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Integration Manual for iOS Bhima Secure Save Framework.

Bhima Secure Save Framework offer protection against File Substitution Hacks (FSH).

By definition, File Substitution Hack is when by changing the content of the file, but not the file name, attacker can modify behavior of a program.

It is very common in virtual currency on iOS, that is how players have “unlimited” virtual currency in games.

On application that is on Apple App Store, File Substitution Hack result in decline of sale of virtual currency (In-App Purchase), basically you as app developer lose money.

This document explain how to use WOC\_FSHPersistence class from iOS Bhima Secure Save Framework.

WOC\_FSHPersistence provide protection against File Substitution Hack.

WOC\_Persistence provide save and load, but without protection against File Substitution Hack.

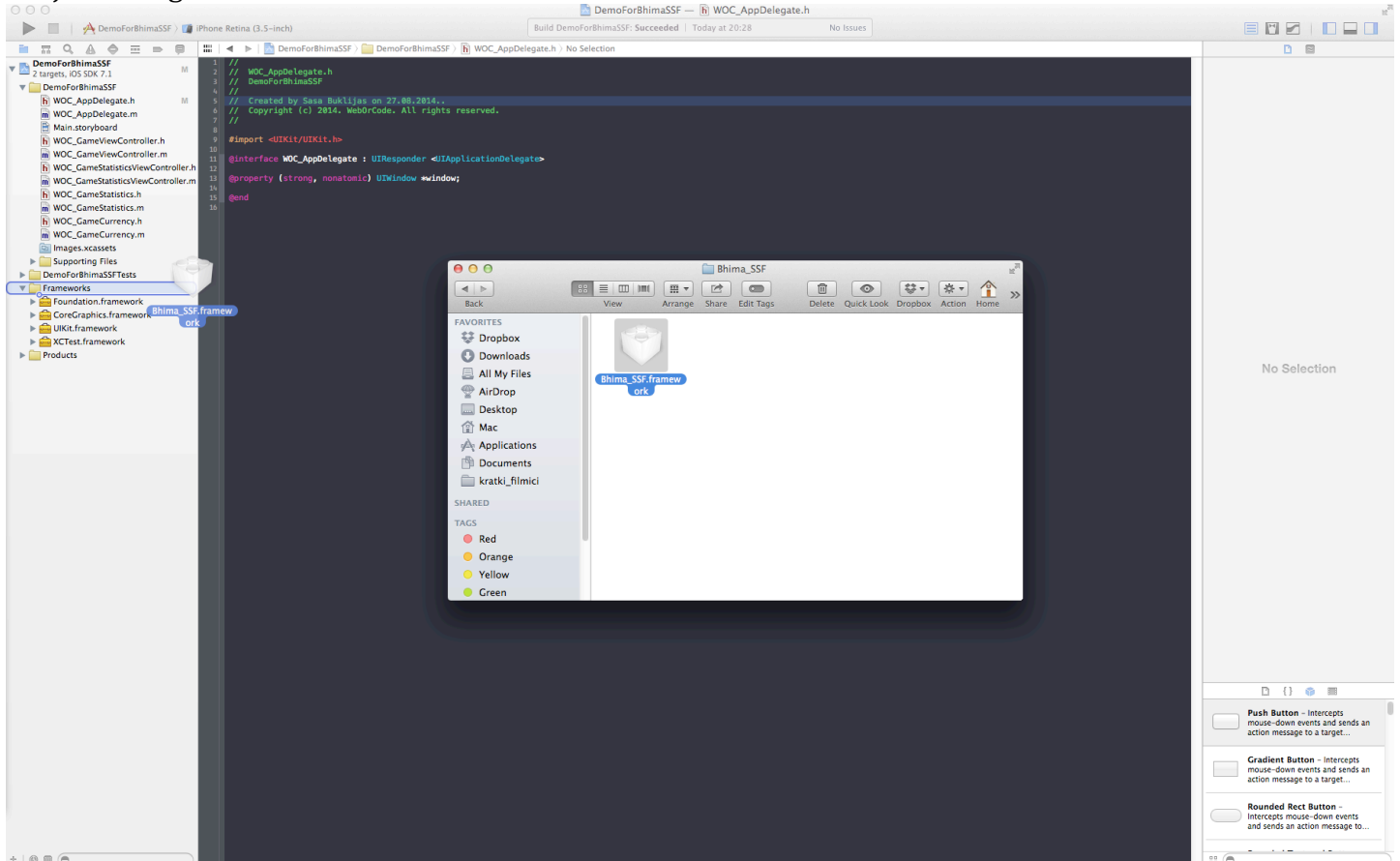
Use WOC\_Persistence for data that does not require protection against File Substitution Hack, like sound volume.

## 6 Steps guide for using Bhima, Secure Save Framework in your app

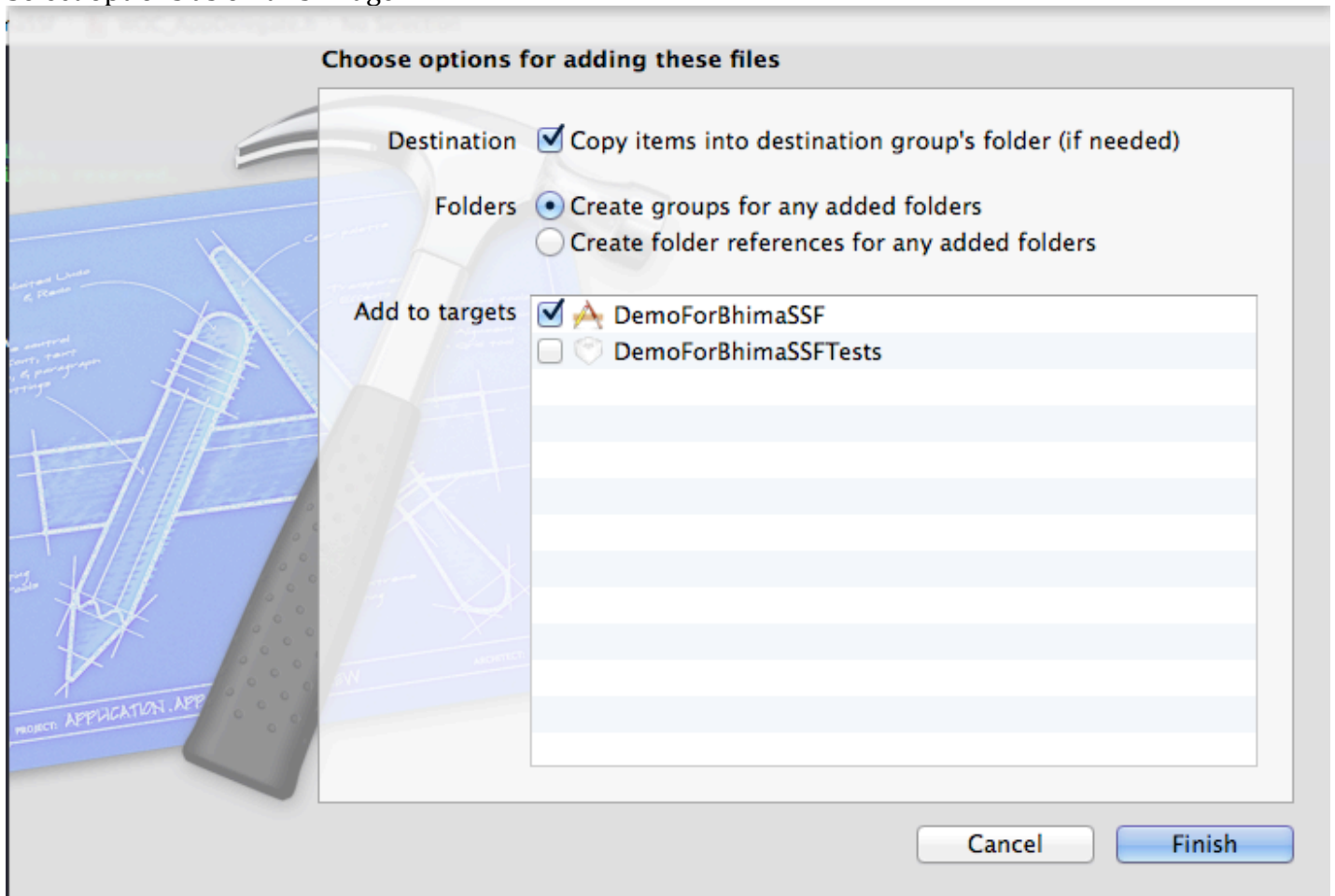
### 1. Step

Add Bhima Secure Save Framework to your project

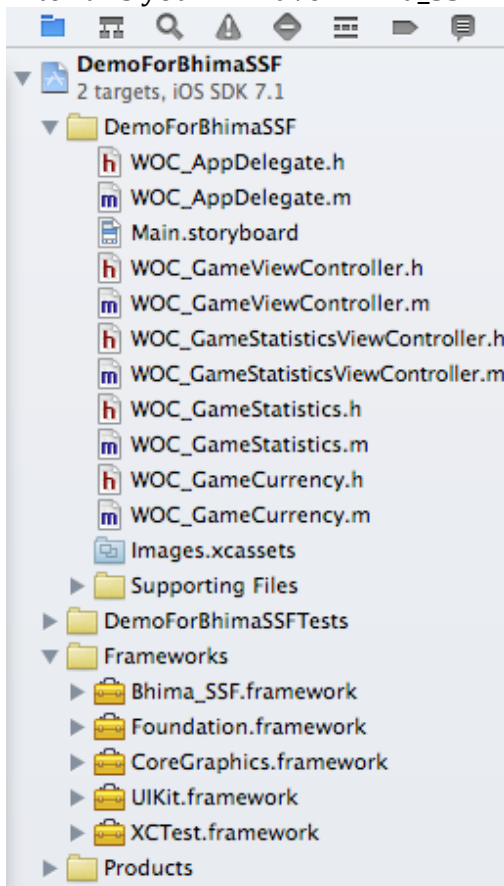
Drag and Drop from Finder window where Bhima\_SSF.framework file is located to Framework section in Project Navigator



Select options as on this image

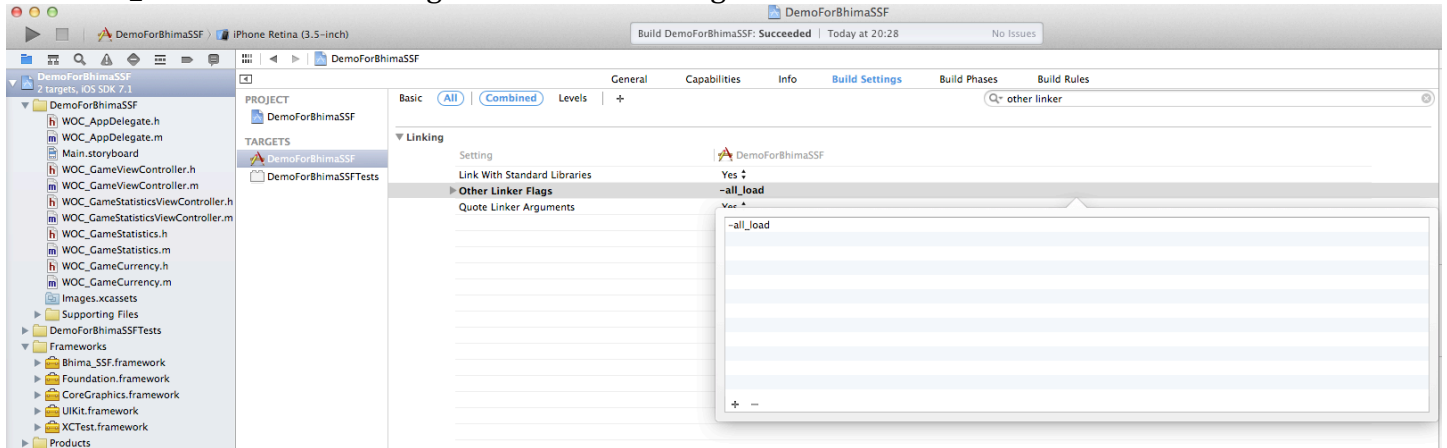


After this you will have Bhima\_SSF.framework in Framework group



## 2. Step

Add “-all\_load” to “Build Settings” “Other Linker Flags”



## 3. Step

Make subclass from base class WOC\_FSHPersistence

Code Example:

```
#import <Bhima_SSF/WOC_FSHPersistence.h>

@interface WOC_GameCurrency : WOC_FSHPersistence

@property NSUInteger coinsAmount;

@end
```

## 4. Step

Add suffix to properties that you want to save eg. “\_save” suffix

Code Example:

```
@interface WOC_GameCurrency : WOC_FSHPersistence

// renamed from coinsAmount
@property NSUInteger coinsAmount_save;

@end
```

## 5. Step

Implement initWith in your WOC\_FSHPersistence subclass

Code Example:

```
// Here is the real initializer
- (instancetype)initWithPrivate
{
    //NSLog(@"%s", __PRETTY_FUNCTION__);

    // this must be called
    self = [super initWithPrivate];

    // give some initial value fro your properties, if you need it
    self.coinsAmount_save = 10;
}
```

```

// do not put any custom code after this lines
// self.fileName MUST be unique in your iOS app
self.fileName = @"gameCurrency.archive";
self.propertiesWithThisSuffixWillBeSavedToFileName = @"_save";
// self.bhimaUniqueKey MUST be unique in your iOS app
// BEST to be unique for all your app
self.bhimaUniqueKey = @"gameCurrency_bda";

// loadFromFileWithFSHProtection will automatically
// load all data from self.filename
// and restore values to all properties that
// conform to self.propertiesWithThisSuffixWillBeSavedToFileName

BhimaState stateFromLoad = [self loadFromFileWithFSHProtection];
// BhimaState_C and BhimaState_D are considere attacks
if (stateFromLoad >= BhimaState_C)
{
    UIAlertView *message = [[UIAlertView alloc]
        initWithTitle:@"Bhima has detected hacking of COINS."
        message:@"Your coins are back to 5 coins."
        delegate:nil
        cancelButtonTitle:@"I am sorry, I will not do it again."
        otherButtonTitles:nil];

    [message show];

    // return to 5 coins
    self.coinsAmount_save = 5;
}

return self;
}

```

## 6. Step

Call `saveToFileWithFSHProtection` when you want to save data to file

Code Example:

```

// saveToFileWithFSHProtection will automatically
// save values from all properties that
// conform to self.propertiesWithThisSuffixWillBeSavedToFileName
// to self.filename

[[WOC_GameCurrency sharedManager] saveToFileWithFSHProtection];

```