

NETWORKING WITH URLSESSION



PART 10: OPERATIONQUEUE

Running HalfTunes on iPhone 7 Plus

APIManager.swift SearchVC+URLSessionDelegates.swift SearchVC+URLSessionDelegates.swift

HalfTunes PID 16539

- CPU 0%
- Memory 35.1 MB
- Disk 40 KB/s
- Network Zero KB/s

Thread 1 Queue: com.apple.main-thread (serial)

Thread 4 Queue: com.apple.libdispatch-manager (serial)

com.apple.uikit.eventfetch-thread (6)

Thread 8

Thread 12

Thread 14 Queue: NSOperationQueue 0x608000035...0x600000440750 (QOS: DEFAULT) (serial)

0 SearchViewController.urlSession(URLSession, downloadTask : URLSessionDownloadTask, d...

1 @objc SearchViewController.urlSession(URLSession, downloadTask : URLSessionDownload...

2 __113-[NSURLSession delegate_downloadTask:didWriteData:totalBytesWritten:totalBytesEx...

3 __NSBLOCKOPERATION_IS_CALLING_OUT_TO_A_BLOCK__

4 -[NSBlockOperation main]

5 -[_NSOperationInternal _start:]

6 _NSOQSchedule_f

7 _dispatch_client_callout

8 _dispatch_queue_serial_drain

9 _dispatch_queue_invoke

10 _dispatch_root_queue_drain

11 _dispatch_worker_thread3

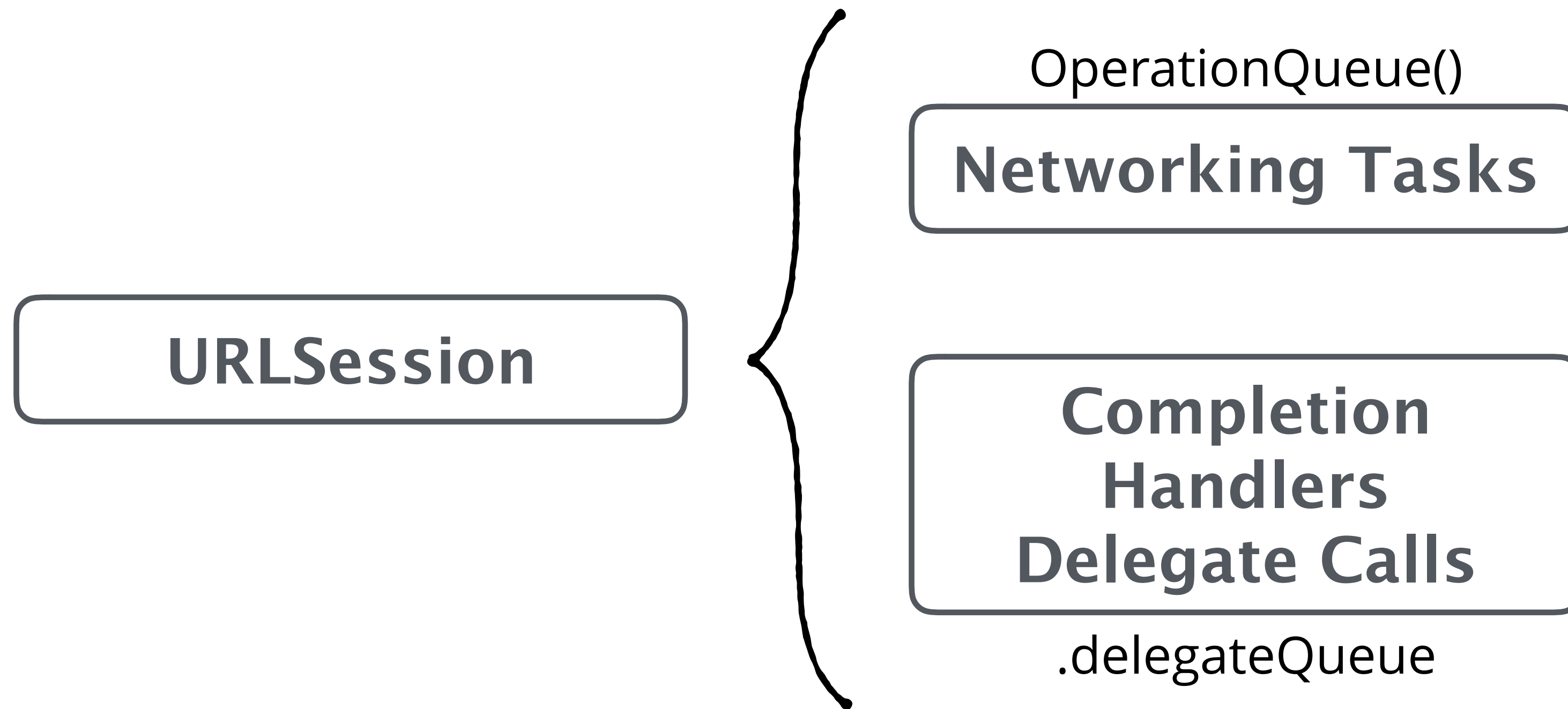
12 _pthread_wqthread

13 start_wqthread

com.apple.NSURLConnectionLoader (15)

```
41
42     if let index = trackIndex(for:
43         downloadTask) {
44         DispatchQueue.main.async {
45             self.tableView.reloadRows(at:
46                 [IndexPath(row: index, section: 0)],
47                 with: .none)
48         }
49     }
50
51 func urlSession(_ session: URLSession,
52     downloadTask: URLSessionDownloadTask,
53     didWriteData bytesWritten: Int64,
54     totalBytesWritten: Int64,
55     totalBytesExpectedToWrite: Int64) {
56     if let url = downloadTask.originalRequest?.
57         url,
58         let download = apiManager.activeDownloads
59         [url] {
60         download.progress =
61             Float(totalBytesWritten) / Float
62             (totalBytesExpectedToWrite)
63         let totalSize =
64             ByteCountFormatter.string(fromByteCount
65                 : totalBytesExpectedToWrite,
66                 countStyle: .file)
67
68         if let trackIndex = trackIndex(for:
69             downloadTask) {
70             if let trackCell = tableView.cellForRow
71                 withIndexPath(IndexPath(row: trackIndex,
72                     section: 0)) as?
73                 ProgressUpdateDelegate {
74                 DispatchQueue.main.async {
75                     trackCell.updateDisplay(progress:
76                         download.progress, totalSize:
77                         totalSize)
78                 }
79             }
80         }
81     }
82 }
```

URLSESSION THREADS



UPDATE UI ON MAIN THREAD

```
apiManager.getSearchResults(searchTerm: searchBar.text!) { results, errorMessage in
    UIApplication.shared.isNetworkActivityIndicatorVisible = false
    if let results = results {
        self.searchResults = results
        self.tableView.reloadData()
    }
}
```

```
// dataTask's completion if successful
self.updateSearchResults(data)
DispatchQueue.main.async {
    completion(self.tracks, self.errorMessage)
}
```



DELEGATE QUEUE

```
let session = URLSession(configuration: configuration, delegate: self,  
    delegateQueue: nil)  
session.delegateQueue.name = "com.raywenderlich.delegateQueue"  
session.delegateQueue.qualityOfService = .userInitiated
```

```
let delegateQueue = OperationQueue()  
delegateQueue.underlyingQueue = DispatchQueue.global(qos: .userInitiated)  
delegateQueue.maxConcurrentOperationCount = 2  
let session = URLSession(configuration: configuration, delegate: self,  
    delegateQueue: delegateQueue)
```

```
func invalidateAndCancel()  
func finishTasksAndInvalidate()
```



DEMO



CHALLENGE TIME!

