FIFTH QUIZ ANSWERS

COSC 6360
December 11, 2019
First question

**Why** does FAWN try to *minimize the memory footprint* of its in-memory hash table?
First question

- Why does FAWN try to minimize the memory footprint of its in-memory hash table?

  - FAWN tries to minimize the memory footprint of in-memory hash tables because larger in-memory hash tables would require larger memories and refreshing these larger memories would increase the power consumption of FAWN nodes.
Second question

- What happens in FAWN when a physical node fails?
Second question

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  - The workload of the failed physical node gets reassigned to the successors of the virtual nodes hosted by the failed physical node.
Third question (Part A)

- What is the purpose of Xen’s *shadow page tables*?
Third question (Part A)

- What is the purpose of Xen’s **shadow page tables**?

  - The shadow page tables are page tables managed by Xen that map the virtual pages of a guest OS into actual machine pages. For that reason, they are used to resolve all TLB misses.
Third question (part B)

- How does Xen keep these tables up to date?
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- How does Xen keep these tables up to date?

- **Xen marks the page tables of guest OSes read-only** so that any changes made by a guest OS to one of its page table can be immediately reflected in the corresponding shadow page.
Fourth question

- Why does Xen reserve for itself the top 64MB region of each address space?
Fifth question

- How does the VMWare ESX server detect *identical pages*?
Fifth question

- How does the VMWare ESX server detect identical pages?

- They first compare page hashes then do a full comparison of the pages whose hashes match.
Sixth question

- What is the *main advantage* of *ballooning* over other ways to reclaim memory space from a virtual machine?
Sixth question

- What is the **main advantage** of *ballooning* over other ways to reclaim memory space from a virtual machine?

  - *It does it in a way that is transparent to the guest OS while letting the guest OS decide with virtual pages will be expelled from main memory*
Seventh question

- In the ACID acronym listing the properties of atomic transaction, what does the letter ‘D’ stand for?

  \( \Box \) D stands for:
Seventh question

- In the ACID acronym listing the properties of atomic transaction, what does the letter ‘D’ stand for?

- **D stands for: Durability**
  - Committed data are immediately stored by the system in some kind of crash-proof storage.
Eighth question

Which is the correctness criterion used by Aegean?
Eighth question

Which is the **correctness criterion** used by Aegean?

- **Undistinguishability**
  
  *A replicated service is correct if its outcomes are undistinguishable from those of an unreplicated service*
Ninth question

- What is the purpose of request pipelining in Aegean?
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  To allows services to keep processing requests while their nested requests are being transmitted and processed.