

Data Structures and Algorithms

Project Phase1 Report

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List Name	Chosen DS	Operations	Justification
Events List	Queue	<pre>bool isEmpty() O(1) bool enqueue(T& newEntry) O(1) bool dequeue(T& frntEntry) O(1) bool peek(T& frntEntry) O(1)</pre>	First event declared will have been done first. Queue will be based on linked list because it Insert in the end.
Waiting Polar Missions	Queue	<pre>bool isEmpty() O(1) bool enqueue(T& newEntry)O(1) bool dequeue(T& frntEntry) O(1) bool peek(T& frntEntry) O(1)</pre>	First mission declared will have been done first. Queue will be based on linked list because it easier to Insert in the end and delete from front.
Waiting Mountainous Missions	Queue	<pre>bool isEmpty() O(1) bool enqueue(T& newEntry) O(1) bool dequeue(T& frntEntry) O(1) bool peek(T& frntEntry) O(1)</pre>	First mission declared will have been done first. Queue will be based on linked list because it. easier to Insert in the end and delete from front.
Waiting Emergency Missions	Priority Queue	<pre>bool isEmpty() O(1) bool enqueue(T& newEntry)O(log(n)) bool dequeue(T& frntEntry) O(log(n)) bool peek(T& frntEntry) O(1)</pre>	Because we want to sort them according to their priority. Queue will be based on linked list because it easier to Insert in any position and delete from front.

Execution Missions	Priority Queue	<pre> bool isEmpty();O(1) bool enqueue(T& newEntry) O(log(n)) bool dequeue(T& frntEntry)O(log(n)) bool peek(T& frntEntry) O(1) </pre>	Because we want to sort them according to the day will done on. Queue will be based on linked list because it easier to Insert in any position and delete from front.
Completed Missions	Queue	<pre> bool isEmpty() O(1) bool push(T& newEntry) O(1) bool pop(T& frntEntry)O(1) bool peek(T& frntEntry) O(1) </pre>	Because it will be print the completed mission every day. Queue will based on linked list because it easier to Insert in the end.
Polar Rovers	Priority Queue	<pre> bool isEmpty()O(1) bool enqueue(T& newEntry) O(log(n)) bool dequeue(T& frntEntry) O(log(n)) bool peek(T& frntEntry) O(1) </pre>	Because we want to sort them according to their velocity. Queue will be based on linked list because it easier to Insert in any position and delete from front.
Mountainous Rovers	Priority Queue	<pre> bool isEmpty()O(1) bool enqueue(T& newEntry) O(log(n)) bool dequeue(T& frntEntry) O(log(n)) bool peek(T& frntEntry) O(1) </pre>	Because we want to sort them according to their velocity. Queue will be based on linked list because it easier to Insert in any position and delete from front.
Emergency Rovers	Priority Queue	<pre> bool isEmpty()O(1) bool enqueue(T& newEntry) O(log(n)) bool dequeue(T& frntEntry) O(log(n)) bool peek(T& frntEntry) O(1) </pre>	Because we want to sort them according to their velocity. Queue will be based on linked list because it easier to Insert in any position and delete from front.
Execution Rovers	Priority Queue	<pre> bool isEmpty() O(1) bool enqueue(T& newEntry) O(log(n)) bool dequeue(T& frntEntry) O(log(n)) bool peek(T& frntEntry) O(1) </pre>	Because we want to sort them according to the day will done mission. Queue will be based on linked list because it easier to Insert in any position and delete from front.
Checkup Rovers	Priority Queue	<pre> bool isEmpty() O(1) bool enqueue(T& newEntry) O(log(n)) bool dequeue(T& frntEntry) O(log(n)) bool peek(T& frntEntry) O(1) </pre>	Because we want to sort them according to less time will take in checkup. Queue will be based on linked list because it easier to Insert in any position and delete from front

Rovers Maintenance (Bonus)	Priority Queue	<code>bool isEmpty() O(1)</code> <code>bool enqueue(T& newEntry) O(log(n))</code> <code>bool dequeue(T& frntEntry) O(log(n))</code> <code>bool peek(T& frntEntry) O(1)</code>	Because we want to sort them according to less time will take in maintenance.
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