

# **Advanced OS**

## **Assignment #2 - Adding and testing a new system call to Linux kernel**

### **Deadline - 16/09/2022**

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#### **Objective:**

- Add new system calls to the Linux kernel and test them.
- Get understanding of how system call works, their structure.

#### **Prerequisites:**

1. Basic usage and architectural of system calls
2. Preliminaries such as C/C++ code compilation, execution & debugging.

#### **Guidelines:**

Download the Linux kernel version 4.19.210 from <https://www.kernel.org/> and implement this assignment on this kernel only.

Proper error handling should be done.

#### **Requirements:**

##### **Ques 1: Write syscall to print welcome message to Linux logs**

e.g., If your name is divit gupta then syscall name will be divithello()

Which will print some hello message to Linux logs upon calling it.

##### **Ques 2: Write syscall which will receive string parameter and print it along with some message to kernel logs**

e.g., If your name is divit gupta then syscall name will be divitprint(string)

Which will print the passed parameter along with some message to Linux logs.

##### **Ques 3: Write system call to print the parent process id and current process id upon calling it**

e.g., If your name is divit gupta then syscall name will be divitprocess()

Which will print parent process id and current process id to Linux logs.

**Ques 4: Write system call to execute some predefined system call from your written system call**

e.g., If your name is divit gupta and you want to execute getpid() then syscall name will be divitgetpid()

Which will work the same way as getpid() works.

**Report :** minimum 5 to 6 pages

**Viva :** TBA

**Submission Format:**

A zip folder consisting of:

- A single pdf report of all 4 questions having following things:
  - All snapshots of changes made for each question in a step-wise wise manner with proper explanation.
  - For Ques3 Are both process ids same or different? Why? What are your Observations.
- All four system call code.c file. Naming conversion: Rollnumber\_assignment2.zip

**References:**

- <https://medium.com/anubhav-shrimal/adding-a-hello-world-system-call-to-linux-kernel-da32875872>
- <https://www.stolaf.edu/people/rab/os/lab/newsyscall.html>