

# Data structures and Algorithms

## Project Phase 1 Report

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**Selected Data Structures:**

List Name	Chosen DS	Justification
Ready list (FCFS processor)	Linked List	Insert: $O(1)$ Delete: $O(1)$ We have chosen this Data Structure as we sometimes have delete nodes from the middle (kill signal)
Ready list (RR processor)	Queue	Enqueue: $O(1)$ Dequeue: $O(1)$ Peek: $O(1)$ We have chosen this Data Structure to make the FIFO order, no special order here (no priority)
Ready list (SJF processor)	Priority queue	Enqueue: $O(n)$ Dequeue: $O(1)$ Peek: $O(1)$ This Data Structure is used so that processes are sorted by the shortest run time first

New list	Queue	<p>Enqueue: <math>O(1)</math>  Dequeue: <math>O(1)</math>  Peek: <math>O(1)</math></p> <p>We have chosen this Data Structure to make the FIFO order, no special order here</p>
Blocked list	Queue	<p>Enqueue: <math>O(1)</math>  Dequeue: <math>O(1)</math>  Peek: <math>O(1)</math></p> <p>We have chosen this Data Structure to make the FIFO order, no special order here</p>
Terminated list	Queue	<p>Enqueue: <math>O(1)</math>  Dequeue: <math>O(1)</math>  Peek: <math>O(1)</math></p> <p>We have chosen this Data Structure to make the FIFO order, no special order here</p>
Array of pointers For processor	Array	<p>Add: <math>O(1)</math>  Remove: <math>O(n)</math></p> <p>We have chosen this Data Structure due to its easy random access</p>
I/O_R, I/O_D (i/o request & i/o duration)	Struct Queue	<p>Enqueue: <math>O(1)</math>  Dequeue: <math>O(1)</math>  Peek: <math>O(1)</math></p> <p>We have chosen this Data Structure to make the FIFO order, no special order here</p>
Kill Signal	Struct Queue	<p>Enqueue: <math>O(1)</math>  Dequeue: <math>O(1)</math>  Peek: <math>O(1)</math></p> <p>We have chosen this Data Structure to make the FIFO order, no special order here</p>

