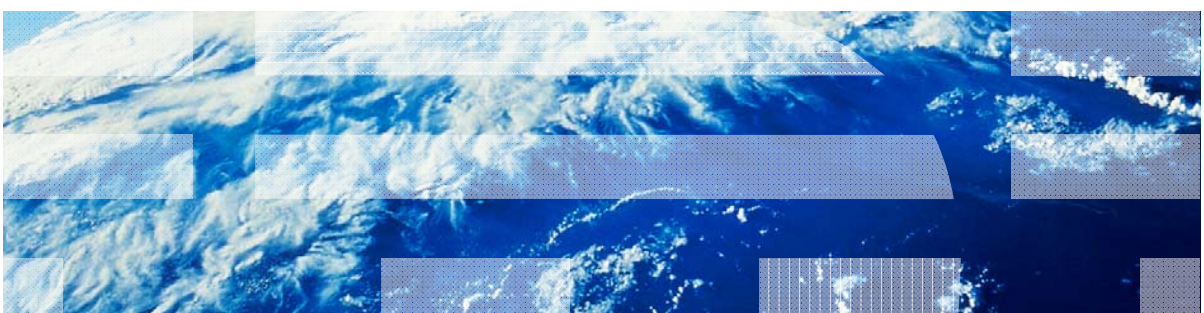
IBM Worklight V5.0.6
Getting Started

JSONStore – Encrypting sensitive data



15 March 2013

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- Advanced JSONStore Usage
  - Overview
  - Security
  - Multiple Users
  - Enhance
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- Enhance
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Overview

- This module covers advanced tasks that you can perform on a local JSONStore collection, including encryption and management of multiple users.
- JSONStore provides a way to securely encrypt contents by using AES256 and PBKDF2.
- JSONStore supports the management of multiple users, and provides a way to limit the access to specific data.
- With JSONStore, you can add a function to a collection prototype.
- With the “documentify” method, you can create a document by using an ID and a JavaScript object.
- JSONStore supports the replacement of documents and the removal of collections.

Security

```
var options = {adapter: adapterDefinition, onSuccess: win, onFailure: fail};

//[Optional] You may assign a username to the store:
options.username = 'carlos';

//[Optional] If you want encryption you need to supply a password:
options.password = '12345';

var collection = WL.JSONStore.initCollection(name, searchFields, options);
```

- To encrypt a data store, use **WL.JSONStore.initCollection**.
  - Add a **password** field to the options object and specify its value.
  - This password is used to generate keys to encrypt data that is stored locally on the device.
- The store is always encrypted.

Multiple Users

```
var options = {adapter: adapterDefinition, onSuccess: win, onFailure: fail};

//[Optional] You may assign a username to the store:
options.username = 'carlos';

//[Optional] If you want encryption you need to supply a password:
options.password = '12345';

var collection = WL.JSONStore.initCollection(name, searchFields, options);
```

- To add a user name, use **WL.JSONStore.initCollection** method.
  - Add a **username** field to the **options** object, and specify its alphanumeric value.
  - This user name is used to create multiple stores that are stored locally on the device.
- After this initialization with a specific user name, you must call **WL.JSONStore.closeAll** before you can select another user (by calling **initCollection** again).

Enhance

```
enhance ( name , func , [options] ) Integer
```

- Use **enhance** to add a function to a collection prototype.
- You can create custom functions for tasks that might be performed frequently. You call these functions from your collection instance.
- For example, in the sample app, a custom function is created to find documents by using a user name.

Documentify and Replace

```
documentify ( id , data ) Document static

replace ( doc , [options] ) OnSuccess
```

- Use **documentify** to create JSONStore document objects.
  - Generally, you create the JSONStore document object with **documentify** by combining an ID field that is stored in the DOM with some raw object data. Then, you use this JSONStore document object as a parameter of the **replace** method.
- Use **replace** to update an entire document in a collection.

Collection Removal

```
removeCollection ( [options] ) OnSuccess
```

- To remove all data in a collection instance, use **removeCollection**.
- To remove all data in JSONStore, use **destroy**.
- To reuse a collection with the same name, you must reinitialize the collection.

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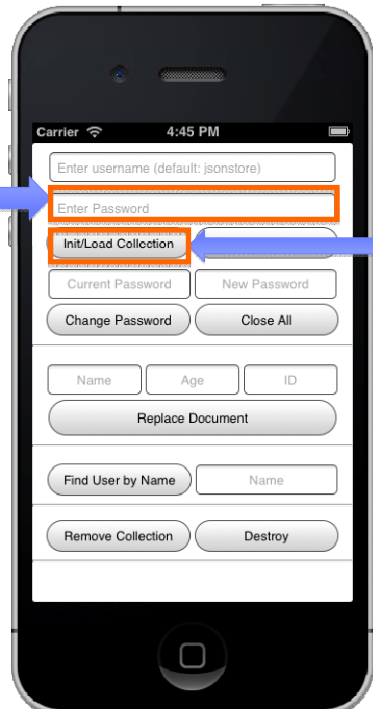
Encryption – Initialization

To enable encryption in the sample, specify a password.



Next, initialize, and load the collection.

Encryption – Initialization

```
var options = {adapter: usersAdapterOptions,
        onSuccess: initCollectionSuccessCallback,
        onFailure: genericFailureCallback,
        load:true};

if (pwd.length > 0) {

    options.password = pwd;
    WL.Logger.debug('Using Password');
    passwordTag.val('');

} else {

    WL.Logger.debug('Using NO Password');
}

if (usr.length > 0) {
    WL.Logger.debug('Using Username: ' + usr);
    options.username = usr;
}

usersCollection = WL.JSONStore.initCollection(
    "users",
    usersSearchFields, options),
```

Assigning a password

If a password was given, add it to the options object by using "**password**" as the key.

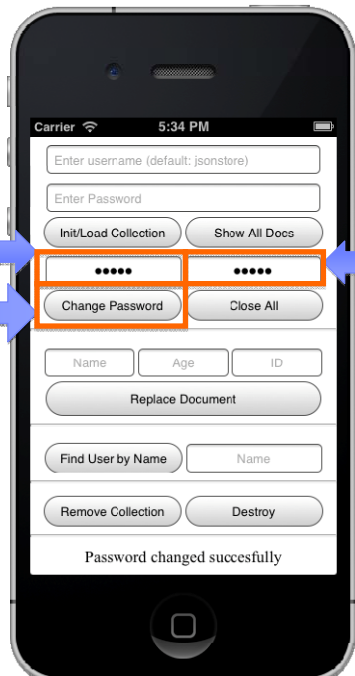
Encryption – Initialization

```
var options = {adapter: usersAdapterOptions,
        onSuccess: initCollectionSuccessCallback,
        onFailure: genericFailureCallback,
        load:true};


if (pwd.length > 0) {

    options.password = pwd;
    WL.Logger.debug('Using Password');
    passwordTag.val('');

} else {

    WL.Logger.debug('Using NO Password');
}

if (usr.length > 0) {
    WL.Logger.debug('Using Username: ' + usr);
    options.username = usr;
}

usersCollection = WL.JSONStore.initCollection(
    "users",
    usersSearchFields, options),
```

Assigning a user name

If a user name was given, add it to the options object by using "**username**" as the key.

Encryption – Changing a Password



Input your current password.

Specify a new password.

Change the password.

Encryption – Changing a Password

Process the input

Obtain the original password and the new one as specified in the inputs, and assign them to variables.

```
WLJQ('button#change_password').bind('click', function () {

    WL.Logger.debug('Called button#change_password');

    var password_old = passwordOldTag.val(),
        password_new = passwordNewTag.val();

    if (password_old.length < 1 || password_new.length < 1 ||
        checkUndefOrNull(JSONStoreInstance)) {
        logMessage('You must enter your old password as well as the new one.');
    } else {

        var win =   function (data) {
            logMessage('Password was successfully changed : ' + data);
            passwordOldTag.val('');
            passwordNewTag.val('');
        };

        var options = {onSuccess: win, onFailure: genericFailureCallback};

        WL.JSONStore.changePassword(password_old,password_new,options);
    }
});//END Change Password
```

Encryption – Changing a Password

```
WLJQ('button#change_password').bind('click', function ()

    WL.Logger.debug('Called button#change_password');

    var password_old = passwordOldTag.val(),
        password_new = passwordNewTag.val();

    if (password_old.length < 1 || password_new.length <
        checkUndefOrNull(JSONStoreInstance)) {
        logMessage('You must enter your old password as well as the new one.');
    } else {

        var win =   function (data) {
            logMessage('Password was successfully changed : ' + data);
            passwordOldTag.val('');
            passwordNewTag.val('');
        };

        var options = {onSuccess: win, onFailure: genericFailureCallback};

        WL.JSONStore.changePassword(password_old,password_new,options);
    }
});//END Change Password
```

Options

Define the **OnSuccess** callback.
The **data** variable will contain a status code.
The value of this code is defined in the JSONStore documentation.

Encryption – Changing a Password

```
WLJQ('button#change_password').bind('click', function () {

    WL.Logger.debug('Called button#change_password');

    var password_old = passwordOldTag.val(),
        password_new = passwordNewTag.val();

    if (password_old.length < 1 || password_new.length < 1
        checkUndefOrNull(JSONStoreInstance)) {
        logMessage('You must enter your old password as we
    } else {

        var win =   function (data) {
            logMessage('Password was successfully changed
            passwordOldTag.val('');
            passwordNewTag.val('');
        };

        var options = {onSuccess: win, onFailure: genericFailureCallback};

        WL.JSONStore.changePassword(password_old,password_new,options);
    }
});//END Change Password
```

Change the password

Finally, call **changePassword** with the old and new passwords as parameters. On success, the password is changed.

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Enhance – UI

Enhance – The Code

```
WLJQ('button#enhance').bind('click', function () {

    WL.Logger.debug('Called button#enhance');

    var name = enhanceTag.val();

    if ( name.length < 1 ) {
        logMessage('You must provide a valid search value');
        return;
    }

    //Create a custom function
    var custFunction = function (user_name,onSuccess) {

        var query = {name: user_name};

        var win =  function (data) {
            onSuccess(data);
        };

        var fail =  function (data) {
            genericFailureCallback(data);
        };

        var options = {onSuccess: win, onFailure: fail};
        usersCollection.find(query, options);
    };

    usersCollection.enhance('getUserByName', custFunction);

    var onSuccess = function (data) {
        reloadTable(data);
        enhanceTag.val('');
    };

    usersCollection.getUserByName(name, onSuccess);
});//END Enhance
```

Create a custom function

Define a custom function that creates a query and searches the `users` collection by user name. This function accepts a user name and an **onSuccess** callback as parameters.

Enhance – The Code

```
WLJQ('button#enhance').bind('click', function () {

    WL.Logger.debug('Called button#enhance');

    var name = enhanceTag.val();

    if ( name.length < 1 ) {
        logMessage('You must provide a valid search value');
        return;
    }

    //Create a custom function
    var custFunction = function (user_name,onSuccess) {

        var query = {name: user_name};

        var win =  function (data) {
            onSuccess(data);
        };

        var fail =  function (data) {
            genericFailureCallback(data);
        };

        var options = {onSuccess: win, onFailure: fail};
        usersCollection.find(query, options);
    };

    usersCollection.enhance('getUserByName', custFunction);

    var onSuccess = function (data) {
        reloadTable(data);
        enhanceTag.val('');
    };

    usersCollection.getUserByName(name, onSuccess);
});//END Enhance
```

Add the function to the collection prototype

Call **enhance** with the following parameters:

- A name for the custom function
- The custom function itself

The function is added to the collection prototype and is ready for use.

Enhance – The Code

```
WLJQ('button#enhance').bind('click', function () {

    WL.Logger.debug('Called button#enhance');

    var name = enhanceTag.val();

    if ( name.length < 1 ) {
        logMessage('You must provide a valid search value');
        return;
    }

    //Create a custom function
    var custFunction = function (user_name,onSuccess) {

        var query = {name: user_name};

        var win =  function (data) {
            onSuccess(data);
        };

        var fail =  function (data) {
            genericFailureCallback(data);
        };

        var options = {onSuccess: win, onFailure: fail};
        usersCollection.find(query, options);
    };

    usersCollection.enhance('getUserByName', custFunction);

    var onSuccess = function (data) {
        reloadTable(data);
        enhanceTag.val('');
    };

    usersCollection.getUserByName(name, onSuccess);
});//END Enhance
```

onSuccess Callback

Define an **onSuccess** callback for you to verify that the custom function successfully executes.

Enhance – The Code

```
WLJQ('button#enhance').bind('click', function () {

    WL.Logger.debug('Called button#enhance');

    var name = enhanceTag.val();

    if ( name.length < 1 ) {
        logMessage('You must provide a valid search value');
        return;
    }

    //Create a custom function
    var custFunction = function (user_name,onSuccess) {

        var query = {name: user_name};

        var win =  function (data) {
            onSuccess(data);
        };

        var fail =  function (data) {
            genericFailureCallback(data);
        };

        var options = {onSuccess: win, onFailure: fail};
        usersCollection.find(query, options);
    };

    usersCollection.enhance('getUserByName', custFunction);

    var onSuccess = function (data) {
        reloadTable(data);
        enhanceTag.val('');
    };

    usersCollection.getUserByName(name, onSuccess);
});//END Enhance
```

Calling the custom function

Finally, use the JSONStore instance to call **getUserByName**.

The parameters of **getUserByName** are:

- The **name** to search for
- The **onSuccess** callback

On success, you receive an array of matching documents that are then displayed in a table.

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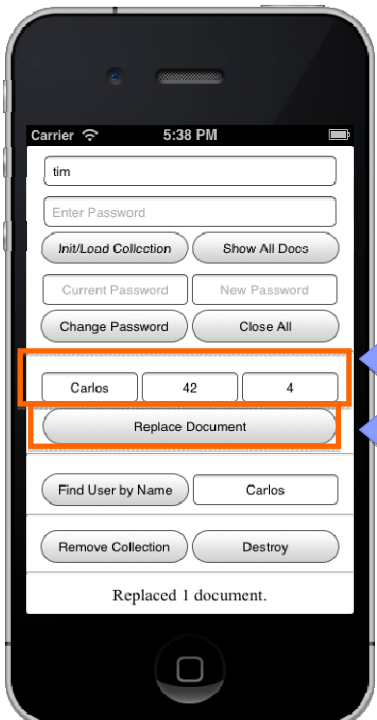
Documentify and Replace – UI



Specify a new name and age, and the ID of the user in the collection that you want to replace.

Users who match the specified ID in the local store are all replaced.

Documentify and Replace – The Code

```
WLJQ('button#replace').bind('click', function () {

    WL.Logger.debug('Called button#replace');
    if (!checkColInit(usersCollection)) {return;}

    var name = nameTag.val(),
        id = idTag.val(),
        age = ageTag.val();

    if (id.length < 1 ) {
        logMessage('You must provide a valid value for ID');
    } else {
        var doc = WL.JSONStore.documentify(id, {name: name, age: age});

        var win =   function (data) {
            logMessage('Replaced ' + data + ' document.');
            //Clear Text Boxes
            nameTag.val('');
            ageTag.val('');
            idTag.val('');
        };

        var options = {onSuccess: win, onFailure: genericFailureCallback};

        usersCollection.replace(doc,options);
    }
});
```

Documentify

To call **replace**, you require a document object.
You can construct a document object from the user input by using **documentify**:

- Use an ID and JSON data as the parameters.
- The result is a JSONStore document object.

Documentify and Replace – The Code

```
WLJQ('button#replace').bind('click', function () {

    WL.Logger.debug('Called button#replace');
    if (!checkColInit(usersCollection)) {return;}

    var name = nameTag.val(),
        id = idTag.val(),
        age = ageTag.val();

    if (id.length < 1 ) {
        logMessage('You must provide a valid value for ID')
    } else {

        var doc = WL.JSONStore.documentify(id, {name: name,  age});

        var win =   function (data) {
            logMessage('Replaced ' + data + ' document.');
            //Clear Text Boxes
            nameTag.val('');
            ageTag.val('');
            idTag.val('');
        };

        var options = {onSuccess: win, onFailure: genericFailureCallback};

        usersCollection.replace(doc,options);
    }
});
```

Options

Define the **OnSuccess** callback of the **replace** method. The **data** variable contains the number of replaced documents.

Documentify and Replace – The Code

```
WLJQ('button#replace').bind('click', function () {

    WL.Logger.debug('Called button#replace');
    if (!checkColInit(usersCollection)) {return;}

    var name = nameTag.val(),
        id = idTag.val(),
        age = ageTag.val();

    if (id.length < 1 ) {
        logMessage('You must provide a valid value for ID');
    } else {

        var doc = WL.JSONStore.documentify(id, {name: name, age: age});

        var win =   function (data) {
            logMessage('Replaced ' + data + ' document.');
            //Clear Text Boxes
            nameTag.val('');
            ageTag.val('');
            idTag.val('');
        };

        var options = {onSuccess: win, onFailure: genericFailureCallback};

        usersCollection.replace(doc,options);
    }
});
```

Replace the Document

Finally, call **replace** by using the newly created document object and the options as parameters.

To verify that the document is replaced, display all the documents in the collection by using the **Show all documents** button.

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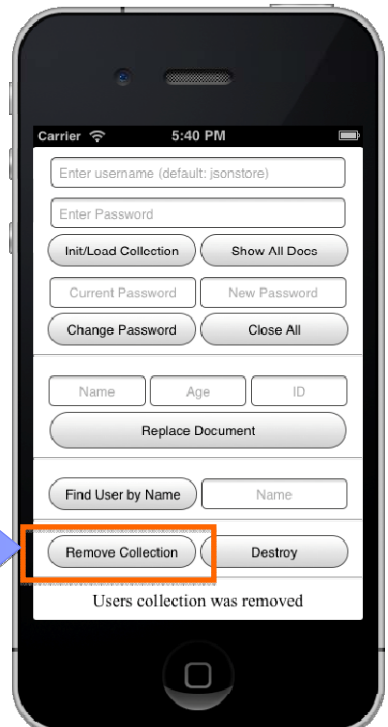
Collection Removal – UI

Remove the entire `users` collection. The local store still exists, and contains all the collections that were not removed yet.



Collection Removal – The Code

Options

Define the **onSuccess** callback. The **data** variable contains a `boolean` value that indicates whether the `users` collection was removed.

```
WLJQ('button#remove_collection').bind('click', function () {

    WL.Logger.debug('Called button#remove_collection');

    var win =  function (data) {
        if (data === 0) {
            logMessage('Users collection was removed');
        }else{
            logMessage('Users Collection was not removed');
        }
    };

    var options = {onSuccess: win, onFailure: genericFailureCallback};

    usersCollection.removeCollection(options);
});
```

Collection Removal – The Code

Remove the Collection

Finally, call **removeCollection** by using your options as the parameter.

```
WLJQ('button#remove_collection').bind('click', function

    WL.Logger.debug('Called button#remove_collection');

    var win =  function (data) {
        if (data === 0) {
            logMessage('Users collection was removed');
        }else{
            logMessage('Users Collection was not removed');
        }
    };

    var options = {onSuccess: win, onFailure: genericFailureCallback};

    usersCollection.removeCollection(options);
});
```

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Sample

- The sample for this training module can be found in the Getting Started page of the IBM Worklight documentation website at
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