Week 12.a
CS3650
03/25 2024
https://naizhengtan.github.io/24spring/

1. journaling
2. intro to networking
3. packet switching

Admin

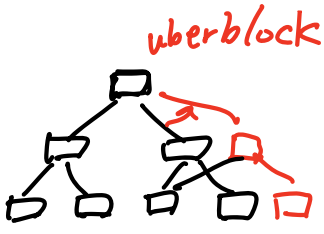
- lab3
- Piazza
- midterm

- lab4
  partA: 20%
  partB: 80%

Problem:
Crash consistency, recovery

- metadata consistency
- data consistency

mkdir("/dir1", ...)



1. Journaling

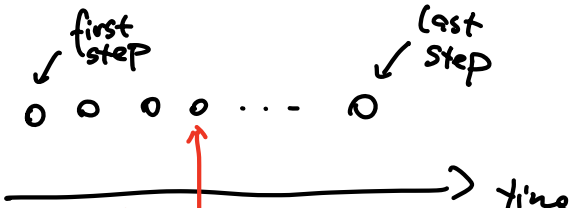
- "never modify the only copy"

Transactional DB

mkdir

- transaction

- commit point



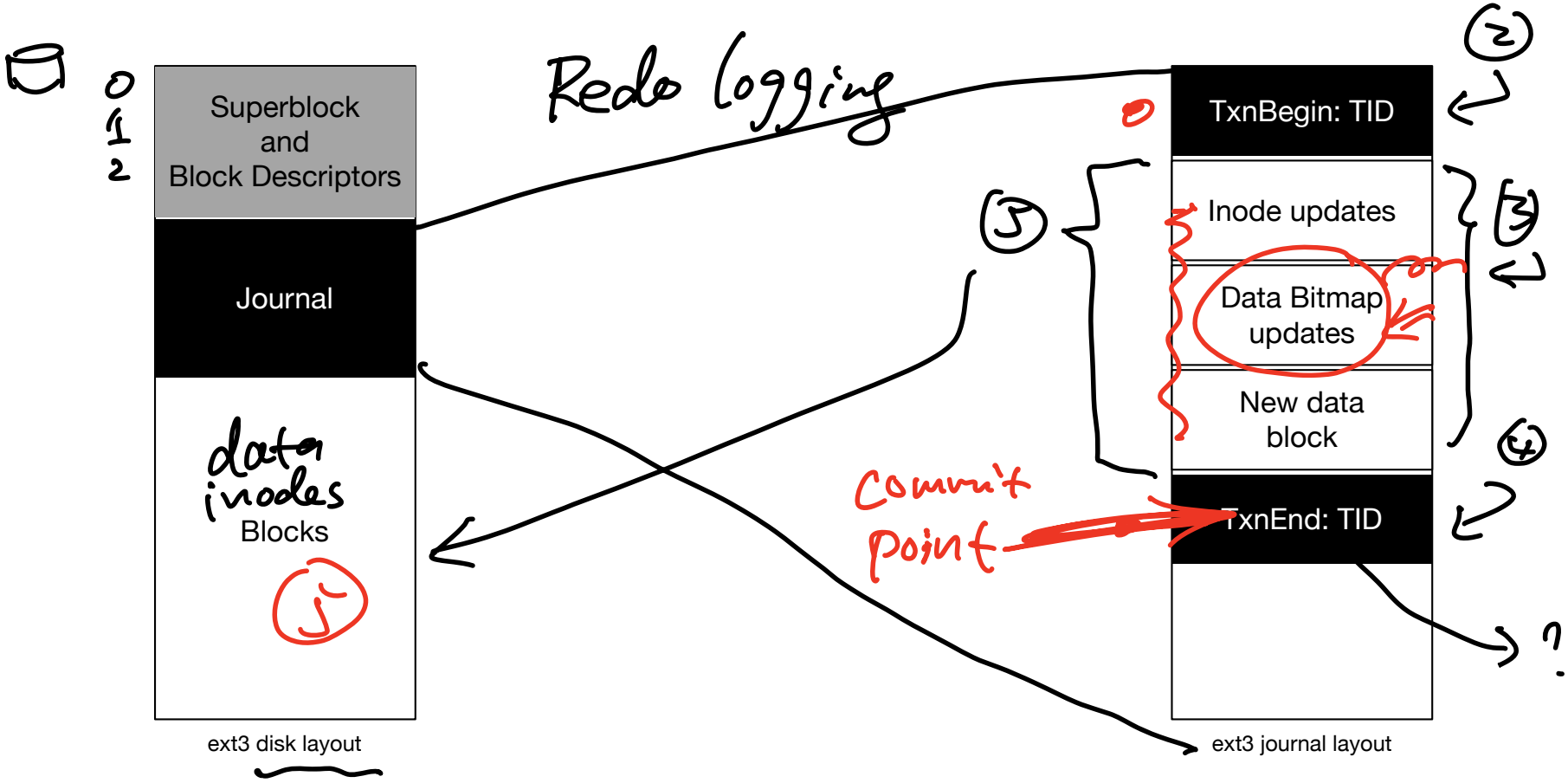
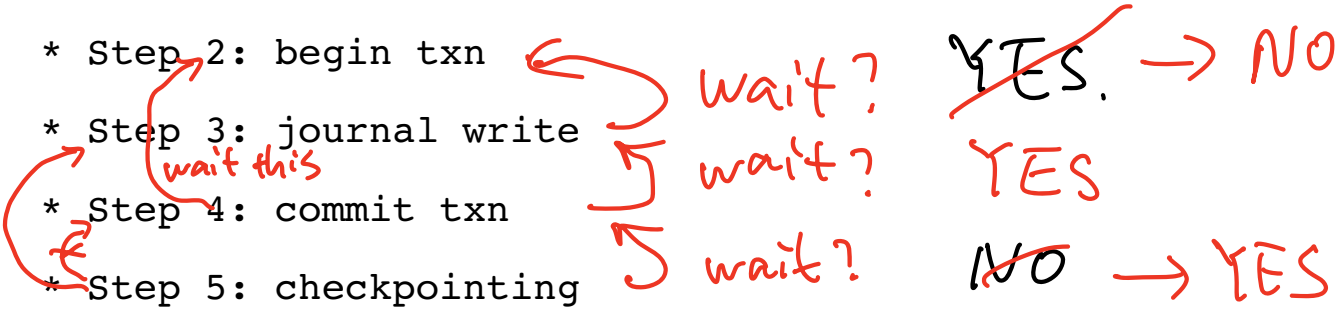


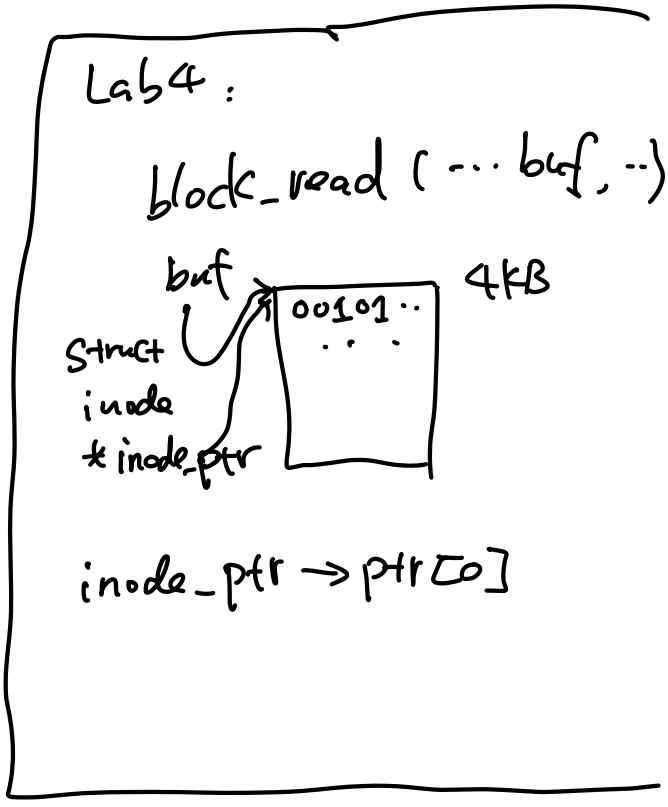
Figure 4: Redo logging in a filesystem

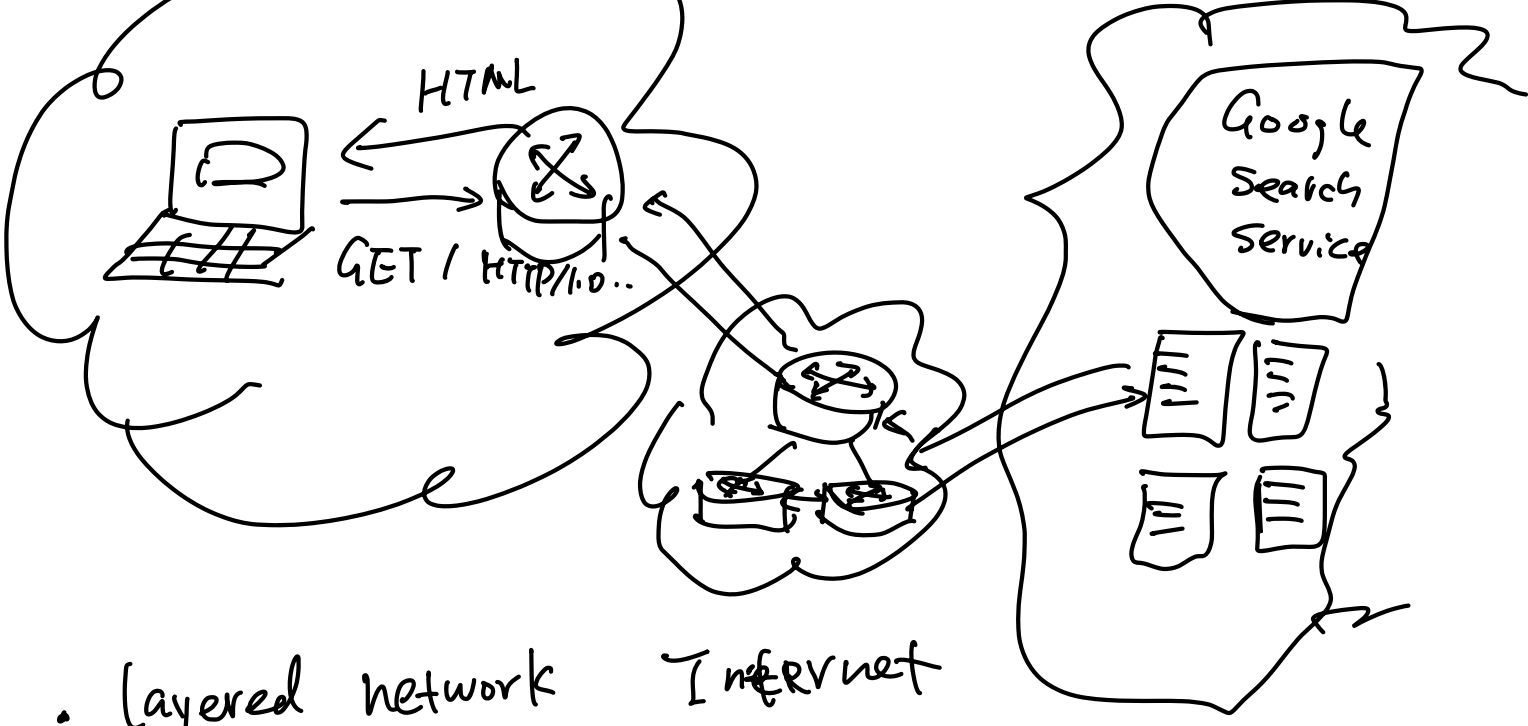
Redo logging:

* Step 1: planning
* Step 2: begin txn
* Step 3: journal write
* Step 4: commit txn
* Step 5: checkpointing



2. intro to networking

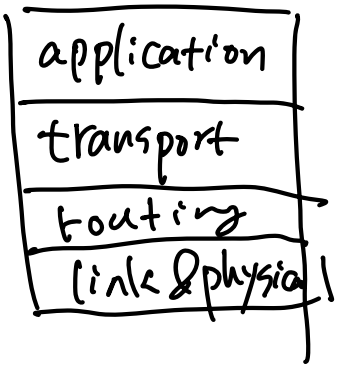




- Layered network Internet

  ISO/OSI: 7 layer

  TCP/IP: 4 layer



3. Packet switching

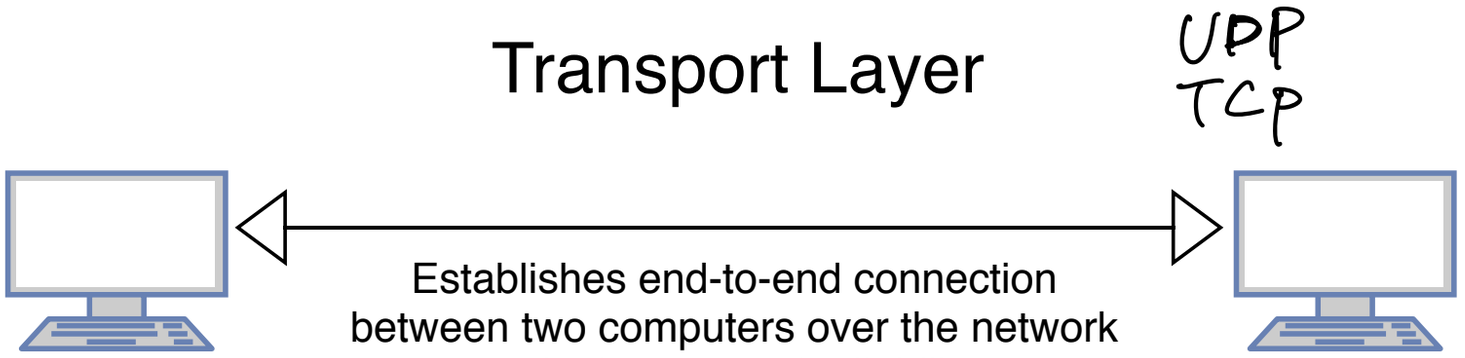
   - Circuit switching

Application Layer

Using Google Hangouts to chat

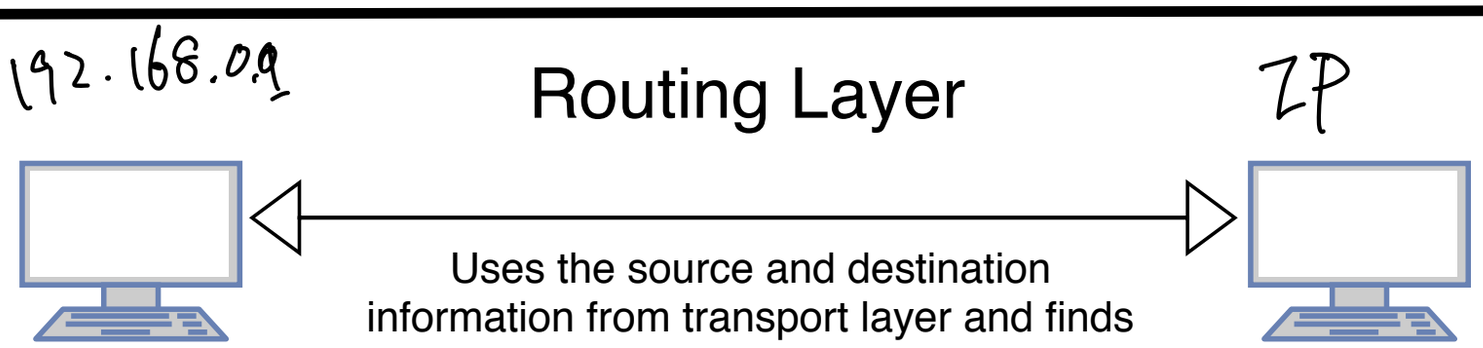
socket

Transport Layer



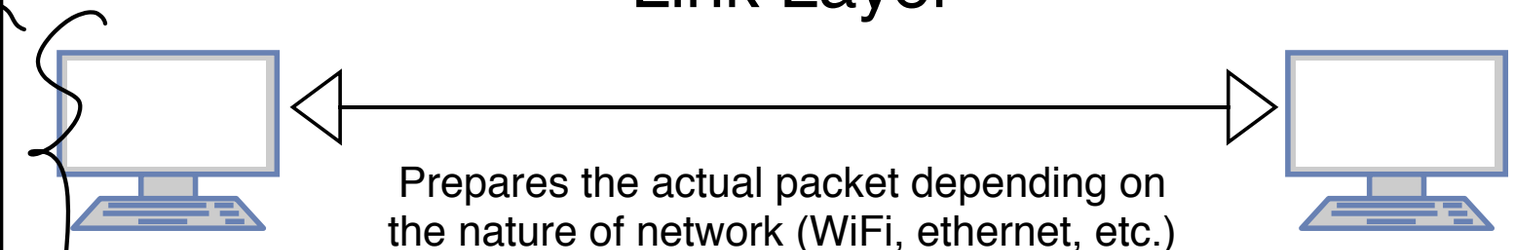
Establishes end-to-end connection between two computers over the network and takes care of reliability.

Routing Layer



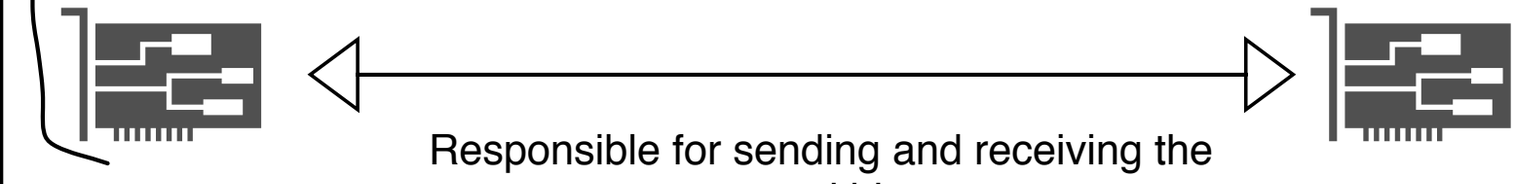
Uses the source and destination information from transport layer and finds a network path to send the packet on

Link Layer



Prepares the actual packet depending on the nature of network (WiFi, ethernet, etc.)

Physical Layer



Responsible for sending and receiving the actual bits