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Agenda

- What is JSONStore?
- Follow along with the code sample
- Code sample walkthrough
- Expected output
- For more information

What is JSONStore?

- Optional client-side API with the following key features:
 - Data indexing for efficient searching.
 - Data encryption in production environments.
 - Mechanism for tracking local-only changes to the stored data.
 - Multiple user support.
- Available in the following environments:
 - Native: Android and iOS
 - Hybrid: Android, iOS, Windows Phone 8, and Windows 8
 - Preview Common Resources / Mobile Browser Simulator (not for production use)

Note: This module shows how to get started with the JSONStore API. Some features such as data encryption are beyond the scope of this module. All features are documented in detail in the IBM Worklight® Foundation user documentation.

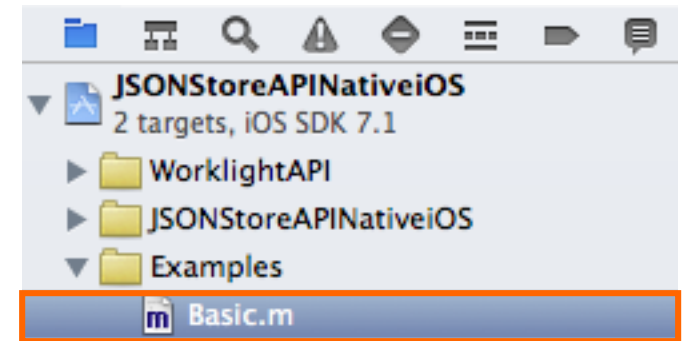
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Follow along with the code sample

1. Download the compressed file with the code sample that is associated with this module.
2. Open the `Basic.m` file. The sample image provides context.
3. Run the application by using Xcode. On the top bar, look for **Product** and then select **Test**. Alternatively you can use the keyboard shortcut ($\text{⌘}U$).

Note: The code sample uses the built-in Unit Test framework of the Xcode IDE. Explaining how this framework works is beyond the scope of this module.



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Code sample walkthrough (1 of 9)

If an error occurs, the error variable contains information about the error, such as the error code. Otherwise, it remains `nil`.

```

NSError* error = nil;

[[JSONStore sharedInstance]
 destroyDataAndReturnError:&error];

JSONStoreCollection* people = [[JSONStoreCollection alloc]
                               initWithName:@"people"];

[people setSearchField:@"name"
              withType:JSONStore_String];

[people setSearchField:@"age"
              withType:JSONStore_Integer];

[[JSONStore sharedInstance] openCollections:@[people]
                          withOptions:nil
                          error:nil];

NSArray* data = @[:@{@"name" : @"carlos", @"age" : @20},
                 @{@"name" : @"mike", @"age" : @30}];

[people addData:data andMarkDirty:NO
          withOptions:nil
          error:nil];

NSArray *actualResults = [people findAllWithOptions:nil
                        error:nil];

NSArray* expectedResults =
    @[:@{ @"_id" : @1,
          @"json" : @{@"name" : @"carlos", @"age" : @20}},

      @{@"_id" : @2,
        @"json" : @{@"name" : @"mike", @"age" : @30}}];

XCTAssertEqualObjects(actualResults, expectedResults);

```

Code sample walkthrough (2 of 9)

The `destroy` API removes all JSONStore content from the application. It is used here to start with no data. Doing it this way ensures that the output is predictable in the code sample.

```
NSError* error = nil;

[[JSONStore sharedInstance]
destroyDataAndReturnError:&error];

JSONStoreCollection* people = [[JSONStoreCollection alloc]
initWithName:@"people"];

[people setSearchField:@"name"
withType:JSONStore_String];

[people setSearchField:@"age"
withType:JSONStore_Integer];

[[JSONStore sharedInstance] openCollections:@[people]
withOptions:nil
error:nil];

NSArray* data = @[ @{@"name" : @"carlos", @"age" : @20},
@{ @"name" : @"mike", @"age" : @30}];

[people addData:data andMarkDirty:NO
withOptions:nil
error:nil];

NSArray *actualResults = [people findAllWithOptions:nil
error:nil];

NSArray* expectedResults =
@[ @{@"_id" : @1,
@"json" : @{@"name" : @"carlos", @"age" : @20}},

@{ @"_id" : @2,
@"json" : @{@"name" : @"mike", @"age" : @30}}];

XCTAssertEqualObjects(actualResults, expectedResults);
```


Code sample walkthrough (3 of 9)

To persist data, you must first define at least one collection. These collections are entities that hold data. You can see here the definition of a collection that is called `people`.

```
NSError* error = nil;

[[JSONStore sharedInstance]
 destroyDataAndReturnError:&error];

JSONStoreCollection* people = [[JSONStoreCollection alloc]
                               initWithName:@"people"];

[people setSearchField:@"name"
              withType:JSONStore_String];

[people setSearchField:@"age"
              withType:JSONStore_Integer];

[[JSONStore sharedInstance] openCollections:@[people]
                          withOptions:nil
                          error:nil];

NSArray* data = @[ @{@"name" : @"carlos", @"age" : @20},
                  @{@"name" : @"mike", @"age" : @30} ];

[people addData:data andMarkDirty:NO
          withOptions:nil
          error:nil];

NSArray *actualResults = [people findAllWithOptions:nil
                          error:nil];

NSArray* expectedResults =
    @[ @{@"_id" : @1,
        @"json" : @{@"name" : @"carlos", @"age" : @20}},

        @{@"_id" : @2,
          @"json" : @{@"name" : @"mike", @"age" : @30}} ];

XCTAssertEqualObjects(actualResults, expectedResults);
```

Code sample walkthrough (4 of 9)

Search fields are fields that are indexed inside a collection. You can use those fields when you search for data that is inside a collection.

You can see here the definition of two search fields:

- name (string)
- age (integer)

The data types, such as `string`, `integer`, `number`, `boolean`, are used to better store input data.

```

NSError* error = nil;

[[JSONStore sharedInstance]
 destroyDataAndReturnError:&error];

JSONStoreCollection* people = [[JSONStoreCollection alloc]
                               initWithName:@"people"];

[people setSearchField:@"name"
               withType:JSONStore_String];

[people setSearchField:@"age"
               withType:JSONStore_Integer];

[[JSONStore sharedInstance] openCollections:@[people]
                             withOptions:nil
                             error:nil];

NSArray* data = @[ @{@"name" : @"carlos", @"age" : @20},
                  @{@"name" : @"mike", @"age" : @30}];

[people addData:data andMarkDirty:NO
         withOptions:nil
         error:nil];

NSArray *actualResults = [people findAllWithOptions:nil
                          error:nil];

NSArray* expectedResults =
    @[ @{ @"_id" : @1,
          @"json" : @{@"name" : @"carlos", @"age" : @20}},

        @{ @"_id" : @2,
          @"json" : @{@"name" : @"mike", @"age" : @30}}];

XCTAssertEqualObjects(actualResults, expectedResults);

```

Code sample walkthrough (5 of 9)

The `open` API is used to open one or more collections. If the collection was never opened before, a file is created on the file system to persist data that is inside the collection. Before the operation finishes, an accessor to that file is created.

The accessor allows the caller to call collection-level APIs such as `add` and `findAll`, which are shown later in this code sample walkthrough.

```

NSError* error = nil;

[[JSONStore sharedInstance]
 destroyDataAndReturnError:&error];

JSONStoreCollection* people = [[JSONStoreCollection alloc]
                               initWithName:@"people"];

[people setSearchField:@"name"
               withType:JSONStore_String];

[people setSearchField:@"age"
               withType:JSONStore_Integer];

[[JSONStore sharedInstance] openCollections:@[people]
                             withOptions:nil
                             error:nil];

NSArray* data = @[:@{@"name" : @"carlos", @"age" : @20},
                 @{@"name" : @"mike", @"age" : @30}];

[people addData:data andMarkDirty:NO
               withOptions:nil
               error:nil];

NSArray *actualResults = [people findAllWithOptions:nil
                          error:nil];

NSArray* expectedResults =
    @[:@{ @"_id" : @1,
          @"json" : @{@"name" : @"carlos", @"age" : @20}},

      @{ @"_id" : @2,
          @"json" : @{@"name" : @"mike", @"age" : @30}}];

XCTAssertEqualObjects(actualResults, expectedResults);

```

Code sample walkthrough (6 of 9)

The data that is stored inside the `people` collection is defined here. Notice that the data is a hardcoded array of two JSON objects with key value pairs for `name` and `age`. This data can be acquired from multiple sources (for example: Network Request, File I/O, User Input).

```

NSError* error = nil;

[[JSONStore sharedInstance]
 destroyDataAndReturnError:&error];

JSONStoreCollection* people = [[JSONStoreCollection alloc]
                               initWithName:@"people"];

[people setSearchField:@"name"
                 withType:JSONStore_String];

[people setSearchField:@"age"
                 withType:JSONStore_Integer];

[[JSONStore sharedInstance] openCollections:@[people]
                             withOptions:nil
                             error:nil];

NSArray* data = @[:@{@"name" : @"carlos", @"age" : @20},
                 @:@{@"name" : @"mike", @"age" : @30}];

[people addData:data andMarkDirty:NO
         withOptions:nil
         error:nil];

NSArray *actualResults = [people findAllWithOptions:nil
                        error:nil];

NSArray* expectedResults =
    @[:@{ @"_id" : @1,
          @"json" : @:@{@"name" : @"carlos", @"age" : @20}},

      @:@{ @"_id" : @2,
          @"json" : @:@{@"name" : @"mike", @"age" : @30}}];

XCTAssertEqualObjects(actualResults, expectedResults);

```

Code sample walkthrough (7 of 9)

The collection accessor provides access to store data inside the people collection. The input data must be in JSON format.

```
NSError* error = nil;

[[JSONStore sharedInstance]
 destroyDataAndReturnError:&error];

JSONStoreCollection* people = [[JSONStoreCollection alloc]
                               initWithName:@"people"];

[people setSearchField:@"name"
              withType:JSONStore_String];

[people setSearchField:@"age"
              withType:JSONStore_Integer];

[[JSONStore sharedInstance] openCollections:@[people]
                          withOptions:nil
                          error:nil];

NSArray* data = @[ @{@"name" : @"carlos", @"age" : @20},
                  @{@"name" : @"mike", @"age" : @30}];

[people addData:data andMarkDirty:NO
          withOptions:nil
          error:nil];

NSArray *actualResults = [people findAllWithOptions:nil
                        error:nil];

NSArray* expectedResults =
    @[ @{@"_id" : @1,
        @"json" : @{@"name" : @"carlos", @"age" : @20}},

        @{@"_id" : @2,
        @"json" : @{@"name" : @"mike", @"age" : @30}}];

XCTAssertEqualObjects(actualResults, expectedResults);
```

Code sample walkthrough (8 of 9)

There are a couple of different ways to find documents inside a JSONStore collection (for example: `find`, `findById`).

The easiest way, and the way that is shown here, is by using the `findAll` API. This method returns all the data that is stored inside a collection.

```

NSError* error = nil;

[[JSONStore sharedInstance]
 destroyDataAndReturnError:&error];

JSONStoreCollection* people = [[JSONStoreCollection alloc]
                               initWithName:@"people"];

[people setSearchField:@"name"
               withType:JSONStore_String];

[people setSearchField:@"age"
               withType:JSONStore_Integer];

[[JSONStore sharedInstance] openCollections:@[people]
                             withOptions:nil
                             error:nil];

NSArray* data = @[:@{@"name" : @"carlos", @"age" : @20},
                 @{@"name" : @"mike", @"age" : @30}];

[people addData:data andMarkDirty:NO
               withOptions:nil
               error:nil];

NSArray *actualResults = [people findAllWithOptions:nil
                       error:nil];

NSArray* expectedResults =
    @[ @{ @"_id" : @1,
          @"json" : @{@"name" : @"carlos", @"age" : @20}},

      @{ @"_id" : @2,
          @"json" : @{@"name" : @"mike", @"age" : @30}}];

XCTAssertEqualObjects(actualResults, expectedResults);

```

Code sample walkthrough (9 of 9)

Data that is stored inside a collection is called a document.

Documents have `_id` and `json` key value pairs. The `_id` pair is an internal identifier that is added automatically when data is added. The `json` pair contains all the data that was added.

```

NSError* error = nil;

[[JSONStore sharedInstance]
 destroyDataAndReturnError:&error];

JSONStoreCollection* people = [[JSONStoreCollection alloc]
                               initWithName:@"people"];

[people setSearchField:@"name"
                 withType:JSONStore_String];

[people setSearchField:@"age"
                 withType:JSONStore_Integer];

[[JSONStore sharedInstance] openCollections:@[people]
                             withOptions:nil
                             error:nil];

NSArray* data = @[ @{@"name" : @"carlos", @"age" : @20},
                  @{@"name" : @"mike", @"age" : @30}];

[people addData:data andMarkDirty:NO
         withOptions:nil
         error:nil];

NSArray *actualResults = [people findAllWithOptions:nil
                        error:nil];

NSArray* expectedResults =
    @[ @{@"_id" : @1,
        @"json" : @{@"name" : @"carlos", @"age" : @20}},
      @{@"_id" : @2,
        @"json" : @{@"name" : @"mike", @"age" : @30}}];

XCTAssertEqualObjects(actualResults, expectedResults);

```

Agenda

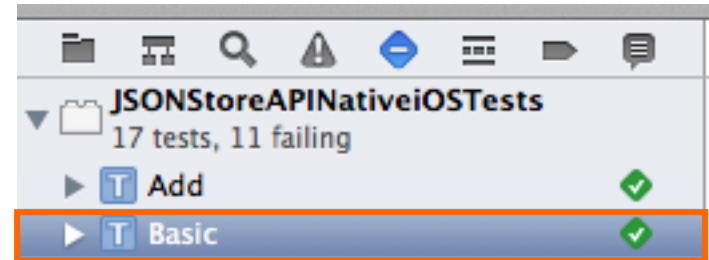
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Expected Output

To execute the tests, select **Product** > **Test**.

When the tests are executed, the output looks similar to the sample image.

The green check mark next to the test indicates that everything is working as expected.



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For more information

- For more information about JSONStore, see [JSONStore](#) in the product user documentation.
- For more information about JSONStore performance and best practices, see [JSONStore performance](#) in the product user documentation.

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 - Address
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 - Phone No.
 - Email address

Thank You

