Solutions for Third Quiz

COSC 6360
Fall 2015
First question

- How does SSH authenticate a new server?

- Is this process as secure as it should?
First question

- How does SSH authenticate a new server?
  - When the client contacts a server, the server replies with its public host key and its public server key.
  - Client then decides to accept or reject these keys

- Is this process as secure as it should?
First question

- How does **SSH** authenticate a new server?
  - When client contacts a server, the server replies with its public host key and its public server key.
  - Client decides to accept or reject these keys.
- Is this process as secure as it should?
  - No because clients rarely have the way to check the keys' authenticity.
Second question

- Which steps will be taken by the Sprite LFS to retrieve a specific i-node when the system reboots after having been properly closed?
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Which steps will be taken by the Sprite LFS to retrieve a specific i-node when the system reboots after having been properly closed?

- Access **checkpoint area** to get **addresses of blocks of i-node map**
- Access **i-node map** to get **address of the i-node**
Third question

- What is the cost of a write in the Sprite LFS system, when its segment cleaner has to clean five segments to produce two clean segments?
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- What is the cost of a write in the Sprite LFS system, when its segment cleaner has to clean five segments to produce two clean segments?

- Compute first segment utilization
  - \( U = \frac{5 - 2}{5} = 0.6 \)

- Apply formula
  - \( \frac{2}{1-U} = \frac{2}{0.4} = \frac{2}{4/10} = 5 \)
Fourth question

- According to Shah and Pâris, how should we modify BitTorrent tit-for-tat policy to let peers participate sooner in the video distribution?
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- According to Shah and Pâris, how should we modify BitTorrent tit-for-tat policy to let peers participate sooner in the video distribution?

  - They proposed "a new randomized tit-for-tat peer selection policy that gives free tries to a larger number of peers and lets them participate sooner in the media distribution."
Fifth question

- What are the main advantage and the main disadvantage of using journaling with asynchronous log updates compared to using journaling with synchronous log updates?
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Fifth question

What are the main advantage and the main disadvantage of using *journaling with asynchronous log updates* compared to using *journaling with synchronous log updates*?

- **Main advantage:** They are *faster*
- **Main disadvantage:** They do *not* guarantee the *durability* of updates
Sixth question

- What is the main motivation for *tailpacking* in journaling file systems?
Sixth question

- What is the main motivation for *tailpacking* in journaling file systems?
  - *To save disk space by reducing internal fragmentation*
Seventh question

- Consider a RAID level 6 disk array with ten disks?
  - How much of the total disk space is occupied by parity information?
  - Assume that we have to update a single data block in the array and already know the old value of the block being updated. How many disk reads and disk writes will be required to perform the update?
Seventh question

Consider a RAID level 6 disk array with ten disks?

- How much of the total disk space is occupied by parity information?
  - Each parity stripe will have ten disks
    - Eight of them will hold data
    - Two of them parity information
  - Twenty percent
Seventh question

- Consider a RAID level 6 disk array with ten disks.
  - Assume that we have to update a single data block in the array and *already know the old value* of the block being updated. How many disk reads and disk writes will be required to perform the update?
The RAID level 6 array

Equivalents of eight data disks

Parity
We update
Seventh question

- We will need to write to disk the new values of
  - The modified block $B'$
  - The modified parity blocks $P'$ and $Q'$
for a total of **three writes**

- We already have in memory the old value $B$ of the block but need to read in
  - The old values $P$ and $Q$ of the two parity blocks
that is, **two reads**