2024 Operating System Term Project - Round Robin Scheduler Implement

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*Basic Requirement for CPU Scheduling.*

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| Parent Process Requirement |  |
| 1. Create 10 child process from a parent process. |  |
| 1. Parent process schedules child processes according to the Round-robin scheduling policy |  |
| 1. Parent process periodically receives ALARM signal by registering timer event(setitimer system call) |  |
| 1. Parent process maintains run-queue and wait-queue |  |
| 1. The parent process performs scheduling |  |
| 1. The parent process accounts for the remaining time quantum of all the child processes |  |
| 1. The parent process gives time slice to the child process by sending IPC message through msgq. |  |
| 1. Please note that there is IPC\_NOWAIT flag. |  |

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| Child Process Requirement |  |
| 1. Workload consists of infinite loop of dynamic CPU-burst and I/O burst. |  |
| 1. Each value is randomly generated. |  |
| 1. Parent process sends IPC message to the currently running child process. |  |
| 1. When the child process takes IPC message from msgq, it decreases CPU-burst value. |  |

*Optional Requirement for I/O involvement.*

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| Child Process Requirement |  |
| 1. Children makes I/O requests after CPU-burst. |  |
| 1. To simulate this, child accounts for the remaining CPU-burst. |  |
| 1. If CPU-burst reaches to zero, the Child sends IPC messages to the parent |  |

*Optional Requirement for I/O involvement.*

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| Parent Process Requirement |  |
| 1. The parent process receives IPC message from a child process, it checks whether the child begins I/O-burst. |  |
| 1. The scheduler takes the child process out of the run-queue, and moves the child process to the wait-queue. |  |
| 1. The parent process should remember I/O burst value of the child process. |  |
| 1. Whenever time tick occurs, the parent process decreases the I/O-burst value. |  |
| 1. When the remaining I/O burst value of a process reaches to zero, the parent process puts the child process back to run-queue. |  |
| 1. The scheduling is triggerd by several events, for example: the expiry of thime quantum(of a process), process makes I/O request. |  |