

# CSGE602055 Operating Systems

## CSF2600505 Sistem Operasi

### Minggu 06: Concurrency: Processes & Threads

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

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Minggu 00	29 Aug - 05 Sep 2017	Intro & Review
Minggu 01	07 Sep - 12 Sep 2017	IPR, SED, AWK, REGEX, & Scripting
Minggu 02	14 Sep - 19 Sep 2017	Protection, Security, Privacy, & C-language
Minggu 03	26 Sep - 30 Sep 2017	BIOS, Loader, Systemd, & I/O
Minggu 04	03 Okt - 07 Okt 2017	Addressing, Shared Lib, Pointer & I/O Programming
Minggu 05	10 Okt - 14 Okt 2017	Virtual Memory
Ming. UTS	15 Okt - 24 Okt 2017	
Minggu 06	26 Okt - 31 Okt 2017	Concurrency: Processes & Threads
Minggu 07	02 Nov - 07 Nov 2017	Synchronization
Minggu 08	09 Nov - 14 Nov 2017	Scheduling & Network Sockets Programming
Minggu 09	16 Nov - 21 Nov 2017	File System & Persistent Storage
Minggu 10	23 Nov - 28 Nov 2017	Special Topic: Blockchain
Cadangan	30 Nov - 09 Des 2017	
Ming. UAS	10 Des - 23 Des 2017	

# Agenda

- 1 Start
- 2 Agenda
- 3 Week 06
- 4 The End

# Week 06: Processes & Threads

- Reference: (OSCE2e ch3/4) (UCB 02 03) (UDA P2L1/2/3) (OLD 03)
- Process Concept
  - Program (passive)  $\leftrightarrow$  Process (active)
  - Process in Memory: | *Stack*  $\cdots$  *Head* | *Data* | *Text* |
  - Process State: | *running* | *waiting* | *ready* |
  - `fork()` and `exec1p()`
- The Multi-process Synchronization Problem
  - Producer-Consumer (Bounded Buffer)
  - Readers-Writers
  - Dining Philosopher
- Communication
  - Pipes
  - Sockets
  - RPC

- Multicore Programming
- Multithreading Models
- Threading Issues
- Benefits
  - Responsiveness
  - Resource Sharing
  - Economy
  - Scalability
- Concurrency vs. Parallelism
- Multithreading Models
  - Many to One
  - One to One
  - Many to Many
  - Multilevel Models
- Pthreads
- Lab
  - `fork()`

# The End

- This is the end of the presentation.