

WACKY WORLD OF ↵ COMPUTING
CHARLES AVERILL @ LRC

THE TI-99/4A - 1981

- FIRST 16-BIT HOME COMPUTER
 - TMS9900 CPU AT 3 MHZ
 - 2.8M UNITS SOLD
 - LAUNCHED @ \$525
 - DROPPED TO \$99 BY EDL
- SHOULD OUTPERFORM 8-BIT
COMPETITION, BUT DOESN'T?

TI-990 - 1975

- TI 16-BIT MINICOMPUTER
 - MULTITASKING OS
 - RAM REGS -> EASY CTX SW.
- TMS9900 WAS SINGLE-CHIP 990,
TOOK PLACE OF AN IN-PROGRESS
8-BIT CPU IN TI99

REGISTERS IN RAM

- 3 REAL REGS: PC, WP, ST
- R0-R15 KEPT IN MEMORY
- WP HOLDS ®S
- TIMESHARING RELIC

256 BYTES

- REGS-IN-RAM NEEDS FAST RAM
- FAST STATIC RAM = PRICEY
- ONLY 256B ACCESSIBLE

WHERE'S THE REST?

- 16K ON TMS9918 VDP
- CPU CAN'T ADDRESS DIRECTLY
- Ask 1B/~24 CYCLES FROM VDP
- BASIC IS RUNNING IN VRAM!

GPL

- TMS9900 CODE IS BIG
- 16-BIT OPCODES!
- HARD TO PROGRAM FOR 8/16B
- SOLUTION: GPL BYTECODE
- OS + BASIC WRITTEN IN IT

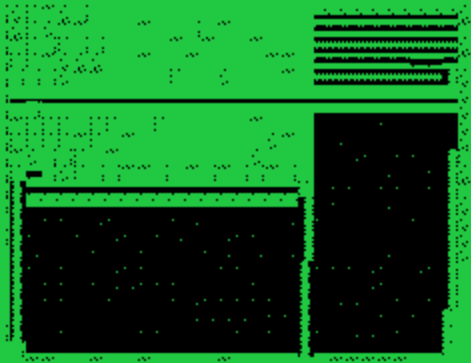
BASIC, TWICE REMOVED

- 9900 RUNS GPL INTERPRETER
- GPL RUNS BASIC REPL
- BASIC RUNS USER CODE
- 3 LAYERS, 8 BITS AT A TIME

WHAT HAPPENED?

- EXPENSIVE + BAD SUPPORT
- TI BLOCKS 3RD-PARTY CARTS
- PRICE WAR W/ COMMODORE C64
- \$330M LOSS IN Q3 83

THE TI-99/4A



THANKS!

RUNNING ON PRESENTER99

- 125L OF BASIC
- SIMPLE TEXT FORMAT
- 1-BIT IMAGES

[HTTPS://CHARLES.SYSTEMS/](https://charles.systems/)

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