

CSF2600505 Sistem Operasi CSGE602055 Operating Systems Week 00: Intro & Review1

Rahmat M. Samik-Ibrahim

University of Indonesia

<http://rms46.vlsm.org/2/207.html>

Always check for the latest revision!

REV106 23-JAN-2018

Operating Systems 2018-1 (Room 3114 Tue/Thu)

Class: A (10:00-12:00) | B (13:00-15:00) | C (16:00-18:00)

Week	Schedule	Topic	OSC9
Week 00	06 Feb - 12 Feb 2018	Intro & Review1	Ch. 1, 16
Week 01	13 Feb - 19 Feb 2018	Review2 & Scripting	Ch. 2
Week 02	20 Feb - 26 Feb 2018	Protection, Security, Privacy, & C-language	Ch. 14, 15
Week 03	27 Feb - 05 Mar 2018	I/O, BIOS, Loader, & Systemd	Ch. 13
Week 04	06 Mar - 12 Mar 2018	Addressing, Shared Lib, & Pointer	Ch. 8
Week 05	13 Mar - 19 Mar 2018	Virtual Memory	Ch. 9
Reserved	20 Mar - 24 Mar 2018		
Mid-Term	26 Mar - 03 Apr 2018	(UTS)	
Week 06	05 Apr - 11 Apr 2018	Concurrency: Processes & Threads	Ch. 3, 4
Week 07	12 Apr - 18 Apr 2018	Synchronization	Ch. 5
Week 08	19 Apr - 25 Apr 2018	Scheduling	Ch. 6
Week 09	26 Apr - 05 May 2018	File System & Persistent Storage	Ch. 10, 11, 12
Week 10	07 May - 16 May 2018	I/O Programming & Network Sockets Programming	
Reserved	17 May - 22 May 2018		
Final	23 May - 26 May 2018	(UAS)	

Agenda

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- 16 Week 00 Check List
- 17 The End

About and how to contact the Lecturer

- Rahmat M. Samik-Ibrahim
- Bekerja di Universitas Indonesia: sejak 1984¹.
- Pengguna GNU/Linux: sejak 1994.
- VauLSMorg (vlsm.org): sejak 1996.
- Blog: rahmatm.samik-ibrahim.vlsm.org/
 - Blog: 2016/08/panggil-saya-rahmat.html
 - Blog: 2013/10/kumpulan-hal.html
 - Blog: 2011/08/ibu-ke-pasar-membeli-ayam.html
- Facebook: facebook.com/RMS46F/
 - Page Only: No need to be "**ADDED**"
 - You can "**Like**" it, "**Follow**" it, or "**Share**" it.

Kontak/Tanya/Jawab WhatsApp Group **OS181**
(info +62-881-456-XXXX)
Email (Subject:[HELP]) os181@vlsm.org

¹MDCCXXXIV — Universitas Goettingen didirikan: 1734

TOP 10 REALITA

- 1 Nama saya **Rahmat**. Rahmat nama saya. Kalau bukan Rahmat, bukan nama saya!
- 2 Jangan datang lebih lambat dari pada Pengajar! Terdapat dua kesempatan untuk menyusul masuk kelas: T+15 menit dan setelah istirahat.
- 3 Jangan berisik/asyik sendiri dalam kelas dan jangan main "*games*" dan "*chat*" dengan "*gadget*" anda!
- 4 Jangan lupa mempersiapkan diri untuk berpartisipasi dalam kelas!
- 5 Jangan lupa membawa selembaar kertas (+QRC) untuk membuat memo kuliah!
- 6 Memo kuliah (+QRC) tersebut yang boleh dibawa saat UTS dan UAS.
- 7 Jangan curang!
- 8 Jangan meminjam peralatan selama kuis dan ujian!
- 9 Jangan menghubungi Pengajar untuk masalah Administratip!
- 10 Jangan menjadi "*Puss in Boot*"!

Jangan menjadi Puss In Boot

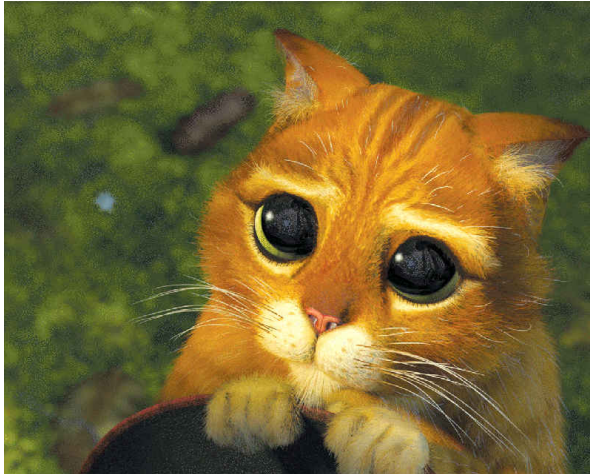


Figure: Ini Puss in Boot¹.

¹This is a fair use of a DreamWorks/Paramount Picture character.

Goal

Coverage

This is an introduction to a modern operating systems course. It will cover general overview, computer architecture review, operating system overview, IPR, software licenses, GNU/Linux CLI, versioning, scripting, C language overview, protection, security, privacy, gnupg, startup process, I/O, addressing and pointers, memory management, processes and threads, virtual memory, synchronization, mutual exclusion, deadlock, CPU scheduling algorithms, file systems, and I/O programming.

Student-Centered

This course is student-centered where responsibility is in the hands of the students. Students are expected to be prepared for the class meeting.

GNU/Linux

Students will have a thorough understanding of how GNU/Linux provides services by using a Command Line Interface.

85 - ... = A	80 - 85 = A-	75 - 80 = B+	70 - 75 = B
65 - 70 = B-	60 - 65 = C+	55 - 60 = C	50 - 55 = D or C ¹
40 - 50 = D	30 - 40 = E	20 - 30 = E	00 - 20 = E

- **4 SKS:** Alokasikan 12 jam per minggu.
- **No Lab — No Task — No Pop Quiz – No Teaching Assistant.**
- **Active Preparation / Participation / Q&A Only.**
- Partisipasi Pra-UTS: 6 set @ 3 points (=18%).
- UTS: 6 set problems @ 6 points (=36%).
- Partisipasi Pasca-UTS: 5 set @ 3 points (=15%).
- UAS: 5 set problems @ 6 points (=30%).
- Extra untuk nilai C keatas: 1 point¹.
- C-2C untuk nilai C-: upto 5 points¹.

¹Syarat dan Ketentuan Berlaku

Schedule part 1

- Week00 – Intro & Review1 (OSC9-ch01¹ OSC9-ch16 RMS-70).
- Week01 – Review2 & Scripting (OSC9-ch02 Scripting demo-w01²).
- Week02 – Protection, Security, Privacy, & C-language (OSC9-ch14 OSC9-ch15 demo-w02).
- Week03 – I/O, BIOS, Loader, & Systemd (OSC9-ch13 demo-w03).
- Week04 – Addressing, Shared Lib, & Pointer (OSC9-ch08 demo-w04).
- Week05 – Virtual Memory (OSC9-ch09 demo-w05).
- MidTerm (UTS) Week 00 — 05.

¹OSC9: Operating Systems Concepts (9th edition).

²Demo Files.

Schedule part 2

- Week06 – Concurrency: Processes & Threads (OSC9-ch03 OSC9-ch04 demo-w06).
- Week07 – Synchronization (OSC9-ch05 demo-w07).
- Week08 – Scheduling (OSC9-ch06 demo-w08).
- Week09 – File System & Persistent Storage (OSC9-10 OSC9-ch11-OSC9-ch12 demo-w09).
- Week10 – I/O Programming & Network Sockets Programming (demo-w10).
- Final (UAS) Week 06 — 10.

- Buku Sistem Operasi yang terbit dalam 10 tahun terakhir, umpama: (OSC9) Abraham Silberschatz, Peter B. Galvin, Greg Gagne: Operating System Concepts, 9th Edition, 2013.
- SUP — (ARSIP)(041_Suplemen) Supplement.
- ETC — (ARSIP)(075_ETC-Video) ETC
- (GITHUB) <https://github.com/UI-FASILKOM-OS/os181>
 - (DEMO) — [demos/](#)
 - (SLIDE) — [pdf/](#) — <http://rms46.vlsm.org/2/207.html>
- (UJIAN) — <http://rms46.vlsm.org/2/195.pdf> - [205.pdf](#)
- ARCHIVE (Arsip bahan pengajaran): <https://scele.cs.ui.ac.id/course/view.php?id=126>
 - Enrollment key: "11100001"².
- BADAk — (BADAk) [/extra/](#)

- Create project "os181" on your new (or existing) github.com account.
- (Week 00) QRCode¹: "OS181
CLASS ID GITHUB-ACCOUNT SSO-ACCOUNT SIAK-Full-Name"
- (Weekly) Memo.
- Informasi Kuliah, Arsip Ujian, dan Demo
 - badak.cs.ui.ac.id/extra/
 - <https://github.com/UI-FASILKOM-OS/os181>
 - <https://rms46.vlsm.org/2/195.pdf> — [195.pdf - 205.pdf].
- BASH Account:
 - Virtual Ubuntu: badak.cs.ui.ac.id (SSO)
 - Ubuntu (BYOD)
 - WSL: Windows 10 Subsystem for Linux
 - Cygwin (Windows)

¹"QR Code" is a registered trademark and wordmark of Denso Wave Inc.

Week 00: Encoding and Decoding a QR Code

```
# OS181:          OS 2018 1st term
# CLASS:          A, B, C, D (reguler), E (Extention),
#                 I (International), M (Matriculation), X (ETC).
# ID:             Student ID (NPM). Eg. "1253757175"
# GITHUB-ACCOUNT: Student's GITHUB account. Eg. "cicak.git"
# SSO-ACCOUNT:    Student's SSO account. Eg. "cicak.sso"
# SIAK-FULL-NAME: Student's SIAK name. Eg. "Cicak Bin Kadal"

$ qrencode "OS181 B 1253757175 cicak.git cicak.sso Cicak Bin Kadal" \
-s 7 -o OS181-B-1253757175.png

$ zbarimg OS181-B-1253757175.png
QR-Code:OS181 B 1253757175 cicak.git cicak.sso Cicak Bin Kadal
scanned 1 barcode symbols from 1 images in 0.11 seconds
```



Quick Response Code (QRC) Code
Check yours with a QRC reader app.

- Subject: [W00] CLASS ID SIAK-NAME
- Example:
 - Mailto: os181@vlsm.org
 - Subject: [W00] B 125375 Cicak Bin Kadal
 - Insert your QR Code (embedded).

Memo Mingguan

- **WAJIB:** mempersiapkan/mempelajari bahan kuliah minggu terkait.
 - telah memahami garis besar bahan minggu terkait.
 - telah mempelajari jenis soal UTS/UAS yang pernah ditanyakan pada masa lalu.
- Telah mempersiapkan diri dengan membuat memo yang ada *QRC*.
 - Harap **TEST** apakah *QRC* terbaca dengan aplikasi *QRC* reader.
 - *QRC* memo akan di-*scan* di kelas pada saat istirahat kuliah pertama minggu terkait¹.
 - tujuan pembuatan memo ialah sebagai "bukti" telah belajar.
 - *ISI* memo tidak dinilai!
 - Memo yang baik ialah *MEMO* yang bermanfaat untuk pembuatnya.
- Ujian:
 - Saat UTS dipersilakan membawa hingga 6 lembar memo ber *QRC*.
 - Saat UAS dipersilakan membawa hingga 5 lembar memo ber *QRC*.
 - Memo boleh yang pernah ditulis atau boleh juga membuat memo (ber *QRC*) yang baru.

¹kecuali kuliah minggu 00.

Week 00 Memo Example

[OS181][WEEK: 00 01 02 03 04 05 06 07 08 09 10]
 [http://cms46.vlsu.vn/2/216.docx ===== 06FEB 13FEB 20FEB 27FEB 06MAR 13MAR 05APR 12APR 19APR 26APR 07MAY]
 [CLASS: A B C D E I M X][ID: 1253757175][Name: Cicak Bin Kadal][Rev: 05]

$$\begin{aligned} | \langle x, y \rangle | &\leq \|x\| \|y\| \\ \frac{d\vec{v}}{dt} &= \vec{a} & \frac{d\vec{x}}{dt} &= \vec{v} \\ d\vec{v} &= \vec{a} dt & \frac{d\vec{x}}{dt} &= (\vec{v}_0 + \vec{a}t) \\ \int d\vec{v} &= \int \vec{a} dt & \frac{d\vec{x}}{dt} &= (\vec{v}_0 + \vec{a}t) \\ \vec{v} &= \vec{v}_0 + \vec{a}t & d\vec{x} &= (\vec{v}_0 + \vec{a}t) dt \\ & & \vec{x} &= \vec{x}_0 + \vec{v}_0 t + \frac{1}{2} \vec{a} t^2 \end{aligned}$$



$$\begin{aligned} \hat{H}|\psi_n(t)\rangle &= i\hbar \frac{\partial}{\partial t} |\psi_n(t)\rangle \\ \frac{1}{c^2} \frac{\partial^2 \phi}{\partial t^2} - \nabla^2 \phi_n + \left(\frac{mc}{\hbar}\right)^2 \phi_n &= 0 \\ \hbar \frac{\partial}{\partial t} s = s / \hbar \frac{\partial}{\partial t} s &= p_i \text{ os, } i=1, \dots, k. \\ f(Q_i) &= \sum_{d_i=1}^{\infty} \frac{(2d_i-1)!}{(d_i!)^2} Q_i^{d_i} \\ d(x, z) &\leq d(x, y) + d(y, z) \end{aligned}$$

$$\begin{aligned} \frac{d\vec{v}}{dt} &= \vec{a} & \frac{d\vec{x}}{dt} &= \vec{v} \\ d\vec{v} &= \vec{a} dt & \frac{d\vec{x}}{dt} &= (\vec{v}_0 + \vec{a}t) \\ \int d\vec{v} &= \int \vec{a} dt & \frac{d\vec{x}}{dt} &= (\vec{v}_0 + \vec{a}t) \\ \vec{v} &= \vec{v}_0 + \vec{a}t & d\vec{x} &= (\vec{v}_0 + \vec{a}t) dt \\ & & \vec{x} &= \vec{x}_0 + \vec{v}_0 t + \frac{1}{2} \vec{a} t^2 \end{aligned}$$

Figure: Memo: OS181 B 1253757175 cicak.git cicak.sso Cicak Bin Kadal

- Harap menghubungi SEKRE (Ged. B lt. 2) untuk segala masalah administratip, terutama absen, sakit, surat sakit, ujian susulan, dst.
- Harap merampungkan masalah administrasi ujian susulan dalam 6 hari kerja.



SCELE


Academic Links ▾



Panduan Mahasiswa ▾

Dukungan Kuliah ▾

My courses > LAIN-LAIN > Arsip RMS > General > ARSIP

 **Clock** 


 Server: Tue 9:56:21


 **Calendar** 

August 2017


Sun	Mon	Tue	Wed	Thu	Fri	Sat
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		


EVENTS KEY


 Hide global events


 Hide course events


ARSIP


 010_OS162


 013_DEMOS


 015_Video


 017_BAHAN-AJAR-LAMA


 030_Arsip-Ujian


 040_EXTRA-RMS


 041_Suplemen


 050_OSC-Silberschatz


 060_UJIAN-INTERNASIONAL


 070_KULIAH-INTERNASIONAL


 075_ETC-Video

 080_eDOCs

 090_KUNYUKS

 100_Infrastruktur_IT_Modern_2012

 110_ITIM-REF

 120_ITIM-Video


 200_Pemrograman_Sistem

Figure: Lihat juga BADAK.cs.ui.ac.id:/extra/

Branch: master ▾ os181 / pdf /	
UI-FASILKOM-OS / os181	
..	
os00-181.pdf	rmsbase pdf
os01-181.pdf	rmsbase pdf
os02-181.pdf	rmsbase pdf
os03-181.pdf	rmsbase pdf
os04-181.pdf	rmsbase pdf
os05-181.pdf	rmsbase pdf
os06-181.pdf	rmsbase pdf
os07-181.pdf	rmsbase pdf
os08-181.pdf	rmsbase pdf
os09-181.pdf	rmsbase pdf
os10-181.pdf	rmsbase pdf
osXX-181.pdf	rmsbase pdf
https://github.com/UI-FASILKOM-OS/os181/tree/master/pdf	

Figure: Alternatif: BADAK.cs.ui.ac.id:/extra/os181/pdf/

```
rms46@pamulang1: ~/git/UF-os181/demos/week03-boot
>>>>> $ PS1="$ "
$ cd /extra/
$ ls -al
total 20
drwxr-xr-x  5 demo demo 4096 Jan 10 20:57 .
drwxr-xr-x 11 root root 4096 Aug 27 15:04 ..
drwxr-xr-x  4 demo demo 4096 Jan  3 20:21 os181
drwxr-xr-x  2 demo demo 4096 Sep  8 21:35 PDF
drwxr-xr-x  2 demo demo 4096 Nov 15 16:50 rms46
$ ls -F os181/
demos/  LICENS pdf/  README.md
$ ls -F os181/demos/
week00-introduction/  week04-pointer-io/  week08-scheduling-sockets/
week01-scripting/     week05-memory/     week09-File-Storage-System/
week02-c-and-security/ week06-CnFork/      week10/
week03-boot/          week07-sync-thread/
$ ls -F os181/pdf/
os00-181.pdf  os03-181.pdf  os06-181.pdf  os09-181.pdf
os01-181.pdf  os04-181.pdf  os07-181.pdf  os10-181.pdf
os02-181.pdf  os05-181.pdf  os08-181.pdf  osXX-181.pdf
$ ls -F PDF/
Cooper-2014-Advanced-Bash-Scripting-Guide.pdf
Garells-2008-Bash-Beginners-Guide.pdf
Goyvaerts-2007-Regular-Expressions.pdf
$ ls -F rms46/
172.pdf 195.pdf 197.pdf 199.pdf 201.pdf 203.pdf 205.pdf 94.pdf
183.pdf 196.pdf 198.pdf 200.pdf 202.pdf 204.pdf 70.pdf
$
```

Figure: BADAK.cs.ui.ac.id:/extra/

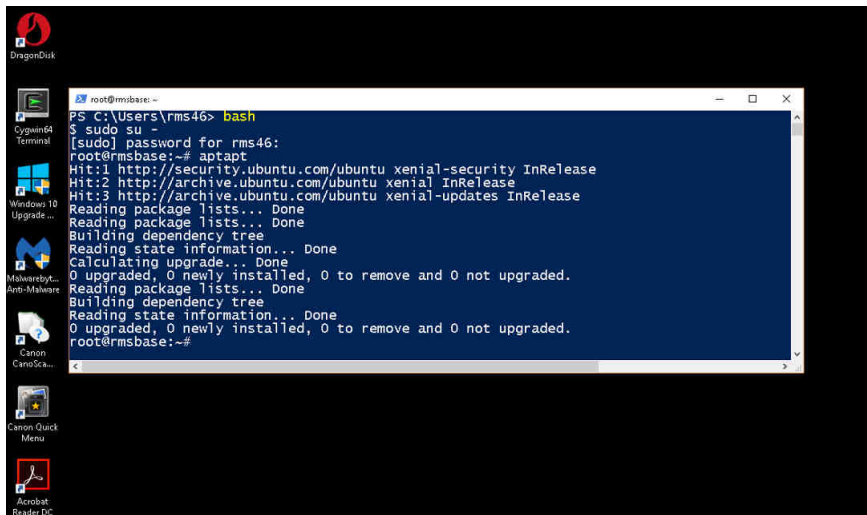
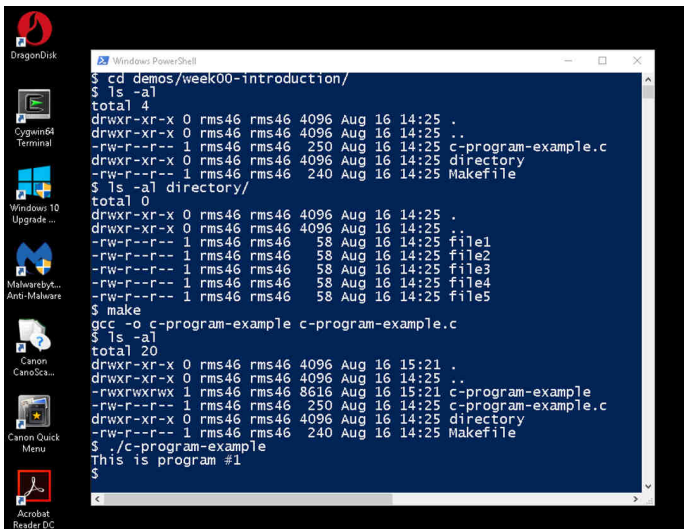


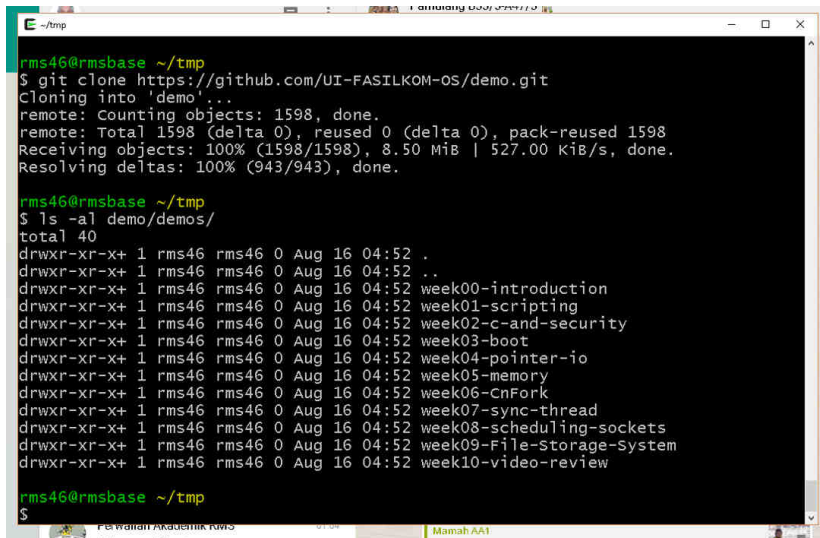
Figure: WSL: Windows Subsystem for Linux



```

Windows PowerShell
$ cd demos/week00-introduction/
$ ls -al
total 4
drwxr-xr-x 0 rms46 rms46 4096 Aug 16 14:25 .
drwxr-xr-x 0 rms46 rms46 4096 Aug 16 14:25 ..
-rw-r--r-- 1 rms46 rms46 250 Aug 16 14:25 c-program-example.c
drwxr-xr-x 0 rms46 rms46 4096 Aug 16 14:25 directory
-rw-r--r-- 1 rms46 rms46 240 Aug 16 14:25 Makefile
$ ls -al directory/
total 0
drwxr-xr-x 0 rms46 rms46 4096 Aug 16 14:25 .
drwxr-xr-x 0 rms46 rms46 4096 Aug 16 14:25 ..
-rw-r--r-- 1 rms46 rms46 58 Aug 16 14:25 file1
-rw-r--r-- 1 rms46 rms46 58 Aug 16 14:25 file2
-rw-r--r-- 1 rms46 rms46 58 Aug 16 14:25 file3
-rw-r--r-- 1 rms46 rms46 58 Aug 16 14:25 file4
-rw-r--r-- 1 rms46 rms46 58 Aug 16 14:25 file5
$ make
gcc -o c-program-example c-program-example.c
$ ls -al
total 20
drwxr-xr-x 0 rms46 rms46 4096 Aug 16 15:21 .
drwxr-xr-x 0 rms46 rms46 4096 Aug 16 14:25 ..
-rwxrwxrwx 1 rms46 rms46 8616 Aug 16 15:21 c-program-example
-rw-r--r-- 1 rms46 rms46 250 Aug 16 14:25 c-program-example.c
drwxr-xr-x 0 rms46 rms46 4096 Aug 16 14:25 directory
-rw-r--r-- 1 rms46 rms46 240 Aug 16 14:25 Makefile
$ ./c-program-example
This is program #1
$
  
```

Figure: WSL: Windows Subsystem for Linux

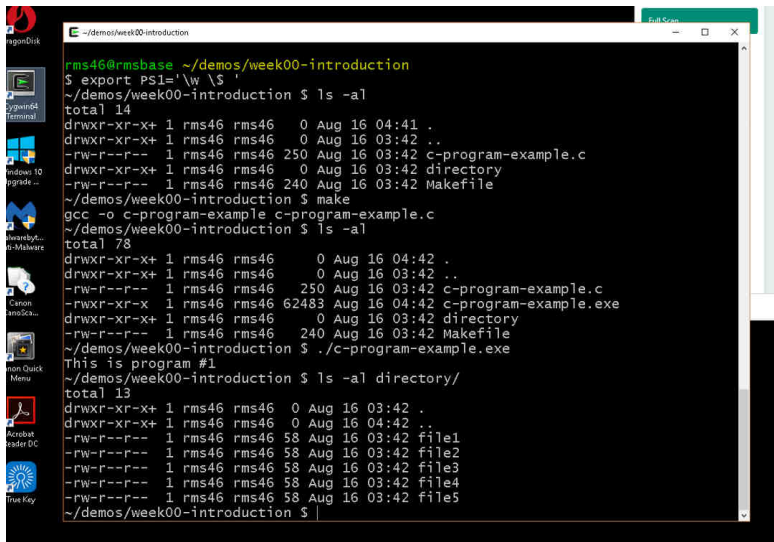


```
rms46@rmsbase ~/tmp
$ git clone https://github.com/UI-FASILKOM-OS/demo.git
Cloning into 'demo'...
remote: Counting objects: 1598, done.
remote: Total 1598 (delta 0), reused 0 (delta 0), pack-reused 1598
Receiving objects: 100% (1598/1598), 8.50 MiB | 527.00 KiB/s, done.
Resolving deltas: 100% (943/943), done.

rms46@rmsbase ~/tmp
$ ls -al demo/demos/
total 40
drwxr-xr-x+ 1 rms46 rms46 0 Aug 16 04:52 .
drwxr-xr-x+ 1 rms46 rms46 0 Aug 16 04:52 ..
drwxr-xr-x+ 1 rms46 rms46 0 Aug 16 04:52 week00-introduction
drwxr-xr-x+ 1 rms46 rms46 0 Aug 16 04:52 week01-scripting
drwxr-xr-x+ 1 rms46 rms46 0 Aug 16 04:52 week02-c-and-security
drwxr-xr-x+ 1 rms46 rms46 0 Aug 16 04:52 week03-boot
drwxr-xr-x+ 1 rms46 rms46 0 Aug 16 04:52 week04-pointer-io
drwxr-xr-x+ 1 rms46 rms46 0 Aug 16 04:52 week05-memory
drwxr-xr-x+ 1 rms46 rms46 0 Aug 16 04:52 week06-CnFork
drwxr-xr-x+ 1 rms46 rms46 0 Aug 16 04:52 week07-sync-thread
drwxr-xr-x+ 1 rms46 rms46 0 Aug 16 04:52 week08-scheduling-sockets
drwxr-xr-x+ 1 rms46 rms46 0 Aug 16 04:52 week09-File-Storage-System
drwxr-xr-x+ 1 rms46 rms46 0 Aug 16 04:52 week10-video-review

rms46@rmsbase ~/tmp
$
```

Figure: Cygwin



```
~/demos/week00-introduction
rms46@rmsbase ~/demos/week00-introduction
$ export PS1='\w \$ '
~/demos/week00-introduction $ ls -al
total 14
drwxr-xr-x+ 1 rms46 rms46  0 Aug 16 04:41 .
drwxr-xr-x+ 1 rms46 rms46  0 Aug 16 03:42 ..
-rw-r--r-- 1 rms46 rms46 250 Aug 16 03:42 c-program-example.c
drwxr-xr-x+ 1 rms46 rms46  0 Aug 16 03:42 directory
-rw-r--r-- 1 rms46 rms46 240 Aug 16 03:42 Makefile
~/demos/week00-introduction $ make
gcc -o c-program-example c-program-example.c
~/demos/week00-introduction $ ls -al
total 78
drwxr-xr-x+ 1 rms46 rms46  0 Aug 16 04:42 .
drwxr-xr-x+ 1 rms46 rms46  0 Aug 16 03:42 ..
-rw-r--r-- 1 rms46 rms46 250 Aug 16 03:42 c-program-example.c
-rwxr-xr-x 1 rms46 rms46 62483 Aug 16 04:42 c-program-example.exe
drwxr-xr-x+ 1 rms46 rms46  0 Aug 16 03:42 directory
-rw-r--r-- 1 rms46 rms46 240 Aug 16 03:42 Makefile
~/demos/week00-introduction $ ./c-program-example.exe
This is program #1
~/demos/week00-introduction $ ls -al directory/
total 13
drwxr-xr-x+ 1 rms46 rms46  0 Aug 16 03:42 .
drwxr-xr-x+ 1 rms46 rms46  0 Aug 16 04:42 ..
-rw-r--r-- 1 rms46 rms46 58 Aug 16 03:42 file1
-rw-r--r-- 1 rms46 rms46 58 Aug 16 03:42 file2
-rw-r--r-- 1 rms46 rms46 58 Aug 16 03:42 file3
-rw-r--r-- 1 rms46 rms46 58 Aug 16 03:42 file4
-rw-r--r-- 1 rms46 rms46 58 Aug 16 03:42 file5
~/demos/week00-introduction $
```

Figure: Cygwin

Github Demo

UI-FASILKOM-OS / demo

Unwatch 5 Star 0 Fork 1

Code Issues 0 Pull requests 0 Projects 0 Wiki Settings Insights

Branch: master demo / demos /

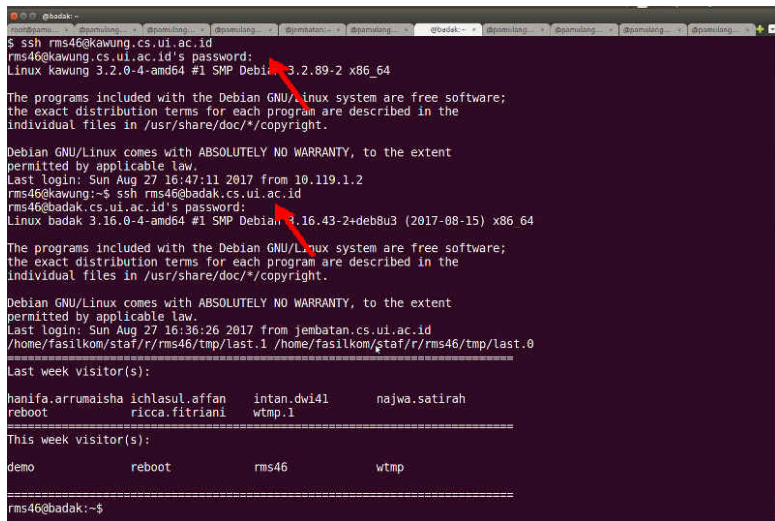
Create new file Upload files Find file History

rms46 edge135 week00-introduction Latest commit 456ae4a 19 hours ago

..		
week00-introduction	edge135 week00-introduction	19 hours ago
week01-scripting	pamulang1: UF-demo	5 months ago
week02-c-and-security	badak demo	6 months ago
week03-boot	badak week03-boot	6 months ago
week04-pointer-io	badak demo	6 months ago
week05-memory	pamulang1: UF-demo	5 months ago
week06-CnFork	rmsbase UF-demo	4 months ago
week07-sync-thread	badak demo	4 months ago
week08-scheduling-sockets	badak demo	10 months ago
week09-File-Storage-System	rmsbase UF-demo	4 months ago
week10-video-review	badak demo	4 months ago

Figure: <https://github.com/UI-FASILKOM-OS/demo>

Login: Kawung dan Badak



```
@badak:~  
$ ssh rms46@kawung.cs.ui.ac.id  
rms46@kawung.cs.ui.ac.id's password:  
Linux kawung 3.2.0-4-amd64 #1 SMP Debian 3.2.89-2 x86_64  
  
The programs included with the Debian GNU/Linux system are free software;  
the exact distribution terms for each program are described in the  
individual files in /usr/share/doc/*/copyright.  
  
Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent  
permitted by applicable law.  
Last login: Sun Aug 27 16:47:11 2017 from 10.119.1.2  
rms46@kawung:~$ ssh rms46@badak.cs.ui.ac.id  
rms46@badak.cs.ui.ac.id's password:  
Linux badak 3.16.0-4-amd64 #1 SMP Debian 3.16.43-2+deb8u3 (2017-08-15) x86_64  
  
The programs included with the Debian GNU/Linux system are free software;  
the exact distribution terms for each program are described in the  
individual files in /usr/share/doc/*/copyright.  
  
Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent  
permitted by applicable law.  
Last login: Sun Aug 27 16:36:26 2017 from jembatan.cs.ui.ac.id  
/home/fasilkom/staf/r/rms46/tmp/last.1 /home/fasilkom/staf/r/rms46/tmp/last.0  
=====
```

Last week visitor(s):			
hanifa.arrumaisha	ichlasul.affan	intan.dwi41	najwa.satirah
reboot	ricca.fitriani	wtmp.1	

```
=====
```

This week visitor(s):			
demo	reboot	rms46	wtmp

```
=====
```

rms46@badak:~\$

Figure: Login: Kawung dan Badak

Program Example

```
$ cat c-program-example.c
/* (c) 2016-2017 Rahmat M. Samik-Ibrhaim
 * REV01 Sun Aug 20 15:01:12 WIB 2017
 * START Fri Jan 01 00:00:00 WIB 2016
 * This is a free software.
 * To compile:
 * $ gcc -o c-program-example c-program-example.c
 * To execute:
 * $ ./c-program-example
 */
```

```
#include <stdio.h>
```

```
void main() {
    printf("This is program #1\n");
}
```

Makefile

```
$ cat Makefile
```

```
# (c) 2016-2017 Rahmat M. Samik-Ibrahim  
# REV01 Tue Aug 22 14:45:14 WIB 2017  
# START Fri Jan 01 00:00:00 WIB 2016  
# This is a free Makefile configuration.  
# Just run:  
# % make
```

```
ALL:  c-program-example
```

```
c-program-example: c-program-example.c  
    gcc -o c-program-example c-program-example.c
```

```
clean:  
    rm -f c-program-example
```

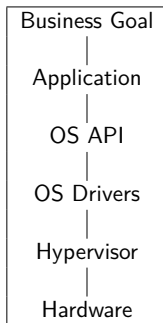
Week 00

```
$ ls -al
total 44
drwxr-xr-x  3 rms46 rms46  4096 Aug 28 18:45 .
drwxr-xr-x 13 rms46 rms46  4096 Feb 28 18:50 ..
-rw-r--r--  1 rms46 rms46   334 Aug 23 20:17 c-program-example.c
drwxr-xr-x  2 rms46 rms46  4096 Sep 26  2016 directory
-rw-r--r--  1 rms46 rms46   319 Aug 23 20:17 Makefile
-rw-r--r--  1 rms46 rms46 23606 Aug 28 18:26 QuickResponseCode
                                           .docx
```

```
$ make
gcc -o c-program-example c-program-example.c
$ ./c-program-example
This is program #1
$ ls -al
total 56
.....
$ make clean
rm -f c-program-example
$
```

Week 00: Introduction

- Reference: (OSCE2e ch1/2)(UCB 01)(UDA P1L1/2)(OLD 00)
- Operating System
 - Why take this OS class?
 - Definition: Resource Allocator & Control Program.
 - Managers: Process, Memory, Storage, ...
 - Layers
 - Interfaces



Computer Organization Review

- You should understand:
 - von Neumann Model.
 - Buses, Bridges, Transfer Rate, Clock.
 - Memory: DDR, DDR-2, ...
 - Cache, Buffer, Spool.
 - Direct Memory Access (DMA).
 - Port & Memory Mapped I/O.
 - CPU: privilege/kernel/supervisor mode and user mode.
 - Hardware Limitation.
 - Priority: Read vs Write.
 - Interrupts: Polling & Vectored.
 - Multiprocessors: Symmetric vs. Asymmetric.
 - Multicore & Multithreading.
 - Clustered Systems.
 - Numbers: base 2, base 8, base 10, base 16.
 - Base 2: 110010101010_2
 - Base 8: $01234567_8 = 000\ 001\ 010\ 011\ 100\ 101\ 110\ 111_2$
 - Base 10: $012\ 345\ 679$
 - Base 16: $9AB\ CDEF_{16} = 1001\ 1010\ 1011\ 1100\ 1101\ 1110\ 1111_2$

Block Diagram

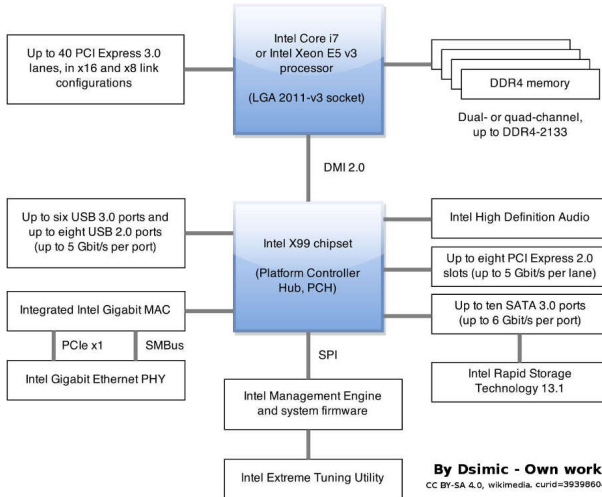


Figure: Block Diagram

APIC

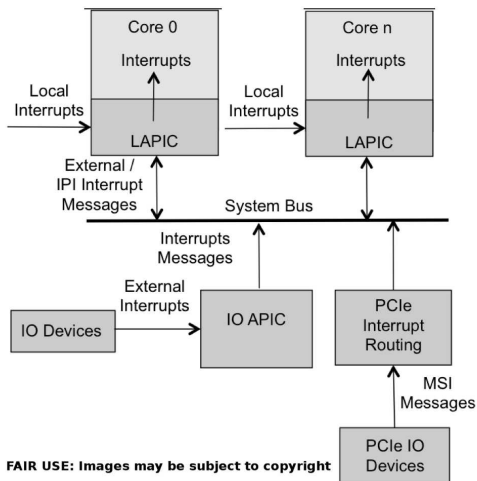
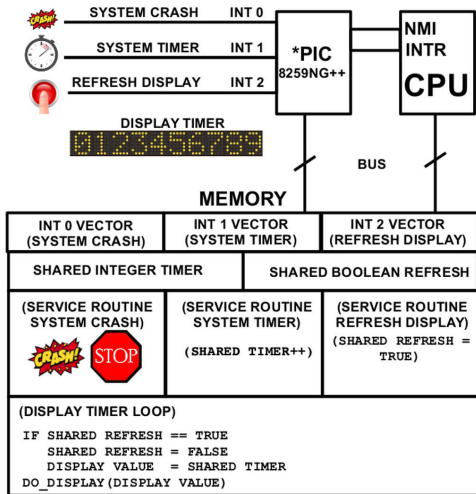


Figure: APIC (Advanced Programmable Interrupt Controller)

Interrupt Handling



(c) 2017 VauLSMorg – This is a free picture

Figure: Interrupt Handling with PIC (Programmable Interrupt Controller)

Managers Set

- Process:
 - Creating/Deleting; Suspending/Resuming; Synchronization; Communication; Scheduling
- Memory:
 - Tracking; Move In/Move Out; Allocating/Deallocating.
- Storage/File System:
 - Create/Delete; Open/Close; Read/Write.
- Mass Storage:
 - Scheduling; Allocating; Free Space.
- I/O:
 - Buffering; Caching; Spooling.
 - Interfacing (driving).
- Protecting & Security:
 - Protecting.
 - Security.

- Mobile/Distributed/Client-Server/Peer-to-Peer Computing.
- Real-Time Computing: Hard Real-Time vs. Soft Real-Time.
- Operating System Comparison: Android, *BSD, GNU/Linux, iOS, Mac OS, Windows.
- Operating System Services: UI (GUI, CLI); Program Executing; I/O Operations; File Systems Manipulation; Communication; Error Detection; Resource Allocation; Accounting; Protection & Security.
- System Calls: Process Control; File Management; Device Management; Information Maintenance; Communications; Protection.
- Application Programming Interface (API)
- Standard C Library.
- System Programs.
- Microkernel System Structure.
- Loadable Kernel Modules.
- Virtualization and Cloud System.

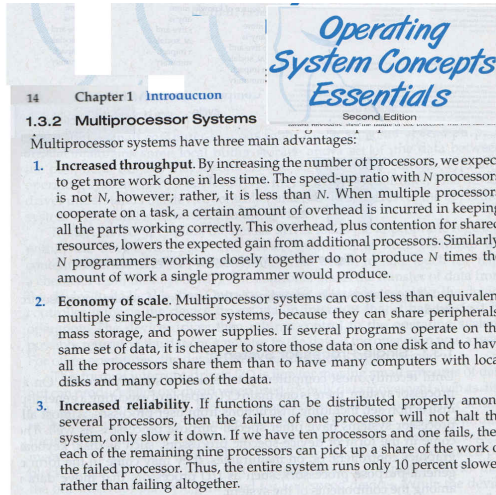


Figure: T / F The advantages of a multiprocessor system include: increased throughput, economy of scale, and increased reliability.

Week 00 Check List

- ☐ Creat project "os181" on your new (or existing) github.com account.
- ☐ Encode the QR Code.
- ☐ Mailto: os181@vlsm.org (Subject: [W00] CLASS ID SIAK-NAME)

The End

- ☐ This is the end of the presentation.
- ☒ This is the end of the presentation.
 - This is the end of the presentation.