

Project 2 Write Up

Group 22

October 27, 2014

Our Solution

For this project, we started by grepping through the Linux Kernel v3.0.4 for the noop implementation that was mentioned in the assignment. We knew it was in the `../block` folder and found the implementation to be in the `noop-iosched.c` file. Most of the functions in this C file could be kept as they were. The only changes we really made were to the data structure of a SSTF and the dispatch. Noop operates by taking the next request from a queue and then dispatching it, regardless of position. SSTF, or Shortest Seek Time First, behaves different since it selects an I/O request that is closer to its current position. As a result, we need to add two new variables to the SSTF data structure so that the function has positions to compare the values with.

Next, we needed to heavily modify the dispatch function so that it works as a SSTF scheduler. First, we have to make sure that the queue is not empty so that we may have values to compare. The current position is then checked against the head and the direction that it is going. If it is going forward and the request is ahead of the list head, then only those values will be compared until the smallest absolute distance between the two are found. If you are going backwards, then you are only considering and comparing against the values behind the head. After the smallest absolute values is found, that I/O process is dispatched. Afterwards, the head is changed either to the front or bottom of the sector that it made the dispatch on for future dispatches.

Work Log

Date	Author	Commit	Summary
Tue Oct 14 15:00	Sam Quinn	9402a8ddf13ad69b80eb9bf42c294822aff87b2f	Added the Linux folder for home-work #2.
Fri Oct 17 13:39	Bob	8daeb619e3ebf201b079b3643e83c70c119f8de0	Coppied the Noop I/) scheduler for a template in creating the new SSTF scheduler.
Wed Oct 22 18:42	Bob	6fbc561c60d26ea444b063b912ac01068f5fca44	Implemented sstf_dispatch
Sat Oct 25 15:22	Bob	3c4249ea31657ed2d5eadf9fa9e8ac52923a38d7	Fixed case logic in SSTF_dispatch
Sat Oct 25 15:55	Bob	b57104fba0b40f41f79c19d08310b543f8b7f6b9	Added a hw2 Writeup doc.
Sat Oct 25 21:36	Bob	c918023c4d2f92f087e1cd721bde987b6291fe5a	Added Sam's project 2 writeup file.
Sun Oct 26 21:57	Bob	4737476b348f7fb7acc3b47daa5328d41d393117	Update sstf-iosched.c fully working.
Mon Oct 27 02:38	lawrencechau	0fad02a3acef842d3d4b7ec6d4b1ebca2781cf29	Update group_22_writeup.tex, Wrote the group writeup
Mon Oct 27 11:53	Bob	50ea3799a520d50c9ee0f32ff3bf0f7b3b56a180	Added the patch file with our SSTF I/O Scheduler.
Mon Oct 27 11:55	Bob	e06f0b76c25ebca39a0051d0132ba7c8ad74bf54	Added the Linux Kernel source as a git ignored file.
Mon Oct 27 11:56	Bob	43e34595c135bd9258a2b2ceaab1e0a069a41c8b	Added untracked files from previous concurrency problem.