

7 POKE of Death for the TRS 80 Model 100

by Dave Weinstein

In his Epistle on the Divinity of Languages, PoC||GTFO 01:07, Pastor Manul Laphroig wrote of the merits of PEEK and POKE in teaching the youth of a previous generation how to fiddle with hardware in ways the hardware did not want to be fiddled.

And so I offer to you a short example of the wonders of POKE as applied to interrupt handlers.

In 1983, Radio Shack introduced the Model 100, a copy of the Kyocera Kyotronic 85. With its 40 character wide 8-line screen, built-in 300 baud modem, and up to 32k of RAM, it was a state of the art laptop, capable of generating endless questions from passengers and crew on any flight.

In high memory, there is a vector at 0xF5FF, which allows a program to hook the keyboard/clock interrupt. Every 4 ms or so, the timer interrupt fires, and the keyboard is polled. By default, the vector is a simple RET NOP NOP.

As it happens, the very next vector in high memory is a JMP to handle the low-power situation and shut the computer down.

```
0xf5ff      0xc9 (RET)
0xf600      0x00 (NOP)
0xf601      0x00 (NOP)
0xf602      0xc3 (JMP 0x1451)
0xf603      0x31
0xf604      0x14
```

The function at 0x1431 will turn the computer off, as the code flows to the actual shutdown sequence at 0x1451:

```
0x1451      di
0x1452      in 0xba
0x1454      ori 0x10
0x1456      out 0xba
0x1458      hlt
```

Should we replace the RET at 0xF5FF (62975) with a NOP, the Model 100 will power down every time the timer interrupt fires. The only way to restore functionality is to do a cold restart of the machine, which, if I recall correctly, in this case requires removing the batteries, unplugging the machine, and disabling the internal NiCad battery. All of the contents would be lost. For those who do not know what has been done, the computer shows every sign of having simply died.

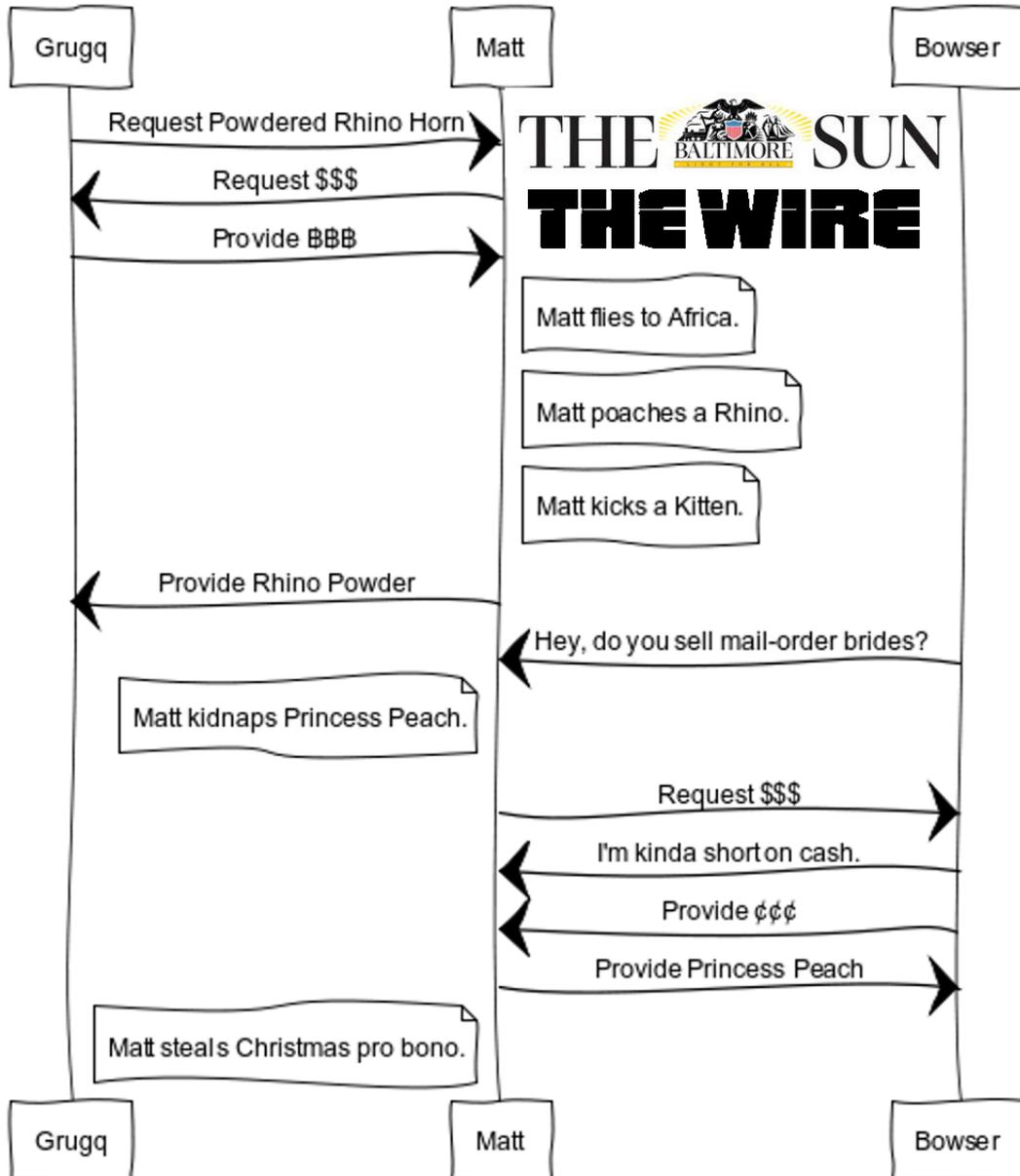
POKE 62975, 0

The only way to prevent it is to prevent access to the BASIC interpreter. Which is possible, but is a discussion for another time.



Figure 3: POKE 62975, 0

Matthew Green "Research Team"



Pastor Laphroaig tells us that the news is stranger than fiction, because unlike the news, fiction requires an element of truth.