AN OVERVIEW:

Question 2 of the assignment contains a Single Program as well as the compilation of the kernel, which contains a user-defined syscall() and the PatchFile for the kernels. The Program included in the 2nd Question is a test program that is used to check whether the user-defined syscall() is functioning as intended.

Detailed Explanation:

To Firstly Define a user-defined syscall() and have observable changes, I first made a copy of the original kernel. Secondly, using the Documentation provided by the TAs, A new syscall was added in the syscall_64.tbl under arch/x86/entry/syscalls in the root directory. Further, in the root directory, we added a sub-directory containing a Makefile and the code which our syscall is based upon. For little to no complication, the size of the 2D Array has been fixed to 4x4. Then further changes were made to the Makefile in the root directory. Then using the make -j$(nproc) and further make commands, I was able to boot the kernel with the user-defined syscall completely. Then using the diff command, a PatchFile was created.