

Lab 5 Problem Statement

In this lab, we start with a PL 0 task and switch to a PL 3 task. Usually, PL-3 task will not be able to call a routine/code/task at a higher privilege level. However, even the lowest privilege user will need access to higher privilege code (for accessing i/o device). Therefore, access to higher privilege code/routine/task is given in through what we call *Gates*. There are two types of gates a) Task-Gate and b) Call-Gate. From the PL-3 task, you are supposed to access two pieces of PL-0 code(lets call them A0 and B0) through Task-Gate and Call-Gate.

In the lab template, you are supposed to code the following:

- 1) PL-3 task's code must start from 0xaa00. A0 must start from 0xa800. B0 starts from 0xa100.
- 2) PL3: Fill-in the TSS Descriptor for the PL-3 task.
- 3) PL3: Fill-in PL-3's TSS from 0xb300.
- 4) PL3: Write call statements to invoke A0 and B0.
- 5) A0: Fill in the Task-Gate descriptor in GDT.
- 6) A0: Fill in the TSS descriptor for the task to be invoked by Task-Gate.
- 7) A0: Fill-in the TSS for the task. (such that it lands up in 0xa800)
- 8) A0: Fill-in some random instructions in its code segment.
- 9) B0: Fill-in the Call-Gate descriptor in GDT, that lands up in 0xa100.
- 10) B0: Fill-in some random instructions in its code segment.
- 11) B0: Demonstrate the security feature provided by Call-Gates.