Transformable Type in CoreData

What could possibly go wrong?

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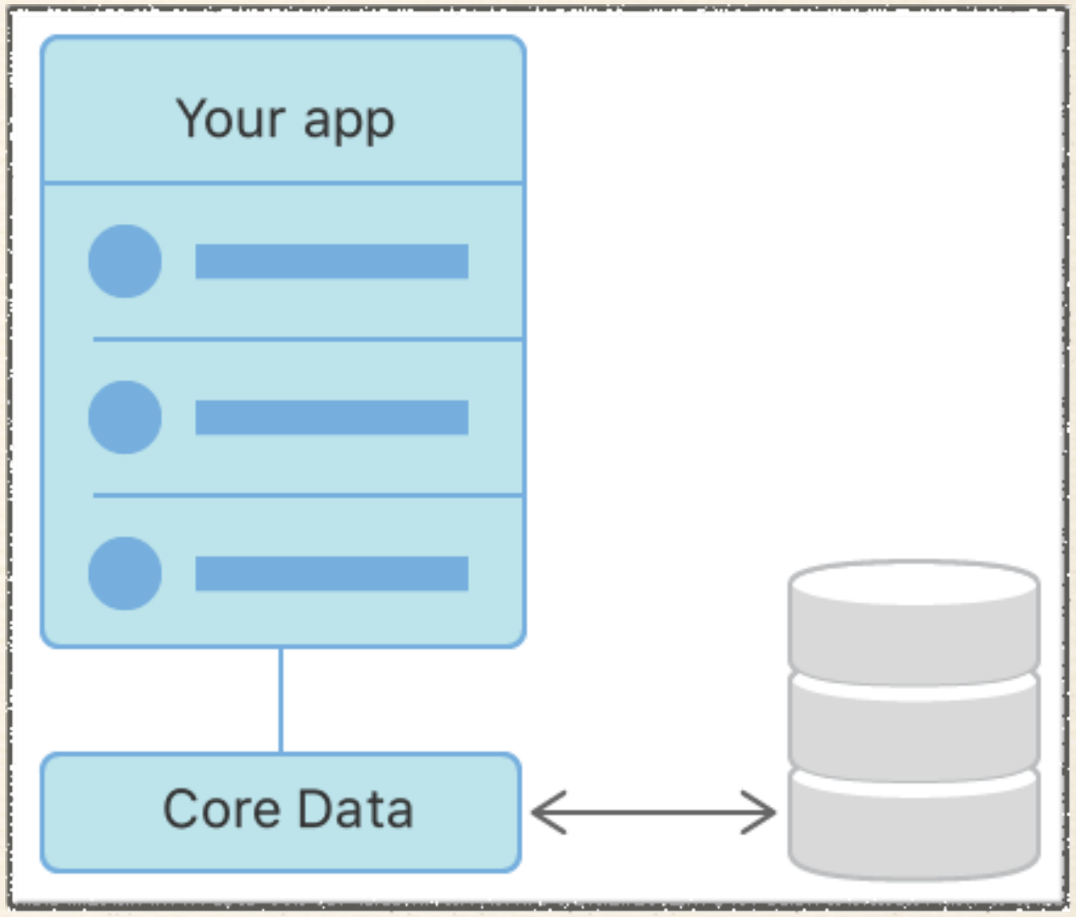
Very brief, what is CoreData and why?

- Data persistence solution by Apple.
- Abstraction of direct database handling.
- No SQL skill needed.
- Generates classes according to your CoreData model.
- Model contains relations and types of entities.



What is “Transformable” type in CoreData

“Boring: strings and integers;
fun and mysterious: transformable!”

–Greg Heo

What is “Transformable” type in CoreData

- CoreData entities support String, Float, Boolean and Date as attributes.
- You can also use “Transformable”.
- Which means using your custom type.

What is “Transformable” type in CoreData

- Saving your NSManagedObject with more complex properties to CoreData.

- Instead of translating properties to aforementioned types.

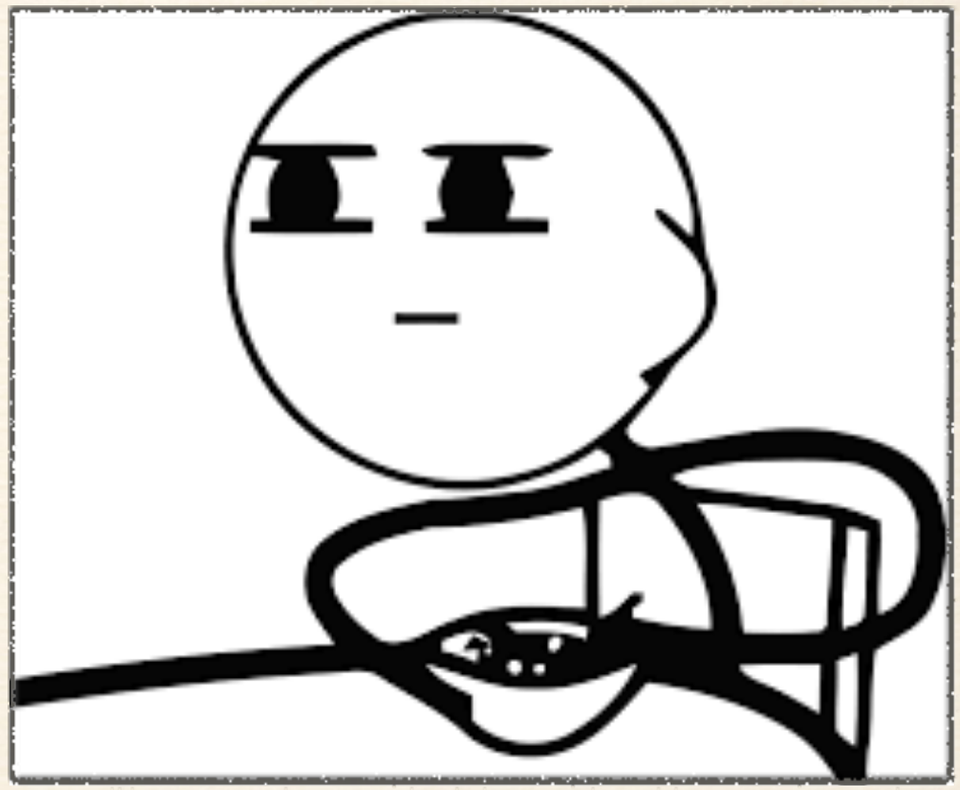
- The same inverted for loading.

Sounds neat, how to use it?

- Our custom type must conform to NSCoding.
- Means NSArray, NSDictionary and NSData support out of the box!
- **But please don’t…**

What is happening?

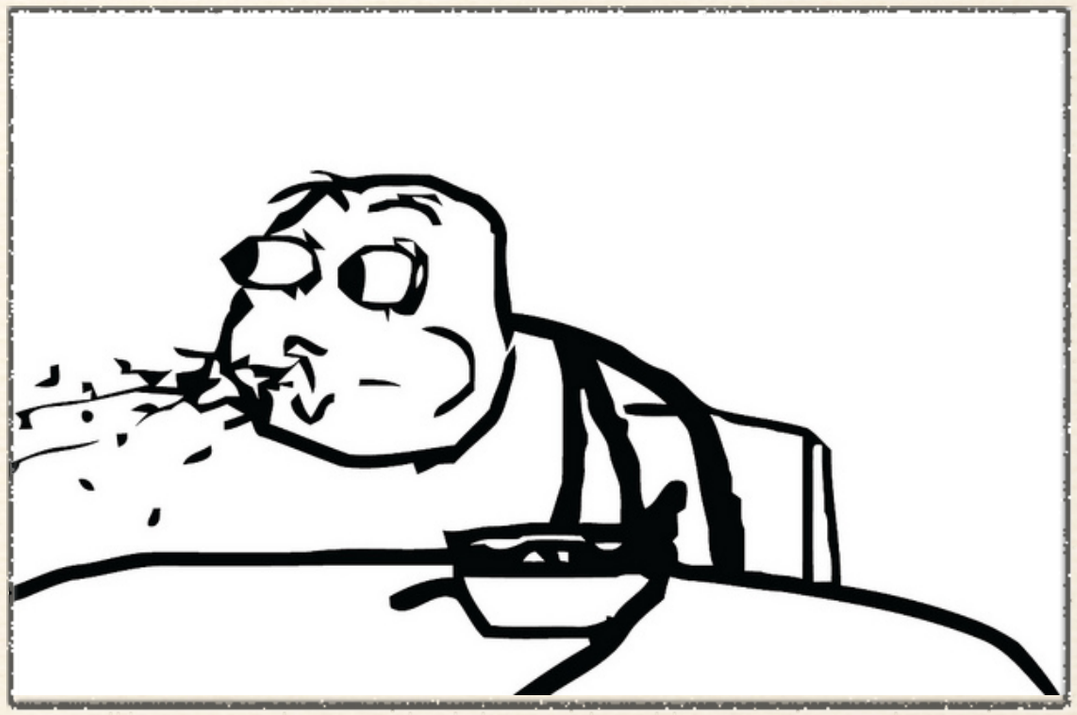
- Supposedly minor update.
- Data loss report from testers…
- Not reproducible at first.
- Configuration: Dev != Test.



What is happening?

```
NSString *storeType = EWConfiguration.isDebug ? NSSQLiteStoreType : NSBinaryStoreType;
```

- With binary store unable to decode…
- …because CoreData lost its information of our transformable type.



What is happening?

- NSSecureCoding was introduced with iOS 11.
- No one at CoreData team knew about this in time.
- Would not lead to problems unless…
- …used with binary data store. 🎉

That must be the fix!

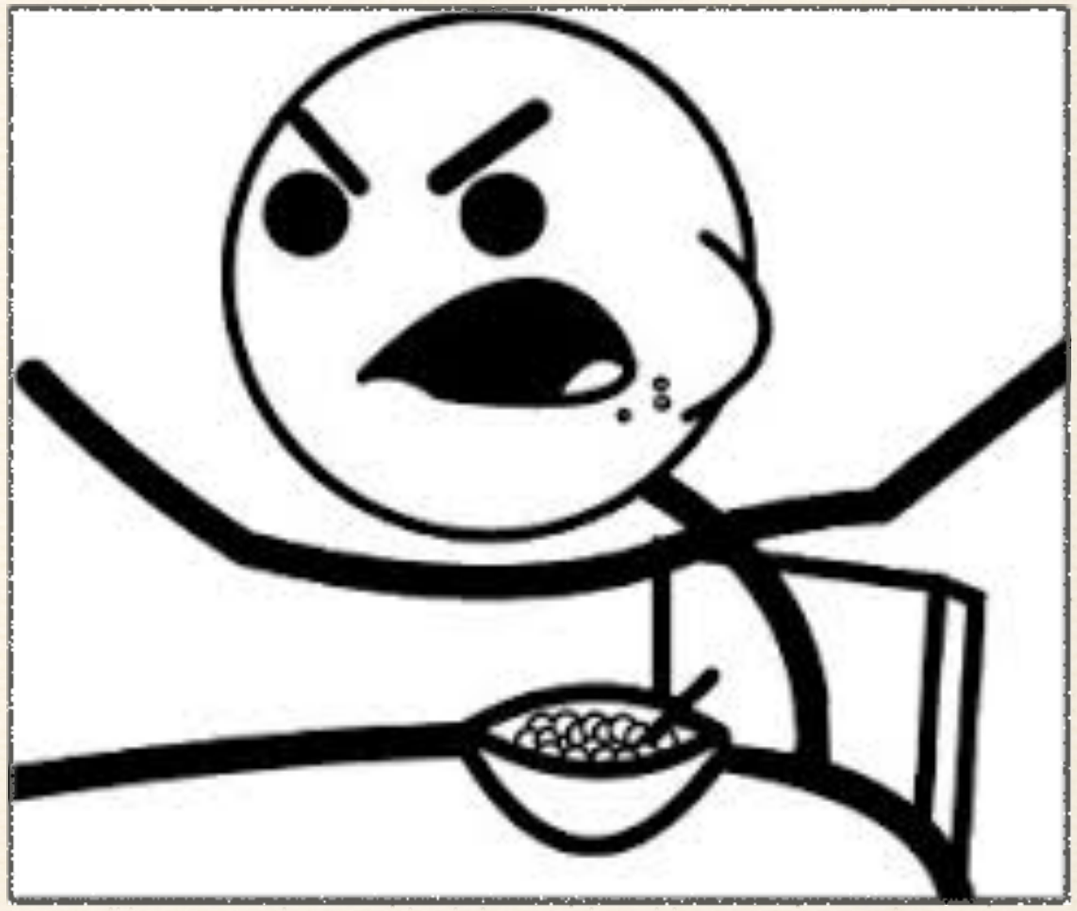
- A workaround found in the depths of Apple Developer Forums.
- Additional option **NSBinaryStoreSecureDecodingClasses**.
- CoreData can decode its data store again.
- **But please don’t…**

```
 /**
 * Starting with iOS 11.0 the transformable type in CoreData is broken
 * But there is a workaround provided by Apple.
 * You can read more about that here: https://forums.developer.apple.com/thread/88194
 */
NSDictionary *options = @{
                          NSMigratePersistentStoresAutomaticallyOption: @YES,
                          NSInferMappingModelAutomaticallyOption: @YES,
                          NSBinaryStoreSecureDecodingClasses: [NSSet setWithObjects:[YourTransformable class], nil]
                          };

NSPersistentStore *persistenceStore = [persistentStoreCoordinator addPersistentStoreWithType: storeType
                                                                                configuration: nil
                                                                                          URL: persistenceFile
                                                                                      options: options
                                                                                        error: error];
```

Not again!

- Supposedly minor update.
- Data loss report from **customers**…
- Reproducible…



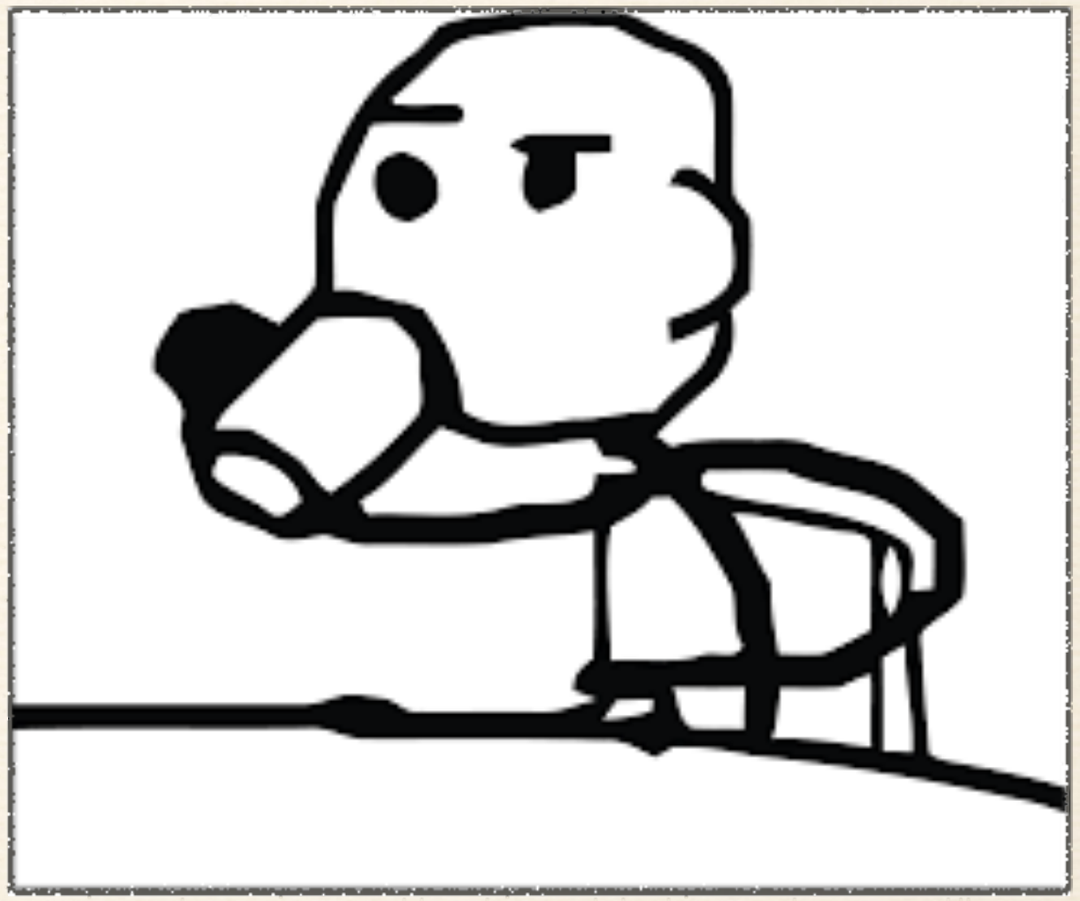
Not again!

- Our transformable class was written in Swift.
- And moved from one module to another, thus changing the full class name…
- Now CoreData can’t find our transformable class.

```
/**
 * Fix missing SendBoardingPassRestrictionModel due to migrating from framework to main app.
 * Causing data los for existing users.
 * More Information on this here: https://stackoverflow.com/a/45290402/5097293
 */
 [NSKeyedUnarchiver setClass: [SendBoardingPassRestrictionsModel class]
                    forClassName: @"EWModel.SendBoardingPassRestrictionsModel"];
```

What now?

- New regression tests.
- Removing transformables.
- Moving away from binary store type.



Sources

- https://developer.apple.com/documentation/coredata
- https://gregheo.com/blog/core-data-transformable/
- https://medium.com/@rohanbhale/hazards-of-using-mutable-types-as-transformable-attributes-in-core-data-2c95cdc27088
- https://forums.developer.apple.com/thread/88194