
CSE 3031/ 3032 :Operating Systems (OS) and OS Lab

About the course

This unit covers the internal details of operating systems. We explore the issues that arise during the design of operating systems, as well as the different approaches used to analyse and resolve those issues. The topics covered in the unit include the internal structure of OS; the ways each major component (process and resource management, memory management, device management, file systems) can be implemented; and the performance impact of design

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Required knowledge: C, Pointer, Assembly, Clear understanding of of X86/32 family Microprocessor.

Class Timetable

- **Lecture:** ***CSE3031***
  - Section 1: **Sunday** and **Tuesday** 2:30pm-3:50pm**(AR SPL)** ;
  - Section 2: **Monday** and **Wednesday** 11:30am-12:50pm**(AR CL3)**
- **LAB**: ***CSE3032***
  - Section 1: **Wednesday** 4:00pm-5:20pm**(AR SPL);**
  - Section 2: **Sunday** 4:00pm-5:20pm**(AR SPL)**

As well as the scheduled hours, each student is expected to devote **four extra hours each week** to CSE3031. This includes time spent doing assessment tasks, reading the text books, trying out ideas on the computer, planning your work, etc. If you can't spare this amount of time, you should reduce your study load, or else reduce the amount of extra-curricular work or play in your life.

Component (3031)	Due (tentative)	% of Final Grade
Assignment 1 (submit as softcopy)	week 7	10
Assignment 2 (submit as softcopy)	week 13	10
Attendance	at least 80%	5
Midterm-1	Exam period	25
Midterm-2	Exam period	25
Final (two hours & closed book)	Exam period	25

To pass the unit, you must meet the following conditions.

- You must score an overall mark of 40 or better.
- At least 80% tutorial(322) / class(3032) attendance.

Textbook

- **Essential:**
    1. *Operating Systems, Internals and Design Principles,* 6th Edition, William Stallings, Pearson Prentice Hall
    2. *The little book about OS development*, Erik Helin, Adam Renberg
    3. *xv6: a simple Unix-like teaching operating system*, Russ Cox, Frans Kaashoek, Robert Morris, MIT
    4. *Intel 80386 reference manual*
    5. *http://wiki.osdev.org*
- **Recommended:** *Operating System Concepts,* 8th Edition, A.Silberschatz, P. B. Galvin and G. Gagne, John Wiley & Sons, Inc, 2009

Course Resources:

GIT:

https://github.com/khanrezwan/cse_3031_os

CSE3031:

https://www.dropbox.com/sh/i4utibhfarw54s4/AAD6M1YpYciFLgyBc8Bb4UEea?dl=0

CSE3032/LAB:

https://www.dropbox.com/sh/p6y26j2hxi7q5xo/AAAUWemqEaz76VFCT2e5KDKTa?dl=0

Tentative Course Outline:

Teaching Weeks	Topics	Chapters
1	Microprocessor Overview	1
2	Operating System Overview	2
3	Processes	3
4	Process Scheduling	9
5	Memory Management	5
6	Virtual Memory	6
7	Concurrency	7
9	I/O Management	11
10	File Management	12
11	Review	

Assignments

There are TWO programming assignments.

- Assignment 1 (Based on LAB 1-6)
- Assignment 2 (Based on LAB 7-12)

LABS (CSE3032)**NB:- I will Announce Assessment criteria for 3032 on a later date**

SUMMER 2016

- Week 1: Linux intro.
- Week 2: Setting up tool chain and intro to GDB
- Week 3: Exploring x86-32
- Week 4: Booting up
- Week 5: Toy kernel and Hello kernel world
- Week 6: Understanding GDT and IDT
- Week 8: Paging and PIT
- Week 9: User land
- Week 10: TBD
- Week 11: Finals

Required Tools: *To name a few*

1. A computer that runs Linux (preferably Ubuntu 14.04 or later).
2. BOCHS / QEMU
3. GCC
4. NASM
5. GDB and DDD.
6. Binutils, Build essential, Objdump
7. scite text editor.

Late work/ Missed Exams

In fairness to all students, late work will not be accepted. In exceptional cases where illness or misadventure prevent work being submitted on time, you must make an official application for Special Consideration, in accordance with the policies. Consult the unit coordinator immediately if you feel that you will not be able to meet a deadline for any assessment.

Plagiarism

Plagiarism is where you use the work of another person and present it as your own. This is NOT PERMITTED.

Some Ground Rules:

1) If you arrive 20 minutes late don't bother to enter the class.

2) **Do not try to change your class/lab time.**

3) Please put your phone to silent during class. If you really need to take a call during the class, exit from the class without causing any interruption.

4) **DO NOT COPY ANY CODE FOR ASSIGNMENT**. Plagiarism will not be tolerated. Remember, Google is your best friend and worst enemy.

5) Do not cheat during exams.

-CHEERS-

Rezwan-Al-Islam Khan
Assistant Professor