

INTRODUCTION

- New technology has not been fully used in enhancing Computer Science education
- PowerPoint slides and video clips are a passive use of technology
- A well-designed self-controlled animated visualization can
 - Make active use of such technology
 - Challenge students and encourage creativity
 - Make learning more interesting

CONTRIBUTIONS

- Generate a collection of interactive animation projects for CSC 139 Operating System Principles
- Deploy the application on CSUS infrastructure and allow our students to use it
- Encourage students to examine the concepts in depth.
- Allow some Computer Science students to gain real project development experience and keep up with the most recent programming frameworks and tools.

REQUIRED TECHNOLOGIES

- Javascript: React.js, Node.js
- HTML5
- CSS

FEATURED ALGORITHMS

- CPU Scheduling
 - First Come, First Served (FCFS)
 - Shortest Job First (SJF)
 - Shortest Remaining Time First (SRTF)
 - Round Robin (RR)
 - Non-preemptive Priority
 - Preemptive Priority
- Memory Page Replacement
 - First In First Out (FIFO)
 - Optimal (OPT)
 - Least Recently Used (LRU)
- Disk Head Scheduling
 - First Come, First Served (FCFS)
 - Shortest Seek Time First (SSTF)
 - SCAN
 - C-SCAN
 - LOOK
 - C-LOOK

RESULTS

CPU Scheduling

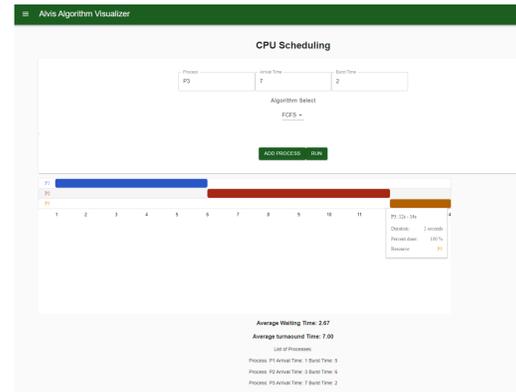


Fig. 1: A sample run of FCFS algorithm

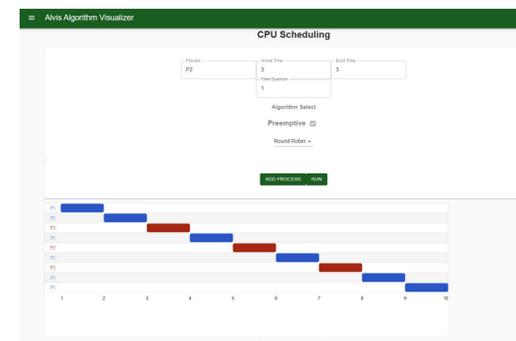


Fig. 2: A sample run of Round Robin algorithm

Memory Page Replacement



Fig. 3: A sample run of FIFO replacement algorithm

Fig. 4: A sample run of OPT replacement algorithm



Fig. 5: A sample run of LRU replacement algorithm

Disk Head Scheduling

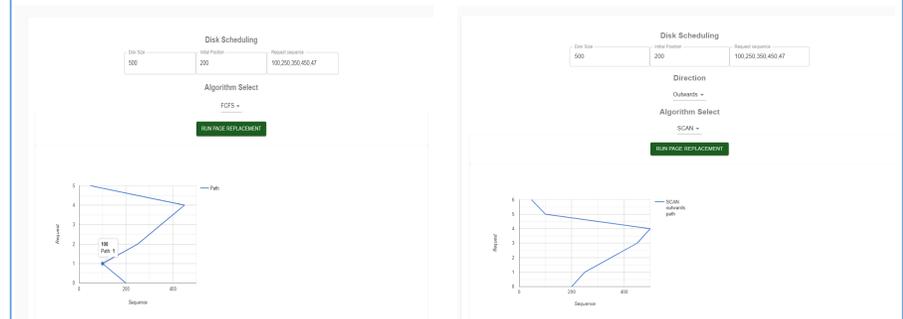


Fig. 6: A sample run of FCFS disk scheduling algorithm

Fig. 7: A sample run of SCAN disk scheduling algorithm

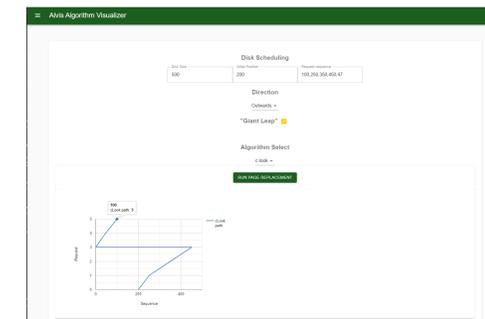


Fig. 8: A sample run of C-LOOK disk scheduling algorithm

CONCLUSION

We implemented three families of algorithms from CSC 139 Operating System Principles, including CPU scheduling, memory page replacement, and disk head scheduling. The application is currently deployed on a testing server. We will migrate it to a production server soon and enable access for CSC 139 students in Fall 2020. We will collect feedbacks and bug reports and come up with a sustainable plan for running and extending the application in the near future.

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