

Assignment-3 Advanced Architecture

Multicore Simulation

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We implemented a two core X86 full system simulation in Gem5.

The simulated system has Linux OS. It has two levels of Caches and 3 GB of RAM. It has 3 GHz Clock. The CPU model used is Atomic Simple CPU.

The system is simulated by executing *run.py* file which outputs a port number (*generally 3456*) on which the simulated system is accessible. We can boot as many systems as desired in separate terminals by using a utility (*m5term*) provided in gem5 to connect to the mentioned port number. On running the utility at the port provided, the system boots up and ends in a terminal at the root directory of the Linux System.

The pictorial representation of the configuration of the CPU is in the file *arch.pdf*. Following is the ScreenShot of the terminal running the Simulated System.

```
hda: max request size: 128KiB
hda: 1048320 sectors (536 MB), CHS=1040/16/63, UDMA(33)
  hda: hda1
megaraid cmm: 2.20.2.7 (Release Date: Sun Jul 16 00:01:03 EST 2006)
megaraid: 2.20.5.1 (Release Date: Thu Nov 16 15:32:35 EST 2006)
megasas: 00.00.03.10-rc5 Thu May 17 10:09:32 PDT 2007
Fusion MPT base driver 3.04.04
Copyright (c) 1999-2007 LSI Logic Corporation
Fusion MPT SPI Host driver 3.04.04
Fusion MPT SAS Host driver 3.04.04
ieee1394: raw1394: /dev/raw1394 device initialized
USB Universal Host Controller Interface driver v3.0
usbcore: registered new interface driver usbblp
drivers/usb/class/usbblp.c: v0.13: USB Printer Device Class driver
Initializing USB Mass Storage driver...
usbcore: registered new interface driver usb-storage
USB Mass Storage support registered.
PNP: No PS/2 controller found. Probing ports directly.
serio: i8042 KBD port at 0x60,0x64 irq 1
serio: i8042 AUX port at 0x60,0x64 irq 12
mice: PS/2 mouse device common for all mice
input: AT Translated Set 2 keyboard as /class/input/input0
device-mapper: ioctl: 4.11.0-ioctl (2006-10-12) initialised: dm-devel@redhat.com
input: PS/2 Generic Mouse as /class/input/input1
usbcore: registered new interface driver usbhid
drivers/hid/usbhid/hid-core.c: v2.6:USB HID core driver
oprofile: using timer interrupt.
TCP cubic registered
NET: Registered protocol family 1
NET: Registered protocol family 10
IPv6 over IPv4 tunneling driver
NET: Registered protocol family 17
EXT2-fs warning: mounting unchecked fs, running e2fsck is recommended
VFS: Mounted root (ext2 filesystem).
Freeing unused kernel memory: 232k freed
INIT: version 2.86 booting
mounting filesystems...
loading script...
Script from M5 readfile is empty, starting bash shell...
(none) / # ls
bin  dev  home  lib32  lost+found  opt  root  sys  usr
boot  etc  lib  lib64  mnt      proc /sbin  tmp  var
(none) / # python
Python 2.4.4 (#1, Jun 17 2008, 01:39:28)
[GCC 4.1.2 (Gentoo 4.1.2 p1.0.2)] on linux2
Type "help", "copyright", "credits" or "license" for more information.
print>>>
>>> print("JAI SAI RAM")
JAI SAI RAM
>>>
(none) / # █
```