CS 138: PuddleStore
A File

_inode

Data Block 1

Data Block 2

Indirect Block

Data Block 3

Data Block 4

myfile.txt
A Directory

MyDir1
Inode
Type: Dir

Indirect Block

MyFile1.txt
Inode

MyFile2.txt
Inode

MyFile3.txt
Inode

MyDir2
Inode
Type: Dir
Copy on Write (1)
Copy on Write (2)
Tapestry

- Inodes, indirect blocks, and data blocks
  - stored in Tapestry
  - identified by GUIDs
  - replicated
Copy on Write (1)

- Parent Inode
- Indirect Block
- Replicated
- Inode
- Indirect Block
- Indirect Block
- Modified Data Block 4
- Modified Data Block 3
- Data Block 1
- Data Block 2
- Data Block 3
- Data Block 4
Copy on Write (1)
Copy on Write (2)
Raft

- The map is handled by Raft
  - inodes referred to by Active GUIDS (AGUIDs)
  - mapped to Version GUIDs (VGUIDs)
Membership Server

- Well known server
  - i.e., all clients know how to contact it
- Identifies Tapestry and Raft nodes
- Identifies root directory’s AGUID
- Facilitates adding nodes to Raft and Tapestry
Required API

- Open
- Read
- Write
- Create
  - both file and directory
- List
  - contents of directory
- Remove
  - deletes file or empty directory
Tapestry and Raft

• Your choice
  – use your own
    - you own your project
      • (please don’t post it publicly on github!)
  – use the TA version
    - you don’t own your project
    - you must sign an NDA
Final PuddleStore

• You put all this together
  – we give you (most of) the B design
    - if you implement it completely: you get a B
    - if you improve it (reasonably well): you get an A
    - you’re encouraged to discuss your design
      with other teams

• Due May 8
Design Document

- Due Wednesday, April 19
  - we'll try to get it back by April 21
  - hand it in earlier, you'll get it back earlier
- Describes A-level features (if any)
  - what is required to implement them?
- Describes API
- How will you test the API?
- What else will you do to test your code?
A-Level Features

• At least one required for A-level
  – some are simpler than others
    - you'll need two simple ones to equal one normal one
• Three-person groups
  – one (normal) A-level feature required for B
  – three required for A
• We'll give you some ideas for A-level features
• Feel free to propose others
  – must solve interesting distributed system problems!