Capítulo 1

Task 14: Two Paging Tables

1.1 Task Description

The goal of this task is to create two separate paging tables and demonstrate different mappings for the same pointer. Specifically:

- One paging table will map a pointer (`ptr3`) to the first 4MB block of memory.
- The other paging table will map the same pointer (`ptr3`) to the second 4MB block of memory.

1.2 Planned Implementation

1. **Create Two Paging Tables:**
   - Define two separate root page tables (`root_table1` and `root_table2`).
   - Align both tables to 4096 bytes using the `__attribute__((aligned(4096)))` directive.
2. **Set Up Mappings:**
   - In `root_table1`, map `ptr3` to the first 4MB block of memory.
   - In `root_table2`, map `ptr3` to the second 4MB block of memory.
3. **Switch Between Paging Tables:**
   - Use the `set_cr3()` function to switch between `root_table1` and `root_table2`.
4. **Demonstrate Behavior:**
   - Access `ptr3` with `root_table1` active and print its value.
   - Switch to `root_table2` and access `ptr3` again, printing its value.

5. **Verify Results:**
    - Confirm that `ptr3` points to different physical memory blocks depending on the active paging table.

1.3 Expected Outcome

- When `root_table1` is active, `ptr3` should point to the first 4MB block of memory.
- When `root_table2` is active, `ptr3` should point to the second 4MB block of memory.
- The values printed for `ptr3` should differ between the two paging tables.

1.4 Implementation Details

(To be filled after implementation)

1.5 Challenges

(To be filled after implementation)

1.6 Final Outcome

(To be filled after implementation)