Chapter 4: Thread and concurrency - Operating System Concepts-Wiley (2018)

Thread = part of CPU ultilization

Consist thread ID, PC (program counter), register set and stack

OS kernel does multi-thread (Linux)

Concurrent = simultaneously

+Program challenge: making multicore system for multi-thread

+Parallelism (for multi-thread): data parallelism is using same data for same execution; task parallelism each thread perform different tasks, data used may be either identical or not

+Type of multi-thread:

Difficulty: many-to-one < one-to-one < many-to-many

+Thread library: creating an API (interface for app) of managing and creating threads

3 types: Pthreads (expanded version of POSIX), Windows and Java

+Implicit threading (having existing thread, compiler used existing function to call out threads): (explain details of application in Java programming)

Thread pool = pre-existing thread

Fork-join: existing thread creating a subset of threads (child threads)

OpenMP: creating thread in langauges other than Java (C, C++, Fortran etc)

Grand Center Dispatch (abb. As GCD) for iOS

Intel thread building block (TBB as Thread Building Block): for C++, no need for compiler and support

Threading issue:

Thread signal for UNIX takes time cause signals are received at unblocking threads while the one of Windows send signals to predetermined thread

Thread cancelling: target thread = thread that get cancelled

2 ways: asynchronous (a thread triggers termination) and deferred cancellation where target thread check its condition to terminate itself

Copy of data in thread are called thread-local storage (TLS)

Scheduler activation: in-between unit of user and kernel threads called lightweight process, it acts as bridge between user threads and kernel threads

Chapter 3: Sending and Receiving Data - "TCP-IP Sockets in Java. Practical Guide for Programmers"

Encoding information: by

+Primitive integers: unique to each TCP and UDP sockets

+Via texts and strings: functions for encoding texts and strings to bits

+Bitmaps: for boolean data

Construction of Parsing

Framing and Parsing

Framing allows the reader to completely locate start and the end

Java specific encoding

Text-based: books covers detail of text-based

Chapter 4: Beyond the Basics - "TCP-IP Sockets in Java. Practical Guide for Programmers"

Multi-tasking: thread per clients and thread pool

Applet: using TCP/IP to create network connection

Blocking and time-out

Control default behaviour