Problem Statement 1: **Character Device Driver for Reverse String**

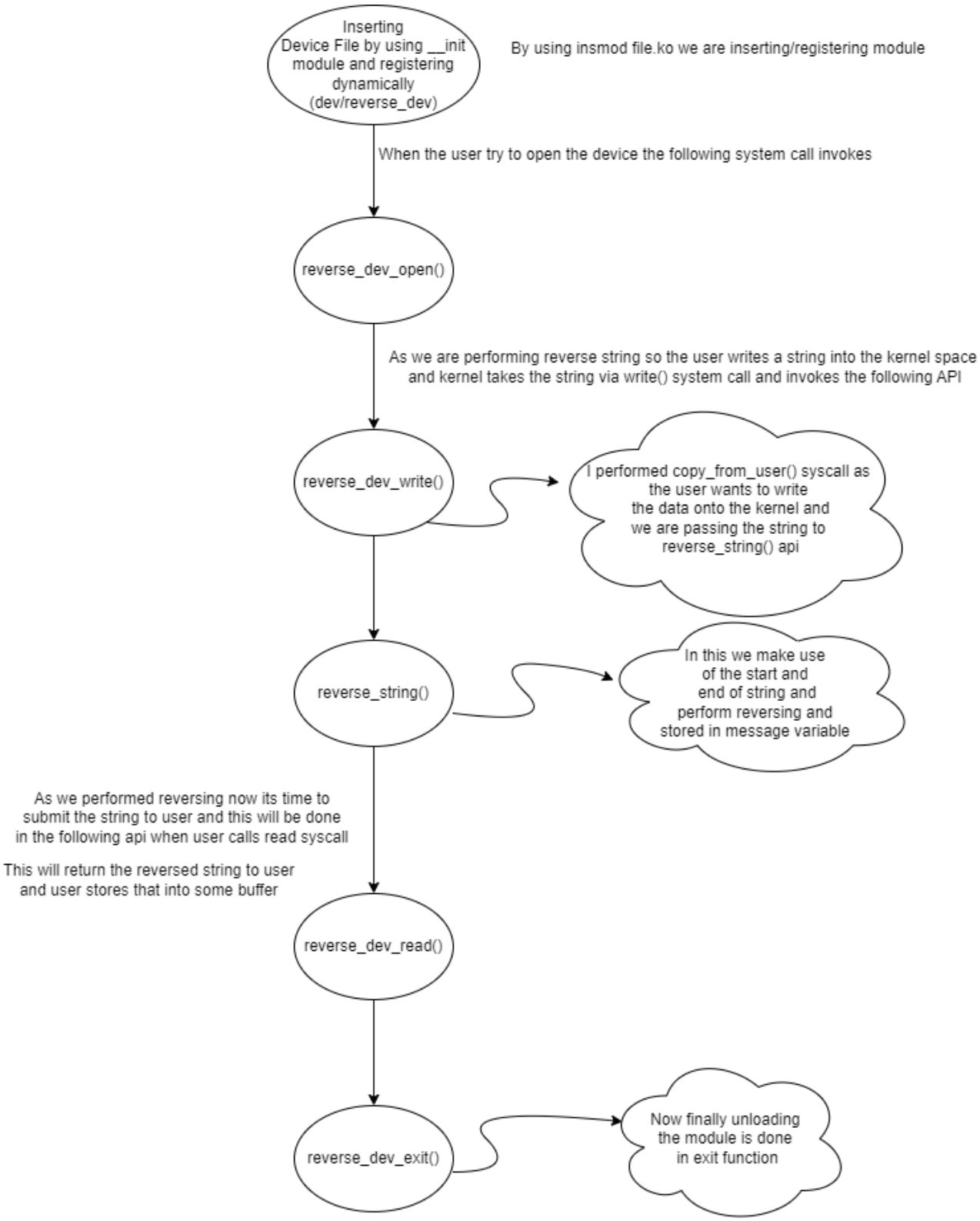
Question: You are required to write a character device driver for an x86 system that reverses a string provided by the user. The driver should interact with a user-space program to perform the following tasks:

1. **Create a Character Device Driver in the Kernel Space:**
    - **Implement `open`, `read`, `write`, and `release` functions for the device driver.**
    - **When the user writes a string to the device, the driver should reverse the string and store it.**
    - **When the user reads from the device, the reversed string should be returned.**
2. **Write a User-Space Program:**
    - **Accept a string input from the user.**
    - **Write the string to the device.**
    - **Read the reversed string from the device and print it.**

Requirements:

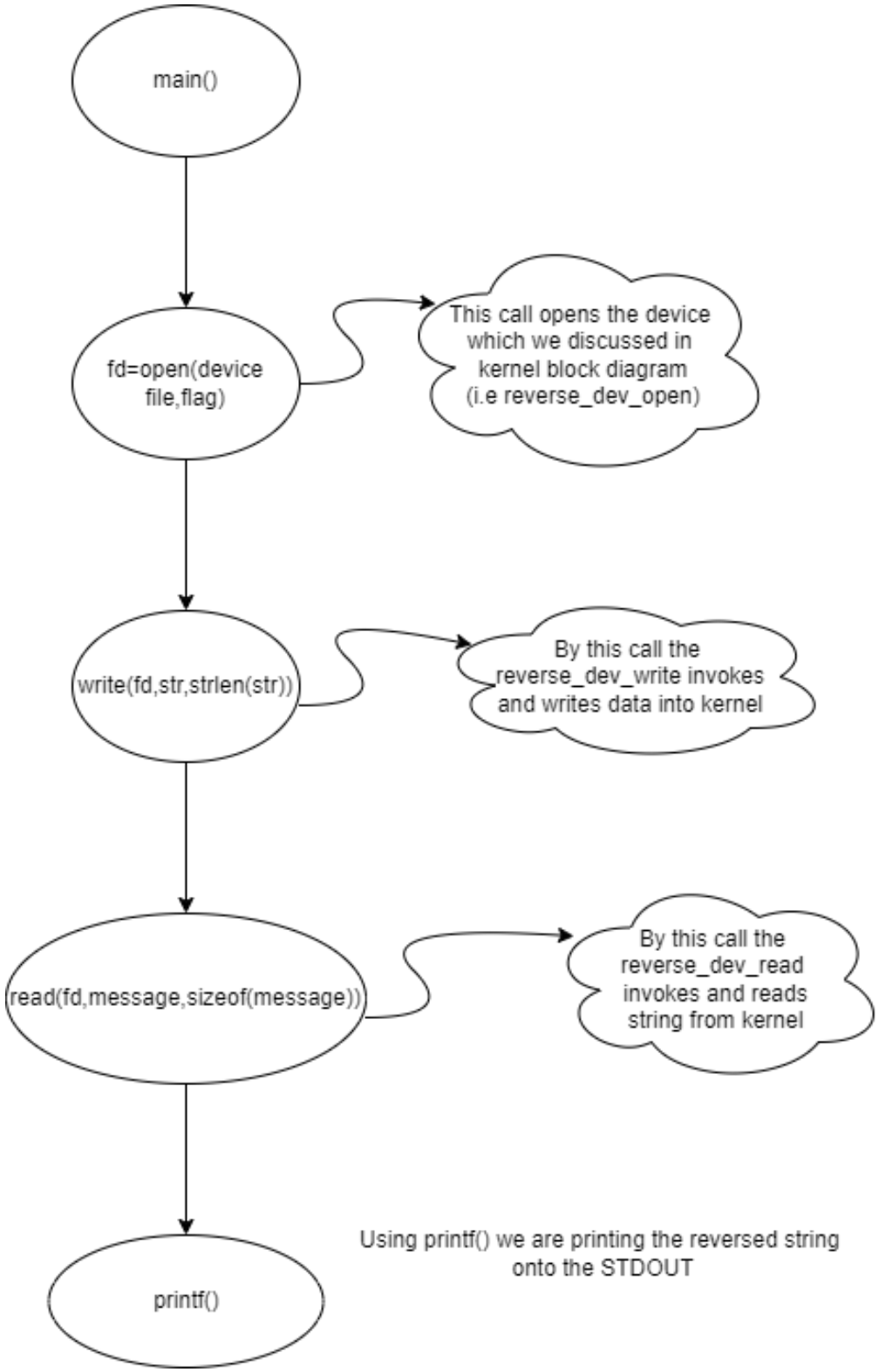
1. **Kernel Module (Driver):**
    - **Implement the device driver with necessary functions (`open`, `read`, `write`, `release`).**
    - **Use a buffer to store and manipulate the string.**
    - **Reverse the string in the `write` function.**
    - **Return the reversed string in the `read` function.**
2. **User-Space Program:**
    - **Open the character device.**
    - **Write a string to the device.**
    - **Read the reversed string from the device.**
    - **Print the reversed string.**

Block Diagram for kernel space program:



You can refer my code from reverse_string.c for better understanding

Block diagram for User space program:



You can refer my reverse_user.c code for better understanding