CS 340

Assignment 3

Due: 11/30/2020

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Round Robin Scheduling is one of the algorithms by network scheduler and process. It is assigned the time slices, as known as time quantum, to each process in equal portion and in circular order, handling all process. For the part 1 of this project, time quantum was given for ten seconds but non-preemptive priority-based scheduling algorithm with round-robin scheduling for process. Which I understood that every time slices, pre-emption will not occur until the current process in the processing is done. But for the part 2 of this project, pre-emption occurs so every given time slices, checking the priority of each process when it reached certain arrival time and process the lower(best) priority. Lower number of priorities indicate the higher priority.

For the beginning of Part1, I thought about what method to use, array or linked-list. After consideration, I decided to use array to implement Round Robin for the project. I made struct which contains process, priority, burst, arrival and other variables that I’m going to use for the project. And by using “fopen”, reading the text file that has the data of process to run and save data into the struct format. For running the part1, I used “flag” to determine that a process in the part1 array is moved, which means that element is used so if flag is 1, that element is utilized. If flag is 0, then all the data in the part1 array still haven’t been used. I also made the function, “isempty”, that search the flag of each elements in the array to check if flag number of each element is 0 or 1. So this function ensures that elements of part1 array are done using or not. And I used the while loop if any data to do the processing. If there are no data to do the processing, while loop breaks. In the while loop, I used for loop to count the time by time quantum to process the data. For the part1, it runs just like “priority queue” so no preemption was occurred during the process.

For Part2, I was thinking to use the linked-list at this time because I thought it was hard to implement the Round Robin with preemption but it was my illusion, only thing I had to was adding the if statement with the condition can check after the certain time slices, if the next process has the same or higher priority, then swap the current process to that process and to run the processing by another time quantum. And I calculate the wait time differently at this time. For part 1, I assigned the service time which each process’s processing time so wait time for each process would be service time minus its arrival time. But for the part2, I calculated wait time with current process’ burst time, Waiting time = exit time – arrival time – its original burst time. Exit time indicates the when process is done which its burst is 0.

At first, the project, which I thought would be easy but I suffered a lot over time. But I am very satisfied that the result came out as I wanted. Hopefully way I thought about round robin is the program that I made.