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SER 334 – Assignment 5

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## **Kernel Version: 5.19**

### **Functions:**

- `module_init(x)`
  - Defined on line **88** in **module.h**
  - **Description:** driver that accepts a function as a parameter and executes it at kernel boot time or module insertion.
- `module_exit(x)`
  - Defined on line **100** in **module.h**
  - Description: driver that accepts a function as a parameter and executes it when kernel is removed.

### **Task\_struct:**

- Defined on line **727 - 1518** in **sched.h**
- **Attributes:**
  - Process Name: `task` → `comm`
  - PID: `task` → `pid` (Line: 950)
  - State: `task` → `__state` (Line: 734)
  - Prio: `task` → `prio` (Line: 772)
  - Static Prio: `task` → `static_prio` (Line 773)
  - Normal Prio: `task` → `normal_prio` (Line 774)

## Header Documentation

- **for\_each\_process**
  - Defined on line **645** in **sched/signal.h**
  - **Signature:** `int for_each_process( struct task_struct *task )`
  - **Parameters:** takes a pointer to a struct task\_struct
  - **Description:** loops over tasks to perform some action
- **printk**
  - Defined on line **464** in **printk.h**
  - **Signature:** `int printk(fmt, "text")`
  - **Parameters:** fmt: format, "text" – string text
  - **Description:** Prints a kernel message
- **module\_param**
  - Defined on line **126** in **moduleparam.h**
  - **Signature:** `int module_param(name, type, perm)`
  - **Parameters:**
    - name: the variable to alter, and exposed parameter name.
    - type: the type of the parameter
    - perm: visibility in sysfs.
  - **Description:** typesafe helper for a module/cmdline parameter

- MODULE\_PARM\_DESC
  - Defined on line 33 in **moduleparam.h**
  - **Signature:** MODULE\_PARM\_DESC(\_parm, desc)
  - **Parameters:**
    - \_parm: the parameter variable
    - desc: description on usage
  - **Description:** One for each parameter, describing how to use it.