
7 Input
8 Store Y
9
10 Add X
11 Output
12 Halt
13
14 X, DEC #
15 Y, DEC #
```

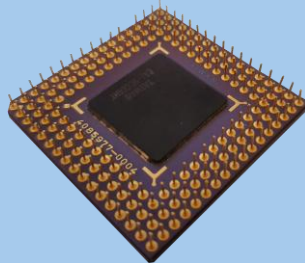
Assembled successfully

	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9	+A	+B	+C
000	0000	2007	0000	2008	3007	0000	0000	0000	0000	0000	0000	0000	0000
010	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
020	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000

Buttons: [H Assembly] [Step] [Microstep] [Step Back] [Run] [Halt] [Exit]

- Only theoretical approach
- No hardware point of view

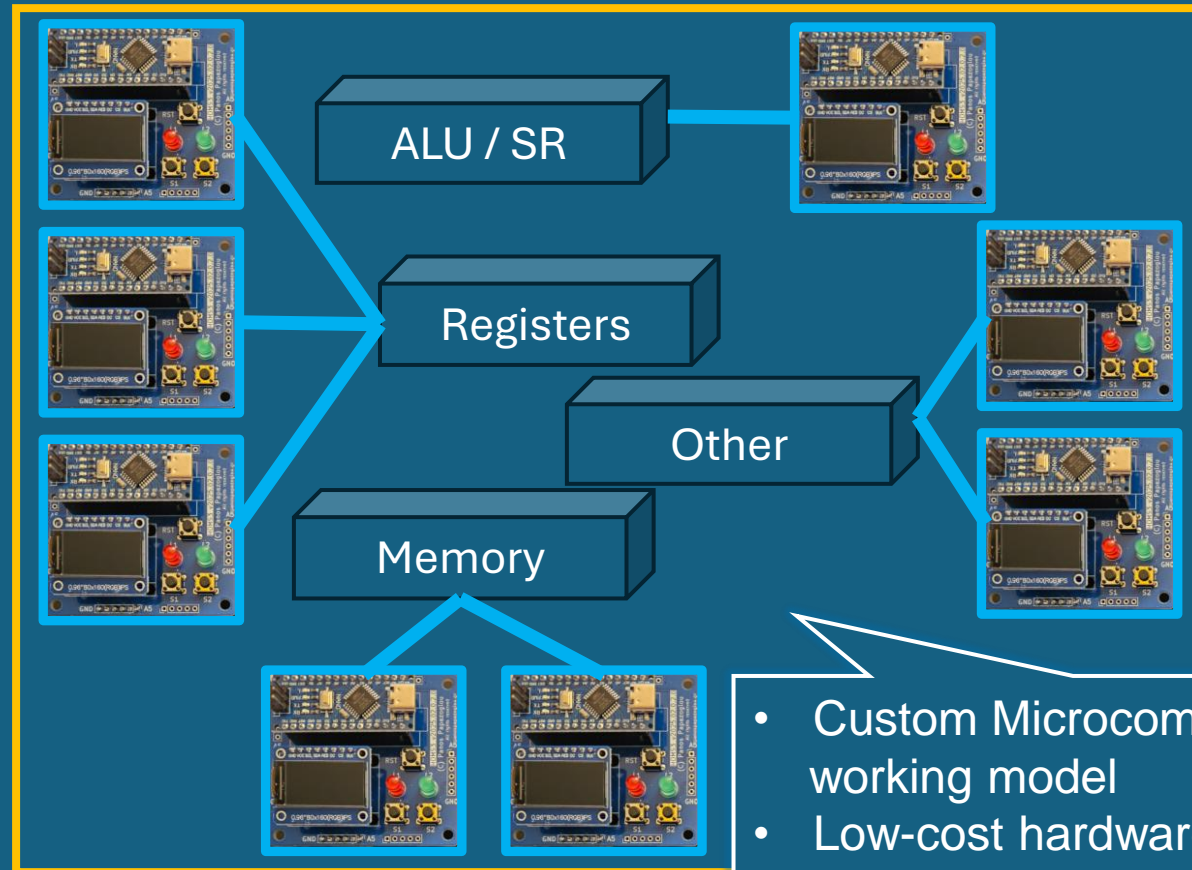
Real microcomputer-microprocessor



- Too complicated
- No hardware tools exist for the class

A Low-Cost Plug-n-Play Educational Hardware-Oriented Microcomputer Simulator Development Kit (HOMSDK)

Proposed solution



- Custom Microcomputer working model
- Low-cost hardware
- Plug-n-Play programmable bricks
- Custom assembly instructions
- GUI software support