Tyler Jackimowicz

04/28/2016

CSC 4410 Operating Systems

Assignment 4 Analysis

With my code, diskScheduling.c, I designed three methods that imitate the sequence of First Come First Served, Shortest Seek Time First, and Look algorithms. Each method reads cylinder numbers from a file and utilizes the data in the algorithms. After the algorithm is complete, the method will return the total head movement value. Total head movement presents which algorithm is more efficient with the provided cylinder numbers.

FCFS method utilizes a while loop to read in each cylinder number from the text file. Total head movement is easily calculated by adding the difference between the previous number and the current cylinder number found in the text file. First Come First Served algorithm deemed to have the largest amount of head movements compared to SSTF and Look algorithms. With input1mil.txt, FCFS had a total of 564,601,183 head movements.

SSTF method uses a while loop to run until the end of the file is reached. A for loop is utilized to read only 40 elements into an array at a time, which lowers the amount of comparisons between each array element. Each cylinder is compared with other cylinder numbers in the array to see which has a closer distance. Once this element is found, the distance is added to the total head movement, and loops until the end of the array. This process happens for each 40 elements until the end of the file is reached. As a result, SSTF had a much lower total head movement value. With input1mil.txt, SSTF had a total of 51,711,539 head movements.

Look method uses the same process as SSTF to read the information and storing the values into an array. Once the array is filled, the algorithm will sort through the values and set the left and right limits of the start position. Total head movement is calculated by adding the distance to all values left of the start position and then moves to all values right of the start position in order. This process provided the least head movements out of all three algorithms. With input1mil.txt, Look had a total of 48,514,957 head movements.

FCFS had the largest total of head movements due to not considering the distance between each cylinder number. SSTF improved this process by searching for the closest cylinder number each time, which required less head movements. Finally, Look had the best option, because it sorted through the array first and then the head movements were in order and not moving long distances. The total head movement values are printed in the command prompt, as shown in figure 1.

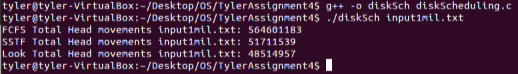


Figure 1 Command Line Prompt running diskScheduling.c