CS 746 : Linux Kernel Programming

Course Project Proposal

“IO scheduler”

Submitted by

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March 20, 2016

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Project Title

Design and implementation of a new block IO schedulers and comparison with existing schedulers

Project Description

Make a new IO scheduler that is a mixture of scan, Deadline and Multilevel Priority Queue scheduling. I intend to modify the noop IO scheduler for this purpose.
Whenever a request arrives, it enters in different queues based on its priority. Also, each request gets a deadline (to omit starvation). Within each queue scan is implemented.

Intended list of modifications to the kernel

The main functions of our interest are elevator_add_req_fn() and elevator_dispatch_fn() of the noop scheduler. The add method is called when a new request need to be added to the queue while dispatch method is called when a request is required for processing. These functions reside in ***source/block/noop-iosched.c***

Demonstration of Correctness

We print the priority of the request serviced along with the priority of all requests in queue and then we can verify manually whether the next request served is at the one with the highest priority OR if it has met its deadline.

Technical Challenges

My aim is to that our IO scheduler should produce better results than the existing schedulers. Implementing scheduling in Multiple Queue would be a challenge.