<WE/BUILD>

December 12th, 2020
Block 71 Saigon

# WeBuild Day 2020

## Toan Tran

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**Reactive programming in Android**

# About speaker

Hello! I’m Toan

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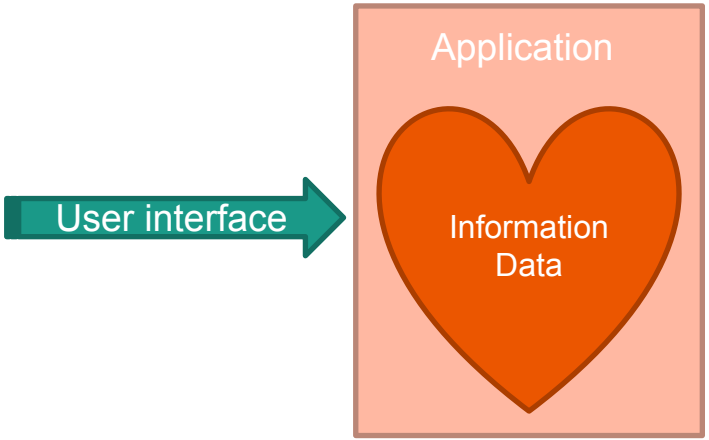
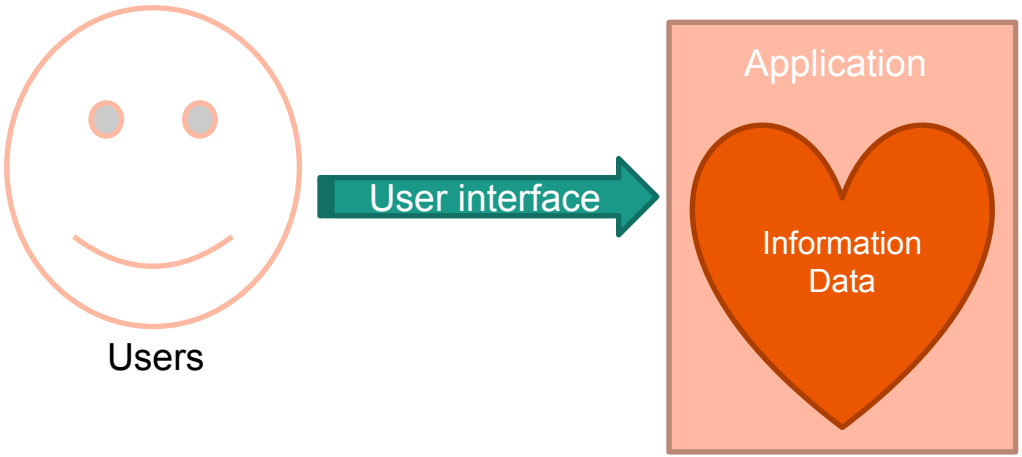
# Reactive Programming in Kotlin|Android

1. The ultimate goal of app development.
2. Introducing Reactive Programming.
3. Realize RP with Kotlin in Android.
4. Some common patterns we may use daily.
5. Key-takeaways.

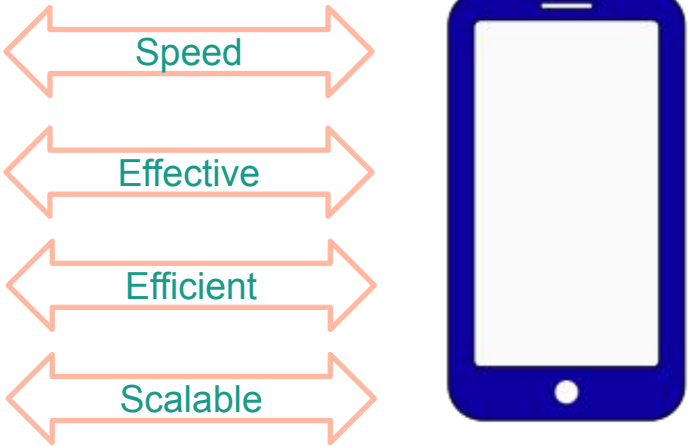
# 1. Let's talk about application development



# 1. Let's talk about application development



# 1. Let's talk about application development

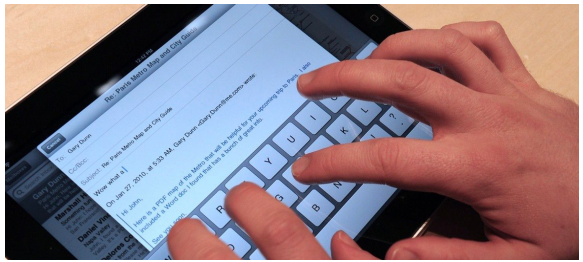


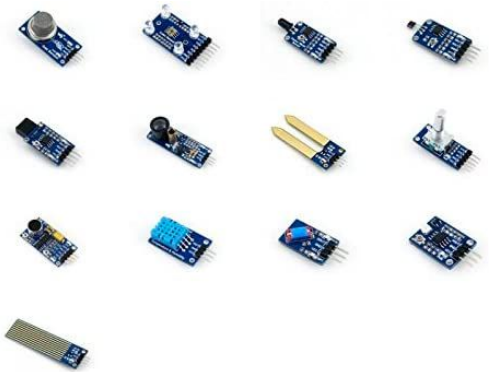
# 1. Introducing Reactive Programming

1. A programming paradigm.
2. Based on 3 pillars:
    - Data streams.
    - Asynchronous  processing.
    - Functional programming.

# 1. Introducing Reactive Programming

**Data streams**: sequence of events. It could be anything!



# 1. Introducing Reactive Programming

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Reactive Programming vs …

```
Val data = getDataFromStream()
If (data is matched condition) {
    ui.display()
}
```

```
getDataFromStream().
.filter( condition )
.subscribe {
   ui.display()
}
```

# 1. Introducing Reactive Programming

Reactive Programming vs …

```
Val remote = getDataFromStream()
// blocking call
Val local = readFromLocalDB()
// blocking call

If (remote is matched condition 1
AND local matched condition 2 ) {
    ui.display()
}
```

```
getDataFromStream().
concat(readFromLocalDB)
.filter( condition1 AND condition 2 )
.subscribe {
   ui.display()
}
```

# 1. Introducing Reactive Programming

Reactive Programming vs …

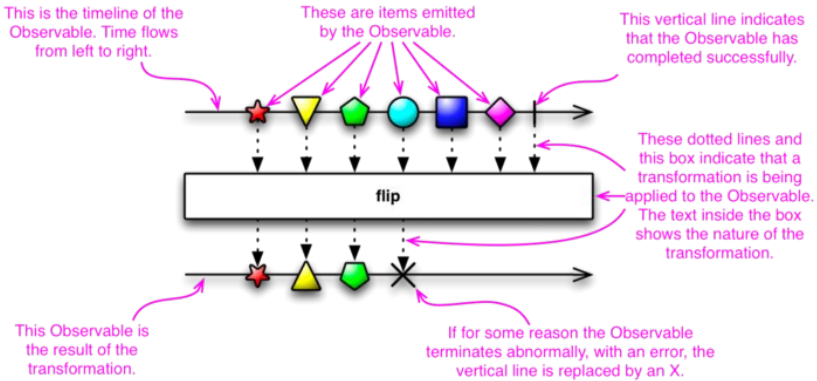
```
Callback<Remote> remote = getDataFromStream()
Callback<Local> local = readFromLocalDB()

remote.execute(THREAD_IO).onResult { res1 ->
    local.excecute(THREAD_IO).onResult {res2 ->
        if (condition 1 and condition 2) {
            runOnnUIThread {
        ui.display()
            }
        }
    }
}
```

```
getDataFromStream().
concat(readFromLocalDB)
.subcribeOn(THREAD_IO)
.filter( condition1 AND condition 2 )
.observerOn(UI_THREAD)
.subscribe {
   ui.display()
}
```

# 3. Realize RP in Kotlin/Android

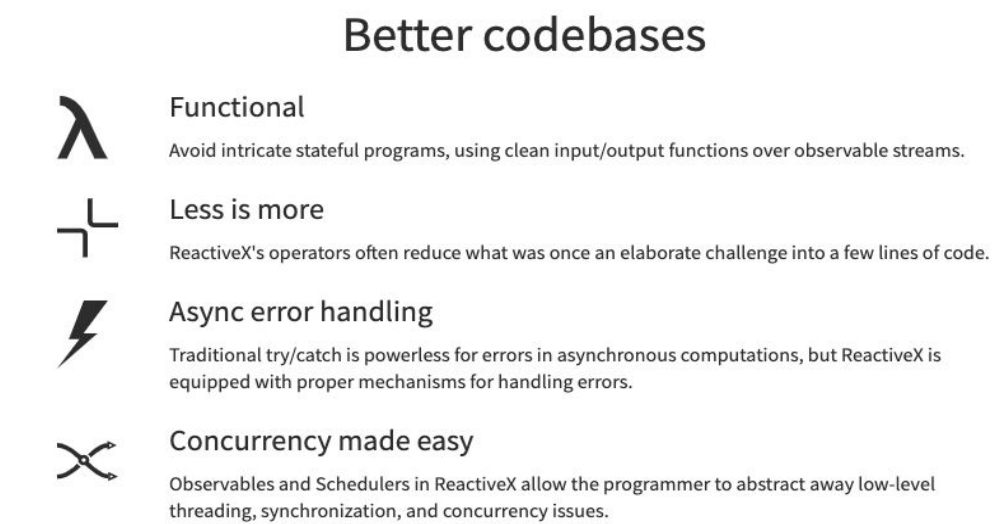
- http://reactivex.io/
- RxJava, RxJS, RxSwift, etc
- Early adopted by big names: Netflix, Microsoft, GitHub, SoundCloud, etc



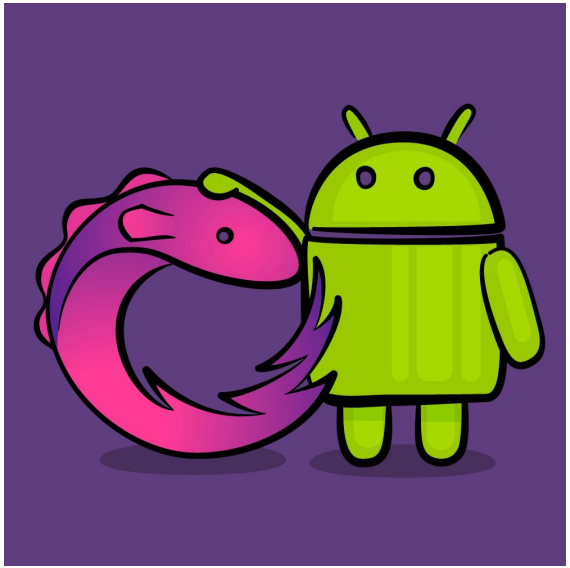
# 3. Realize RP in Kotlin/Android

Main functionalities of Rx family

# 3. Realize RP in Kotlin/Android



# 3. Realize RP in Kotlin/Android



RxJava + Android

# 3. Realize RP in Kotlin/Android

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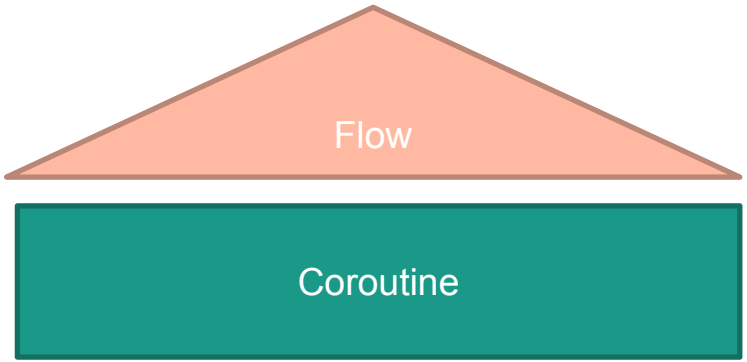

# 4. Common patterns

Creating patterns: To create observables
- Create
- Defer
- From
- Just

# 4. Common patterns

Transforming patterns:
- Map
- FlatMap
- GroupBy
- Buffer

# 4. Common patterns

Filtering patterns:
- Filter
- Debounce
- First
- Last

# 4. Common patterns

Combine patterns:
- Concat
- Join
- Merge
- Zip

# 5. Key takeaways

1. Reactive Programming is paradigm based on async stream processing with the support of functional programming.
2. Realize with ReactiveX language implementations: RxJava, RxKotlin, RxSwift, RxJS
3. Rx provided with set of common tools/pattern to solve data manipulation in an asynchronous manner.

# Thank you