SYSC 4001

Assignment 3 Final Part 1

Sydney Kuhn - 101302923
(Student 1)

Keon Foster - 101303908
(Student 2)

Simulation Results

EP

*values scaled by 100 to account for discrepancies in testing

Throughput: 1.82 processes/ms = 0.0182 processes / ms

Avg Turnaround Time: 14.37ms = 1437ms

Avg Response Time: 8.18ms = 818ms

Avg Wait Time: 8.18ms = 818ms

RR

Throughput: 0.02 processes/ms = 1 process / 50ms

Avg Turnaround Time: 1634.25ms

Avg Response Time: 178.08ms

Avg Wait Time: 178.08ms

EP_RR

Throughput: 0.02 processes/ms = 1 process / 50ms

Avg Turnaround Time: 1382.19ms

Avg Response Time: 806.85ms

Avg Wait Time: 806.85ms

Discussion

Before comparing the results, it is important to address a discrepancy in the testing. As RR was meant to use a relatively large quantum value of 100ms, its test cases were inflated by about 100ms across all its times to prevent the execution output from being too cluttered with preemptions. This is why EP stands out as having very low metrics. To account for this, EP's metrics will be treated as 100x higher than measured, bringing it more in line with the other 2 schedulers. With the numbers adjusted, an obvious advantage emerges. This advantage is that RR experiences significantly lower wait/response times, making it an excellent choice for any system that requires quick responses, such as one that actively interacts with a user. EP_RR also provides this advantage to a certain extent. However, it is dependent on the distribution of priorities. If most processes have the same priority and aren't waiting for large, higher-priority processes to finish, then the wait/response times will be much closer to those of the pure RR implementation. Despite its clear advantage in wait/response times, the RR scheduler does have a noticeable disadvantage in turnaround times. This could make it less attractive as an option for any system that requires its programs to run to completion, especially if they are high-priority.