CAB301 Technical Report

Assignment 1

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# Algorithm Design and Analysis

## Pseudocode

All three sorting methods are implementing a Bubble Sort algorithm.

### First-Come, First Served (FCFS)

ALGORITHM *FirstComeFirstServed*(*J*[0..n-1])  
 // Given an array *J* of length 1≤n≤999, where each element has a parameter *R*  
 // where *R* = timeRequired and is an integer > 0  
 // Returns a sorted array *S* of length 1≤n≤999, with the same elements as *J* arranged in  
 // non-descending order of *R*

*S* <- *J*  
**for** i <-0 **to** n-1 **do  
 for** j<-0 **to** n-1-I **do**  
 **if** *J*[j] > *J*[j + 1] **do** *temp* <- *S*[j]*S*[j] <- *S*[j+1]  
 *S*[j+1] <- *temp*  
**return** *S*

### Priority

ALGORITHM *Priority*(*J*[0..n-1])  
 // Given an array *J* of length 1≤n≤999, where each element has a parameter *P*  
 // where *P* = priority and is an integer from 1-999  
 // Returns a sorted array *S* of length 1≤n≤999, with the same elements as *J* arranged in  
 // non-ascending order of *P*

*S* <- *J*  
**for** i <-0 **to** n-1 **do  
 for** j<-0 **to** n-1-I **do**  
 **if** *J*[j] < *J*[j + 1] **do** *temp* <- *S*[j]*S*[j] <- *S*[j+1]  
 *S*[j+1] <- *temp*  
**return** *S*

### ShortestJobFirst (SJF)

ALGORITHM *ShortestJobFirst*(*J*[0..n-1])  
 // Given an array *J* of length 1≤n≤999, where each element has a parameter *E*  
 // where *E* = executionTime and is an integer > 0  
 // Returns a sorted array *S* of length 1≤n≤999, with the same elements as *J* arranged in  
 // non-descending order of *E*

*S* <- *J*  
**for** i <-0 **to** n-1 **do  
 for** j<-0 **to** n-1-I **do**  
 **if** *J*[j] > *J*[j + 1] **do** *temp* <- *S*[j]*S*[j] <- *S*[j+1]  
 *S*[j+1] <- *temp*  
**return** *S*

# Test Plan, Test Date, and Test Results

# References

**There are no sources in the current document.**