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Meese

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Author

Message

vbbrett

Post subject: Meese

Posted: Fri May 20, 2005 7:04 pm

My mouse is not completely working. My kernel is currently in 3 stages.

1st: Bootstrap; enables A20; PMODE; loads 2nd.

2nd: IDT written to 0x8700; floppy driver loads 3rd; Init mouse; Paging; ect.

3rd: Rewrites IDT to 0x90000; GUI.

Now, we have two issues on our hands:

1. The mouse init routine only works right when I boot the second stage. Meaning, that it won't initialize the mouse if I put the same exact code much later in my program. Apparently the mouse expects the be initialized early in the boot process. BTW, it takes ~20 seconds from the time of the 2nd stage starting to the 3rd stage actually running. In summary: can the mouse only be initialized early in the boot?

2. IF I DO ENABLE the mouse in the 2nd stage, my mouse barfs after I rewrite my IDT. It doesn't send any more packets over the same exact interrupt. BTW, the interrupt, PIC, ect is working fine in all the stages AND the cascade, keyboard, mouse are unmasked AND the keyboard SHOULDN'T have sent any commands to be read.. I catch every byte sent from the keyboard.

So, how does this work? Is there some way I can turn off the mouse for my rewrite of the IDT? Could I simply 'Reset' the mouse after I start the 3rd stage?

And if I was to talk to the mouse, documentation is not very helpful and rather sparse. It's fairly hard to get a lot of info on this device.

Questions? Comments? Smart remarks?

Thanks,

Brett

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viral

Post subject: Re:Meese**Posted:** Fri Jun 03, 2005 1:41 pm

I had the same problem. when I initialize Mouse after initialising Keyboard, it dint work. so i do one thing:

1. setting up IDT
2. Eanble Mouse (See 1st I initialize mice)
3. Initilize Keyboard

and so on....

Surprizingly It works.....

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Pype.Clicker

Post subject: Re:Meese**Posted:** Sun Jun 05, 2005 3:36 am

Member



just out of curiosity, how do you "initialize the keyboard" ??

May the source be with you.

Joined: Wed Oct 18, 2006

2:31 am

Posts: 5959**Location:** In a galaxy, far, far away

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profile

mystran

Post subject: Re:Meese**Posted:** Mon Jun 06, 2005 3:22 pm

You initialize the keyboard by telling it that you definitely DON'T want the default scancode set, and that it's default repeat rate is totally too slow to be of any use whatsoever.

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Brendan

Post subject: Re:Meese**Posted:** Mon Jun 06, 2005 7:11 pm

Member



Hi,

I guess a more direct line of questioning may be:

- a) How do you initialize the keyboard?
- b) How do you initialize the mouse?
- c) How do you initialize the PS/2 controller?

In my experience the PS/2 controller can take a relatively large amount of

Joined: Sat Jan 15, 2005

12:00 am

Posts: 6256**Location:** At his keyboard!

work to initialize correctly - especially if you auto-detect which devices are connected, prevent the rare case of received data messing up initialization, and/or handle incompatibilities between different PS/2 controller chips.

Cheers,

Brendan

The BCOS Project:
<http://bcos.hopto.org>

Slow code that scales better can be faster than fast code that doesn't scale!

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Pyype.Clicker

Post subject: Re:Meese

Posted: Tue Jun 07, 2005 2:37 am



Member



Joined: Wed Oct 18, 2006
 2:31 am
Posts: 5959
Location: In a galaxy, far,
 far away

well, there are
[http://www.mega-tokyo.com/forum/index.p ... eadid=3888](http://www.mega-tokyo.com/forum/index.p...eadid=3888)
 and [http://www.mega-tokyo.com/forum/index.p ... eadid=7336](http://www.mega-tokyo.com/forum/index.p...eadid=7336) giving
 info about the PS2 mouse initialization already, and i know the mouse
 should be given some commands before it starts delivering events to the
 PC, but i never heard of something similar for keyboard.

Now okay, if you mean setting suitable typematic rate and things alike ...

May the source be with you.

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distantvoices

Post subject: Re:Meese

Posted: Tue Jun 07, 2005 2:59 am



Member



Joined: Wed Oct 18, 2006
 11:59 am
Posts: 1600
Location: Vienna/Austria

To get it further, I for one fetch the first scancode after doing all the init
 stuff (setting the LED's to a known state, choosing repeat rate & scan code
 set, initializing the circular scancode buffer and registering the Interrupt
 handler) to avoid mixing up in the buffer. Unwanted characters might be
 read.

... the osdever formerly known as *beyond infinity* ...
 BlueillusionOS iso image

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Brendan

Post subject: Re:Meese

Posted: Tue Jun 07, 2005 5:15 am



Member



Hi,

My current PS/2 controller initialization sequence goes like this:



Joined: Sat Jan 15, 2005
 12:00 am
Posts: 6256
Location: At his keyboard!

Code:

```
a) Do a couple dummy reads from the data port.
b) Get the current controller configuration byte (controller
   command 0x20).
c) Do another dummy read from the data port.
d) Set a new configuration byte (controller command 0x60).
   Note: This step disables IRQs, enables clock signals to any
   devices
       and disables the scan code translation for the first
   PS/2 port
e) Do another dummy read from the data port.
f) Send "disable device B" command to the controller
   (controller command 0xA7).
g) Get the current controller configuration (controller command
   0x20).
h) If clock signal to device B is still enabled, then assume
   the PS/2
       controller is an older "single device" controller rather
   than
       a "dual device" controller, and mark device B as unusable.
i) If it is a "dual device" controller, send the controller
   configuration
       byte again to re-enable device B (controller command
   0x60).
j) Create a new node for the PS/2 controller in my "device
   tree" (mark the
       IO ports and IRQ/s as used, etc).
k) Disable scanning for device A by sending command 0xF5 to it.
l) If device B is still usable, disable scanning for device B
   by
       sending command 0xF5 to it.
m) Perform device A interface test (send command 0xAB to
   device).
n) If device B is still usable, perform device B interface test
   (send
       command 0xAB to device).
o) Reset device A (device command 0xFF) - if it doesn't return
   0xFA then
       0xAA (ACK then BAT test passed) mark device A as unusable,
   otherwise
       disable device A scanning again (device command 0xF5).
p) If device A is still usable, send the "identify" device
   command to
       it and store anything returned for later.
q) If device B is still usable, reset device B (device command
   0xFF) - if
       it doesn't return 0xFA then 0xAA mark device B as
   unusable, otherwise
       disable device A scanning again (device command 0xF5).
r) If device B is still usable, send the "identify" device
   command to
       it and store anything returned for later.
```

s) Add any usable devices to the the "device tree" ready to load device drivers

There's a few notes that go with all this..

It's designed to support any combination of devices (a mouse where the keyboard normally goes, a pair of keyboards and no mouse, etc).

I deliberately try to disable the default scan code translation (which is meant to convert "scancode set 2" sent by the keyboard into "scancode set 1"). This translation is only possible for device A, and messes up mouse data when a mouse is plugged in as device A. Unfortunately, for some older PS/2 controllers it can't be disabled (~80486 and Bochs), and for some new computers if the BIOS has the "emulate PS/2 for USB keyboard/mouse for crappy OSs" option enabled. In this case it's difficult to have a mouse as PS/2 device A (I still need to do some research on how hard it is to reverse this translation if it can't be disabled).

All of the steps above rely on little helper routines to get data, send commands, etc. These helpers can all return a time-out error. During the early parts of initialization any time-out results in a "controller not found" condition. Later stages may result in device A or device B being marked unusable or a "controller not found" condition (if the time-out shouldn't be possible when a device isn't present).

Possible "device types" returned from step P and step R are:

Code:

0xFA	AT keyboard with translation (not possible for device B)
0xFA, 0xAB, 0x41	MF2 keyboard with translation (not possible for device B)
0xFA, 0xAB, 0xC1	MF2 keyboard with translation (not possible for device B)
0xFA, 0xAB, 0x83	MF2 keyboard without translation
0xFA, 0x00	Standard mouse
0xFA, 0x03	Mouse with a scroll wheel
0xFA, 0x04	5 button mouse with a scroll wheel

There's probably device types that I haven't seen yet, but the list covers everything I've been able to test so far.

After initialization, the IRQs for any usable devices are left disabled and so is device scanning. These are enabled when a PS/2 keyboard or mouse driver does it's initialization. Leaving "device scanning" disabled prevents the device from sending any data to the controller unless they've been asked to.

Device specific configuration is left to an appropriate device driver (there's

no setting the LED's, typematic rate, mouse scaling, etc). The idea is to configure the PS/2 controller only - it could be a bar code scanner or something attached for all I know.

The method above works on everything I've tested it on, but I haven't tested it on everything in the world so there's no guarantees 😊.

Cheers,

Brendan

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