Module: ReadyQueue

Uses: None

INTERFACE:

|  |  |  |
| --- | --- | --- |
| Field Name | Type | Meaning |
| waiting | int | The number of threads waiting in the Queue |
| threadQueue | Thread[5] | The queue of processes waiting to be executed. |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Method Name | Input | Output | Description | State Transitions | Dependencies |
| ReadyQueue | void | ReadyQueue | Constructor | INITIAL STATE:  waiting=0  threadQueue=new Process[5] |  |
| enqueue(Process p) | A Process representing the new thread to be put into the threadQueue | void | Waits for the thread to have space, then adds the given process to the threadQueue | waiting++  threadQueue[lastEmptyIndex]=p | isFull()  findEmptyIndex()  notifyAll()  wait() |
| dequeue() | void | void | Takes a thread out of the queue.  Notifies any thread waiting on this class's monitor | waiting--  for(i=1,i<lastNonEmptyIndex;i++){  threadQueue[i-1]=threadQueue[i]  threadQueue[lastNonEmptyIndex]=null | findNonEmptyIndex()  wait()  notifyAll() |
| backInQueue(Process p) | A Process p that represents the modified thread at the front of the queue  (This thread was taken by the dispatcher and is now being returned by the Grim Reaper) | void | Puts the first item in the threadQueue in the last available spot, then notifies any thread that's waiting. | placeHolder=threadQueue[0]  for(i=1<, i<lastNonEmptyIndex;i++){  threadQueue[i-1]=threadQueue[i]  threadQueue[lastNonEmptyIndex]=placeHolder | findNonEmptyIndex  notifyAll() |
| select() | void | The process at the head of the threadQueue | Waits until the thread is not empty, then returns the thread at the head of the Queue | N/A | isEmpty()  wait() |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Method Name | Input | Output | Description | State Transitions | Dependencies |
| findEmptyIndex | void | int | Finds the index of the first null element in the ThreadQueue and returns it |  |  |
| findNonEmptyIndex | void | int | Finds the index the the last element in the threadQueue |  |  |
| isFull() |  | boolean | Returns a boolean representing whether the queue is full or not |  |  |
| isEmpty() | void | boolean |  |  |  |