Jeremy Holloway
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Pre-class Assignment #17

1. Define the following terms:
    - zero-copy I/O: A technique for transferring data across the kernel-user boundary without a memory-to-memory copy, by manipulating page table entries.
    - paravirtualization: Changes the guest OS so that it knows it's running on a host and it can then make system calls to the host OS.
    - process migration: The ability to take a running program on one system, stop its execution, and resume it on a different machine.
    -log: An ordered sequence of steps saved to persistent storage.
    - incremental checkpoint: A consistent snapshot of the portion of process memory that has been modified since the previous checkpoint.

2. Why does the operating system need to pin pages when performing zero-copy I/O if I/O devices are using physical addresses?
    The kernel must pin the page to prevent it from being evicted during I/O.

3. What is an efficient way to take a checkpoint if a trap handler is in progress?
    Allow check points at VM level only.

4. How do you prevent a call to a user-level page handler from experiencing a page fault?
    Pinning the user-level handler in memory (on a page) can avoid this infinite error cycle.