Chapter 13
File and Buffer Management
: Redis Memory Management

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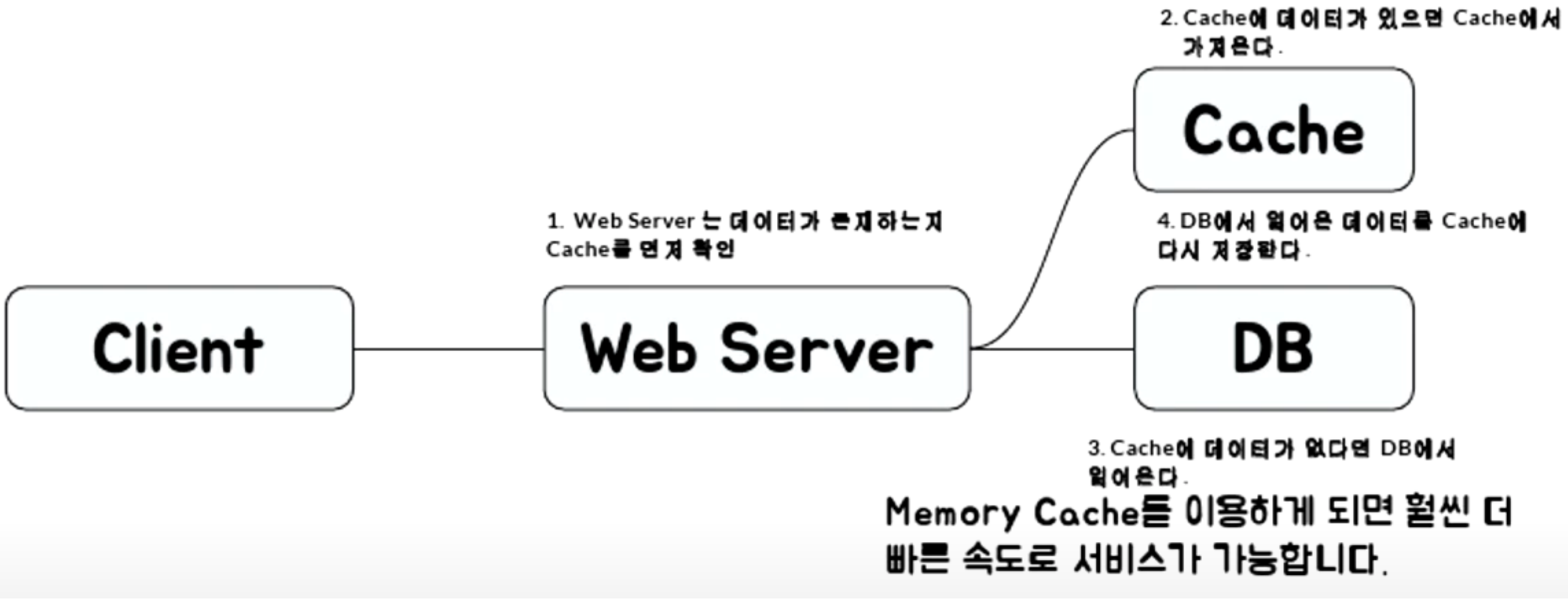
VLDB Lab.

Redis

- In-memory Data Structure (Key-Value) Store
- Open Source (BSD 3 License)
- Supported Data Structure
    - Strings, Set, Sorted-Set, Hashes, List
    - Hyperloglog , Bitmap, geospatial Index
    - Stream
- Single Thread (committer)
- Key : Memory Management

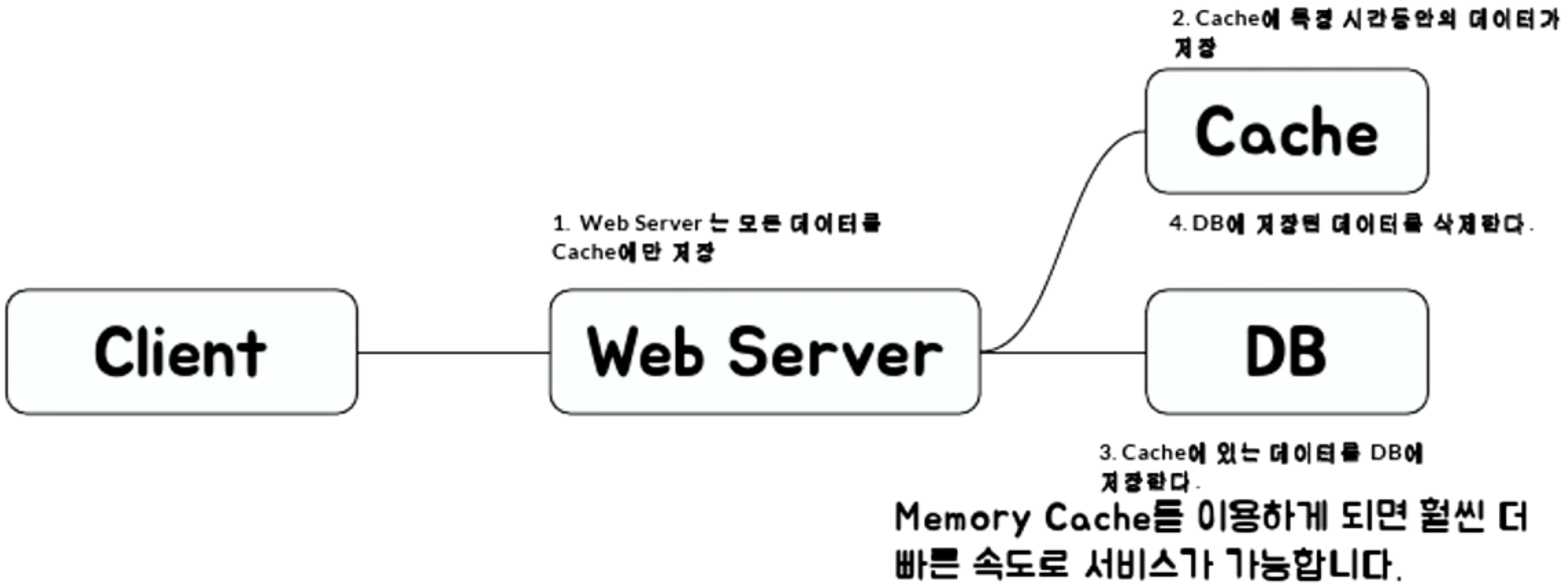
Redis

- **Look aside Cache**

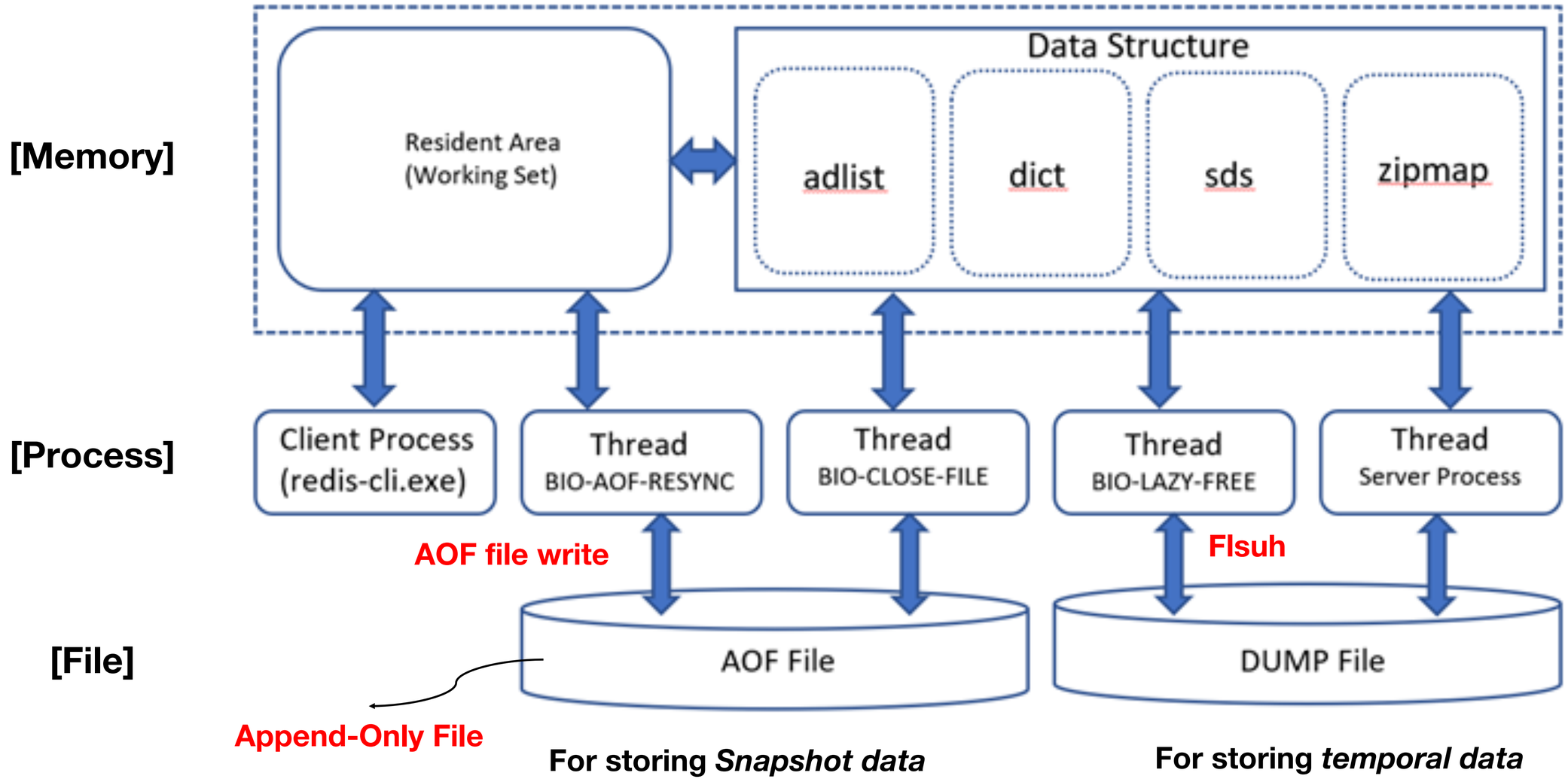


Redis

- **Write-Back Cache**



Redis


[Memory]
[Process]
[File]
Resident Area
(Working Set)
Data Structure
adlist
dict
sds
zipmap
Client Process
(redis-cli.exe)
Thread
BIO-AOF-RESYNC
Thread
BIO-CLOSE-FILE
Thread
BIO-LAZY-FREE
Thread
Server Process
AOF file write
Flsuh
AOF File
DUMP File
Append-Only File
For storing *Snapshot data*
For storing *temporal data*

maxmemory-policy

- **Noeviction**
  - Do not remove existing data return OOM (Out Of Memory)
- **Allkey**
  - Allkeys-lru : Remove key via LRU policy
  - Allkeys-random : Remove key randomly
  - Allkeys-lfu : Remove key via LFU policy
- **Volatile** * Expired Set
  - Allkeys-lru : Remove key via LRU policy
  - Allkeys-random : Remove key randomly
  - Allkeys-lfu : Remove key via LFU policy

Reference

[1] Jim Gray and Andreas Reuter, “Transaction Processing: Concepts and Techniques”, Morgan Kaufmann, San Mateo, CA (1993)

[2] https://www.slideshare.net/charsyam2/redis-196314086

[3] https://velog.io/@litien/%EB%A6%AC%EB%B7%B0-%EC%9A%B0%EC%95%84%ED%95%9C-Redis

[4] https://mblogthumb-phinf.pstatic.net/MjAxOTA1MThfMTcz/MDAxNTU4MTMxNzY3ODE2.VkYzIKhbnAAny3zy0PAlJ-qA-3JRnku2zD6MoQm6JBcg.9IptiEoTLP8e5NrMxTB0SOLPqif2-IgdvQ6XAsVmuqEg.PNG.jevida/051719_2222_RedisArchit1.png?type=w800