**Operating System**

**Simulation based Project**

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This code simulates a simple file management system on a disk consisting of 1024 blocks. The disk is represented by a list called "disk", where each element in the list represents a block on the disk. The value of each element can be either None, meaning that the block is free, or a string, representing the name of the file stored in that block.

The code defines five functions:

1. "add\_file(name, size)": This function adds a file to the disk with the given name and size. It searches the disk for a contiguous block of free blocks that is big enough to store the file, and then stores the file in those blocks. If such a block is found, the function returns True. Otherwise, it returns False.
2. "delete\_file(name)": This function removes a file from the disk with the given name. It searches the disk for all blocks containing the file with that name and sets their values to None. If at least one block containing the file is found, the function returns True. Otherwise, it returns False.
3. "rename\_file(old\_name, new\_name)": This function renames a file on the disk with the given old name to the given new name. It searches the disk for all blocks containing the file with the old name and changes their values to the new name. If at least one block containing the file is found, the function returns True. Otherwise, it returns False.
4. "move\_file(name, new\_location)": This function moves a file on the disk with the given name to a new location specified by the given new location. It searches the disk for all blocks containing the file with the given name, then searches for a contiguous block of free blocks at the new location that is big enough to store the file, and then moves the file to that new location by setting the values of the old blocks to None and the values of the new blocks to the file name. If such a block is found, the function returns True. Otherwise, it returns False.
5. "calculate\_fragmentation()": This function calculates the number of fragmented blocks on the disk, meaning the number of free blocks that are not contiguous with any other free blocks.

The code also includes a main program loop that displays a menu of options to the user and accepts user input to perform the desired file management operations. The menu includes the following options:

1. Creating a File: Prompts the user to enter a file name and size, and then attempts to add the file to the disk.
2. Deleting a File: Prompts the user to enter a file name, and then attempts to delete the file from the disk.
3. Renaming a File: Prompts the user to enter the old and new file names, and then attempts to rename the file on the disk.
4. Moving a File: Prompts the user to enter a file name and a new location, and then attempts to move the file on the disk to the new location.
5. Calculate Fragmentation: Displays the number of fragmented blocks on the disk.
6. Stopping the Simulation: Ends the program loop and exits the program.