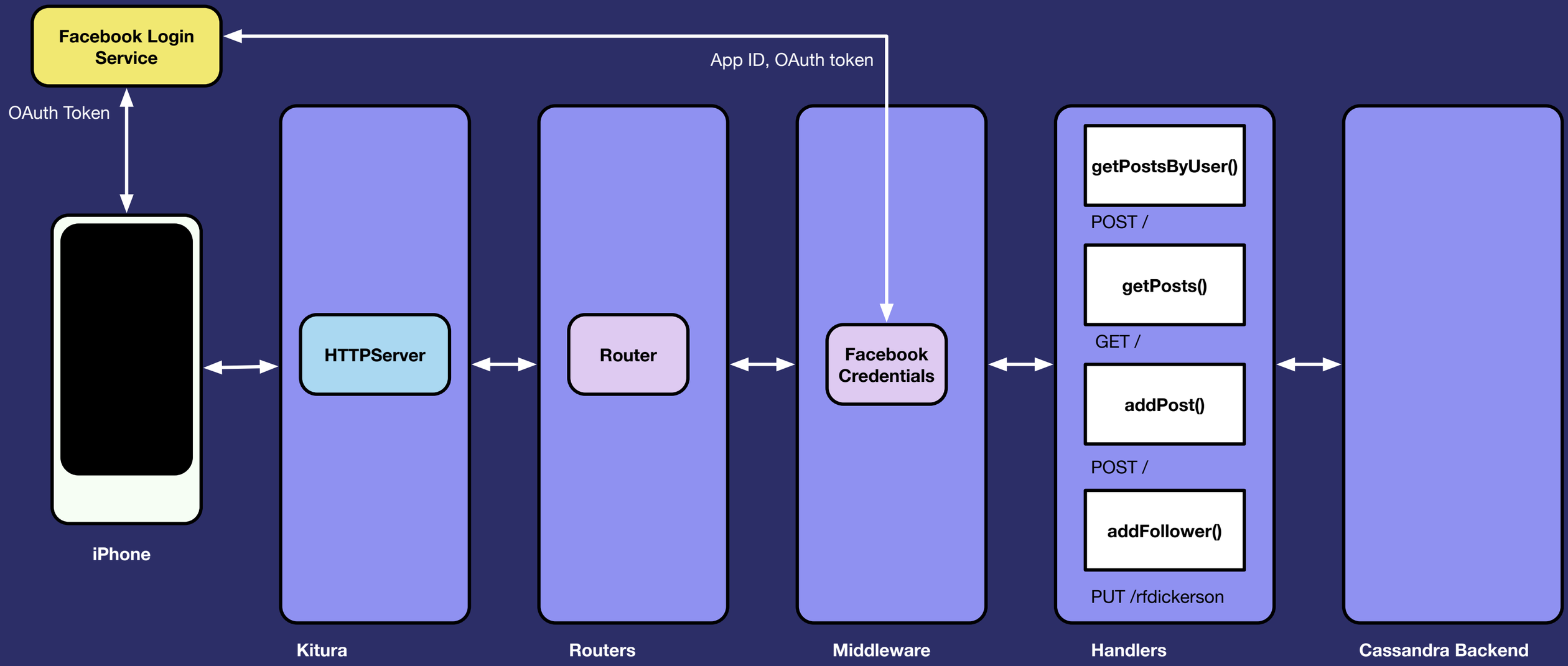
Blitter

Building a Social networking backend in Swift 3


Facebook Login Service
App ID, OAuth token
OAuth Token
iPhone
HTTPServer
Router
Facebook Credentials
getPostsByUser()
POST /
getPosts()
GET /
addPost()
POST /
addFollower()
PUT /rfdickerson
Kitura
Routers
Middleware
Handlers
Cassandra Backend

Steps

→ Set up up project and dependencies

→ Set up routes

→ Add Facebook authentication

→ Set up the model and database

→ Handle the requests

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Create the boilerplate

```
$ ~/> mkdir Blitter && cd Blitter
$ ~/Blitter/> swift package init
```

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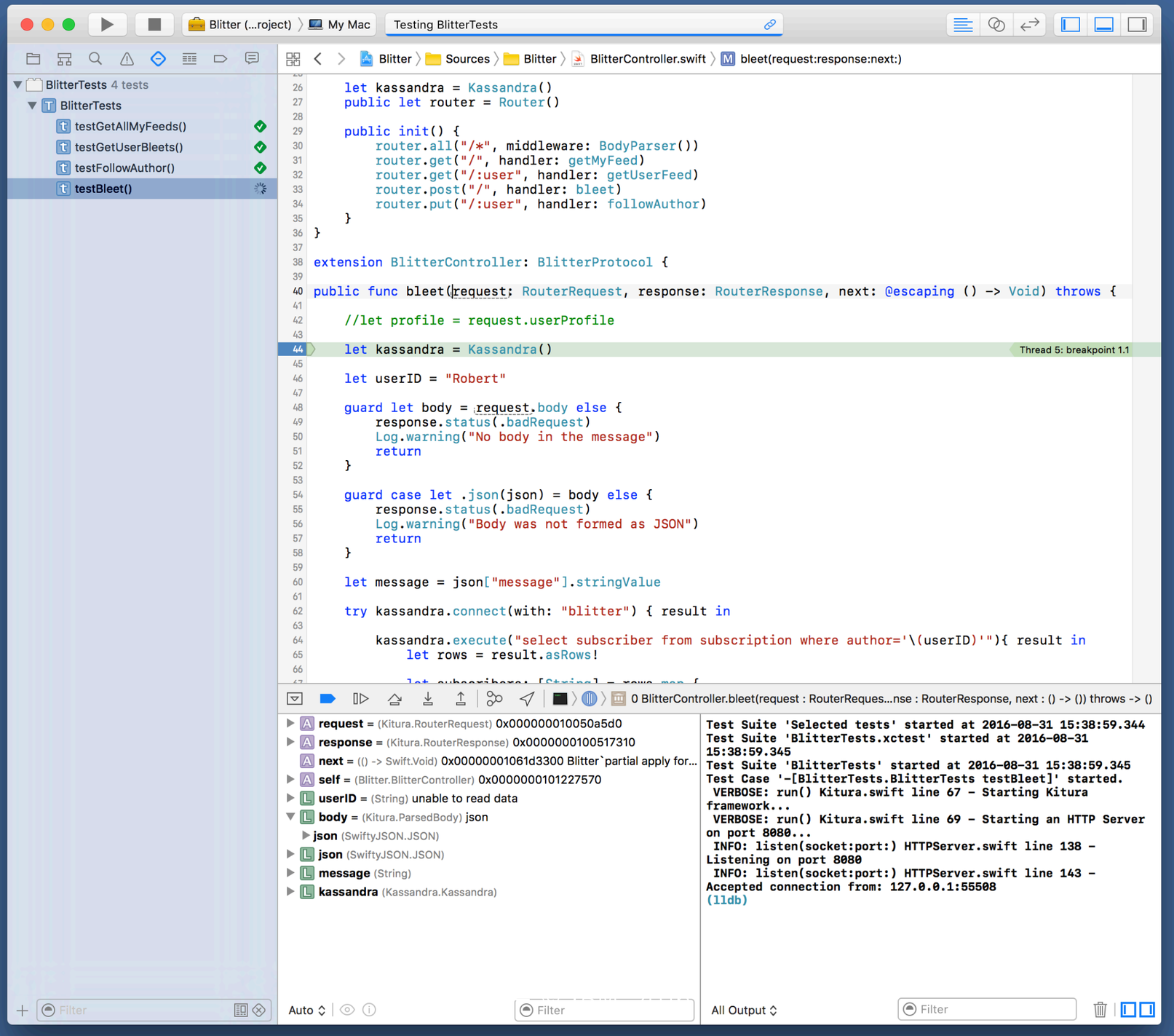
```
$ ~/Blitter/> swift package init


Creating library package: Blitter
Creating Package.swift
Creating .gitignore
Creating Sources/
Creating Sources/Blitter.swift
Creating Tests/
Creating Tests/LinuxMain.swift
Creating Tests/BlitterTests/
Creating Tests/BlitterTests/BlitterTests.swift
```

If you want to develop in XCode

```
$ ~/Blitter/> swift package generate-xcodeproj
$ ~/Blitter/> open Blitter.xcodeproj
```


Blitter (...roject) 〉 My Mac
Testing BlitterTests
Blitter 〉 Sources 〉 Blitter 〉 BlitterController.swift 〉 bleet(request:response:next:)
BlitterTests 4 tests
BlitterTests
testGetAllMyFeeds()
testGetUserBleets()
testFollowAuthor()
testBleet()
let kassandra = Kassandra()
public let router = Router()
public init() {
router.all("/*", middleware: BodyParser())
router.get("/", handler: getMyFeed)
router.get("/:user", handler: getUserFeed)
router.post("/", handler: bleet)
router.put("/:user", handler: followAuthor)
}
}
extension BlitterController: BlitterProtocol {
public func bleet(request: RouterRequest, response: RouterResponse, next: @escaping () -> Void) throws {
//let profile = request.userProfile
let kassandra = Kassandra()
Thread 5: breakpoint 1.1
let userID = "Robert"
guard let body = request.body else {
response.status(.badRequest)
Log.warning("No body in the message")
return
}
guard case let .json(json) = body else {
response.status(.badRequest)
Log.warning("Body was not formed as JSON")
return
}
let message = json["message"].stringValue
try kassandra.connect(with: "blitter") { result in
kassandra.execute("select subscriber from subscription where author='\(userID)'"){ result in
let rows = result.asRows!
0 BlitterController.bleet(request : RouterReques...nse : RouterResponse, next : () -> ()) throws -> ()
request = (Kitura.RouterRequest) 0x000000010050a5d0
response = (Kitura.RouterResponse) 0x0000000100517310
next = (() -> Swift.Void) 0x00000001061d3300 Blitter`partial apply for...
self = (Blitter.BlitterController) 0x0000000101227570
userID = (String) unable to read data
body = (Kitura.ParsedBody) json
json (SwiftyJSON.JSON)
json (SwiftyJSON.JSON)
message (String)
kassandra (Kassandra.Kassandra)
Test Suite 'Selected tests' started at 2016-08-31 15:38:59.344
Test Suite 'BlitterTests.xctest' started at 2016-08-31 15:38:59.345
Test Suite 'BlitterTests' started at 2016-08-31 15:38:59.345
Test Case '-[BlitterTests.BlitterTests testBleet]' started.
VERBOSE: run() Kitura.swift line 67 - Starting Kitura framework...
VERBOSE: run() Kitura.swift line 69 - Starting an HTTP Server on port 8080...
INFO: listen(socket:port:) HTTPServer.swift line 138 - Listening on port 8080
INFO: listen(socket:port:) HTTPServer.swift line 143 - Accepted connection from: 127.0.0.1:55508
(lldb)
Auto
All Output
Filter

Add dependencies

```
// Package.swift
import PackageDescription

let package = Package(
    name: "TwitterClone",
    dependencies: [
        .Package(url: "https://github.com/IBM-Swift/Kassandra",       majorVersion: 0,  minor: 1),
        .Package(url: "https://github.com/IBM-Swift/Kitura.git",      majorVersion: 0,  minor: 27),
        .Package(url: "https://github.com/IBM-Swift/SwiftyJSON.git",  majorVersion: 0,  minor: 13)
        ]
)
```

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Basic Routing

```
router.get("/") { request, response, next throws in

  // Get my Feed here

}

router.get("/:user") { request, response, next throws in

  // Get user bleets here
  let user = request.parameters["user"]

}

router.post("/") { request, response, next throws in

   // Add a Bleet here.

}
```

Make a controller

```
public class BlitterController {

    let kassandra = Kassandra()
    public let router = Router()

    public init() {
        router.get("/", handler: getMyFeed)
        router.get("/:user", handler: getUserFeed)
        router.post("/", handler: bleet)
        router.put("/:user", handler: followAuthor)
    }
}
```

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Adding Credentials middleware:

```
import Credentials
import CredentialsFacebook

let credentials = Credentials()
credentials.register(CredentialsFacebook())
```


Using the Credentials middleware

```
router.post("/", middleware: credentials)

router.post("/") { request, response, next in
    /// ...
    let profile  = request.userProfile
    let userId   = profile.id                // "robert.dickerson"
    let userName = profile.displayName       // "Robert F. Dickerson"
    /// ...
}
```

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Bleet Model

```
struct Bleet {

    var id              : UUID?
    let author          : String
    let subscriber      : String
    let message         : String
    let postDate        : Date

}
```

String value pairs

```
typealias StringValuePair = [String : Any]

protocol StringValuePairConvertible {
    var stringValuePairs: StringValuePair {get}
}
```

Make it work for collections too

```
extension Array where Element : StringValuePairConvertible {
    var stringValuePairs: [StringValuePair] {
        return self.map { $0.stringValuePairs }
    }
}
```

Bleet String value pairs

```
extension Bleet: StringValuePairConvertible {
    var stringValuePairs: StringValuePair {
        var result = StringValuePair()

        result["id"]           = "\(self.id!)"
        result["author"]       = self.author
        result["subscriber"]   = self.subscriber
        result["message"]      = self.message
        result["postdate"]     = "\(self.postDate)"

        return result
    }
}
```

Add Model behavior

```
import Kassandra

extension Bleet : Model {
  static let tableName = "bleet"

  // other mapping goes here
}
```

Save the Bleet

```
let bleet = Bleet(id         : UUID(),
                  author     : "Robert",
                  subscriber : "Chris"
                  message    : "I love Swift!",
                  postDate   : Date()
                  )

try kassandra.connect(with: "blitter") { _ in
    bleet.save()
}
```

Save a Bleet for each follower

```
// Get the subscribers ["Chris", "Ashley", "Emily"]
let newbleets: [Bleet] = subscribers.map {
        return Bleet( id:          UUID(),
                      author:      userID,
                      subscriber:  $0,
                      message:     message,
                      postDate:    Date())
}

newbleets.forEach { $0.save() { _ in } }
```

Asynchrononous Error Handling

```
func doSomething(oncompletion: (Stuff?, Error?) -> Void) {

}
```

Asynchrononous Error Handling 👍

```
enum Result<T> {
    case success(T)
    case error(Error)

    var value: T? {
        switch self {
        case .success (let value): return value
        case .error: return nil
        }
    }

    // Do same for error
}
```

Get the list of Bleets

```
func getBleets(oncomplete: (Result<[Bleet]>) -> Void) {
  try kassandra.connect(with: "blitter") { _ in
    Post.fetch() { bleets, error in

       if let error = error  {
          oncomplete( .error(error) )
       }

       let result = bleets.flatMap() { Bleet.init(withValuePair:) }
       oncomplete( .success(result) )
    }

  }
}
```

Get Bleets written by a user

```
Bleet.fetch(predicate: "author" == user,
            limit: 50) { bleets, error in

    ///

}
```

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→ **Handle the requests**

Get back Blitter feed

```
getBleets { result in

    guard let bleets = result.value else {
        response.status(.badRequest).send()
        response.next()
        return
    }

    response.status(.OK)
        .send(json: JSON(bleets.stringValuePairs))
        response.next()
    }
}
```

Get JSON from the request

```
extension RouterRequest {

    var json: Result<JSON> {

        guard let body = self.body else {
            return .error(requestError("No body in the message"))
        }

        guard case let .json(json) = body else {
            return .error(requestError("Body was not formed as JSON"))
        }

        return json
    }
}
```

Save the Bleet

```
let userID = authenticate(request: request)

let jsonResult = request.json
guard let json = jsonResult.result else {
    response.status(.badRequest)
    next()
    return
}

let message = json["message"].stringValue

// Save the Bleets with author matching userID
```

Play with the code

https://github.com/IBM-Swift/Blitter

Todo List [1]

→ TodoList **MongoDB**

→ TodoList **CouchDB**

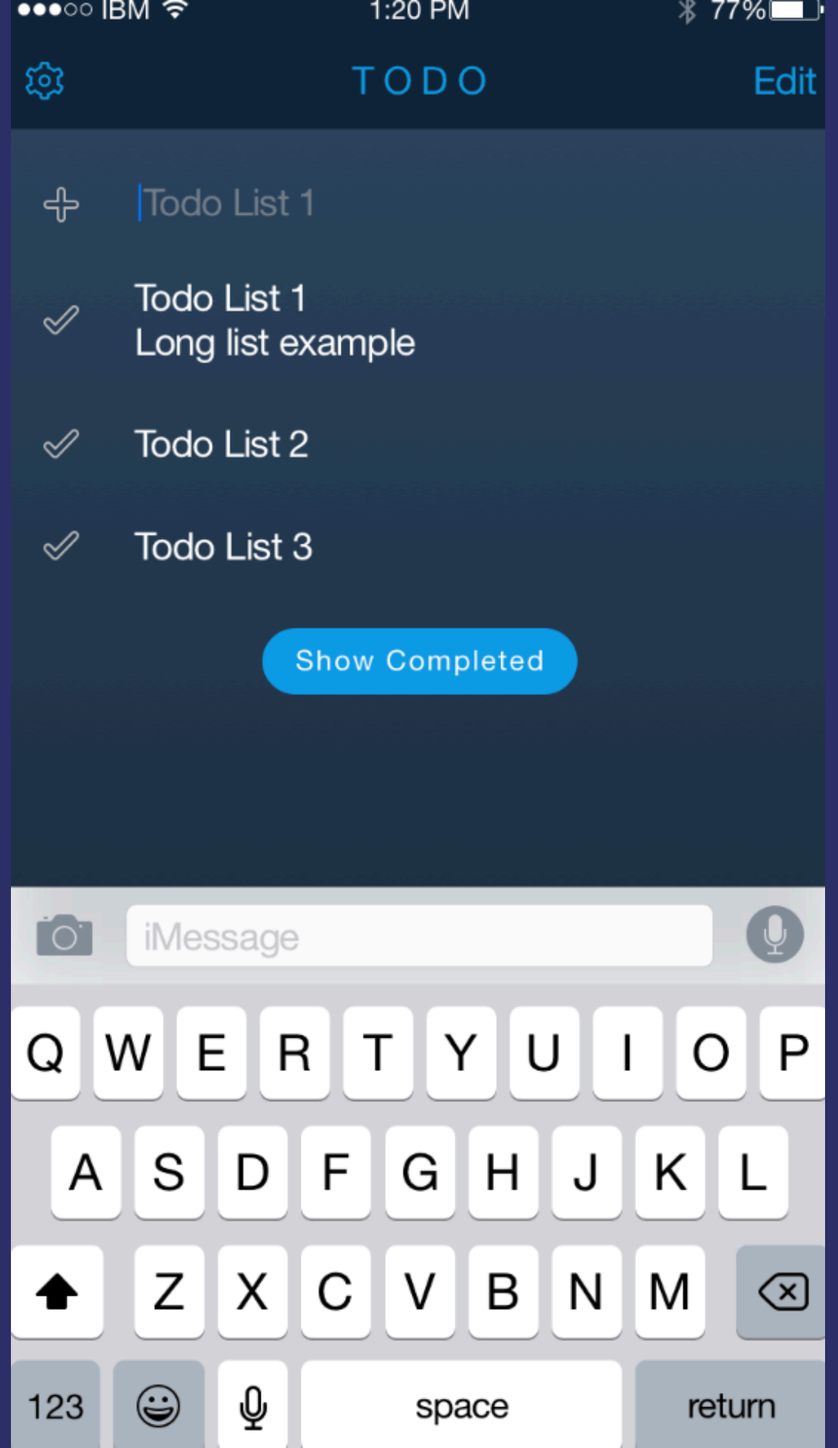
→ TodoList **PostgreSQL**

→ TodoList **MySQL**

→ TodoList **DB2**

→ TodoList **SQLite**

→ TodoList **Redis**



[1] https://github.com/IBM-Swift/TodoList-Boilerplate

BluePic Web Example[1]

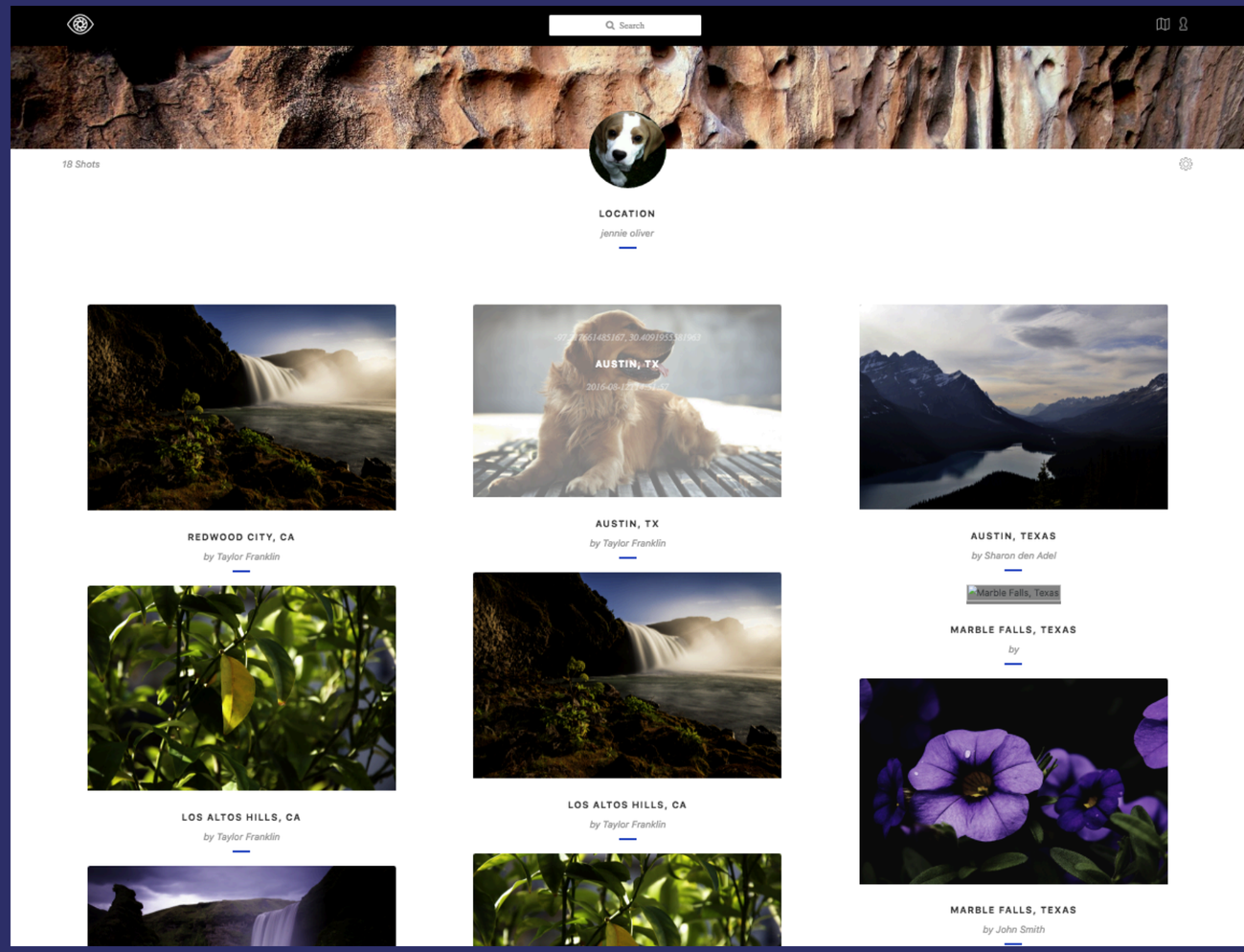
→ CouchDB

→ Object Storage

→ Watson Vision and Weather

→ iOS frontend

→ AngularJS frontend



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