

Swift on Android

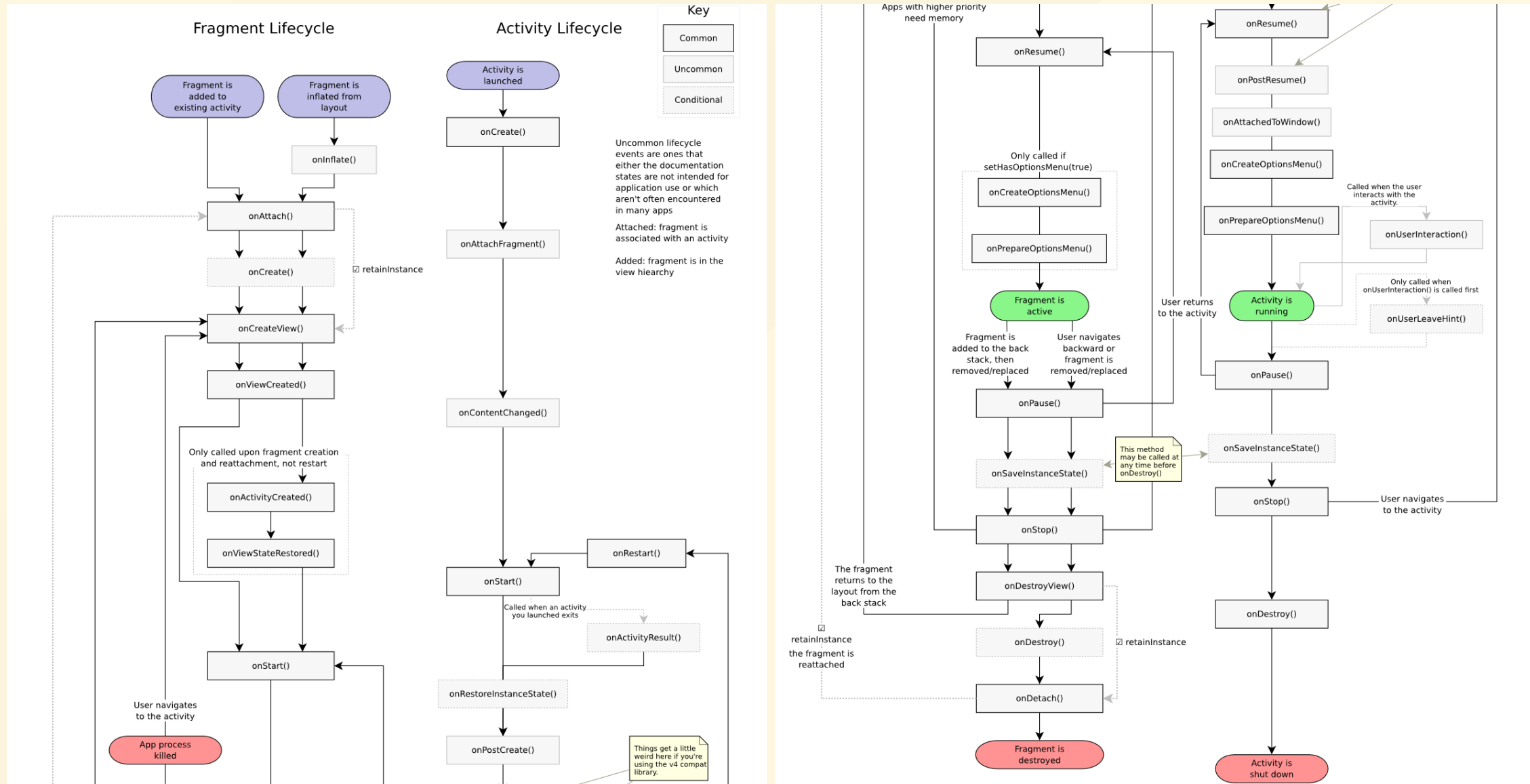
by Sebastian Chlan

Android 101

[~~Swift on Android~~]

by Sebastian Chlan

Android Fragment & Activity Lifecycle



Swift on Android

by Sebastian Chlan

Where did it start?

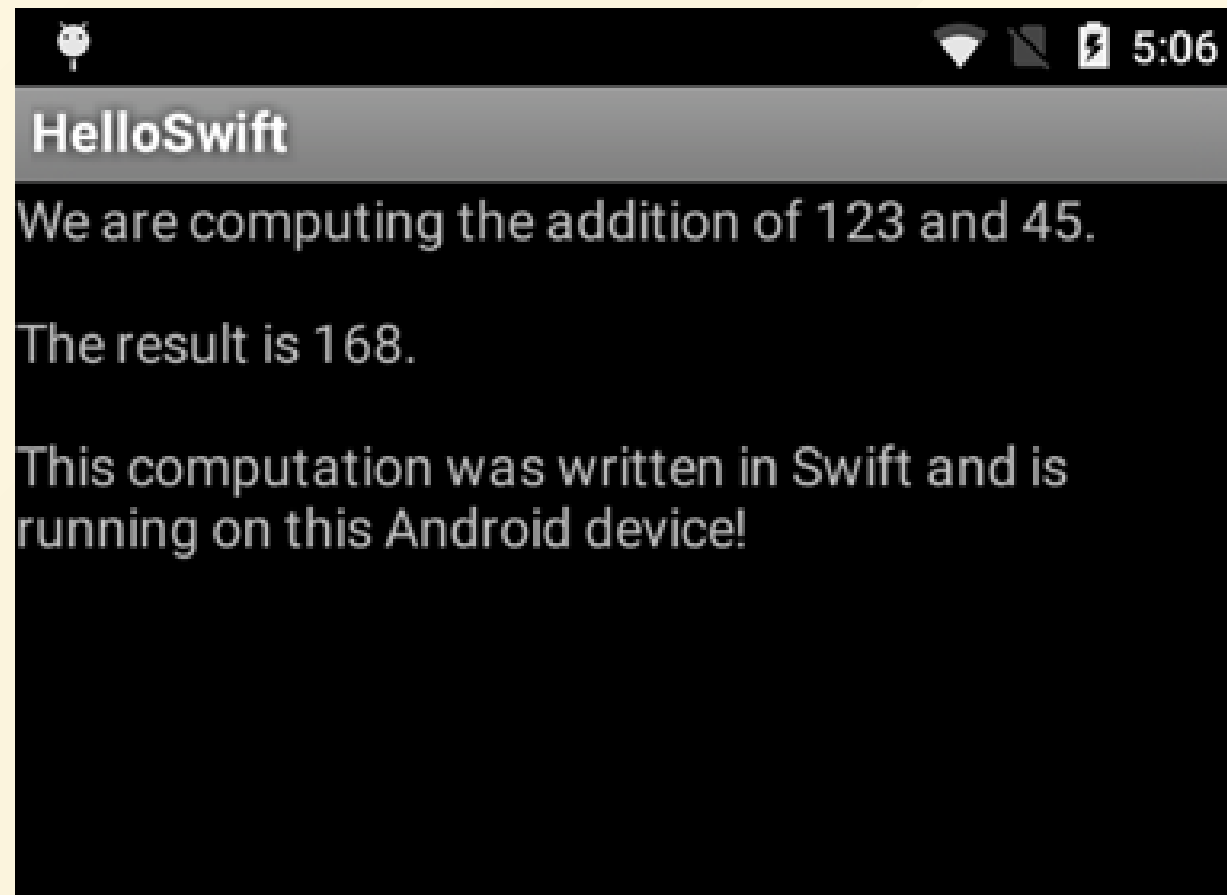
- Pioneers:
 - > [Romain Goyet](#)
 - [Zhuowei Zhang](#)
 - [Brian Gesiak](#)
 - [Geordie J.](#)

First POC

```
// add.swift  
func addTwoNumbers(first: UInt8, second: UInt8) -> UInt8 {  
    return first + second  
}
```

1. Compile the intermediate representation
2. Use LLVM to create an ARM object file
3. Create a JNI bridge

First POC



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Where did it start?

Port to Android #1442

 **Merged** swift-ci merged 1 commit into apple:master from SwiftAndroid:master on Apr 13

 Conversation 198

 Commits 1

 Files changed 34

+592 -149 



modocache commented on Feb 25

What's in this pull request?

This adds an Android target for the stdlib. It is also the first example of cross-compiling outside of Darwin: a Linux host machine builds for an Android target.

Relevant mailing list discussions:

1. <https://lists.swift.org/pipermail/swift-dev/Week-of-Mon-20151207/000171.html>
2. <https://lists.swift.org/pipermail/swift-dev/Week-of-Mon-20151214/000492.html>

The Android variant of Swift may be built and tested using the following `build-script` invocation:

```
$ utils/build-script \  
  -R \                # Build in ReleaseAssert mode.  
  -T \                # Run all tests.  
  --android \         # Build for Android.
```

Labels

None yet

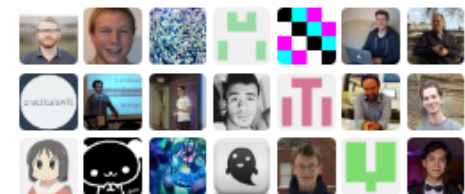
Milestone

No milestone

Assignees

No one assigned

58 participants



and others

NOPE

What can we do today?

- Compile and Swift code and execute it on emulators/rooted phones
- Call Swift code from Java and vice versa

How is it done?

- Setup
 - Linux environment [[Ubuntu \(>15.04\)](#)]

```
git cmake ninja-build clang python uuid-dev libicu-dev icu-devtools libbsd-dev  
swig libpython-dev libncurses5-dev pkg-config libblocksruntime-dev libicu-dev
```

- [Android NDK \(r12\)](#)
- Clone [apple/swift](#)
- Clone [SwiftAndroid/libiconv-libicu-android.git](#)

How is it done?

- Compile
 - `libiconv` and `libicu`
 - Swift standard library

```
utils/build-script \  
  -R \                               # Build in ReleaseAssert mode.  
  --android \                         # Build for Android.  
  --android-ndk /path/to/android-ndk-r12 \ # Path to an Android NDK.  
  --android-api-level 21 \           # The Android API level to target  
  --android-icu-uc /path/to/libicu-android/armeabi-v7a \  
  --android-icu-uc-include /path/to/libicu-android/armeabi-v7a/icu/source/compatibility \  
  --android-icu-i18n /path/to/libicu-android/armeabi-v7a \  
  --android-icu-i18n-include /path/to/libicu-android/armeabi-v7a/icu/source/compatibility
```

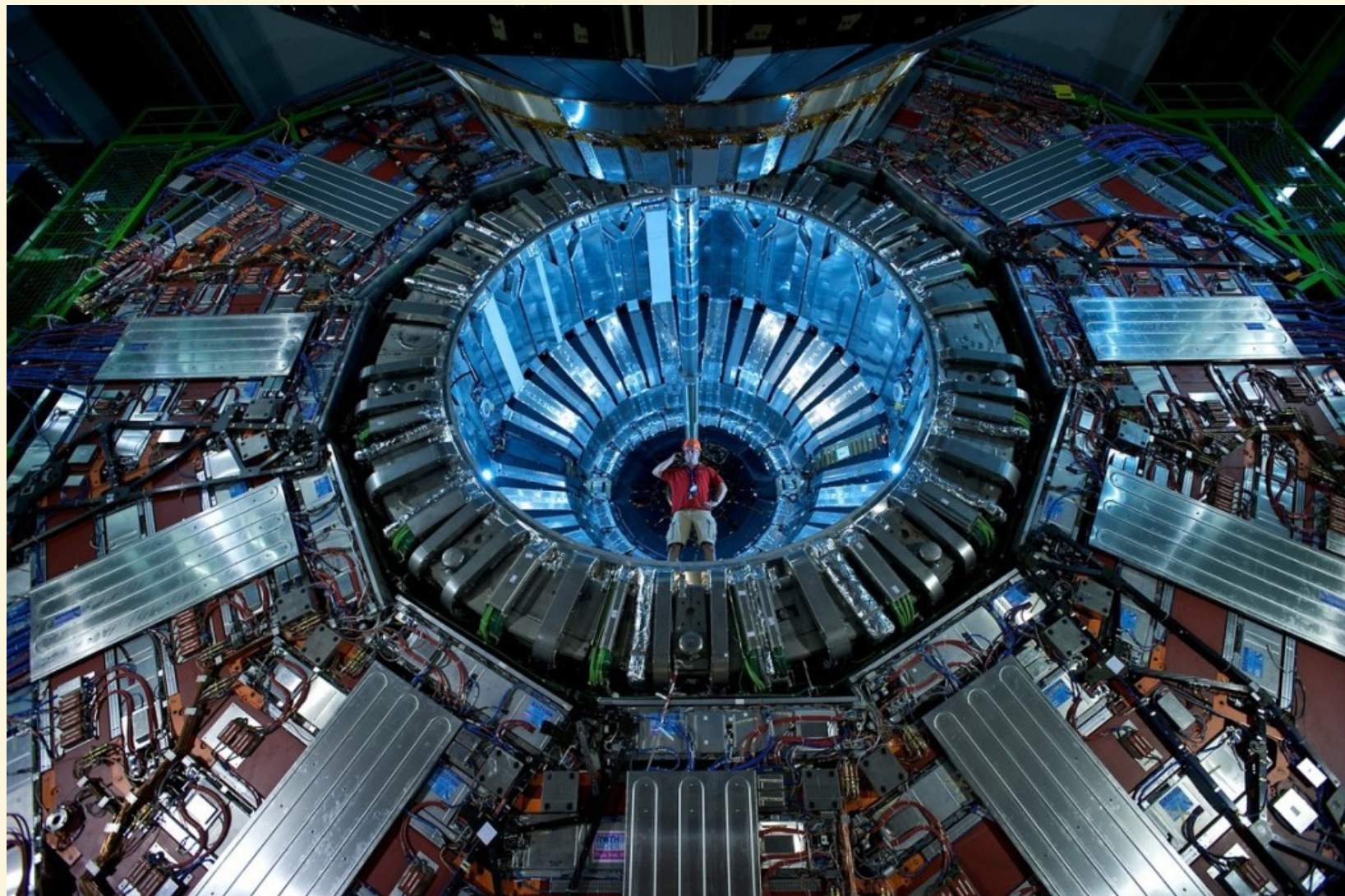
How is it done?

- Build

```
build/Ninja-ReleaseAssert/swift-linux-x86_64/bin/swifc \
  -target armv7-none-linux-androideabi \
  -sdk /path/to/android-ndk-r12/platforms/android-21/arch-arm \
  -L /path/to/android-ndk-r12/sources/cxx-stl/llvm-libc++/libs/armeabi-v7a \
  -L /path/to/android-ndk-r12/toolchains/arm-linux-androideabi-4.9/prebuilt/
hello.swift
```

Demo

Swift <--> JNI <--> Android App



Conclusion

Kotlin



Dmitry Jemerov [JB] 3:49 PM

[@mikehearn](#) to put some facts behind the speculation: yes, we do plan to work on Kotlin Native. the primary motivation is to target platforms where the JVM is not available (which means that Avian is nice but won't solve anything). Kotlin Native will have a GC



Mike Hearn 3:50 PM

which platforms are those?



Dmitry Jemerov [JB] 3:50 PM

embedded

and iOS

References

- [http://romain.goyet.com/articles/running swift code on android/](http://romain.goyet.com/articles/running_swift_code_on_android/)
- *lol* <http://thenextweb.com/dd/2016/04/07/google-facebook-uber-swift/>
- <https://medium.com/@ephemer/why-we-put-an-app-in-the-android-play-store-using-swift-96ac87c88dfc>
- <https://github.com/apple/swift/blob/master/docs/Android.md>
- <https://github.com/SwiftAndroid>

Thanks!

<https://github.com/schlan>

[@sebchlan](#)