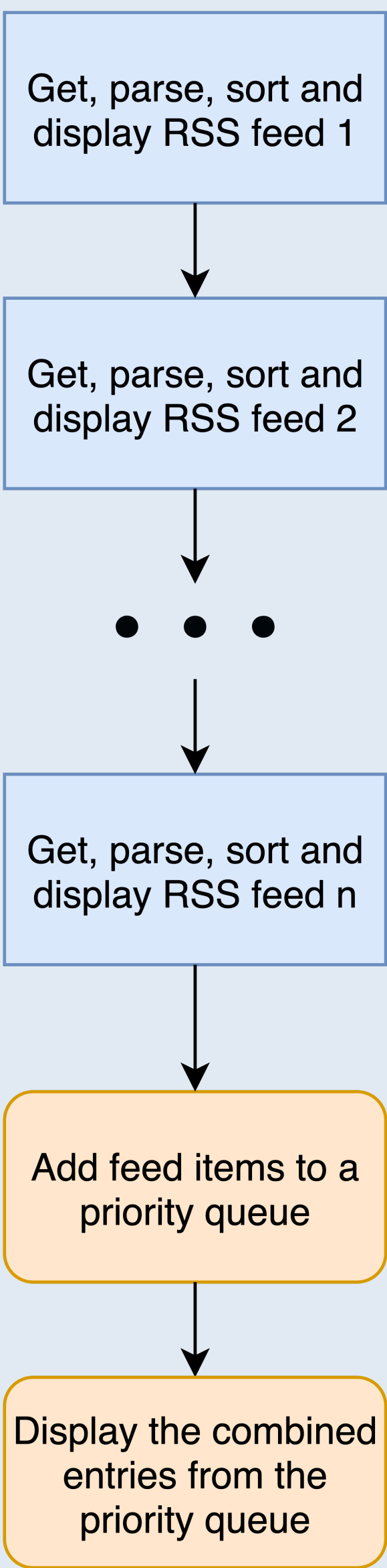


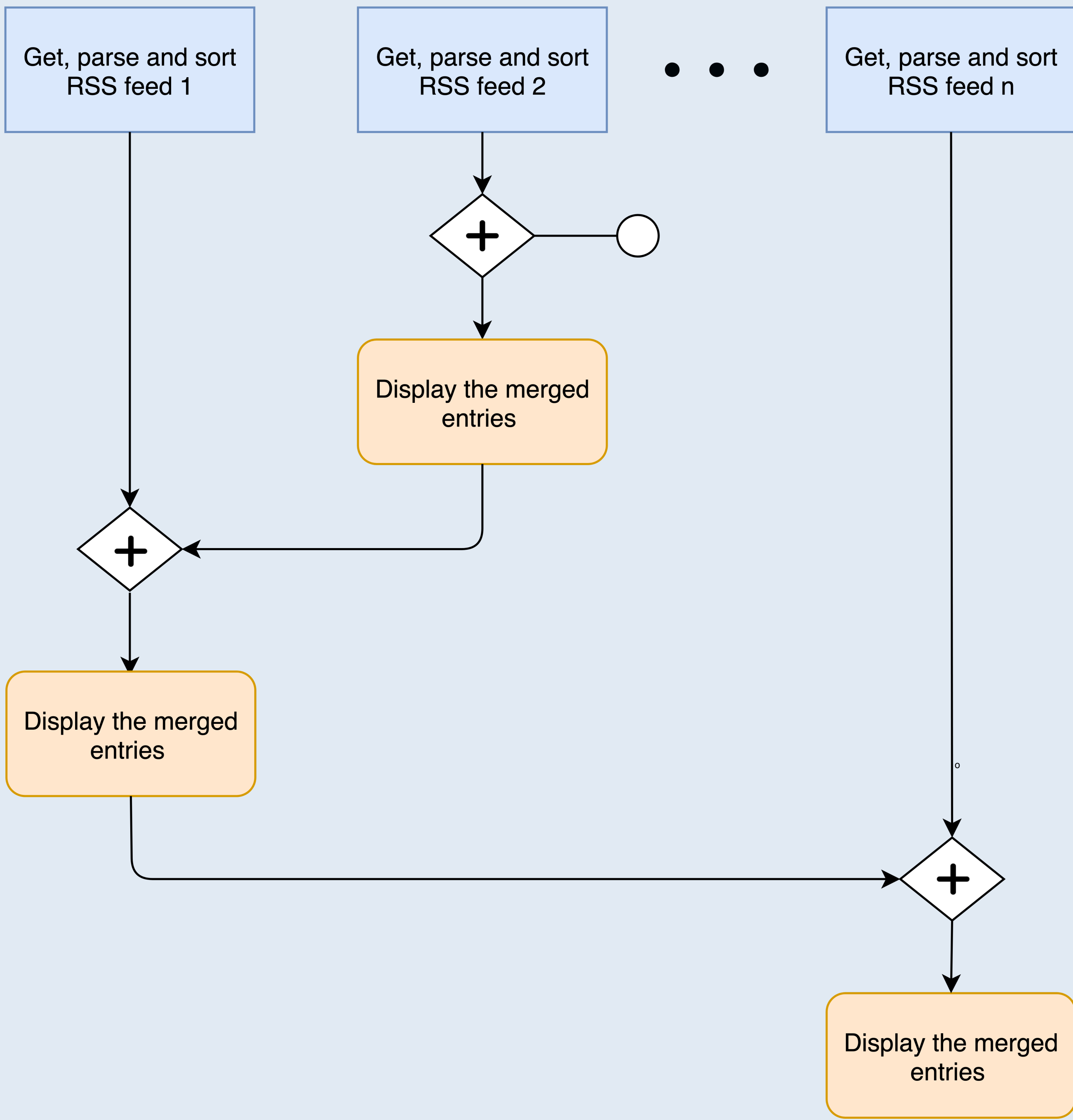
Vaarta is an RSS reader written in Java and JavaFX. It displays feed entries in descending order and also shows a combination of all feeds, also in descending order, under “All feeds”. It stores the feeds between application restarts and allows addition of new RSS feeds. Each RSS feed is obtained over the network, parsed using Java DOM parser, sorted by publication time and displayed. A common thread pool is maintained for all tasks using ExecutorService, whose size is fixed at the number of available CPU threads.

## SINGLE THREADED



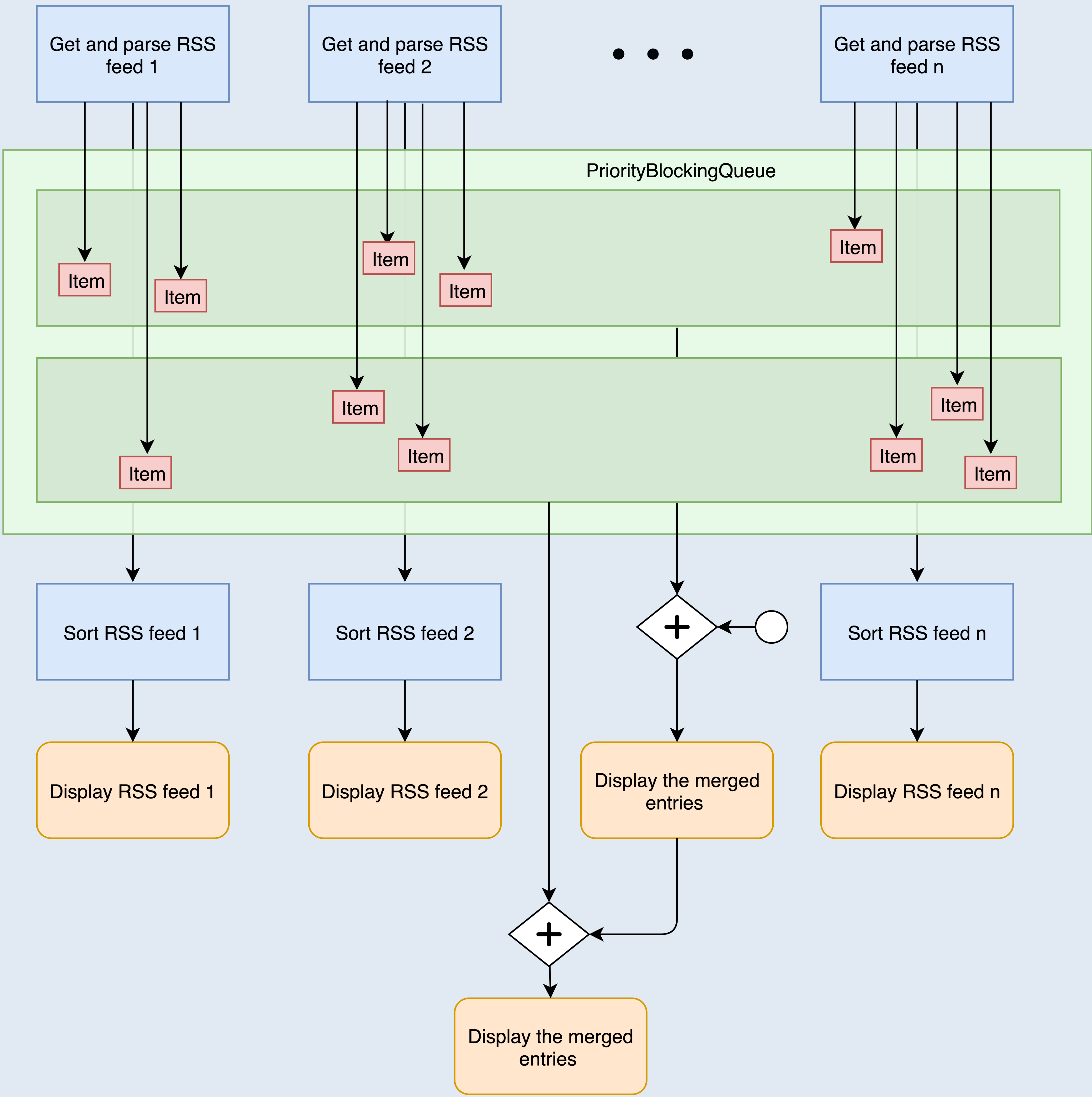
- Perform network request, parsing and sorting in sequence for each RSS feed
- Display each feed using ObservableList
- Insert each feed's entries into a priority queue to combine them
- Display the combined entries under “All feeds” using an ObservableList

## MULTI-THREADED, "ITERATIVE"



- Perform network request, parsing and sorting in parallel for as many feeds as there are threads available
- Once a feed has been parsed and sorted, display it and add it to an ArrayBlockingQueue for merging
- A parallel thread takes feeds from the ArrayBlockingQueue and merges them one by one to create “All feeds”
- Each merge waits on the application thread to finish displaying the entries to prevent concurrent modification

## MULTI-THREADED, "CONCURRENT"



- Perform network request and parsing in parallel for as many feeds as there are threads available
- After parsing an item, add it to a PriorityBlockingQueue
- After a feed has been completely parsed, sort it and display it
- In parallel, take entries from the PriorityBlockingQueue, merge it with existing entries in “All feeds”
- Repeat as long as there are entries in PriorityBlockingQueue

## RESULTS

10 RSS feeds			
Processing	Time	CPU	Memory
Single threaded	548 ms	19.07%	40.09 MB
"Iterative"	691 ms	33.08%	58.07 MB
"Concurrent"	668 ms	30.8%	56.73 MB

50 RSS feeds			
Processing	Time	CPU	Memory
Single threaded	40433 ms	17.31%	63.13 MB
"Iterative"	1013 ms	61.18%	63.12 MB
"Concurrent"	806 ms	61.7%	55.45 MB

110 RSS feeds			
Processing	Time	CPU	Memory
Single threaded	54615 ms	17.69%	57.58 MB
"Iterative"	4040 ms	61.73%	64.37 MB
"Concurrent"	3662 ms	64.35%	56.32 MB