

Capítulo 1

Task 15: Recover Execution Without Modifying Root

1.1 Task Description

The goal of this task is to recover program execution without modifying the root page table. This involves implementing a solution specific to the program that allows execution to continue despite constraints on modifying the root.

1.2 Planned Implementation

1. Analyze the Problem:

- Understand the limitations imposed by the root page table.
- Identify the specific scenarios where execution fails due to these limitations.

2. Design a Solution:

- Develop a mechanism to handle the failure scenarios without altering the root page table.
- This could involve:
 - Using temporary page tables to handle specific memory regions.
 - Dynamically mapping memory as needed during runtime.
 - Leveraging exception handling to intercept and resolve access violations.

3. Implement the Solution:

- Write the necessary code to implement the designed solution.
- Use the `invlpg()` function to invalidate specific TLB entries dynamically.

- Ensure the solution integrates seamlessly with the existing system.

4. Test the Solution:

- Create test cases to validate the solution under various scenarios.
- Simulate edge cases, such as accessing unmapped memory or overlapping regions.
- Ensure execution is successfully recovered in all cases.

1.3 Expected Outcome

- The program should recover execution without requiring modifications to the root page table.
- The solution should be robust and handle all failure scenarios gracefully.
- The system should demonstrate stability and correctness under stress tests.

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)