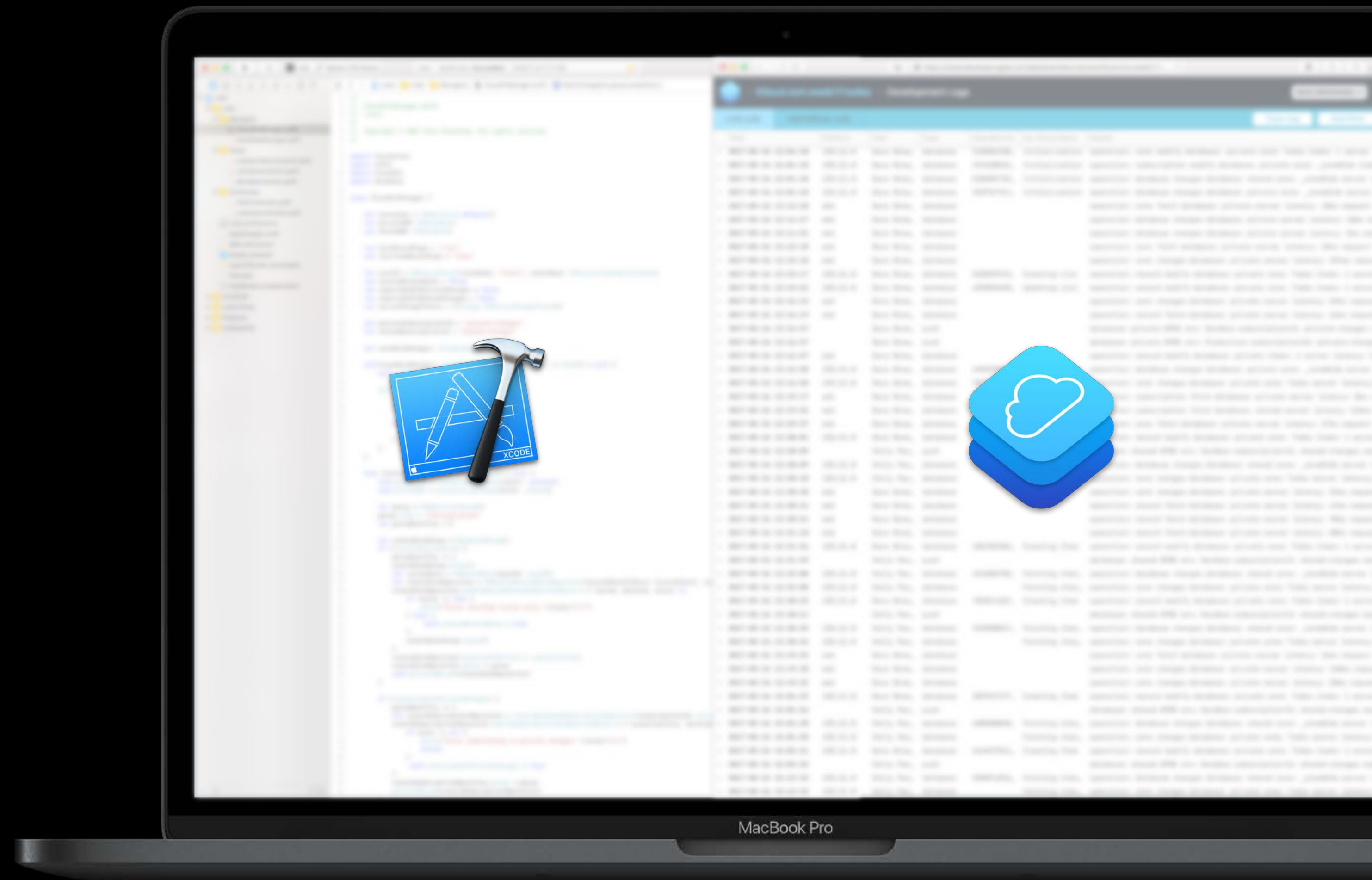


Build Better Apps with CloudKit Dashboard

Session 226

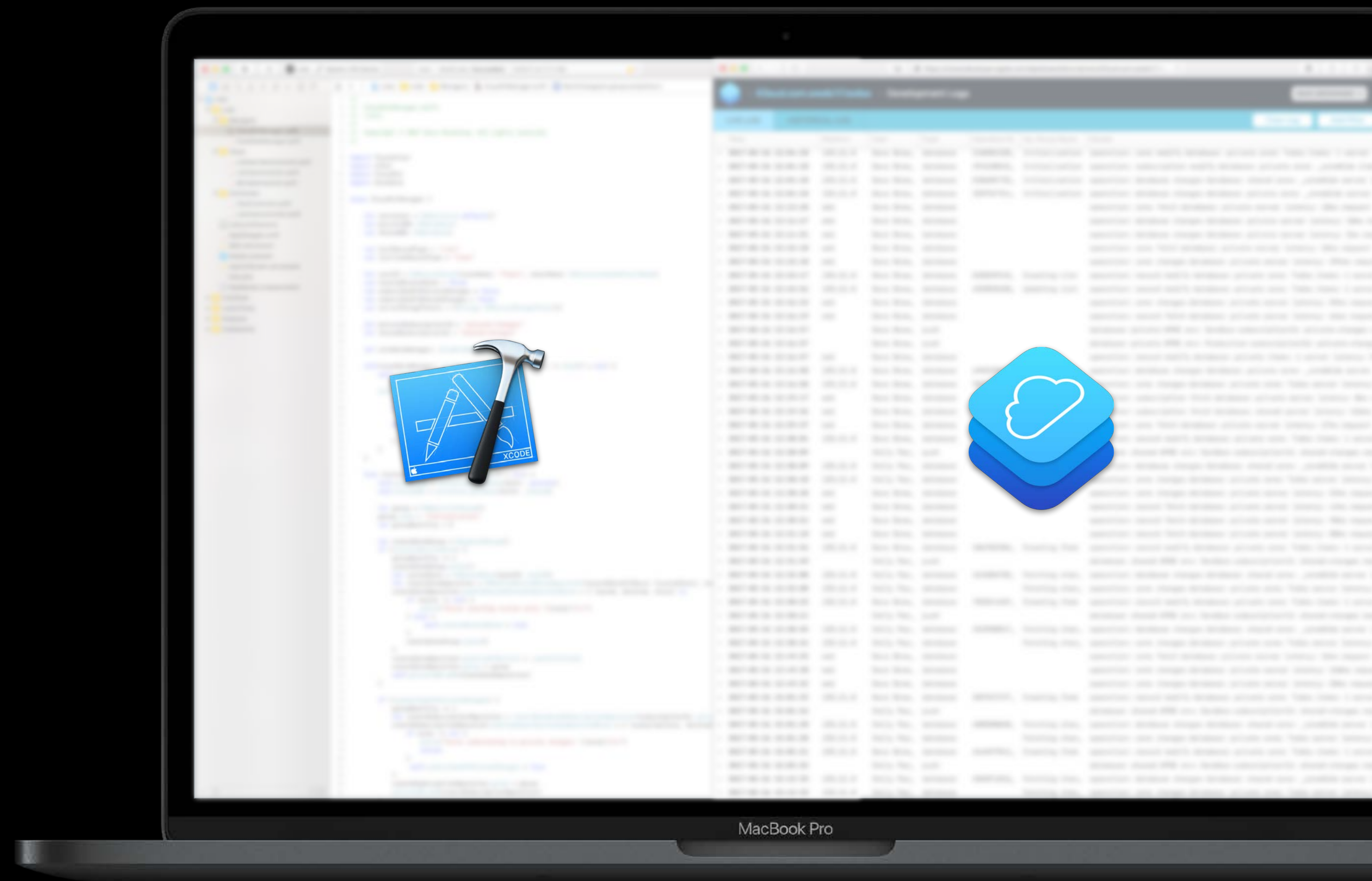
Dave Browning, CloudKit

Helping You Build Better Apps



Helping You Build Better Apps

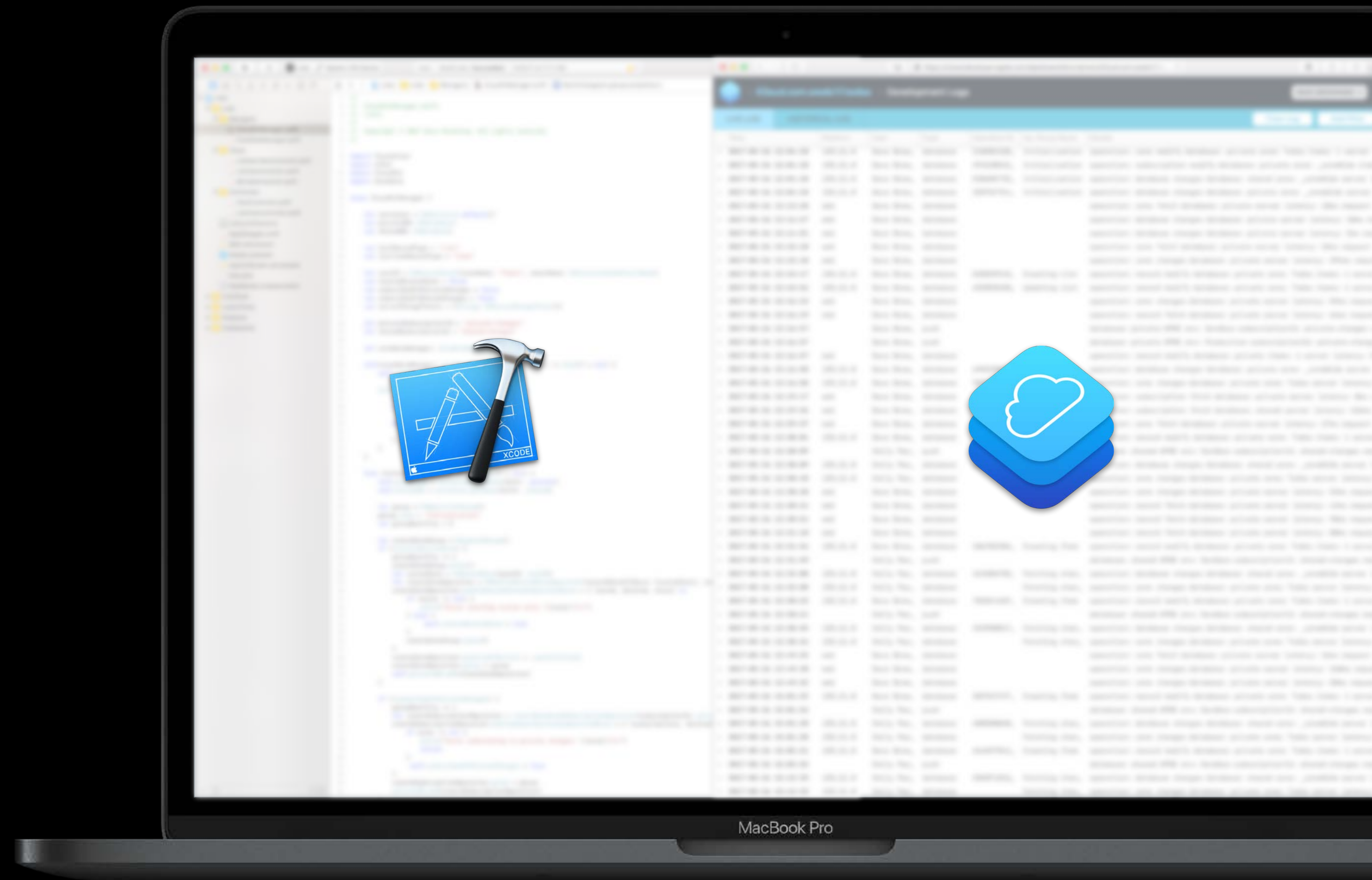
All stages of app's lifecycle



Helping You Build Better Apps

All stages of app's lifecycle

Experiment with entire API

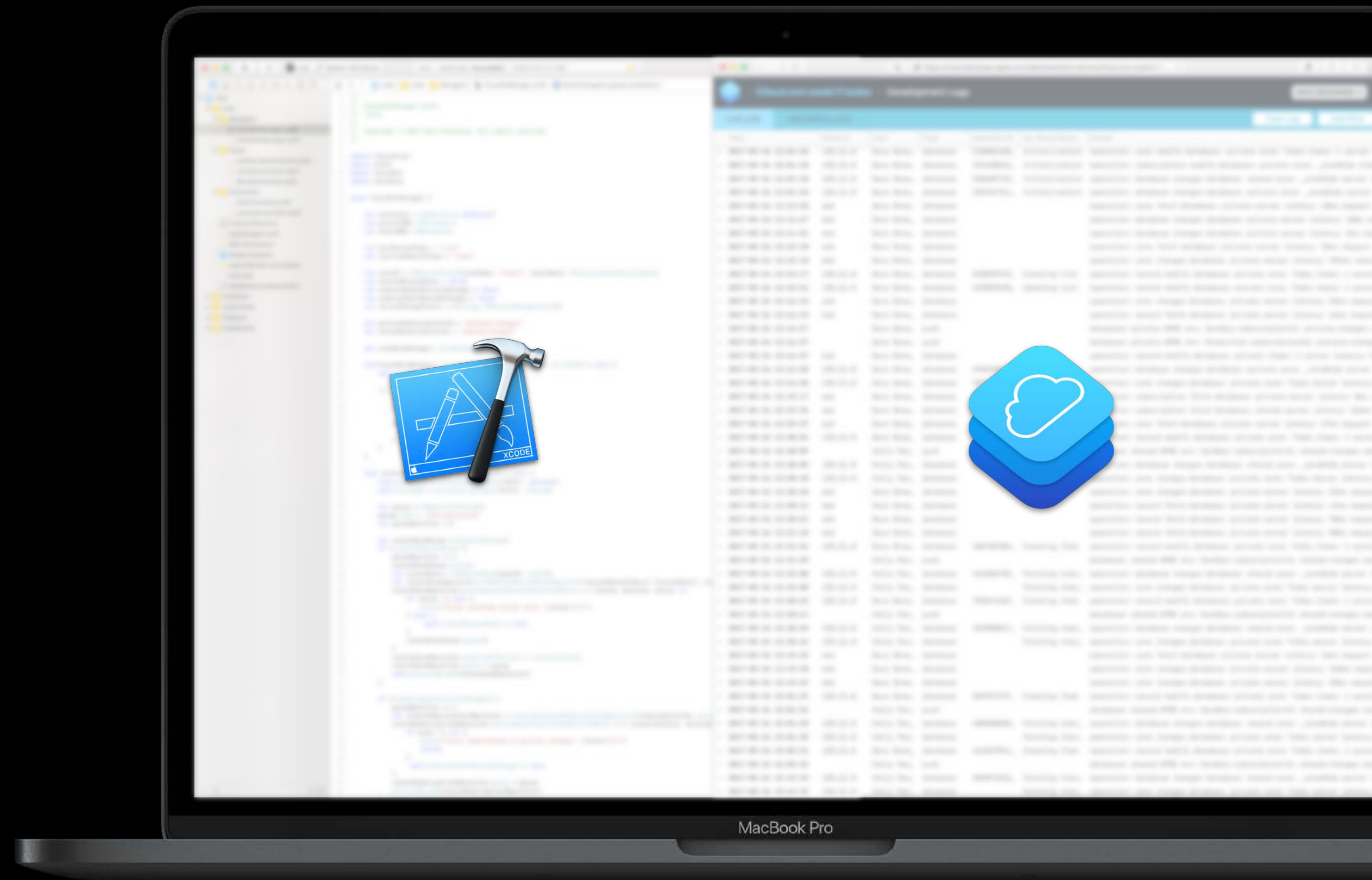


Helping You Build Better Apps

All stages of app's lifecycle

Experiment with entire API

Visibility into all events



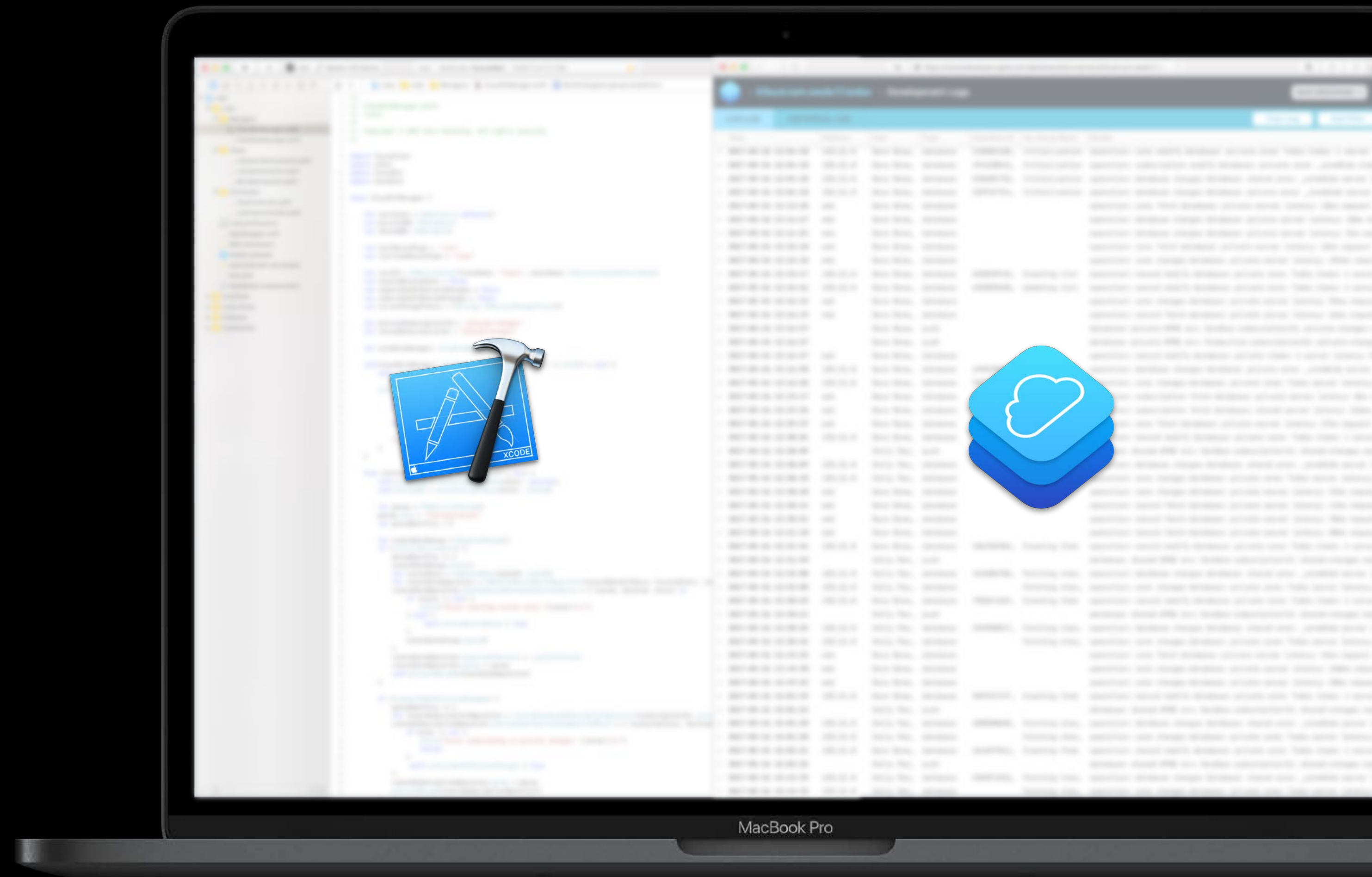
Helping You Build Better Apps

All stages of app's lifecycle

Experiment with entire API

Visibility into all events

Understand aggregate behavior



Quick Conceptual Refresher

Quick Conceptual Refresher

Record

Record

Record

Quick Conceptual Refresher

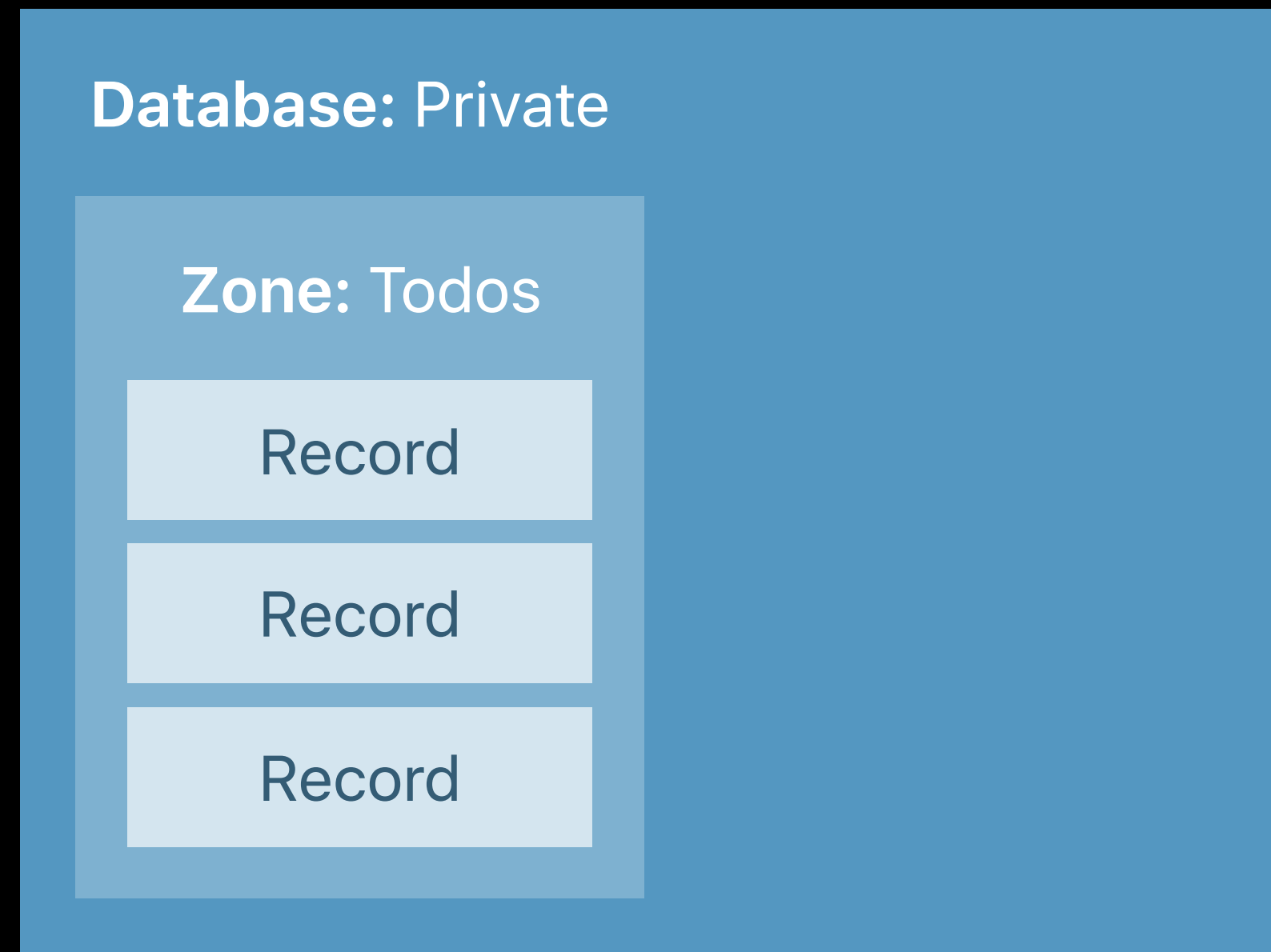
Zone: Todos

Record

Record

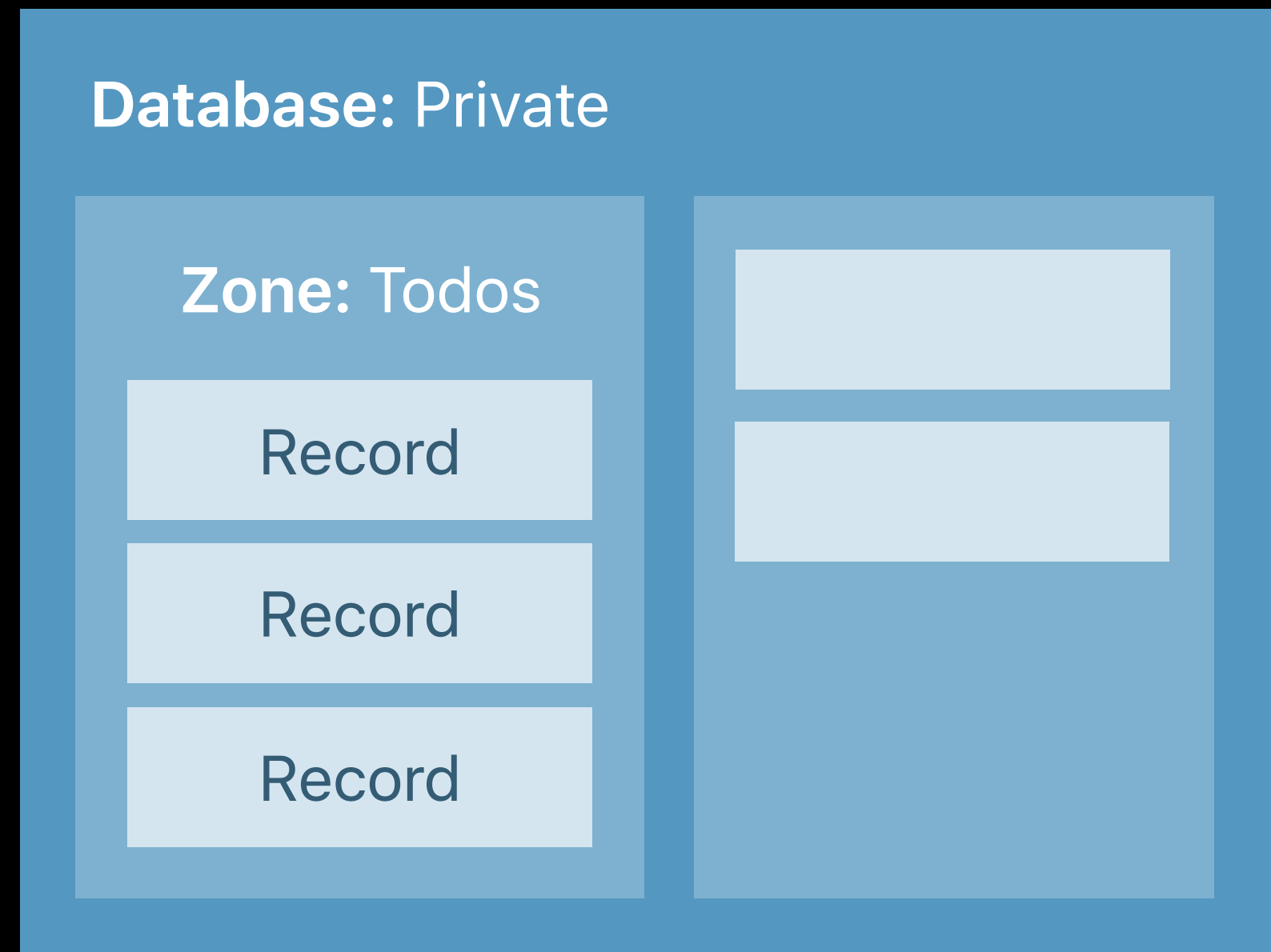
Record

Quick Conceptual Refresher



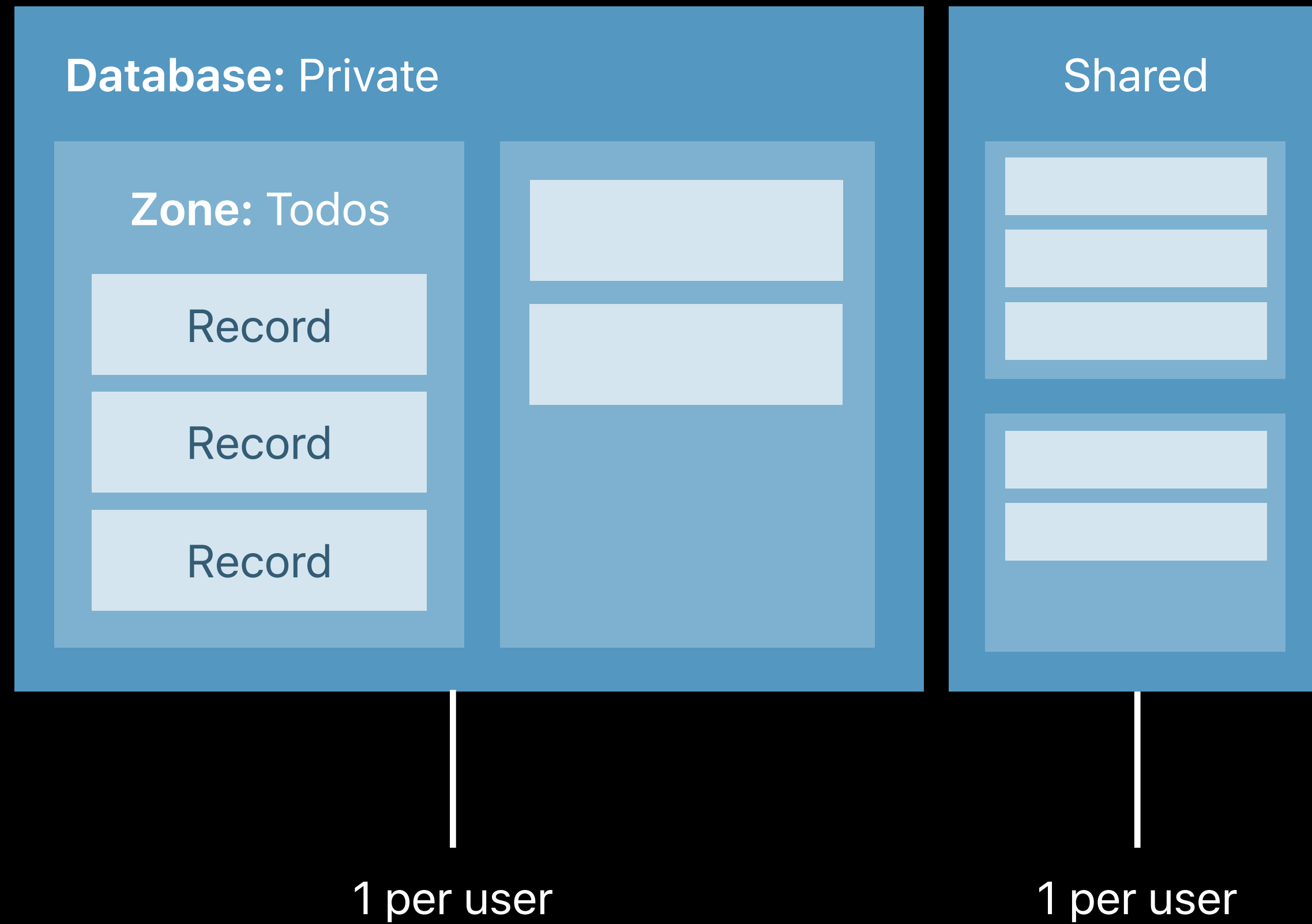
1 per user

Quick Conceptual Refresher

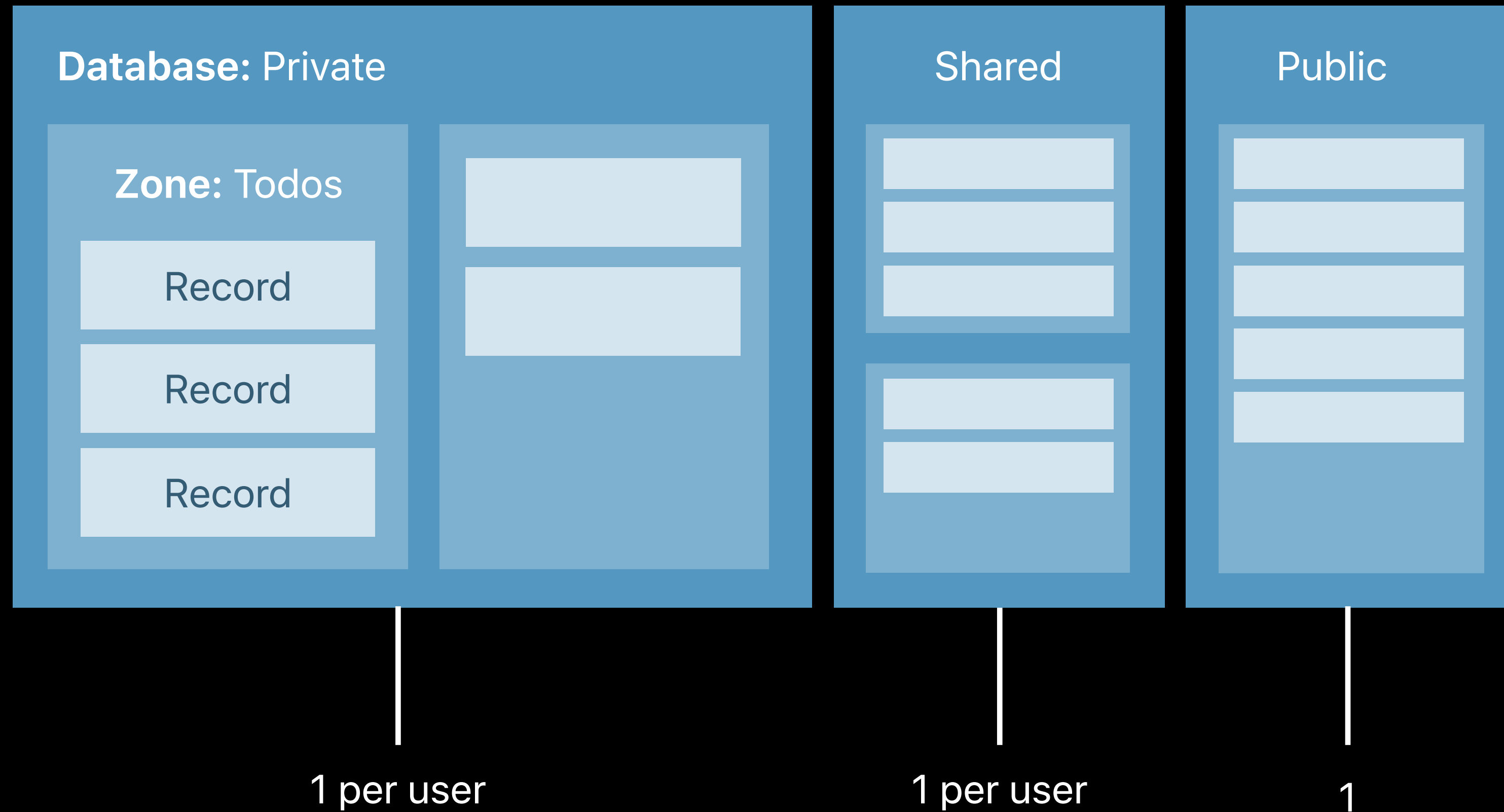


1 per user

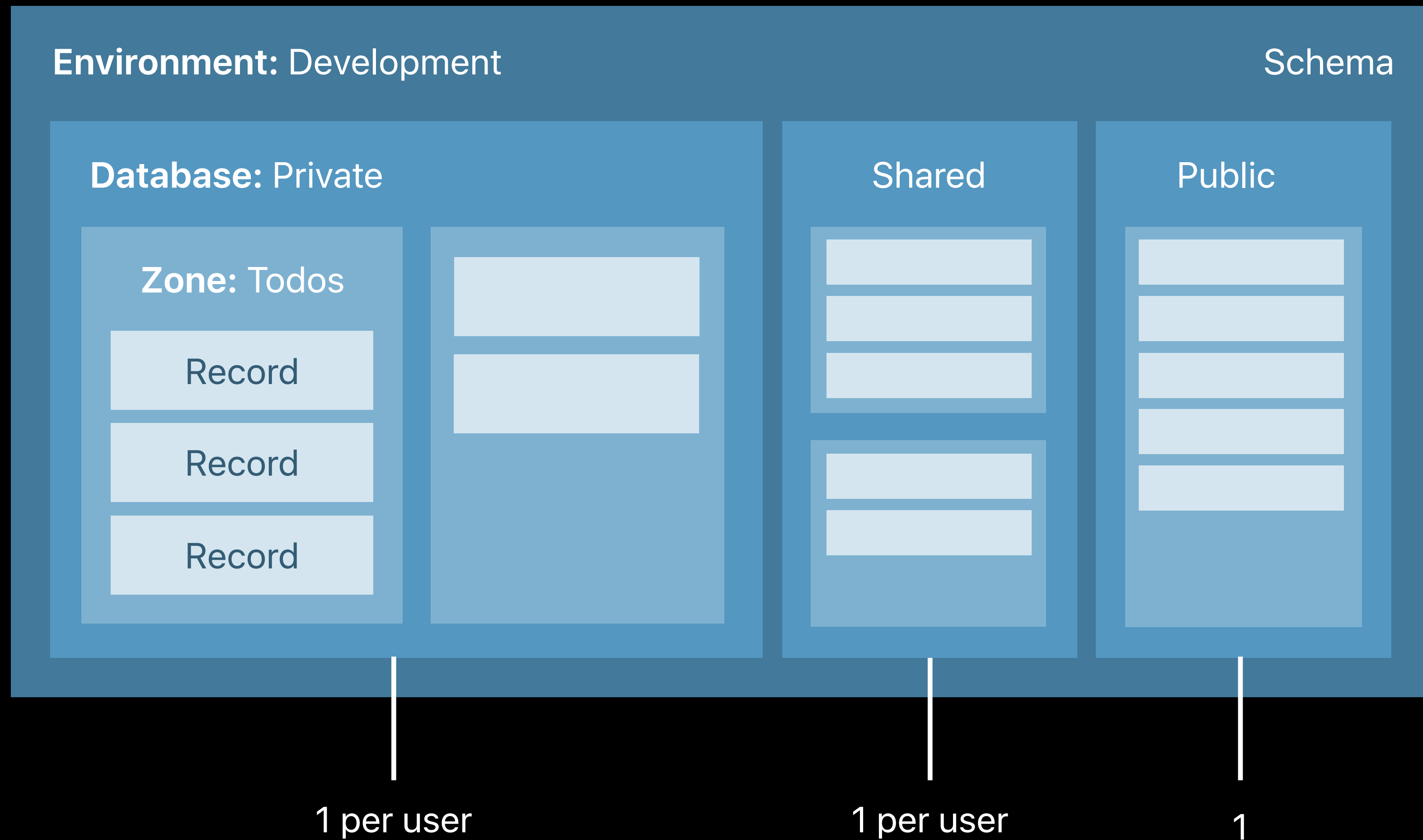
Quick Conceptual Refresher



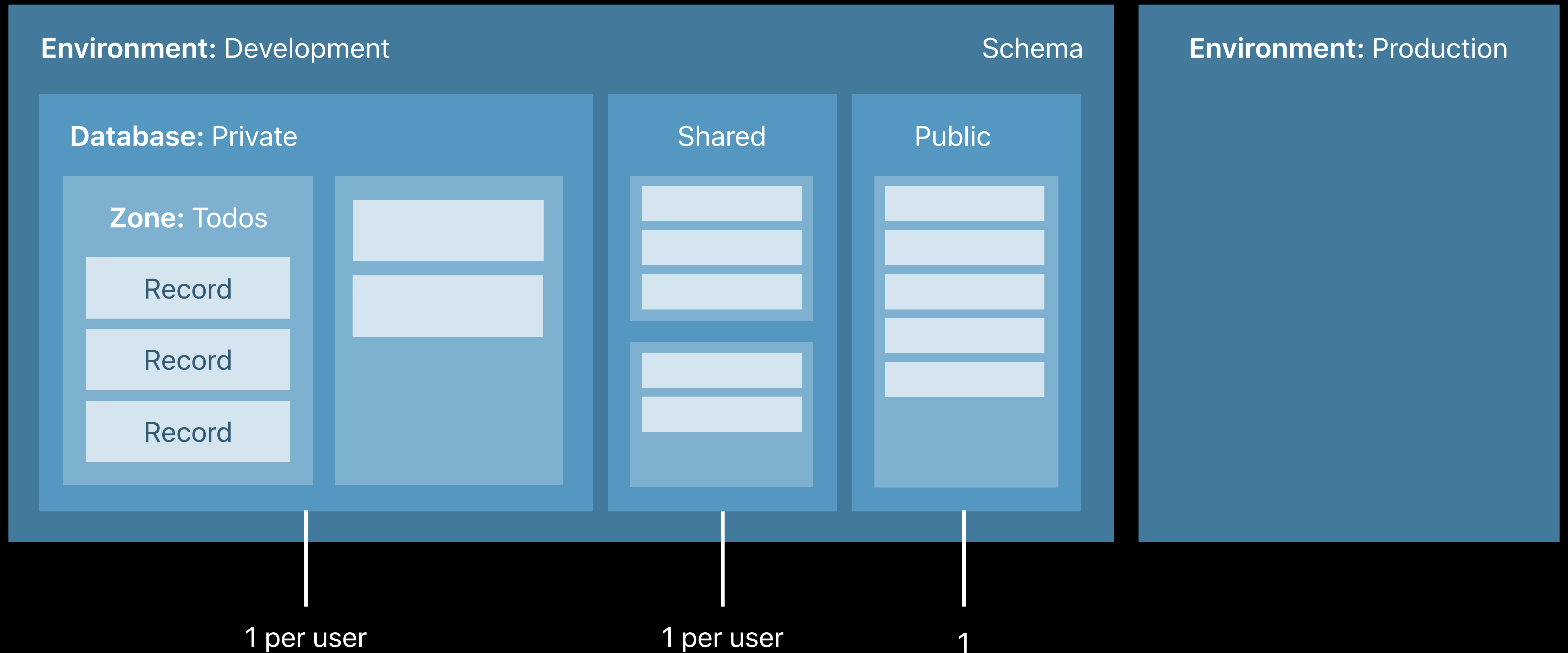
Quick Conceptual Refresher



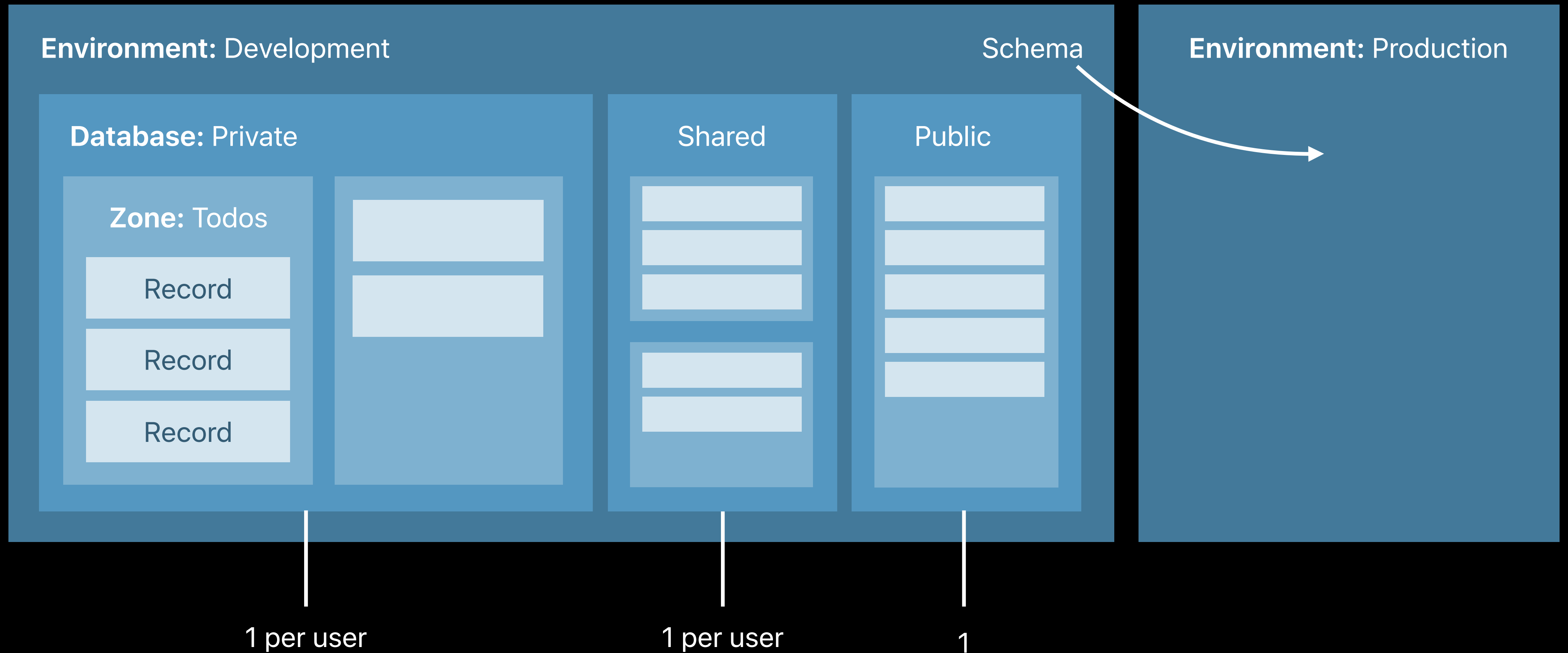
Quick Conceptual Refresher



Quick Conceptual Refresher



Quick Conceptual Refresher



Quick Conceptual Refresher

Container: iCloud.com.wwdc17.todos

Environment: Development

Schema

Environment: Production

Database: Private

Shared

Public

Zone: Todos

Record

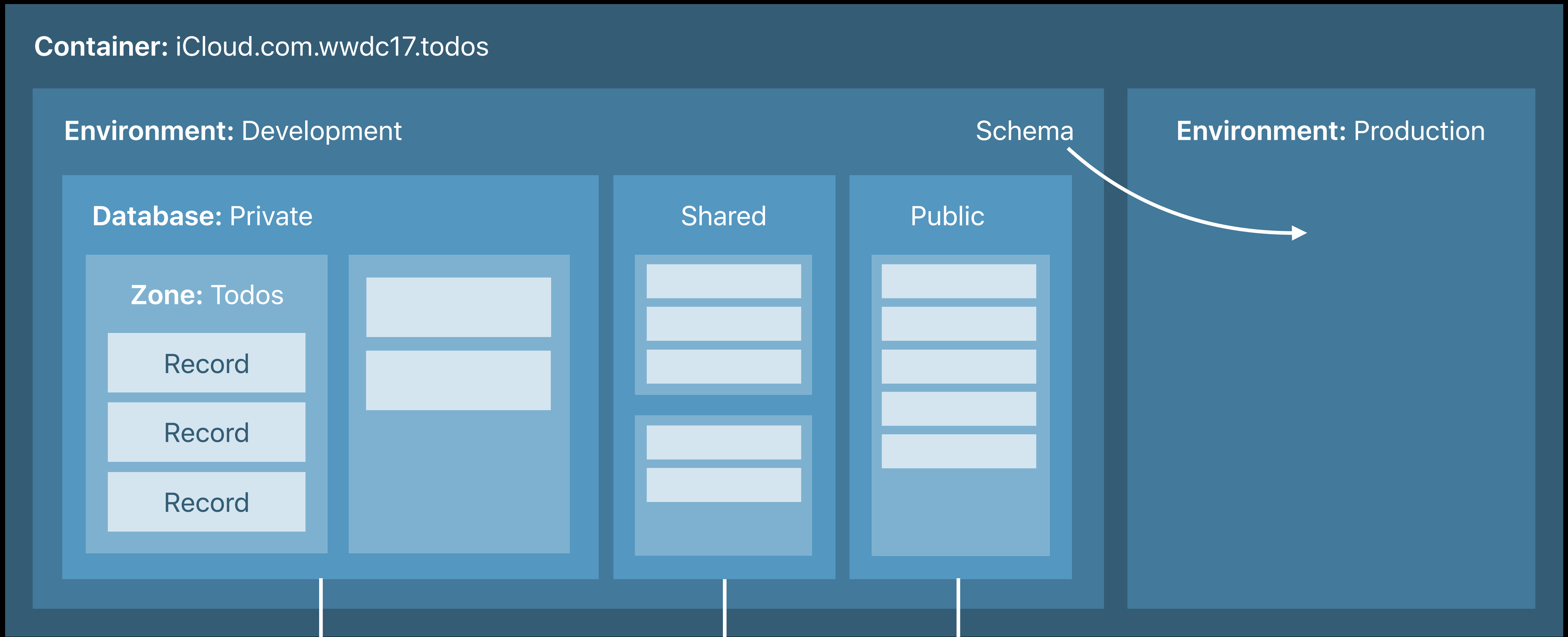
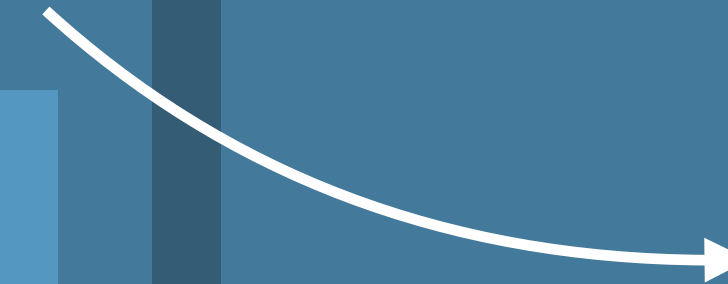
Record

Record

1 per user

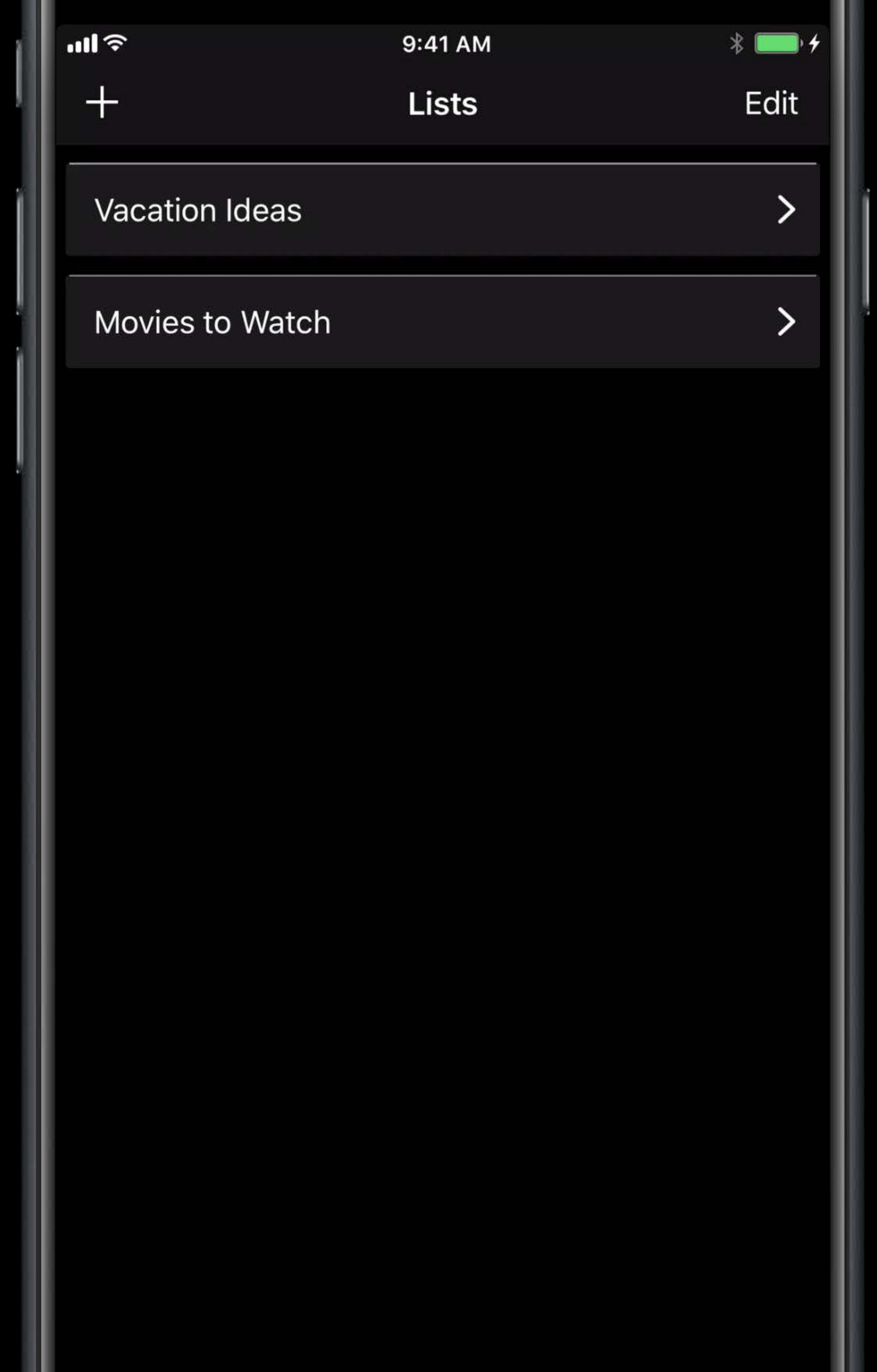
1 per user

1



Example Todo List App

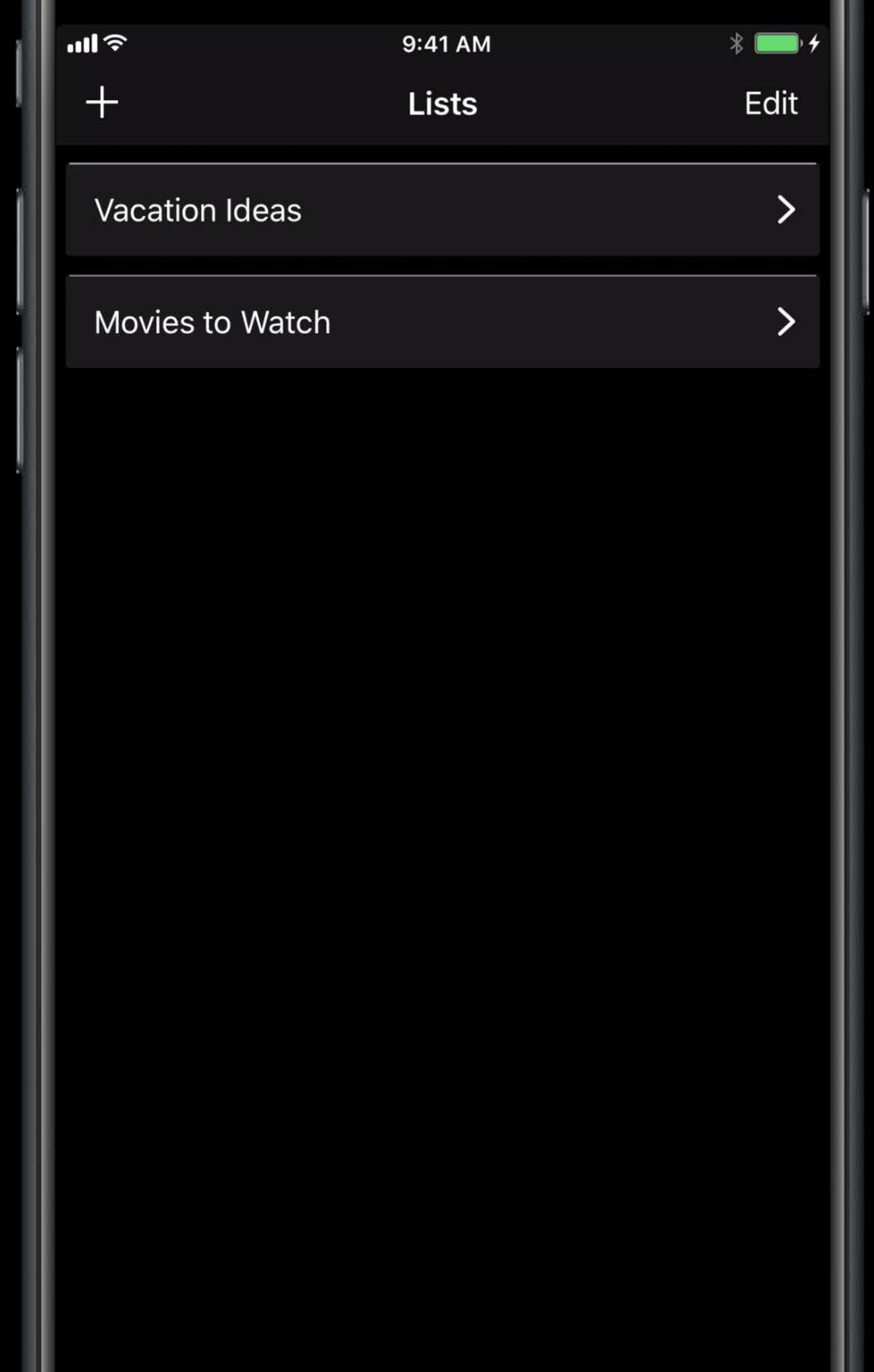
Data model



Example Todo List App

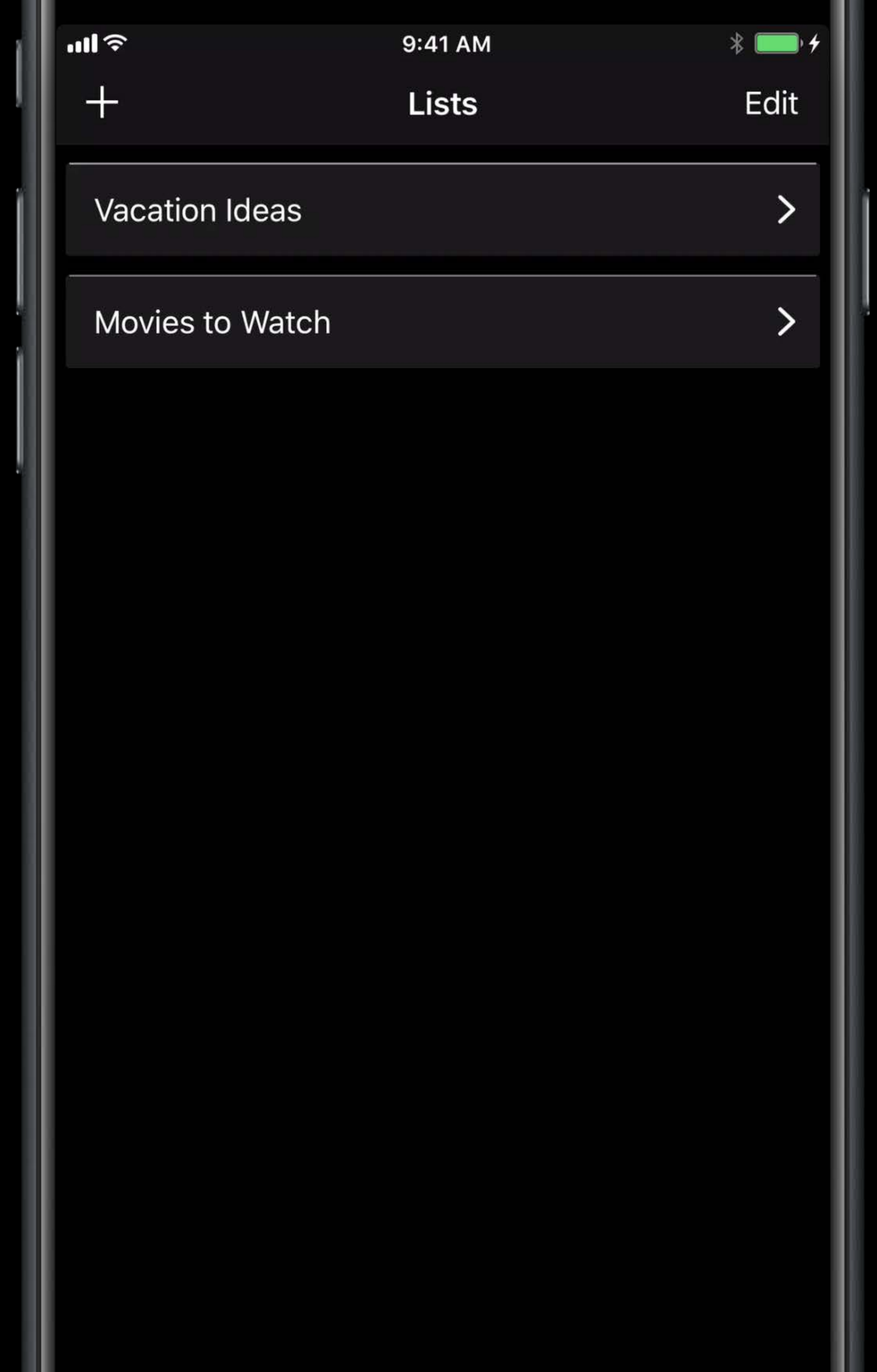
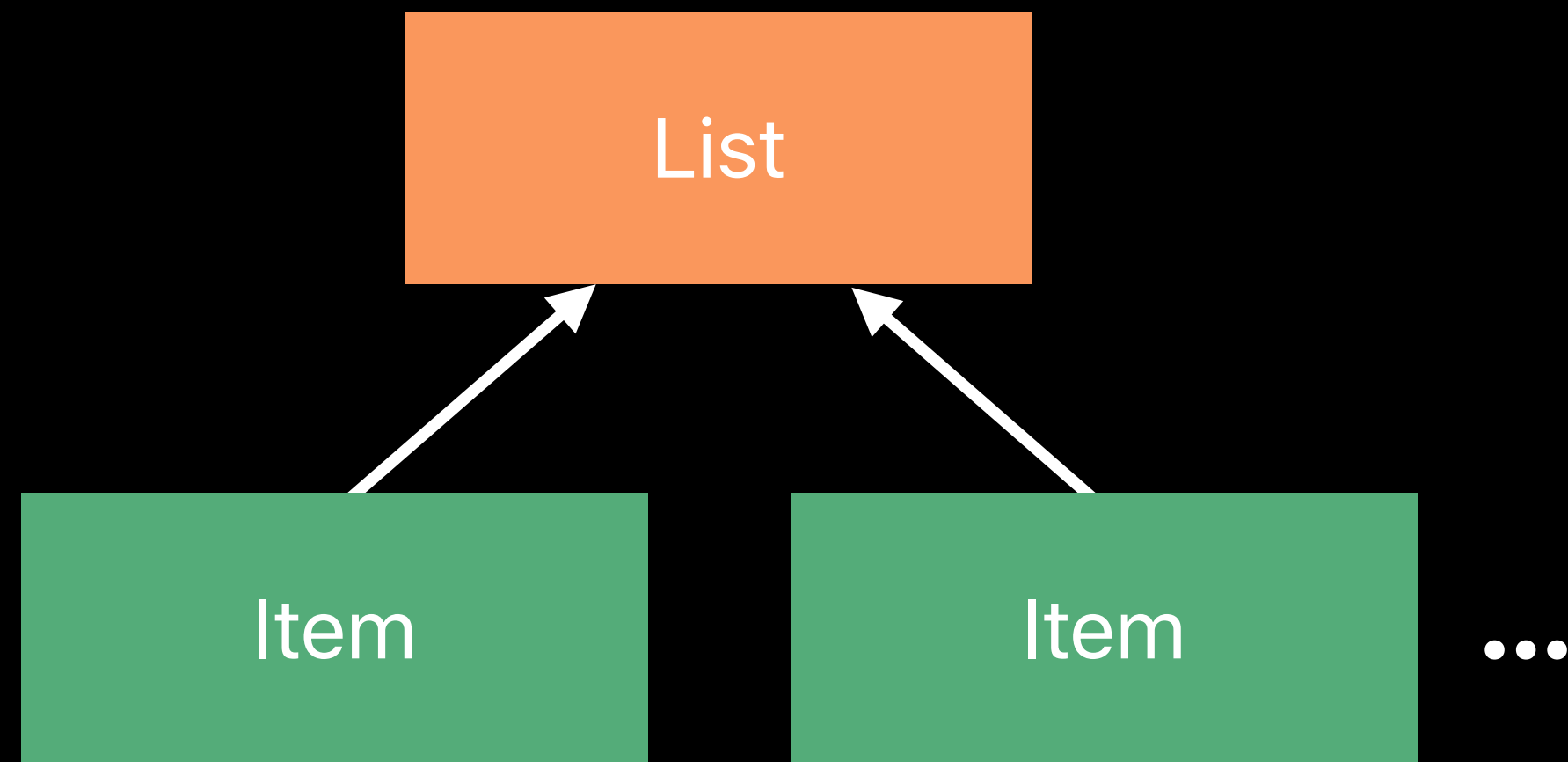
Data model

List



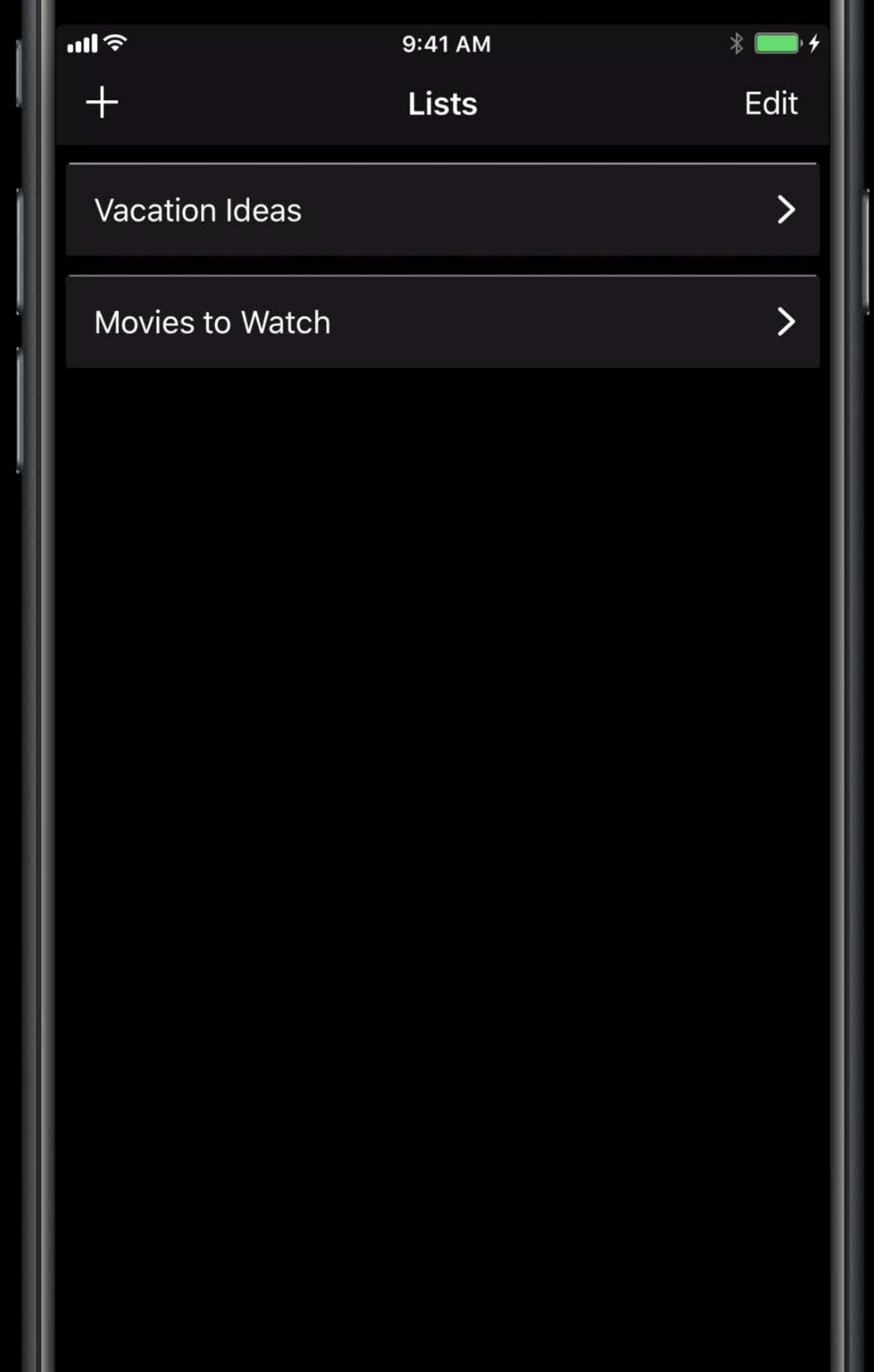
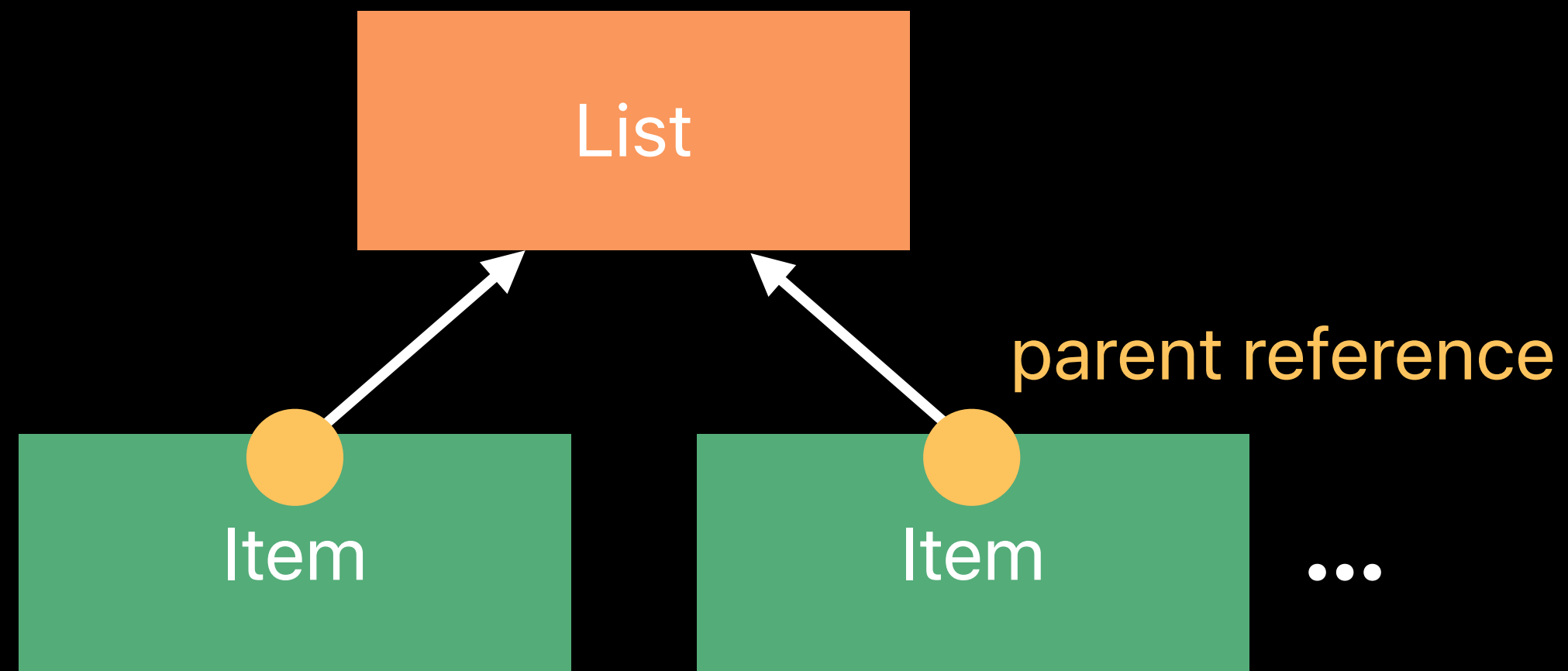
Example Todo List App

Data model



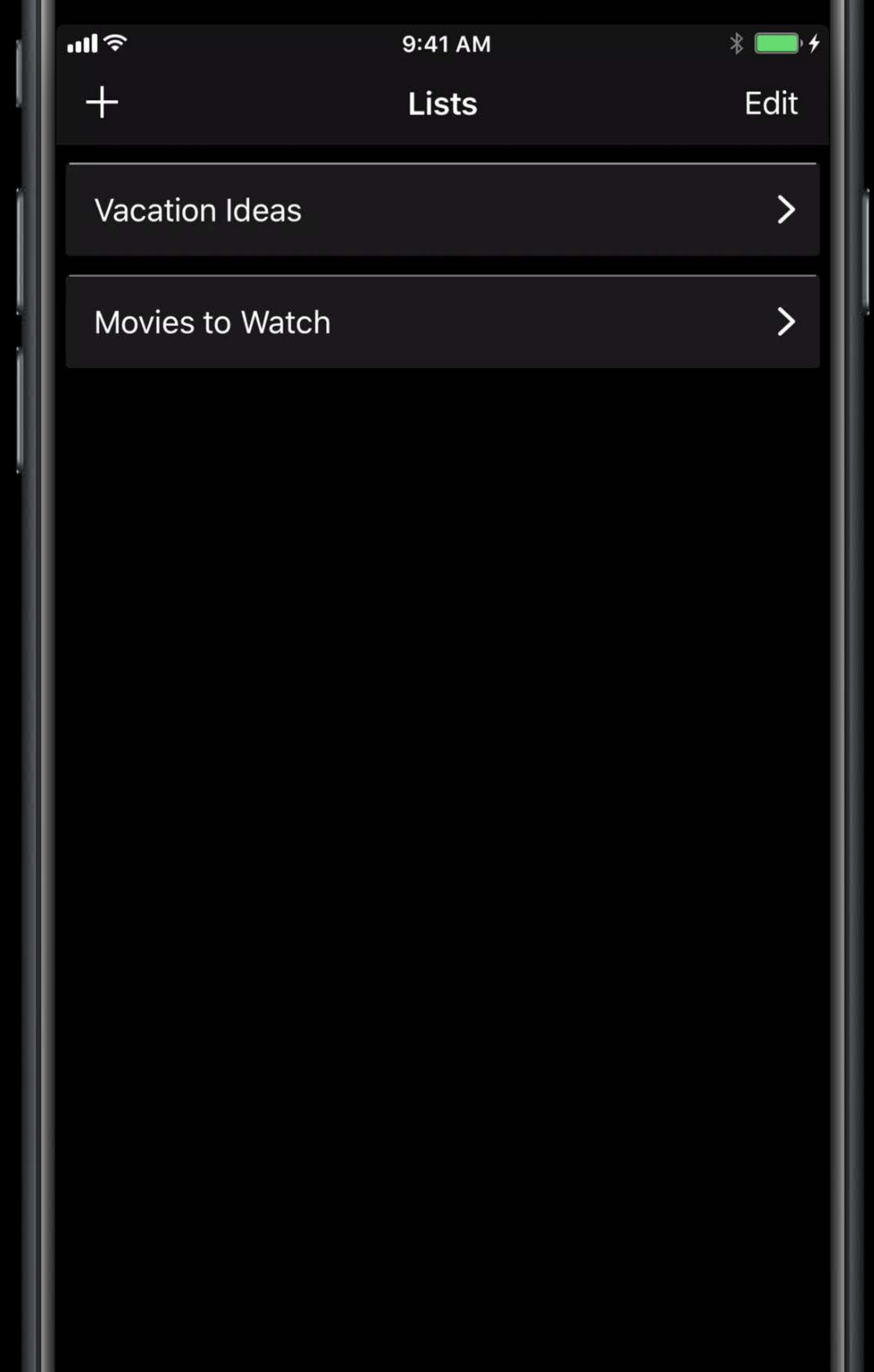
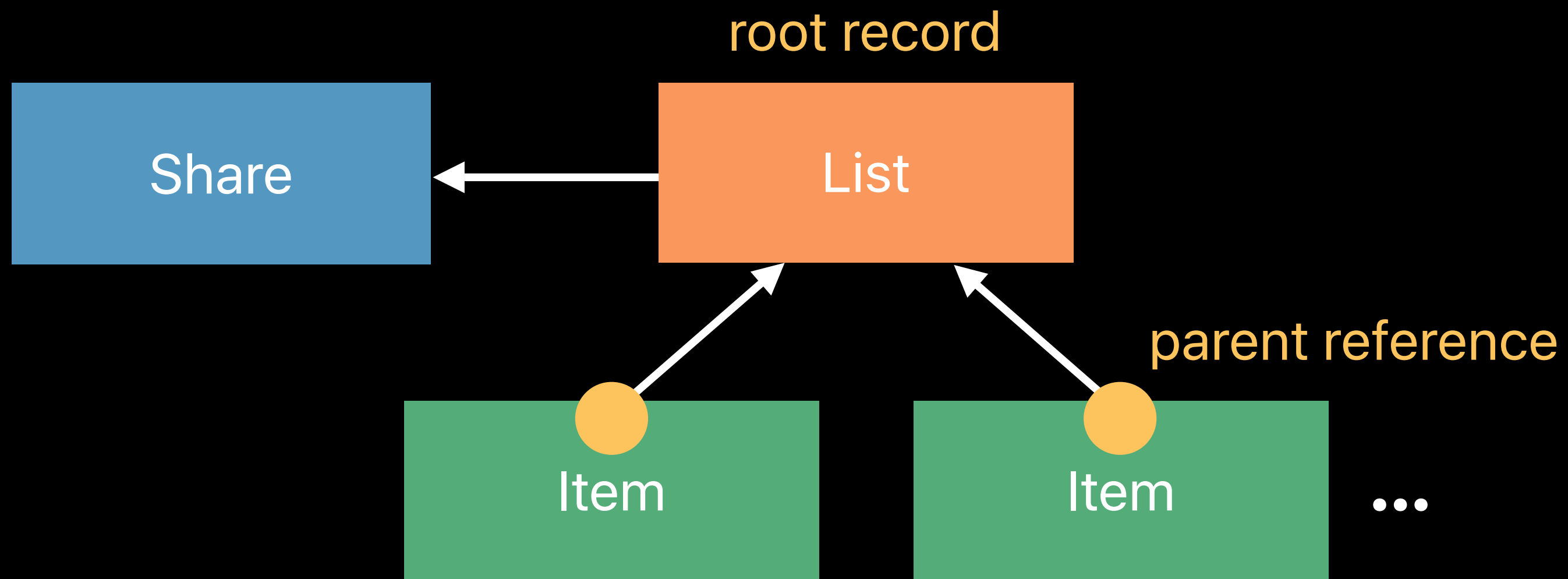
Example Todo List App

Data model



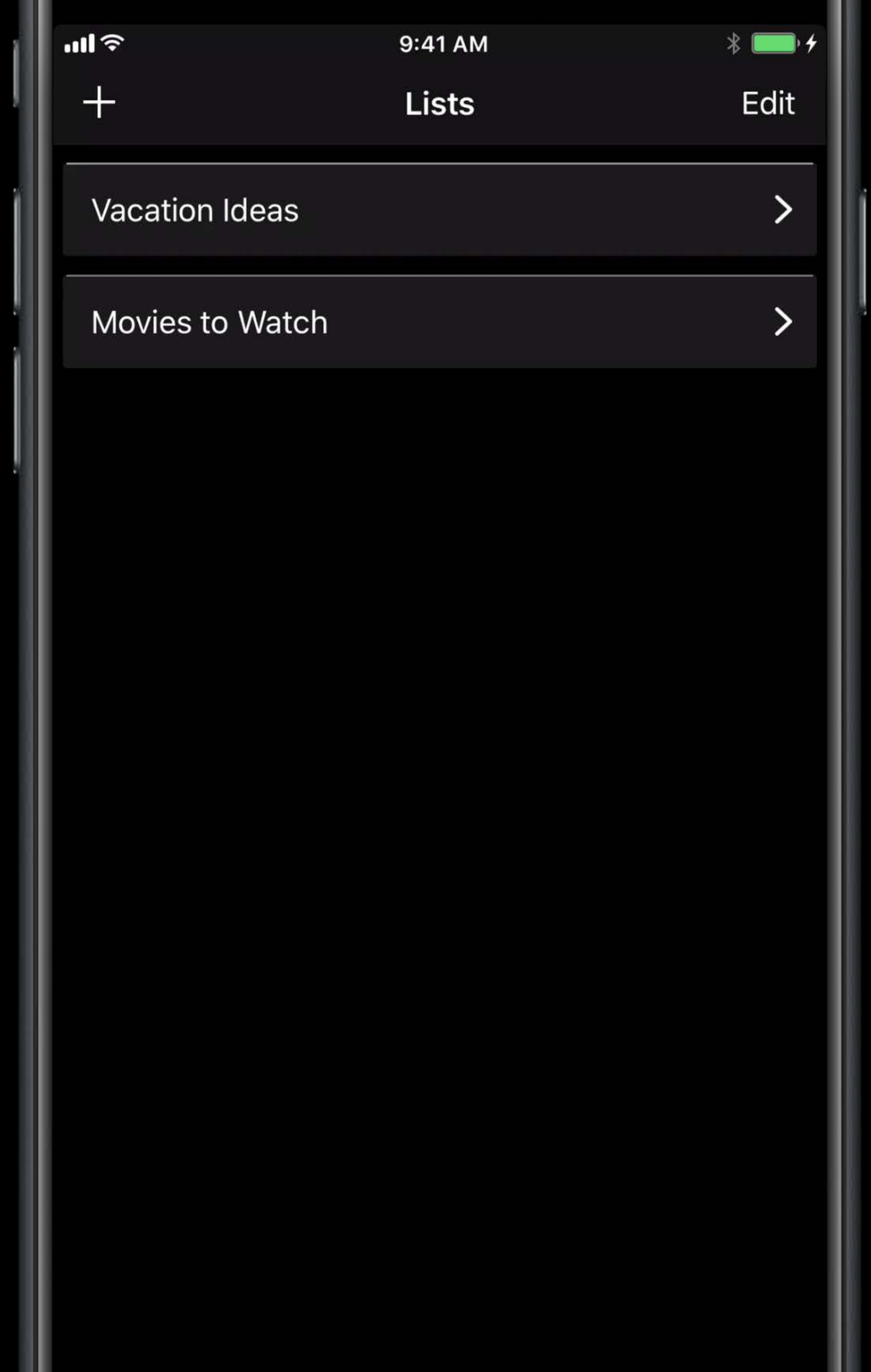
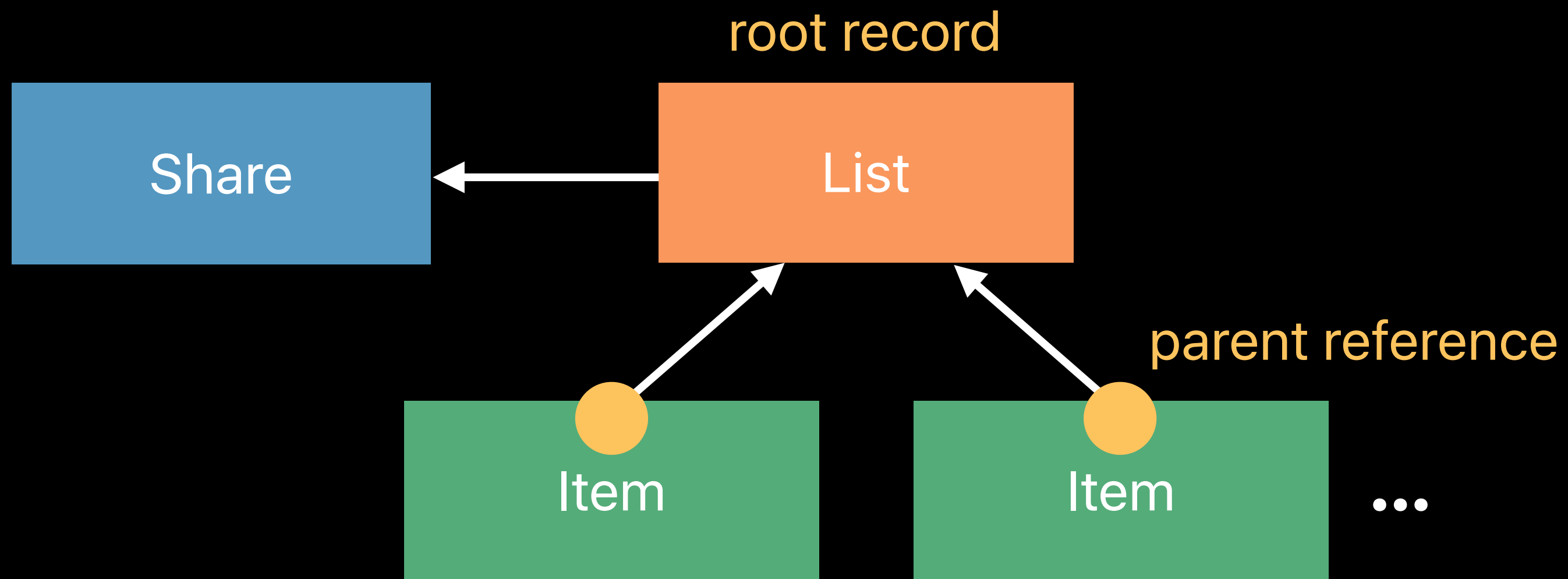
Example Todo List App

Data model



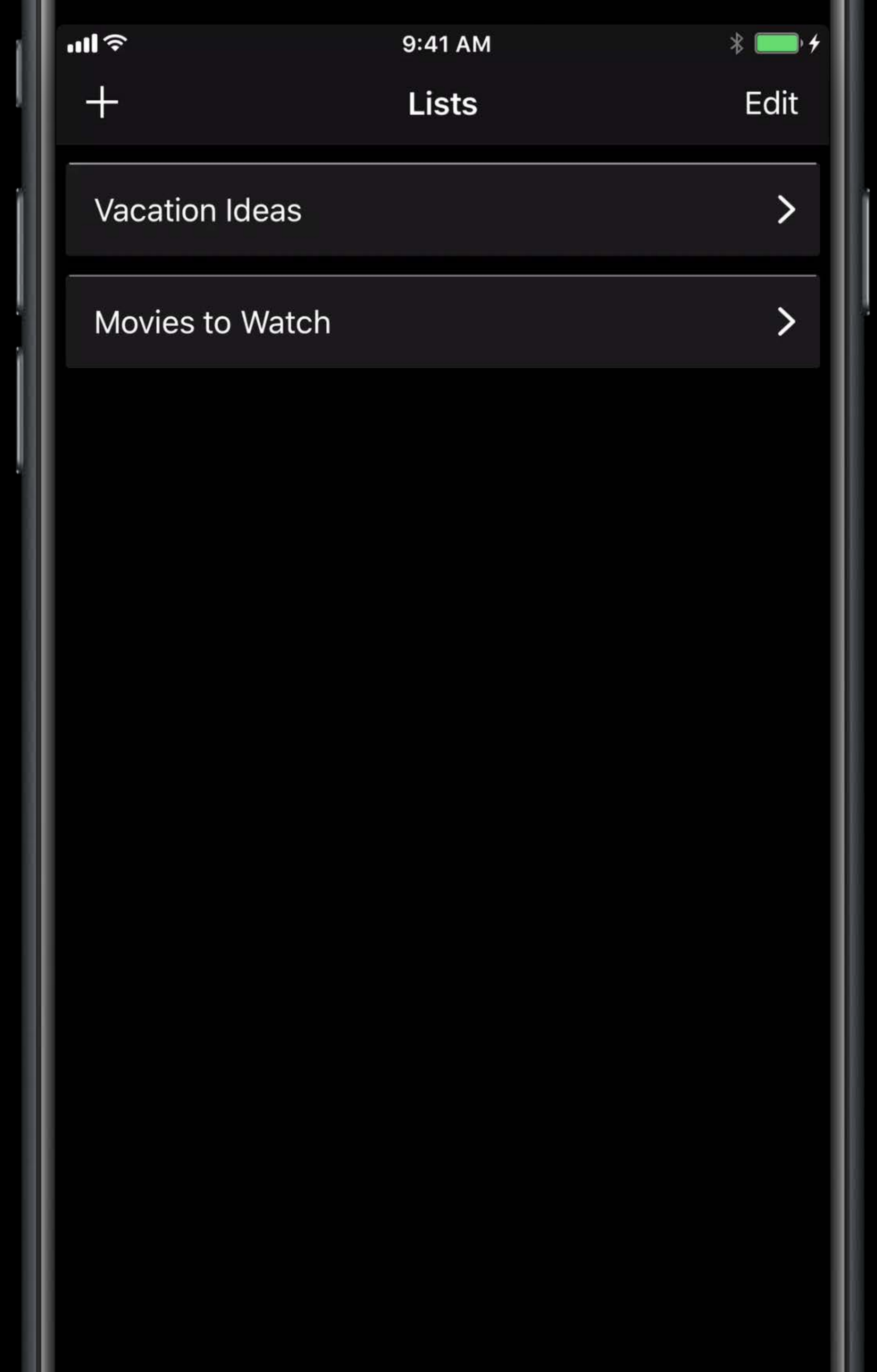
Example Todo List App

Data model



Example Todo List App

Fetch changes APIs

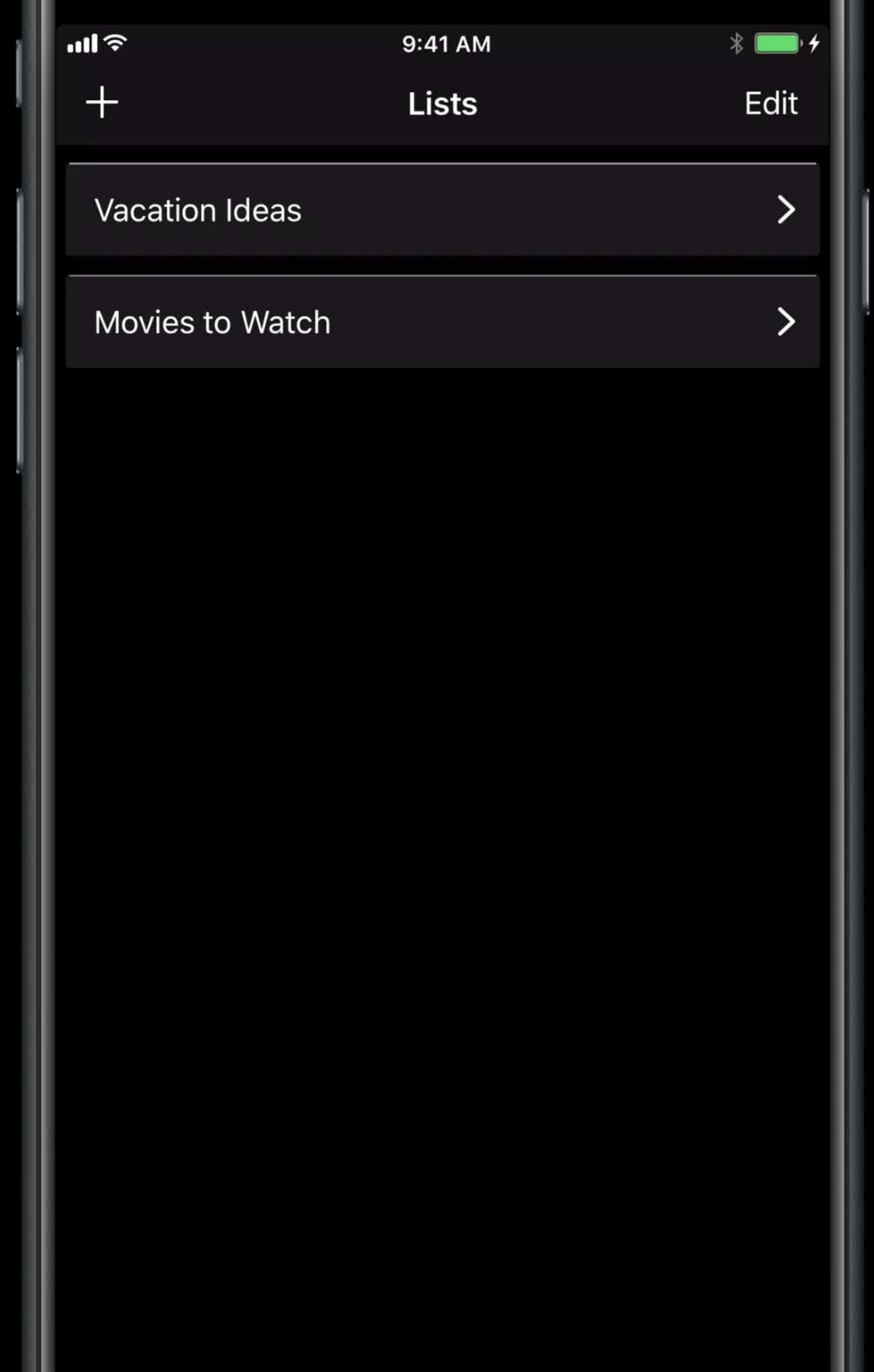


Example Todo List App

Fetch changes APIs

`CKDatabaseSubscription` (private database)

`CKDatabaseSubscription` (shared database)



Example Todo List App

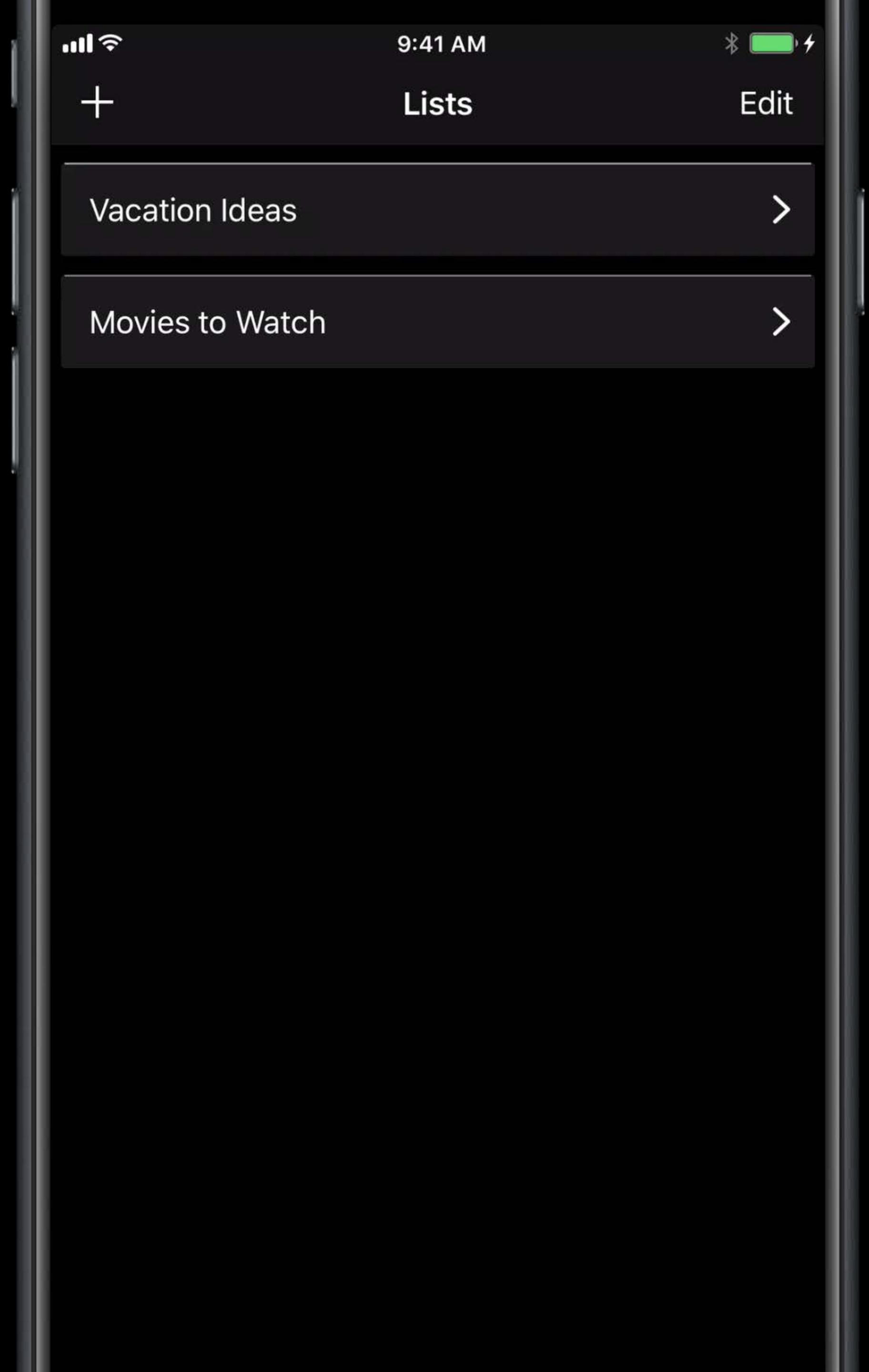
Fetch changes APIs

`CKDatabaseSubscription` (private database)

`CKDatabaseSubscription` (shared database)

Upon push and app launch:

1. `CKFetchDatabaseChangesOperation`
2. `CKFetchRecordZoneChangesOperation`



Example Todo List App

Fetch changes APIs

`CKDatabaseSubscription` (private database)

`CKDatabaseSubscription` (shared database)

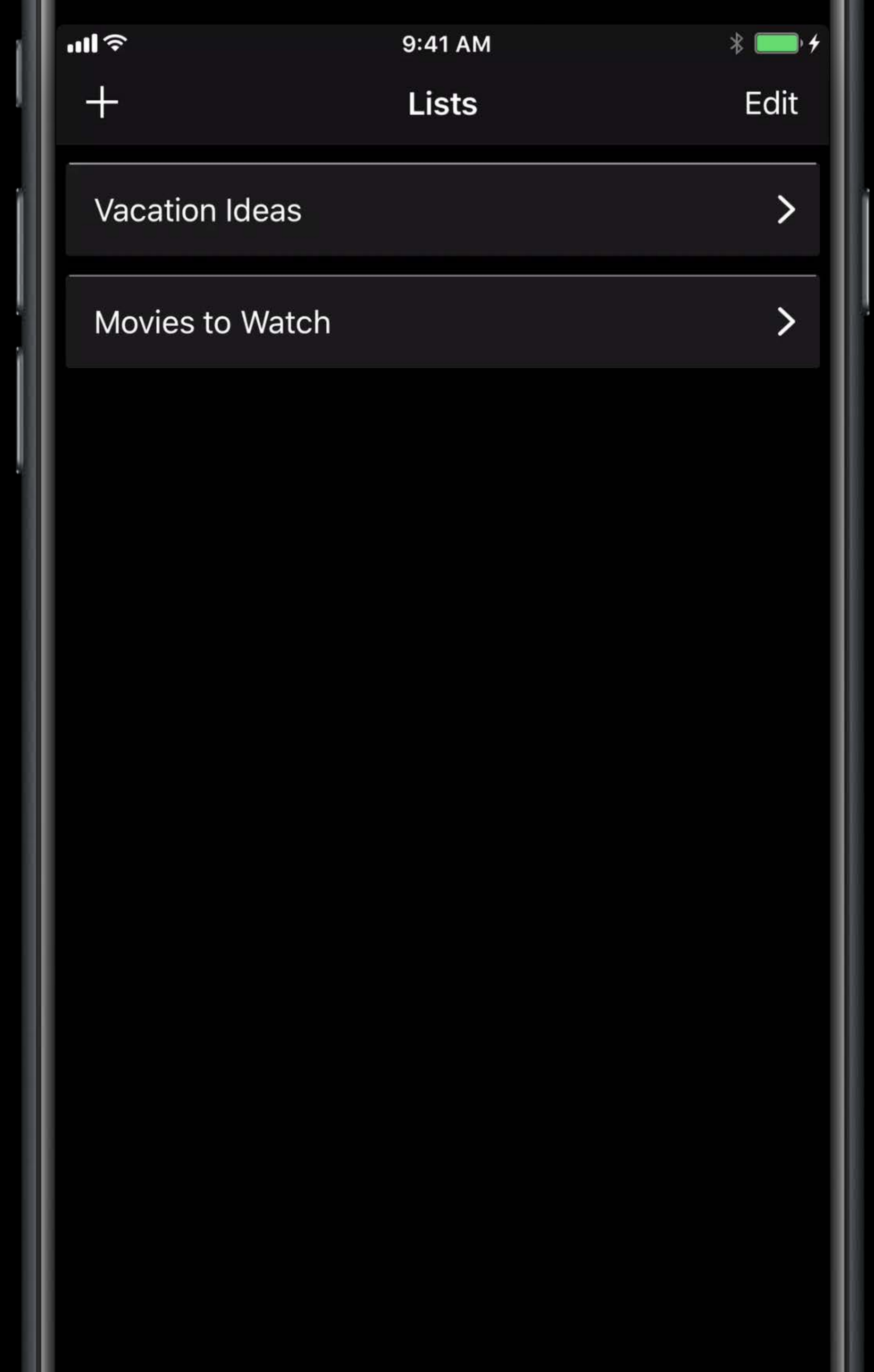
Upon push and app launch:

1. `CKFetchDatabaseChangesOperation`
2. `CKFetchRecordZoneChangesOperation`

CloudKit Best Practices

WWDC16

 Maintaining a Local Cache of CloudKit Records



Demo

Fetching changes in CloudKit Dashboard

▼ Metadata

Name: C5304752-9819-48F3-B837-4256F45652B1

Type: List

Database: private

Zone: Todos

Created: May 18 2017 10:51 AM
by Dave Browning
(_6c07d121939728c5c22a18487fb57b01)

Modified: May 19 2017 3:24 PM
by Dave Browning
(_6c07d121939728c5c22a18487fb57b01)

Change Tag: m

► References 0

► Sharing Not Shared

▼ Fields 1 of 1

name STRING

Movies to Watch

Delete

Reload

Save

HTTP POST /database/1/iCloud.com.wwdc17.todos/development/private/records/modify

```
{
  "operations": [
    {
      "operationType": "update",
      "record": {
        "recordName": "C5304752-9819-48F3-B837...",
        "recordType": "List",
        ...
      }
    }
  ]
}
```

EDITING RECORD

▼ Metadata

Name: C5304752-9819-48F3-B837-4256F45652B1

Type: List

Database: private

Zone: Todos

Created: May 18 2017 10:51 AM
by Dave Browning
(_6c07d121939728c5c22a18487fb57b01)

Modified: May 19 2017 3:24 PM
by Dave Browning
(_6c07d121939728c5c22a18487fb57b01)

Change Tag: m

► References 0

► Sharing Not Shared

▼ Fields 1 of 1

name STRING

Movies to Watch

Delete Reload Save

```
HTTP POST /database/1/iCloud.com.wwdc17.todos/development/private/records/modify
```

```
{  
  "operations": [  
    {  
      "operationType": "update",  
      "record": {  
        "recordName": "C5304752-9819-48F3-B837...",  
        "recordType": "List",  
        ...  
      }  
    }  
  ]  
}
```

```
let operation = CKModifyRecordsOperation(  
  recordsToSave: [record],  
  recordIDsToDelete: []  
)  
  
operation.modifyRecordsCompletionBlock = {  
  (savedRecords, deletedRecordIDs, error) in  
  ...  
}  
  
privateDB.add(operation)
```

EDITING RECORD

Metadata

Name: C5304752-9819-48F3-B837-4256F45652B1

Type: List

Database: private

Zone: Todos

Created: May 18 2017 10:51 AM
by Dave Browning
(_6c07d121939728c5c22a18487fb57b01)

Modified: May 19 2017 3:24 PM
by Dave Browning
(_6c07d121939728c5c22a18487fb57b01)

Change Tag: m

References 0

Sharing Not Shared

Fields 1 of 1

name STRING

Movies to Watch

Delete Reload Save

LOAD RECORDS FROM:

Private Database
dave.ck.wwdc17@icloud.com

Todos

USING:

Query

Fetch

Changes

FETCH RECORD CHANGES SINCE:

```
AQAAAAAAAAAXf////////+hzFL5eSRI0YcbNP  
NBUDxY
```

Fetch Changes

Fetch the record changes in the Todos zone from a specific point in time, specified by a change token.

Create New Record...

Accept Shared Record...

LOAD RECORDS FROM:

Private Database
dave.ck.wwdc17@icloud.com

Todos

USING:

Query

Fetch

Changes

FETCH RECORD CHANGES SINCE:

AQAAAAAAAAAXf/////////+hzFL5eSRI0YcbNP
NBUDxY

Fetch Changes

Fetch the record changes in the Todos zone from a specific point in time, specified by a change token.

Create New Record...

Accept Shared Record...

HTTP POST /database/1/iCloud.com.wwdc17.todos/Development/private/records/changes

```
{
  "zoneID": {
    "zoneName": "Todos",
    "ownerRecordName": "_6c07d121939728c5c22a18487fb57b01"
  },
  "syncToken": "AQAAAAAAAAAXf/////////+hzFL5eSRI0YcbNPNUdxY",
  "resultsLimit": 200
}
```

LOAD RECORDS FROM:

Private Database
dave.ck.wwdc17@icloud.com

Todos

USING:

Query

Fetch

Changes

FETCH RECORD CHANGES SINCE:

AQAAAAAAAAAXf////////+hzFL5eSRI0YcbNP
NBUDxY

Fetch Changes

Fetch the record changes in the Todos zone from a specific point in time, specified by a change token.

Create New Record...

Accept Shared Record...

```
HTTP POST /database/1/iCloud.com.wwdc17.todos/Development/private/records/changes
```

```
{
  "zoneID": {
    "zoneName": "Todos",
    "ownerRecordName": "_6c07d121939728c5c22a18487fb57b01"
  },
  "syncToken": "AQAAAAAAAAAXf////////+hzFL5eSRI0YcbNPNBUdxY",
  "resultsLimit": 200
}
```

```
let operation = CKFetchRecordZoneChangesOperation(
  recordZoneIDs: zoneIDs,
  optionsByRecordZoneID: optionsByRecordZoneID
)
```

```
operation.recordChangedBlock = {...}
operation.recordWithIDWasDeletedBlock = {...}
operation.recordZoneChangeTokensUpdatedBlock = {...}
operation.recordZoneFetchCompletionBlock = {...}
operation.fetchRecordZoneChangesCompletionBlock = {...}
```

```
privateDB.add(operation)
```

Demo

Subscriptions & Push in CloudKit Dashboard

Log Event

Time	Platform	User	Type	Operation ID	Op. Group Name	Details
▼ 2017-05-19 15:24:51	iOS;11.0	Dave Browning (_6c07d121939 728c5c22a1848 7fb57b01)	database	5B55E1C8D1 6CD94C	Initialization	operation: zone fetch database: private zone: Todos server latency: 29ms request size: 409B response size: 0B hardware: iPhone8,2 op. group id: 637989D0CDA36C66 op. group quantity: 5 requestId: 534A7B17-9B03-4D50-B824-78885B8F59F3

Log Event

Time

Time	Platform	User	Type	Operation ID	Op. Group Name	Details
▼ 2017-05-19 15:24:51	iOS;11.0	Dave Browning (_6c07d121939 728c5c22a1848 7fb57b01)	database	5B55E1C8D1 6CD94C	Initialization	operation: zone fetch database: private zone: Todos server latency: 29ms request size: 409B response size: 278B hardware: iPhone8,2 op. group id: 637989D0CDA36C66 op. group quantity: 5 requestId: 534A7B17-9B03-4D50-B824-78885B8F59F3

Log Event

Platform

Time	Platform	User	Type	Operation ID	Op. Group Name	Details
▼ 2017-05-19 15:24:51	iOS;11.0	Dave Browning (_6c07d121939 728c5c22a1848 7fb57b01)	database	5B55E1C8D1 6CD94C	Initialization	operation: zone fetch database: private zone: Todos server latency: 29ms request size: 409B response size: 278B hardware: iPhone8,2 op. group id: 637989D0CDA36C66 op. group quantity: 5 requestId: 534A7B17-9B03-4D50-B824-78885B8F59F3

iOS
macOS
tvOS
watchOS
web

Log Event

User

Time	Platform	User	Type	Operation ID	Op. Group Name	Details
▼ 2017-05-19 15:24:51	iOS;11.0	Dave Browning (_6c07d121939 728c5c22a1848 7fb57b01)	database	5B55E1C8D1 6CD94C	Initialization	operation: zone fetch database: private zone: Todos server latency: 29ms request size: 409B response size: 278B hardware: iPhone8,2 op. group id: 637989D0CDA36C66 op. group quantity: 5 requestId: 534A7B17-9B03-4D50-B824-78885B8F59F3

user record ID
+ name, if team member

Log Event

Type

Time	Platform	User	Type	Operation ID	Op. Group Name	Details
▼ 2017-05-19 15:24:51	iOS;11.0	Dave Browning (_6c07d121939 728c5c22a1848 7fb57b01)	database	5B55E1C8D1 6CD94C	Initialization	operation: zone fetch database: private zone: Todos server latency: 29ms request size: 409B response size: 278B hardware: iPhone8,2 op. group id: 637989D0CDA36C66 op. group quantity: 5 requestId: 534A7B17-9B03-4D50-B824-78885B8F59F3

database
push
sharing

Log Event

Operation ID

Time	Platform	User	Type	Operation ID	Op. Group Name	Details
▼ 2017-05-19 15:24:51	iOS;11.0	Dave Browning (_6c07d121939 728c5c22a1848 7fb57b01)	database	5B55E1C8D1 6CD94C	Initialization	operation: zone fetch database: private zone: Todos server latency: 29ms request size: 409B response size: 278B hardware: iPhone8,2 op. group id: 637989D0CDA36C66 op. group quantity: 5 requestId: 534A7B17-9B03-4D50-B824-78885B8F59F3

Log Event

Operation Group Name

Time	Platform	User	Type	Operation ID	Op. Group Name	Details
▼ 2017-05-19 15:24:51	iOS;11.0	Dave Browning (_6c07d121939 728c5c22a1848 7fb57b01)	database	5B55E1C8D1 6CD94C	Initialization	operation: zone fetch database: private zone: Todos server latency: 29ms request size: 409B response size: 278B hardware: iPhone8,2 op. group id: 637989D0CDA36C66 op. group quantity: 5 requestId: 534A7B17-9B03-4D50-B824-78885B8F59F3

Log Event

Details

Time	Platform	User	Type	Operation ID	Op. Group Name	Details
▼ 2017-05-19 15:24:51	iOS;11.0	Dave Browning (_6c07d121939 728c5c22a1848 7fb57b01)	database	5B55E1C8D1 6CD94C	Initialization	operation: zone fetch database: private zone: Todos server latency: 29ms request size: 409B response size: 278B hardware: iPhone8,2 op. group id: 637989D0CDA36C66 op. group quantity: 5 requestId: 534A7B17-9B03-4D50-B824-78885B8F59F3

Log Event

Type of operation

Time	Platform	User	Type	Operation ID	Op. Group Name	Details
▼ 2017-05-19 15:24:51	iOS;11.0	Dave Browning (_6c07d121939 728c5c22a1848 7fb57b01)	database	5B55E1C8D1 6CD94C	Initialization	operation: zone fetch database: private zone: Todos server latency: 29ms request size: 409B response size: 278B hardware: iPhone8,2 op. group id: 637989D0CDA36C66 op. group quantity: 5 requestId: 534A7B17-9B03-4D50-B824-78885B8F59F3

record modify
database changes
zone changes
record fetch

...

Log Event

Database

Time	Platform	User	Type	Operation ID	Op. Group Name	Details
▼ 2017-05-19 15:24:51	iOS;11.0	Dave Browning (_6c07d121939 728c5c22a1848 7fb57b01)	database	5B55E1C8D1 6CD94C	Initialization	operation: zone fetch database: private zone: Todos server latency: 29ms request size: 409B response size: 278B hardware: iPhone8,2 op. group id: 637989D0CDA36C66 op. group quantity: 5 requestId: 534A7B17-9B03-4D50-B824-78885B8F59F3

private
public
shared

Log Event

Zone

Time	Platform	User	Type	Operation ID	Op. Group Name	Details
▼ 2017-05-19 15:24:51	iOS;11.0	Dave Browning (_6c07d121939 728c5c22a1848 7fb57b01)	database	5B55E1C8D1 6CD94C	Initialization	operation: zone fetch database: private zone: Todos server latency: 29ms request size: 409B response size: 278B hardware: iPhone8,2 op. group id: 637989D0CDA36C66 op. group quantity: 5 requestId: 534A7B17-9B03-4D50-B824-78885B8F59F3

Log Event

Server latency

Time	Platform	User	Type	Operation ID	Op. Group Name	Details
▼ 2017-05-19 15:24:51	iOS;11.0	Dave Browning (_6c07d121939 728c5c22a1848 7fb57b01)	database	5B55E1C8D1 6CD94C	Initialization	operation: zone fetch database: private zone: Todos server latency: 29ms request size: 409B response size: 278B hardware: iPhone8,2 op. group id: 637989D0CDA36C66 op. group quantity: 5 requestId: 534A7B17-9B03-4D50-B824-78885B8F59F3

does not include Internet latency

Log Event

Request size

Time	Platform	User	Type	Operation ID	Op. Group Name	Details
▼ 2017-05-19 15:24:51	iOS;11.0	Dave Browning (_6c07d121939 728c5c22a1848 7fb57b01)	database	5B55E1C8D1 6CD94C	Initialization	operation: zone fetch database: private zone: Todos server latency: 29ms request size: 409B response size: 278B hardware: iPhone8,2 op. group id: 637989D0CDA36C66 op. group quantity: 5 requestId: 534A7B17-9B03-4D50-B824-78885B8F59F3

Log Event

Response size

Time	Platform	User	Type	Operation ID	Op. Group Name	Details
▼ 2017-05-19 15:24:51	iOS;11.0	Dave Browning (_6c07d121939 728c5c22a1848 7fb57b01)	database	5B55E1C8D1 6CD94C	Initialization	operation: zone fetch database: private zone: Todos server latency: 29ms request size: 409B response size: 278B hardware: iPhone8,2 op. group id: 637989D0CDA36C66 op. group quantity: 5 requestId: 534A7B17-9B03-4D50-B824-78885B8F59F3

Log Event

Hardware

Time	Platform	User	Type	Operation ID	Op. Group Name	Details
▼ 2017-05-19 15:24:51	iOS;11.0	Dave Browning (_6c07d121939 728c5c22a1848 7fb57b01)	database	5B55E1C8D1 6CD94C	Initialization	operation: zone fetch database: private zone: Todos server latency: 29ms request size: 409B response size: 278B hardware: iPhone8,2 op. group id: 637989D0CDA36C66 op. group quantity: 5 requestId: 534A7B17-9B03-4D50-B824-78885B8F59F3

not a new iPhone 🤔

Log Event

Operation group details

Time	Platform	User	Type	Operation ID	Op. Group Name	Details
▼ 2017-05-19 15:24:51	iOS;11.0	Dave Browning (_6c07d121939 728c5c22a1848 7fb57b01)	database	5B55E1C8D1 6CD94C	Initialization	operation: zone fetch database: private zone: Todos server latency: 29ms request size: 409B response size: 278B hardware: iPhone8,2 op. group id: 637989D0CDA36C66 op. group quantity: 5 requestId: 534A7B17-9B03-4D50-B824-78885B8F59F3

Log Event

Request ID

Time	Platform	User	Type	Operation ID	Op. Group Name	Details
▼ 2017-05-19 15:24:51	iOS;11.0	Dave Browning (_6c07d121939 728c5c22a1848 7fb57b01)	database	5B55E1C8D1 6CD94C	Initialization	operation: zone fetch database: private zone: Todos server latency: 29ms request size: 409B response size: 278B hardware: iPhone8,2 op. group id: 637989D0CDA36C66 op. group quantity: 5 requestId: 534A7B17-9B03-4D50-B824-78885B8F59F3

A CKOperation may lead to multiple requests

Log Event

Errors

Time	Platform	User	Type	Operation ID	Op. Group Name	Details
▼ 2017-05-18 10:10:24	iOS;11.0	Emily Parker (_d3944e53690 9d3320da8060b 8e74df9b)	database	28EA879074 17C153	Initialization	error: ZONE_NOT_FOUND operation: zone fetch database: private zone: Todos server latency: 4ms request size: 412B response size: 0B hardware: iPhone8,1 op. group id: 293A83DEEF097DD4 op. group quantity: 5 requestId: DC604F59-C950-41BF-AC92-613A24498A4A

Log Event

Type of error

Time	Platform	User	Type	Operation ID	Op. Group Name	Details
▼ 2017-05-18 10:10:24	iOS;11.0	Emily Parker (_d3944e53690 9d3320da8060b 8e74df9b)	database	28EA879074 17C153	Initialization	error: ZONE_NOT_FOUND operation: zone fetch database: private zone: Todos server latency: 4ms request size: 412B response size: 0B hardware: iPhone8,1 op. group id: 293A83DEEF097DD4 op. group quantity: 5 requestId: DC604F59-C950-41BF-AC92-613A24498A4A

Operation Groups

NEW

Operation Groups

NEW

Initialization

Operation Group

Operation Groups

NEW

Initialization

Operation Group

CKModifyZoneOperation

Operation Groups

NEW

Initialization

Operation Group

CKModifyZoneOperation

CKModifySubscriptionsOperation

Operation Groups

NEW

Initialization

Operation Group

CKModifyZoneOperation

CKModifySubscriptionsOperation

CKFetchDatabaseChangesOperation

Operation Groups

NEW

Initialization

Operation Group

CKModifyZoneOperation

CKModifySubscriptionsOperation

CKFetchDatabaseChangesOperation

CKFetchDatabaseChangesOperation



Operation Groups

NEW

Operation Groups

NEW



AutomatedBackup

ManualBackup

Restore

Operation Groups

NEW



AutomatedBackup
ManualBackup
Restore



SettingUpLibrary
ThumbnailsDownload
FetchingMovieStream

Operation Groups

NEW



AutomatedBackup
ManualBackup
Restore



SettingUpLibrary
ThumbnailsDownload
FetchingMovieStream



Sync down (initial)
Sync down (push triggered)
Download (user initiated)


```
open class CKOperationGroup : NSObject, NSSecureCoding {  
  
    open var operationGroupID: String { get }  
  
    @NSCopying open var defaultConfiguration: CKOperationConfiguration?  
  
    open var name: String?  
    open var quantity: Int  
  
    open var expectedSendSize: CKOperationGroupTransferSize  
    open var expectedReceiveSize: CKOperationGroupTransferSize  
  
}  
  
open class CKOperation : Operation {  
    open var group: CKOperationGroup?  
}
```

```
open class CKOperationGroup : NSObject, NSSecureCoding {

    open var operationGroupID: String { get }

    @NSCopying open var defaultConfiguration: CKOperationConfiguration?

    open var name: String?
    open var quantity: Int

    open var expectedSendSize: CKOperationGroupTransferSize
    open var expectedReceiveSize: CKOperationGroupTransferSize

}

open class CKOperation : Operation {
    open var group: CKOperationGroup?
}
```

```
open class CKOperationGroup : NSObject, NSSecureCoding {
```

```
    open var operationGroupID: String { get }
```

```
    @NSCopying open var defaultConfiguration: CKOperationConfiguration?
```

```
    open var name: String?
```

```
    open var quantity: Int
```

```
    open var expectedSendSize: CKOperationGroupTransferSize
```

```
    open var expectedReceiveSize: CKOperationGroupTransferSize
```

```
}
```

```
open class CKOperation : Operation {
```

```
    open var group: CKOperationGroup?
```

```
}
```

```
open class CKOperationGroup : NSObject, NSSecureCoding {
```

```
    open var operationGroupID: String { get }
```

```
@NSCopying open var defaultConfiguration: CKOperationConfiguration?
```

```
    open var name: String?
```

```
    open var quantity: Int
```

```
    open var expectedSendSize: CKOperationGroupTransferSize
```

```
    open var expectedReceiveSize: CKOperationGroupTransferSize
```

```
}
```

```
open class CKOperation : Operation {
```

```
    open var group: CKOperationGroup?
```

```
}
```

```
open class CKOperationGroup : NSObject, NSSecureCoding {  
  
    open var operationGroupID: String { get }  
  
    @NSCopying open var defaultConfiguration: CKOperationConfiguration?  
  
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    open var quantity: Int  
  
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    open var expectedSendSize: CKOperationGroupTransferSize  
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}  
  
open class CKOperation : Operation {  
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```



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open class CKOperationGroup : NSObject, NSSecureCoding {  
  
    open var operationGroupID: String { get }  
  
    @NSCopying open var defaultConfiguration: CKOperationConfiguration?  
  
    open var name: String?  
    open var quantity: Int  
  
    open var expectedSendSize: CKOperationGroupTransferSize  
    open var expectedReceiveSize: CKOperationGroupTransferSize  
  
}  
  
open class CKOperation : Operation {  
    open var group: CKOperationGroup?  
}
```

```
open class CKOperationGroup : NSObject, NSSecureCoding {
```

```
    open var operationGroupID: String { get }
```

```
    @NSCopying open
```

```
    open var name: String
```

```
    open var quantity: Int
```

```
    open var expectedTime: Int
```

```
    open var expectedSize: Int
```

```
}
```

```
open class CKOperation : Operation {
```

```
    open var group: CKOperationGroup?
```

```
}
```

```
public enum CKOperationGroupTransferSize : Int {
```

```
    case unknown
```

```
    case kilobytes
```

```
    case megabytes
```

```
    case tensOfMegabytes
```

```
    ...
```

```
}
```

```
open class CKOperationGroup : NSObject, NSSecureCoding {  
  
    open var operationGroupID: String { get }  
  
    @NSCopying open var defaultConfiguration: CKOperationConfiguration?  
  
    open var name: String?  
    open var quantity: Int  
  
    open var expectedSendSize: CKOperationGroupTransferSize  
    open var expectedReceiveSize: CKOperationGroupTransferSize  
  
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    open var name: String?  
    open var quantity: Int  
  
    open var expectedSendSize: CKOperationGroupTransferSize  
    open var expectedReceiveSize: CKOperationGroupTransferSize  
  
}  
  
open class CKOperation : Operation {  
    open var group: CKOperationGroup?  
}
```

```
open class CKOperationConfiguration : NSObject {  
  
    open var container: CKContainer?  
  
    open var qualityOfService: QualityOfService  
    open var allowsCellularAccess: Bool  
    open var isLongLived: Bool  
  
    open var timeoutIntervalForRequest: TimeInterval  
    open var timeoutIntervalForResource: TimeInterval  
  
}
```

```
open class CKOperationConfiguration : NSObject {  
  
    open var container: CKContainer?  
  
    open var qualityOfService: QualityOfService  
    open var allowsCellularAccess: Bool  
    open var isLongLived: Bool  
  
    open var timeoutIntervalForRequest: TimeInterval  
    open var timeoutIntervalForResource: TimeInterval  
  
}
```


CKOperationConfiguration

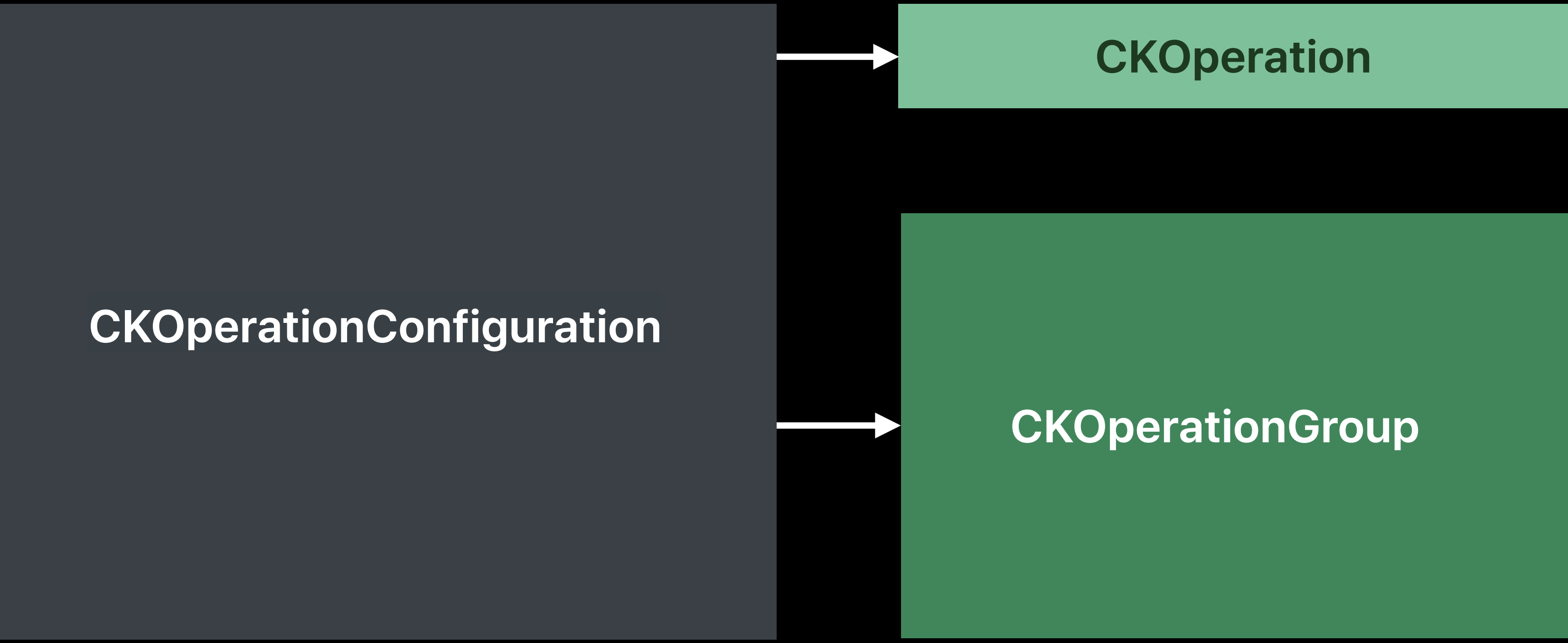
CKOperationConfiguration

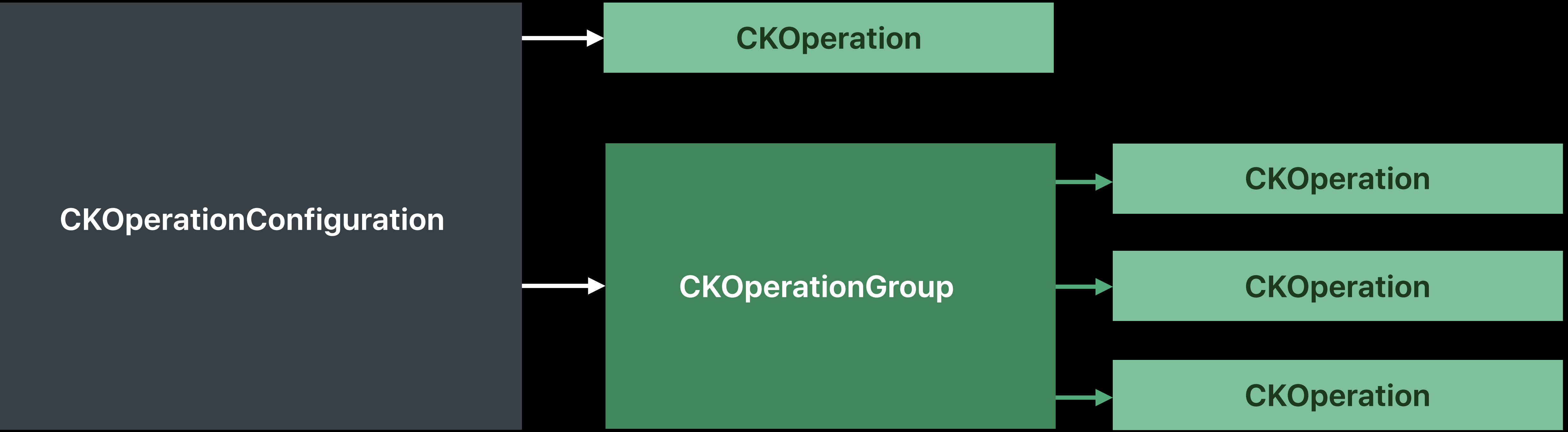


```
graph LR; CKOperationConfiguration[CKOperationConfiguration] --> CKOperation[CKOperation]
```

The diagram consists of two rectangular boxes on a black background. The box on the left is dark gray and contains the text 'CKOperationConfiguration' in white. The box on the right is light green and contains the text 'CKOperation' in dark green. A white arrow points from the right side of the dark gray box to the left side of the light green box.

CKOperation





Log Event

Operation group

Time	Platform	User	Type	Operation ID	Op. Group Name	Details
▼ 2017-05-19 15:24:51	iOS;11.0	Dave Browning (_6c07d121939 728c5c22a1848 7fb57b01)	database	5B55E1C8D1 6CD94C	Initialization	operation: zone fetch database: private zone: Todos server latency: 29ms request size: 409B response size: 278B hardware: iPhone8,2 op. group id: 637989D0CDA36C66 op. group quantity: 5 requestId: 534A7B17-9B03-4D50-B824-78885B8F59F3

Log Event

Operation group → Operation

Time	Platform	User	Type	Operation ID	Op. Group Name	Details
▼ 2017-05-19 15:24:51	iOS;11.0	Dave Browning (_6c07d121939 728c5c22a1848 7fb57b01)	database	5B55E1C8D1 6CD94C	Initialization	operation: zone fetch database: private zone: Todos server latency: 29ms request size: 409B response size: 278B hardware: iPhone8,2 op. group id: 637989D0CDA36C66 op. group quantity: 5 requestId: 534A7B17-9B03-4D50-B824-78885B8F59F3

Log Event

Operation group → Operation → Request

Time	Platform	User	Type	Operation ID	Op. Group Name	Details
▼ 2017-05-19 15:24:51	iOS;11.0	Dave Browning (_6c07d121939 728c5c22a1848 7fb57b01)	database	5B55E1C8D1 6CD94C	Initialization	operation: zone fetch database: private zone: Todos server latency: 29ms request size: 409B response size: 278B hardware: iPhone8,2 op. group id: 637989D0CDA36C66 op. group quantity: 5 requestId: 534A7B17-9B03-4D50-B824-78885B8F59F3

Privacy

Privacy

Your iCloud account

Everyone else's account

Privacy

Your iCloud account

 private & shared data

Everyone else's account

 private & shared data

Privacy

Your iCloud account

✓ private & shared data

✓ public data

Everyone else's account

✗ private & shared data

✓ public data

Privacy

Your iCloud account

 private & shared data

 public data

 log events

Everyone else's account

 private & shared data

 public data

 log events

Privacy

Your iCloud account

✓ private & shared data

✓ public data

✓ log events

Everyone else's account

✗ private & shared data

✓ public data

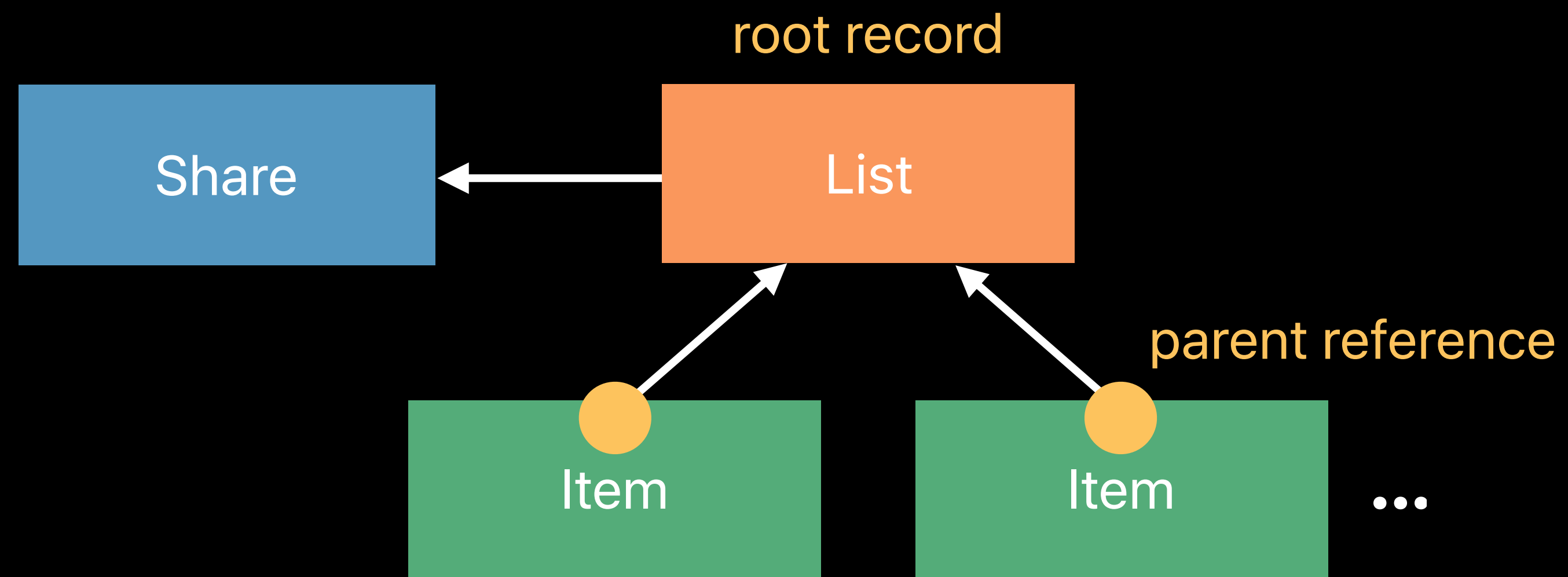
✓ log events

Log events do not include data



Sharing

Sharing

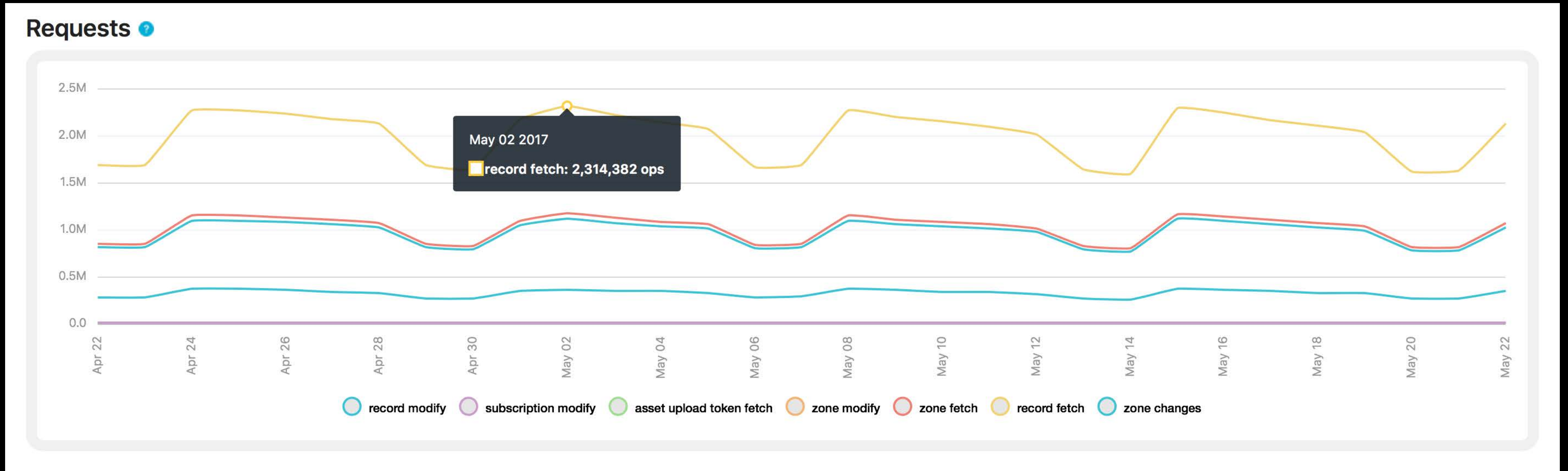


Demo

Sharing in CloudKit Dashboard

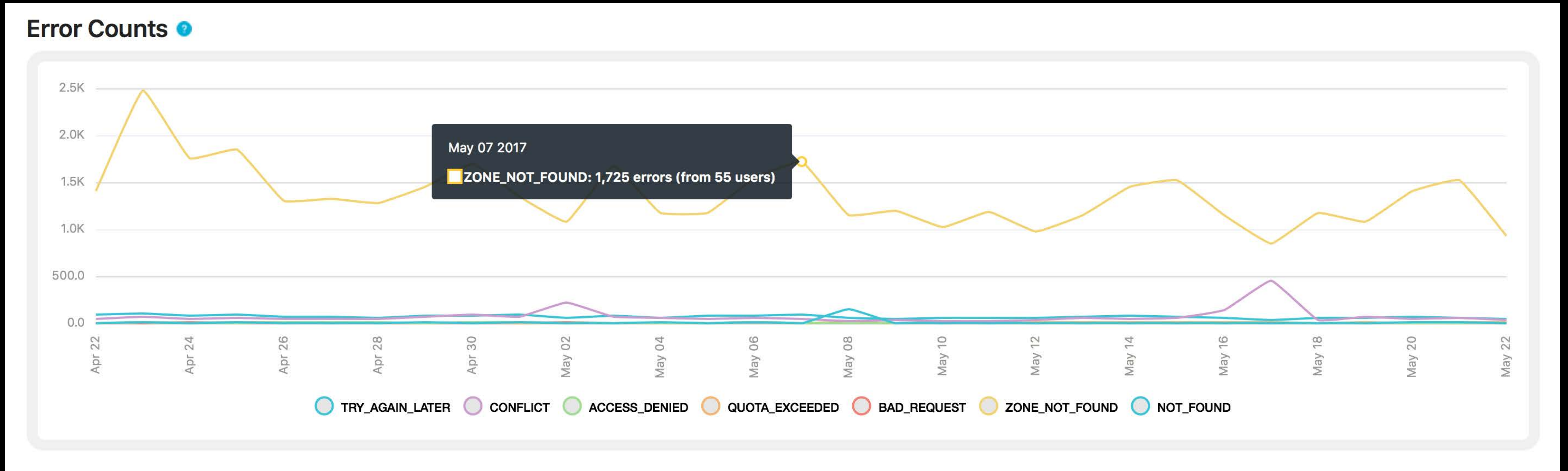
Telemetry

Monitoring for changes



Telemetry

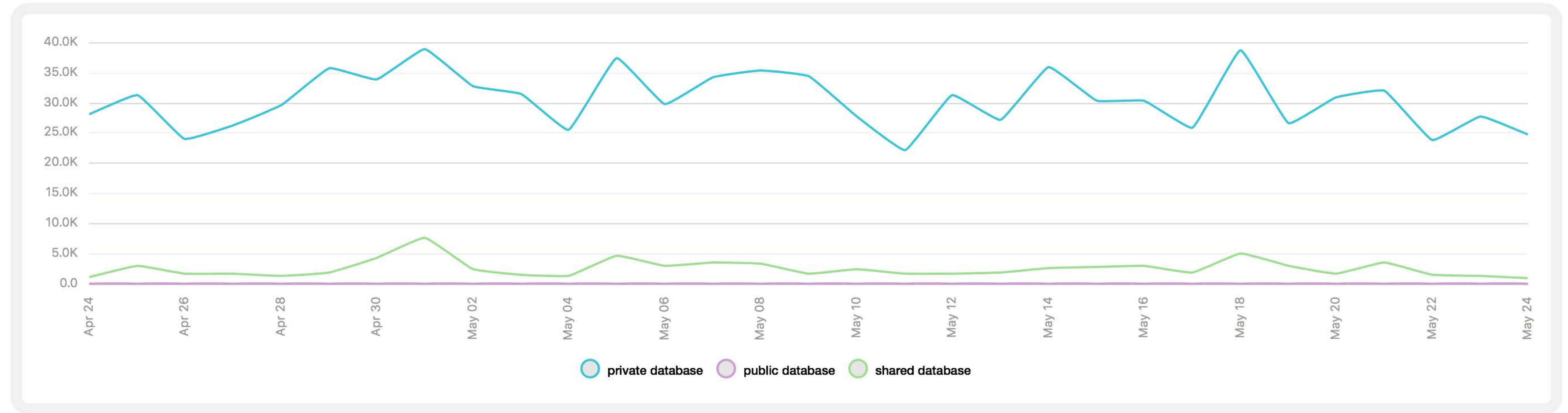
Detecting errors



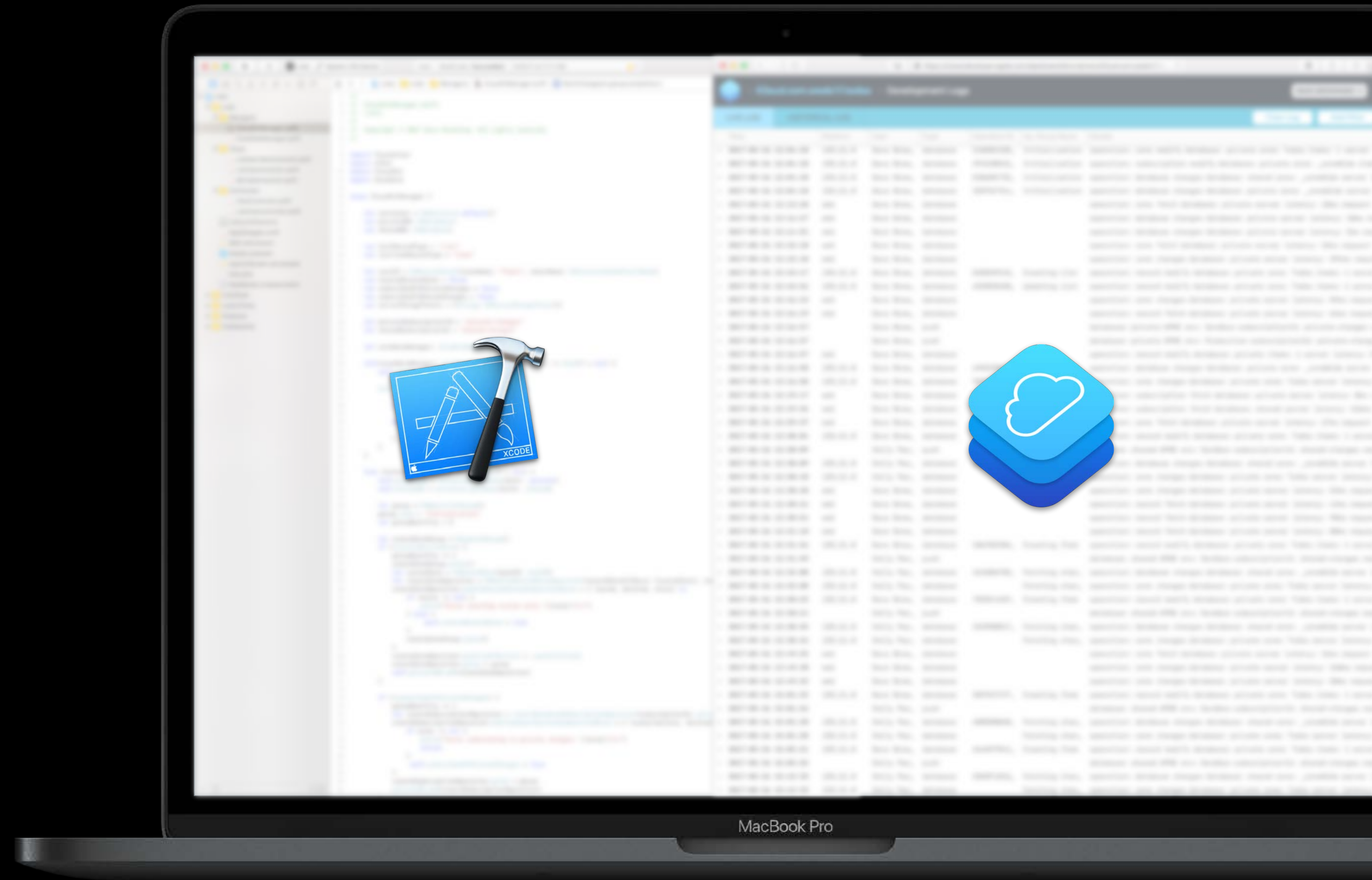
Telemetry

Verifying pushes

Pushes Sent ?

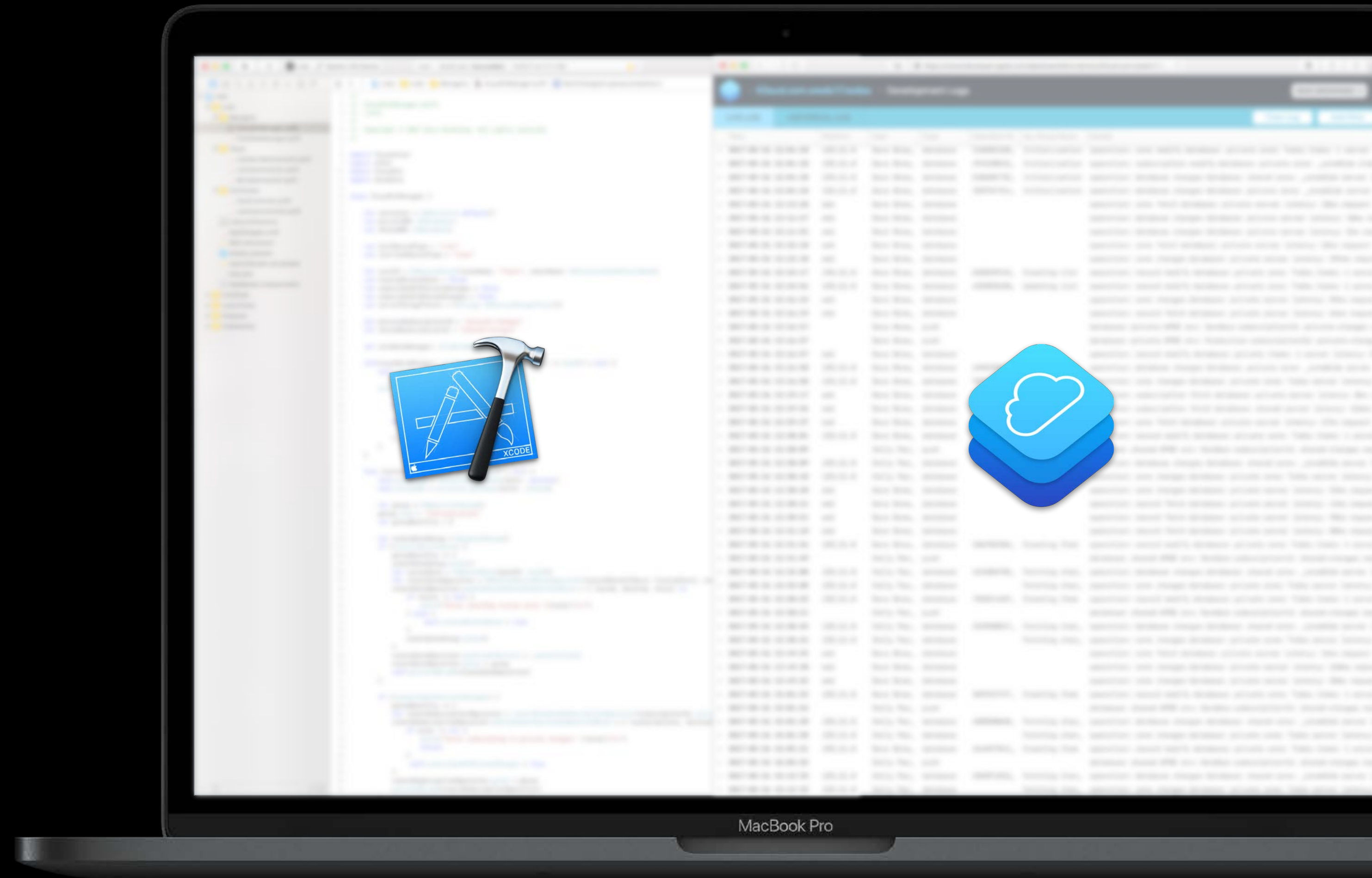


Summary



Summary

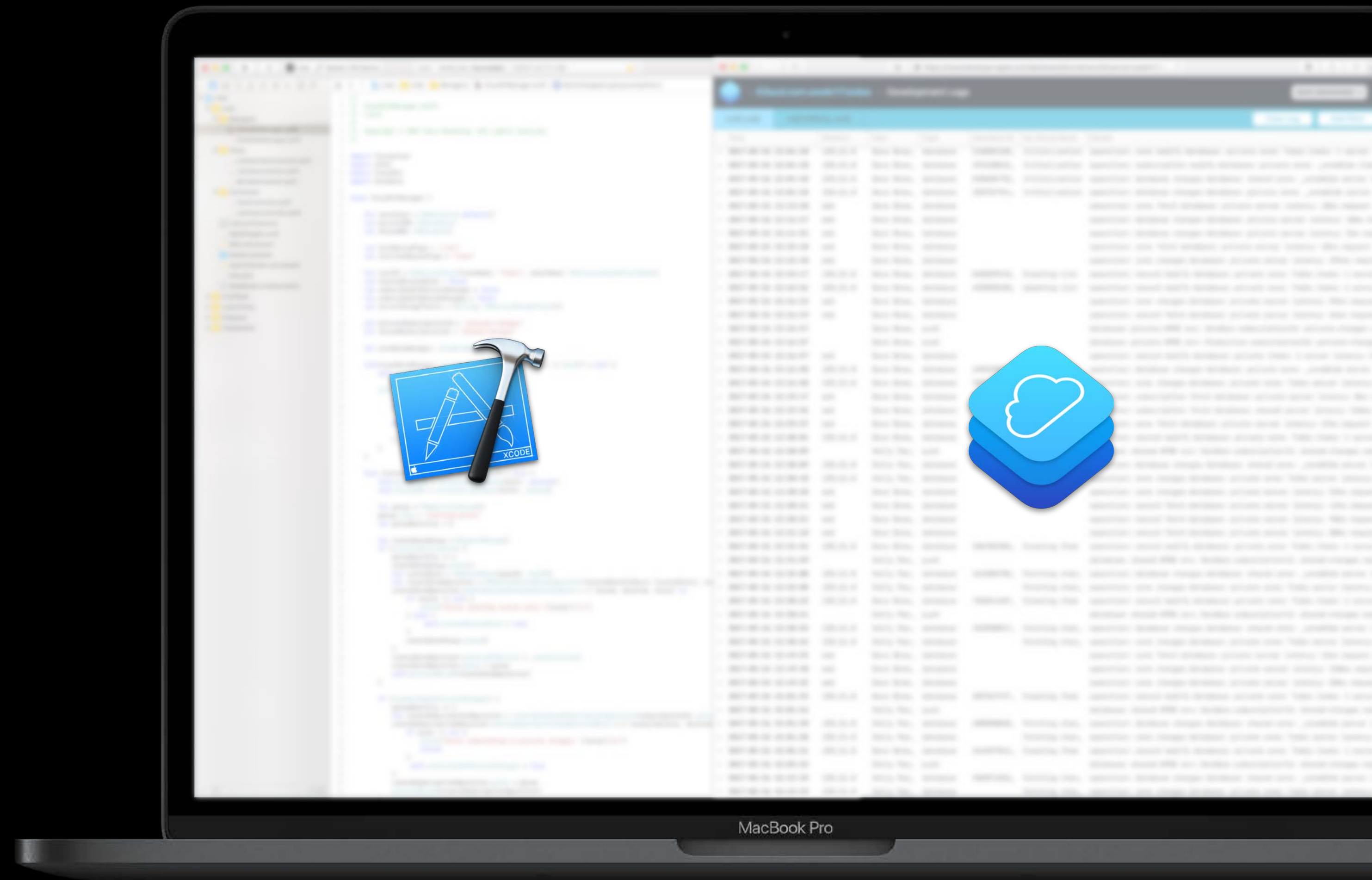
New CloudKit Dashboard



Summary

New CloudKit Dashboard

New CKOperationGroup API

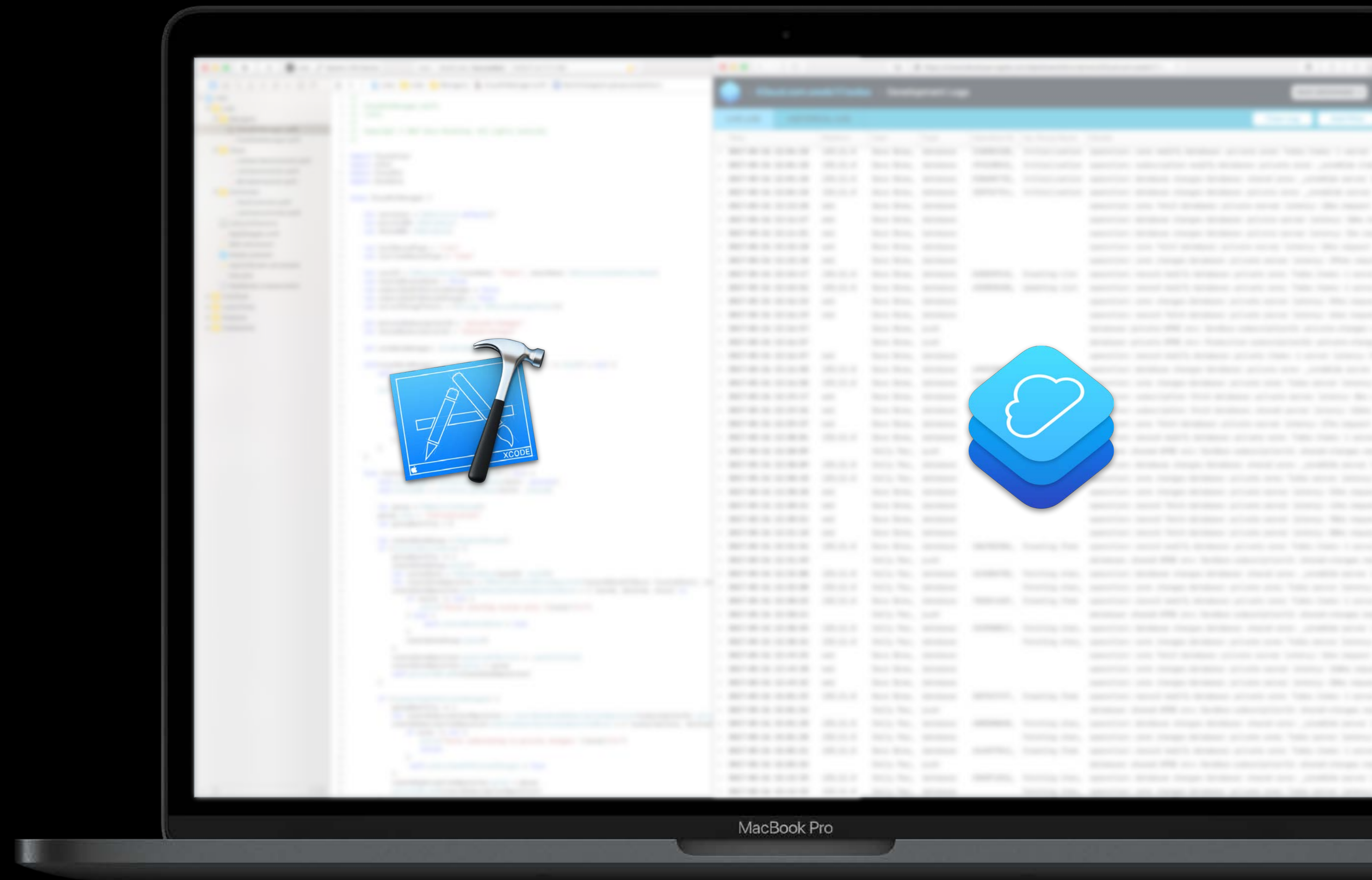


Summary

New CloudKit Dashboard

New CKOperationGroup API

Send us your feedback!



More Information

<https://developer.apple.com/wwdc17/226>

cloudkit@apple.com

Labs

CloudKit & iCloud Lab

Technology Lab I

Tue 4:10PM-6:00PM

CloudKit & iCloud Lab

Technology Lab C

Thur 11:00AM-1:00PM

