SUPER CHARGE

Android and Flux: It's a match!

Attila Polacsek
Senior Android Developer | Supercharge

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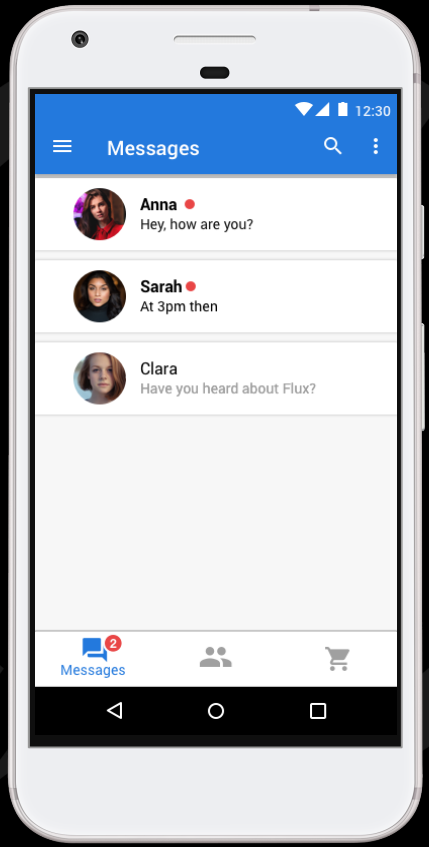

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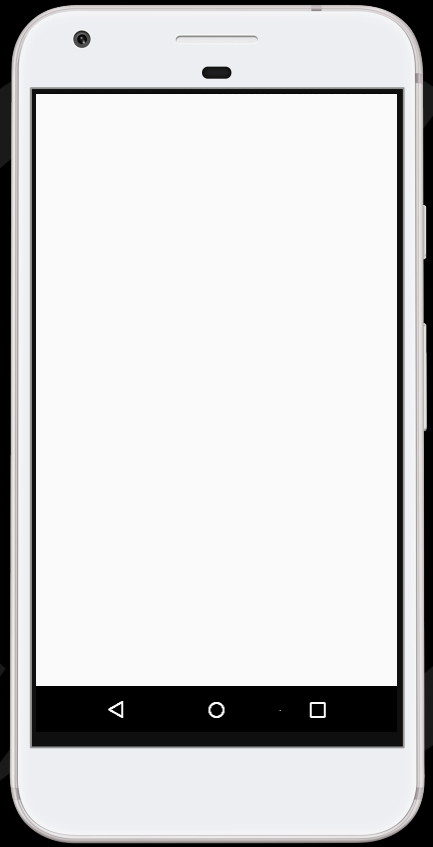

WHAT IS FLUX?

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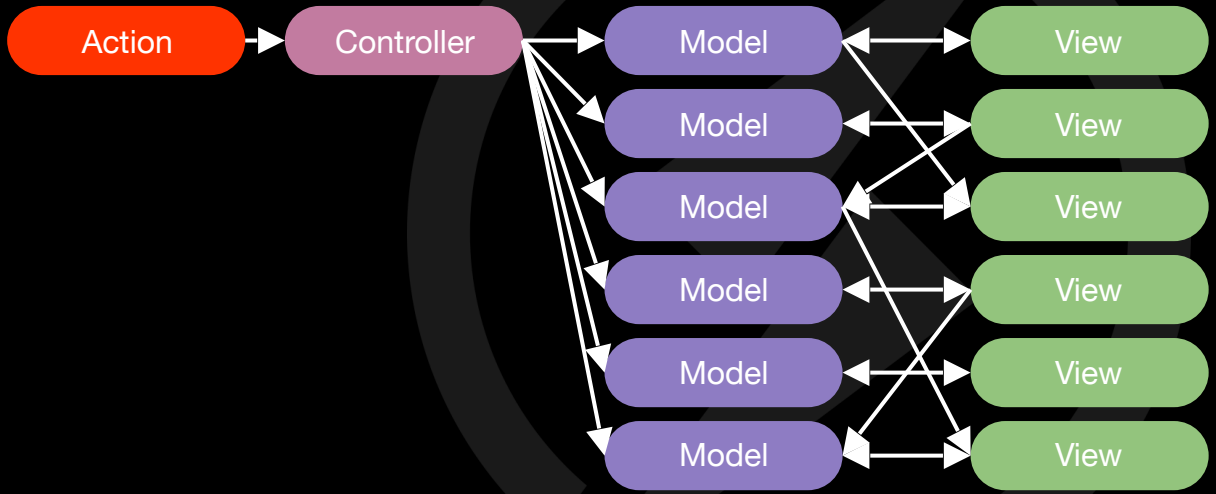
What is FLUX?

- Application architecture
- Pattern, not a framework
- Created by Facebook as a successor of client-side MVC
- Based on unidirectional data flow

MVC Architecture



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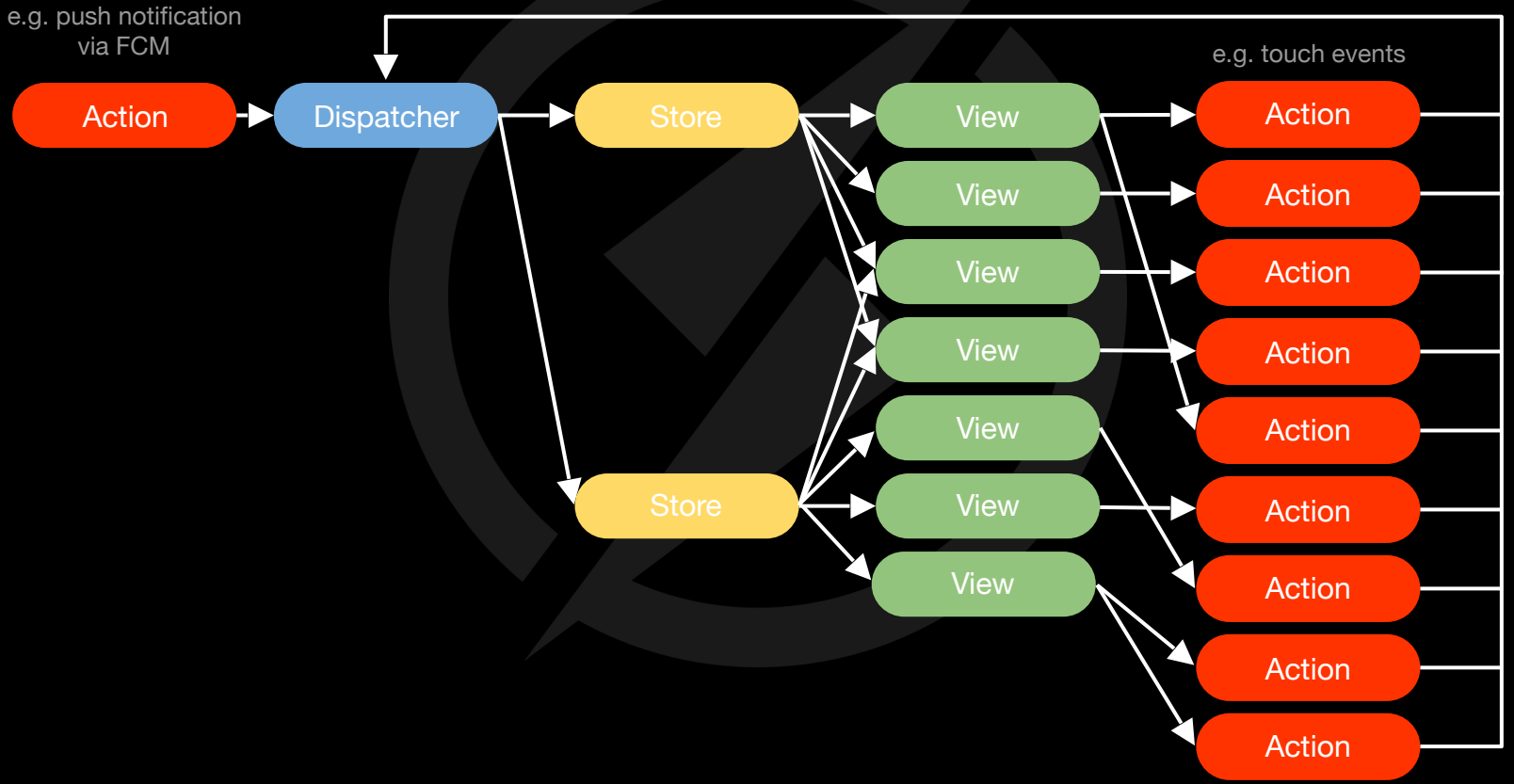
FLUX Architecture



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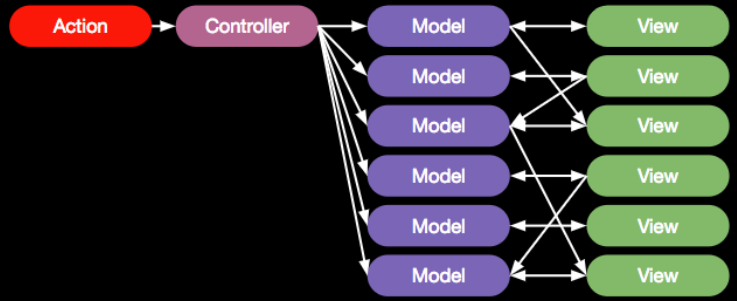
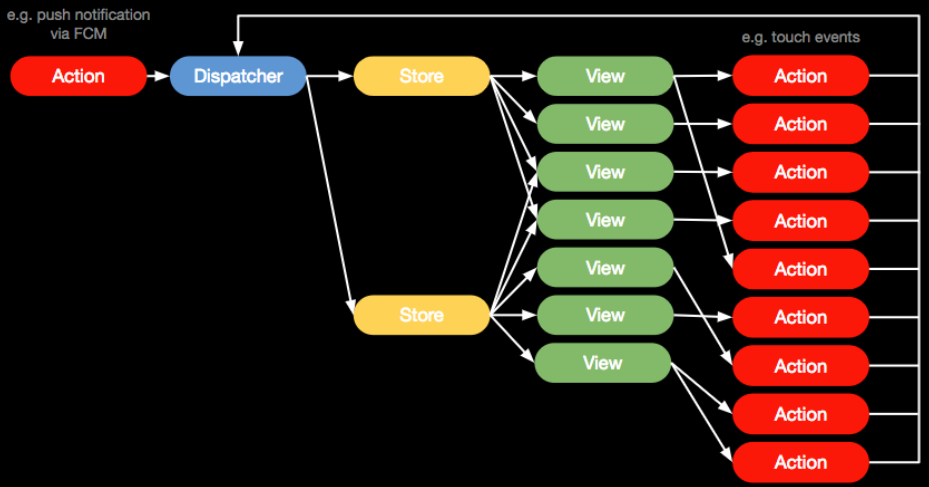
MVC Architecture



FLUX Architecture



WHAT IS FLUX?

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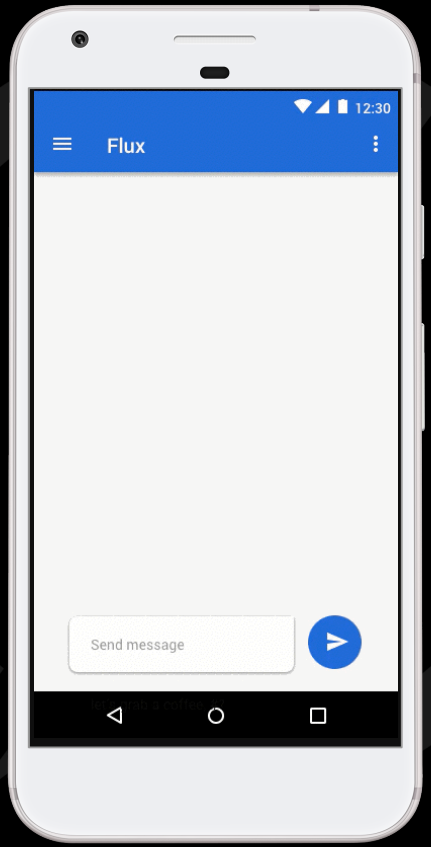

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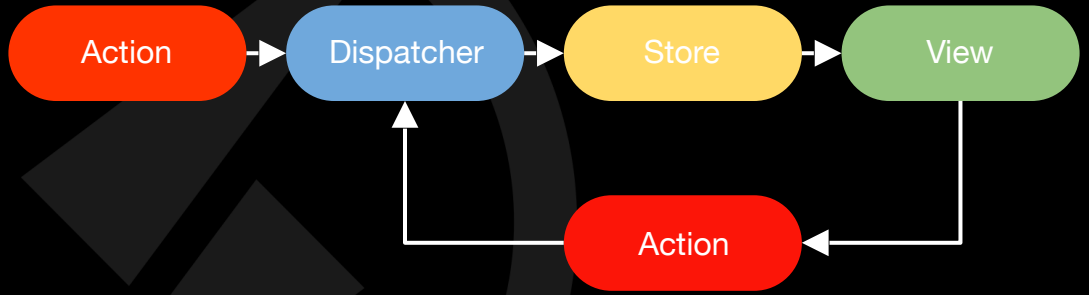
COMPONENTS

- Store
- Action
- Dispatcher
- View



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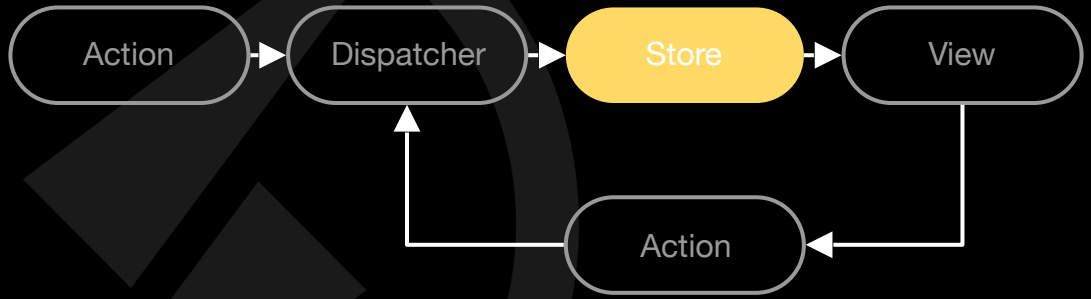
STORE

- Holds the application data
- Immutable from the outside
- Produces a change event



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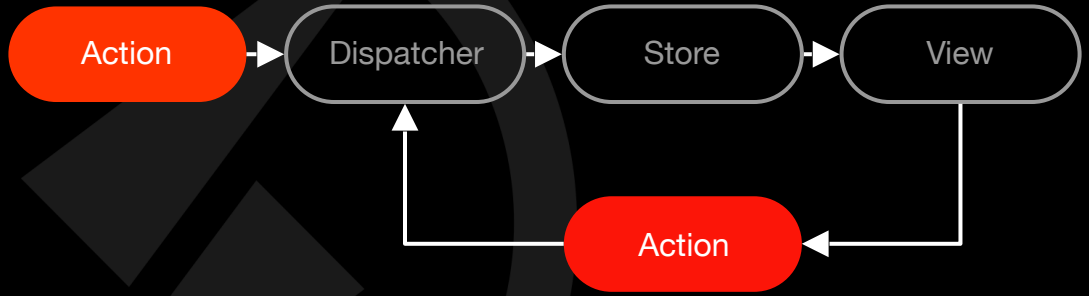
ACTION

- Actions data objects
- They define the internal API
- Action Creators are methods
- Send action to dispatcher



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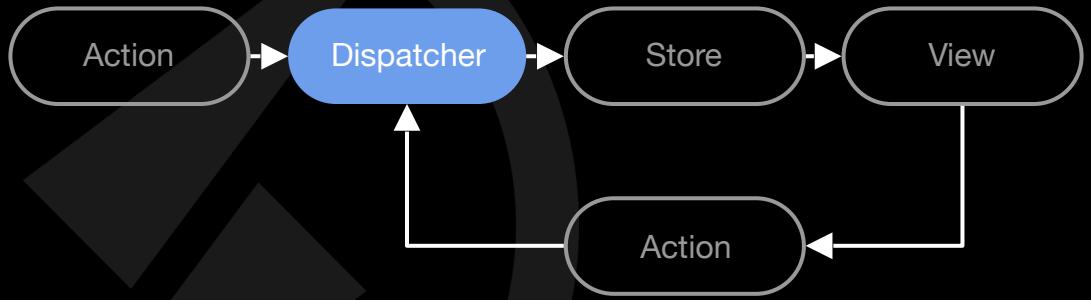
DISPATCHER

- Receives all actions
- Broadcast them to stores
- Invoke callbacks in specific order



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```
// Facebook's own example for waitFor:
CityStore.dispatchToken = flightDispatcher.register(function(payload) {
    if (payload.actionType === 'country-update') {
        // `CountryStore.country` may not be updated.
        flightDispatcher.waitFor([CountryStore.dispatchToken]);
        // `CountryStore.country` is now guaranteed to be updated.

        // Select the default city for the new country
        CityStore.city = getDefaultCityForCountry(CountryStore.country);
    }
});
```

CONS

- All UI state is handled in stores
- Stores are too dependent
- Dispatcher is everywhere
- Not cancelable

WHAT IS FLUX?

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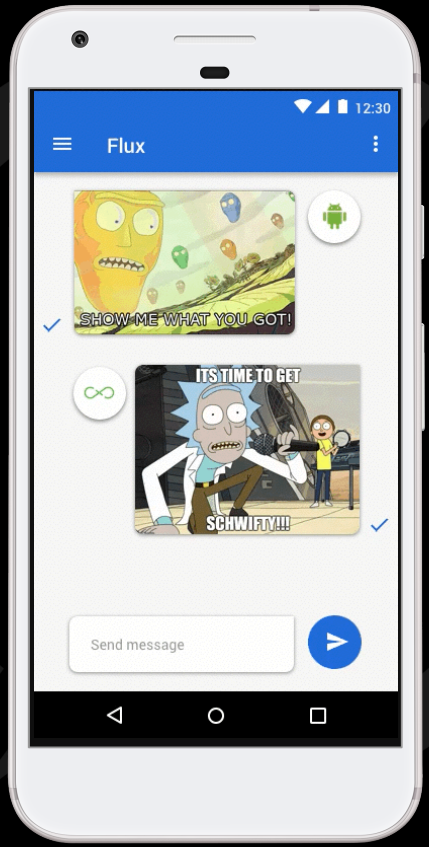

HOW WE IMPLEMENTED IT

On top of RxJava2

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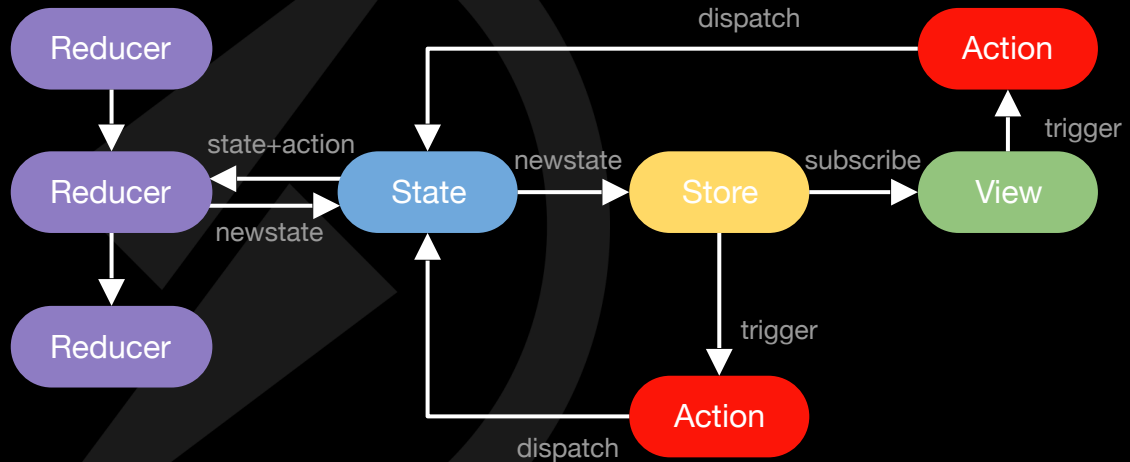
SCFlux

- Implemented on top of RxJava2
- Dependencies between stores are looser
- State persistence is extracted from the stores
- Reducers functions mutate the state



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STORE

- Minor differences
- Returns a Flowable instead of callbacks
- State persistence is extracted

```
class ConversationStoreImpl
@Inject constructor(repository: MessageRepository) : ConversationStore {
    private val listFlowable: Flowable<List<Message>>

    init {
        listFlowable = Flowable.fromCallable(repository::findAll)
            .repeatWhen { completed ->
                completed.zipWith(
                    repository.dataUpdatedEvents(),
                    BiFunction<Any, Any, Any> { item, _ -> item }
                )
            }
            .share()
    }

    override fun getList(): Flowable<List<Message>> {
        return listFlowable
    }
}
```

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ACTION

- Type comes from the class
- Payload is optional

ACTION CREATORS

- Describes the action pipeline
- Composes API calls and actions
- Returns an Rx Comletable

```
data class CreateMessage(
    val msg: String,
    val status: MessageStatus) : Action()

data class UpdateMessage(
    val id: String,
    val status: MessageStatus) : Action()



interface MessageActions {
   fun sendMessage(message: String): Completable

   fun updateMessage(id: String,
                     status: MessageStatus): Completable
}
```

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DISPATCHER

- Without waitFor it was just a dumb pipe
- Completely removed
- Event pipes are declared with Rx operators
- State is modified directly with actions and a reducers

```
fun changeMessageStatus(messages: List<Message>,
                        action: UpdateMessage): List<Message> {
    return messages.map { message ->
        if (message.id == action.id) {
            message.copy(status = action.status)
        } else {
            message
        }
    }
}
```

HOW WE IMPLEMENTED IT

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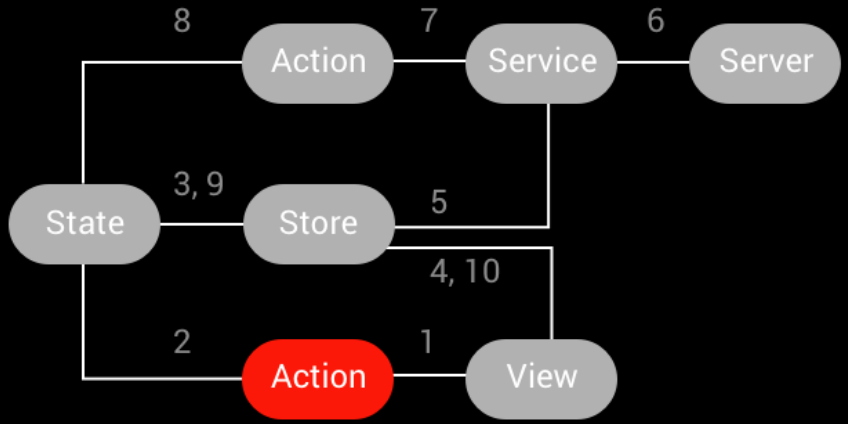

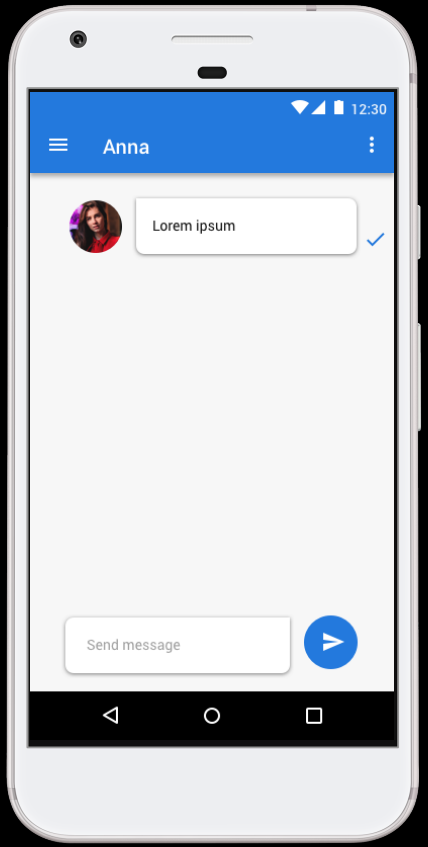

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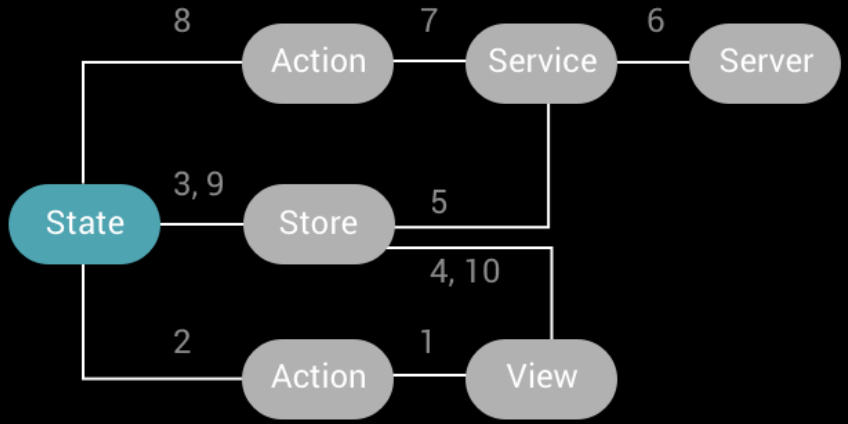

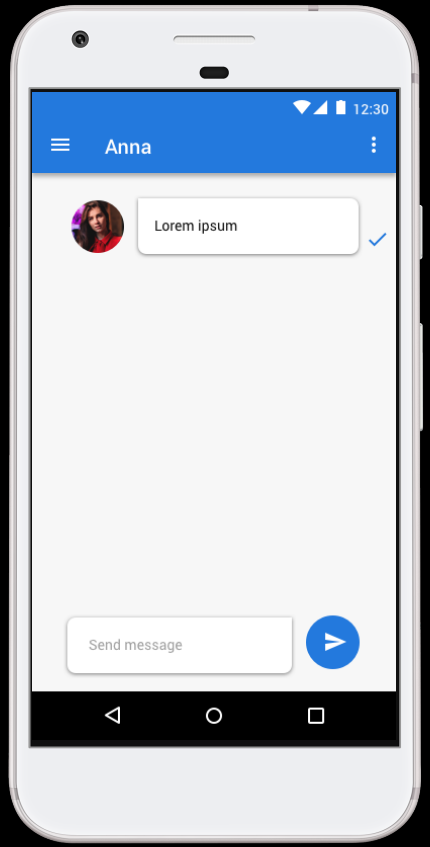

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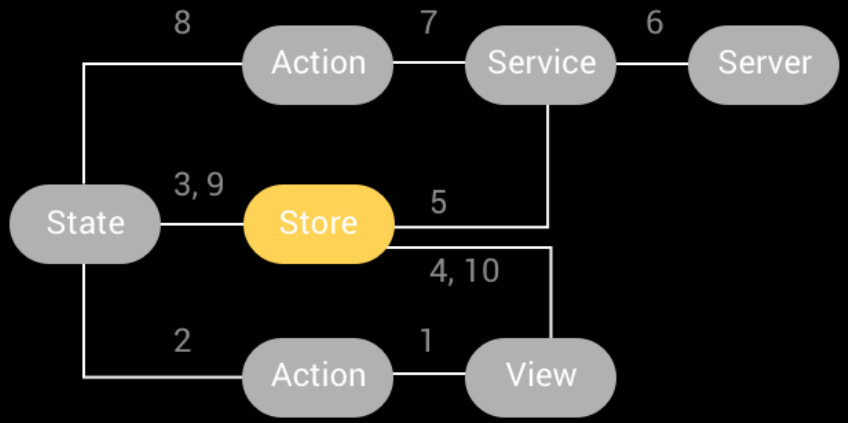

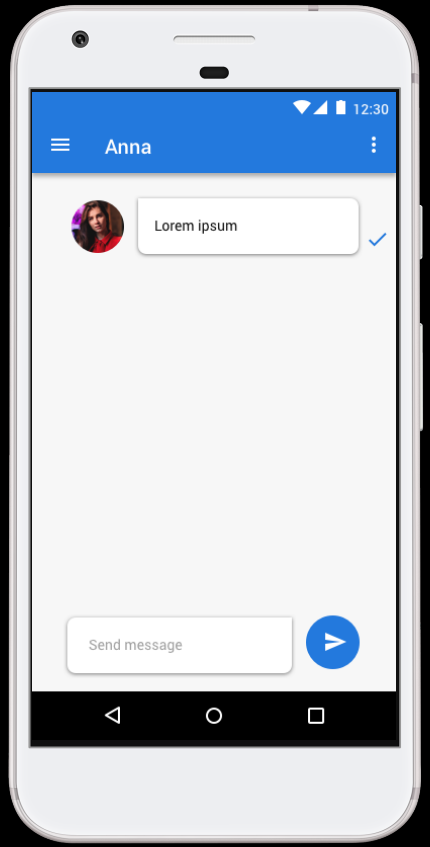

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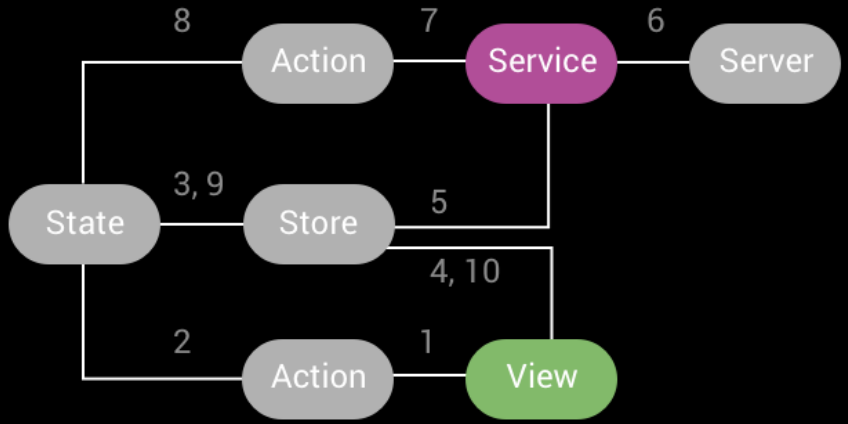

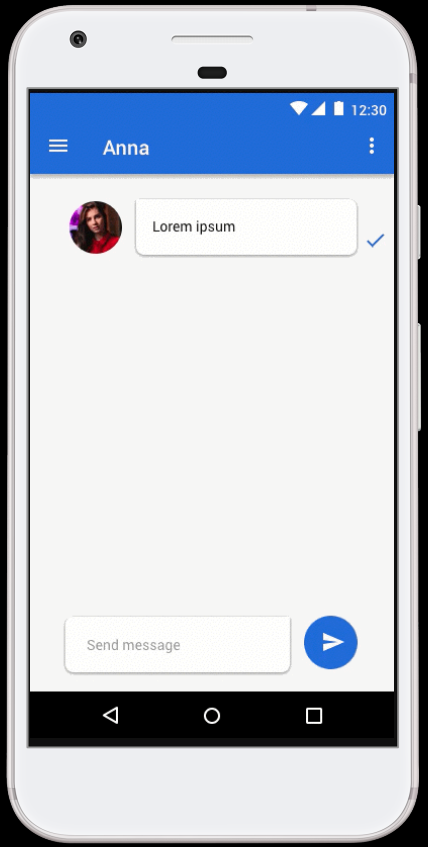

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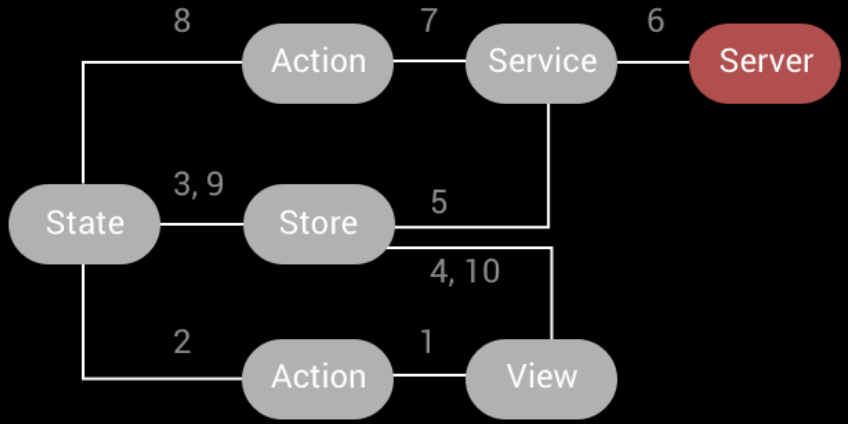

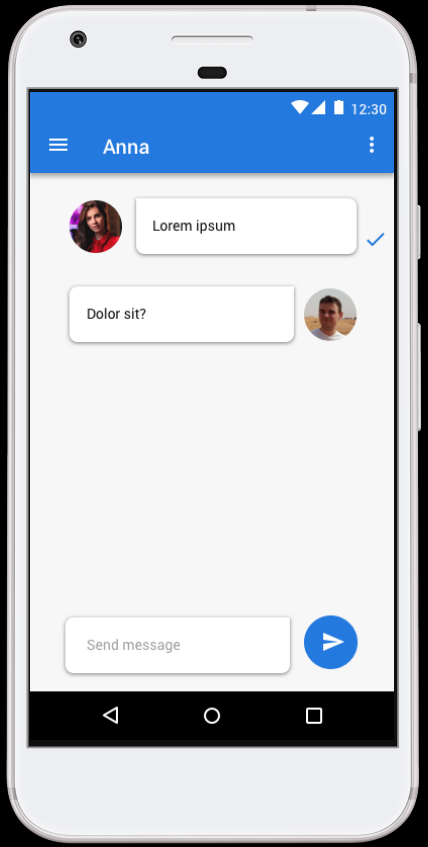

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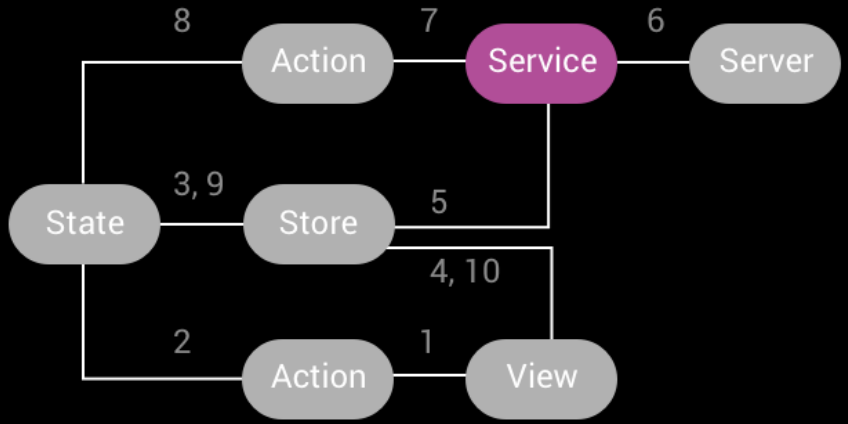

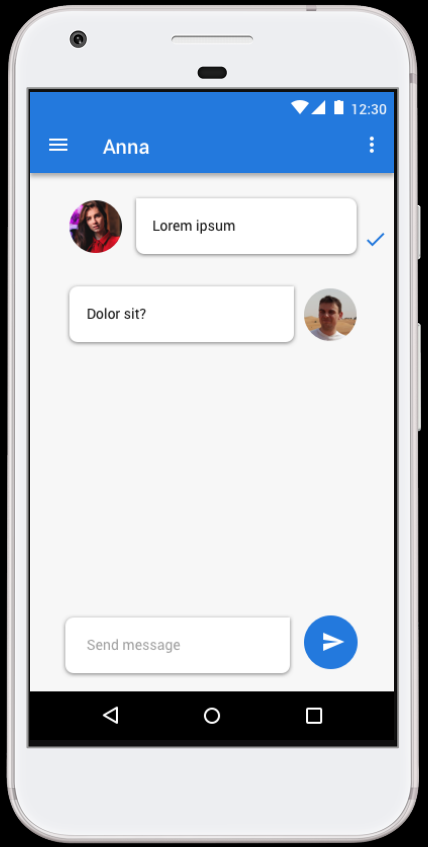

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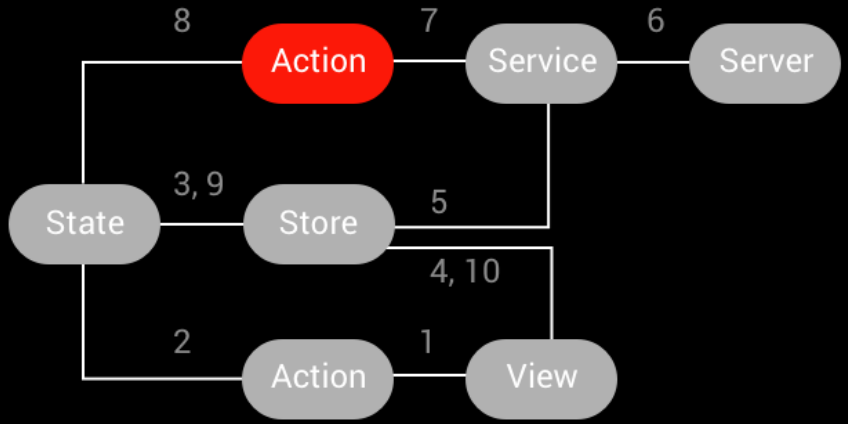

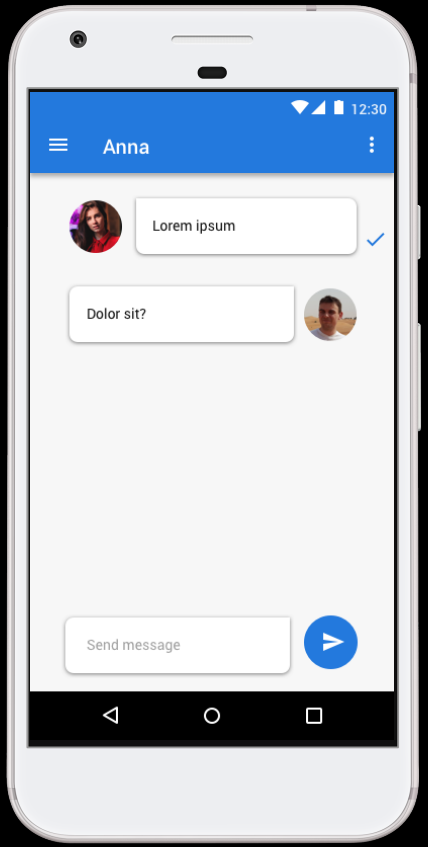

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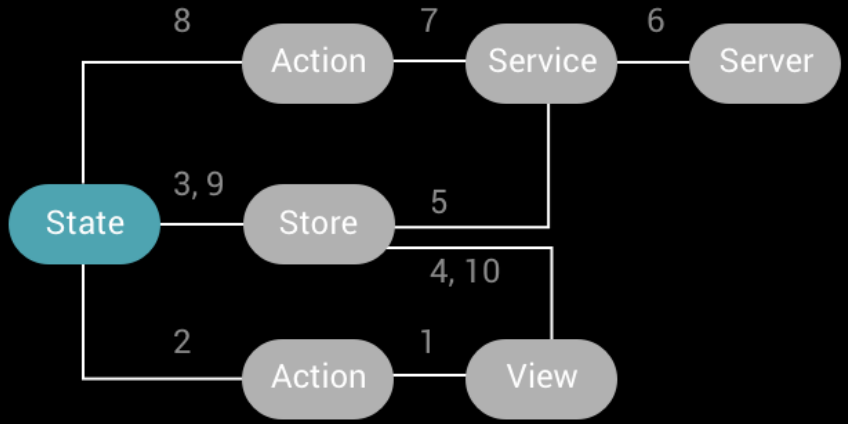

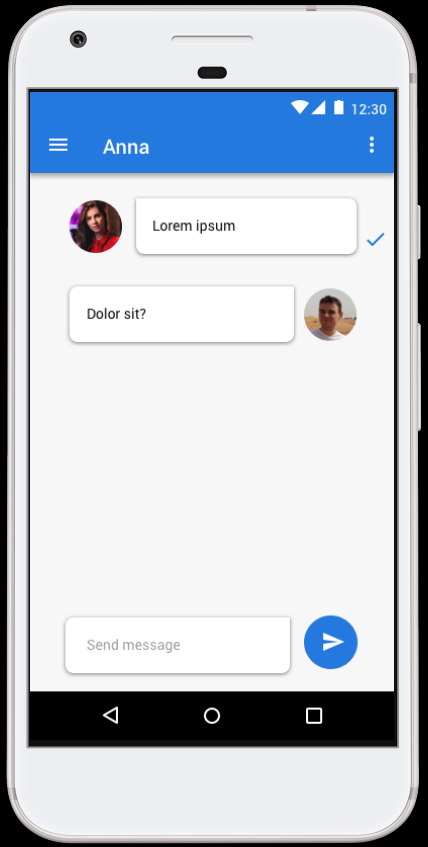

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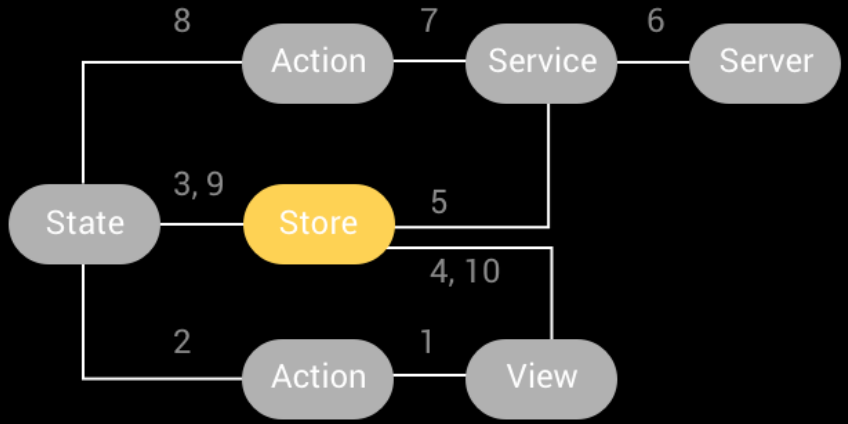

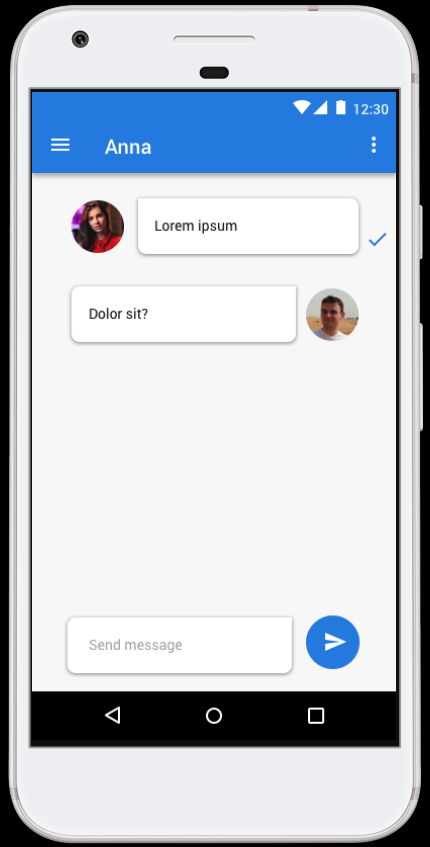

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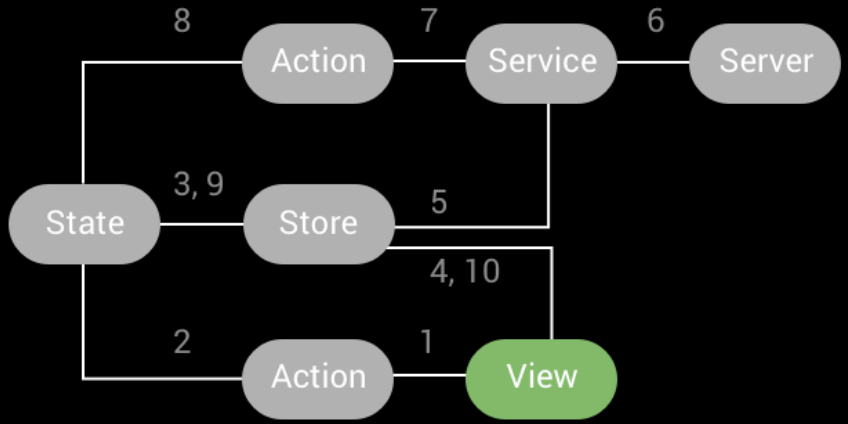

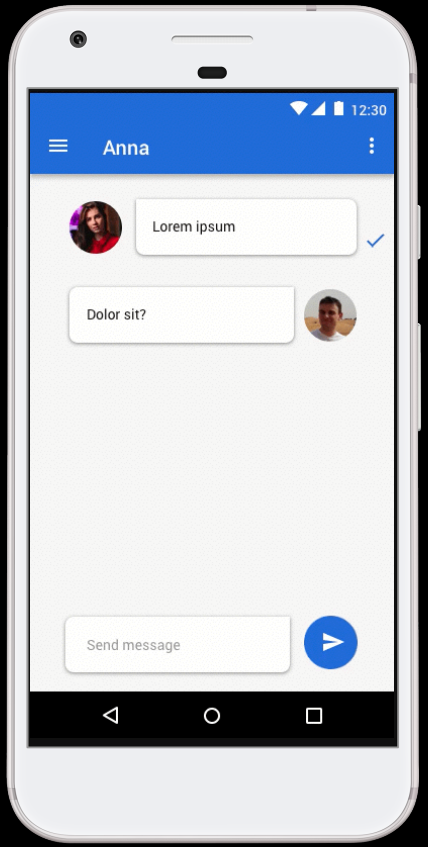

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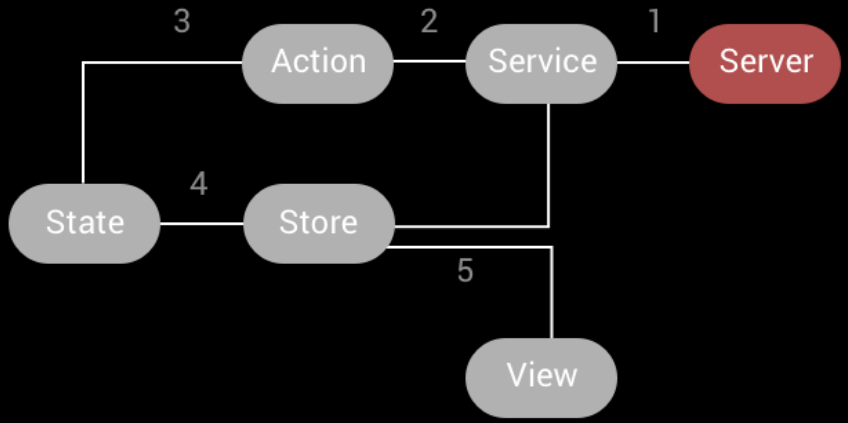

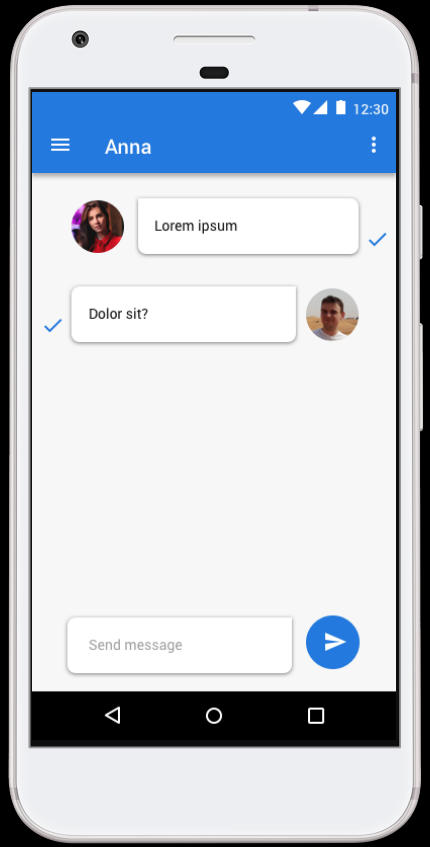

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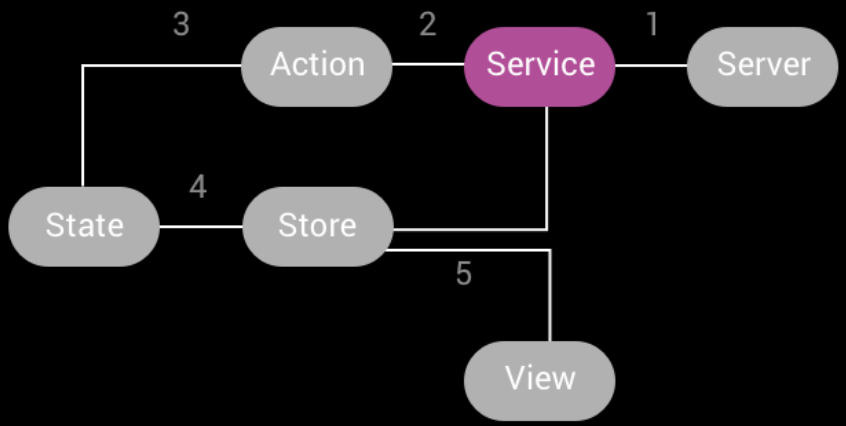

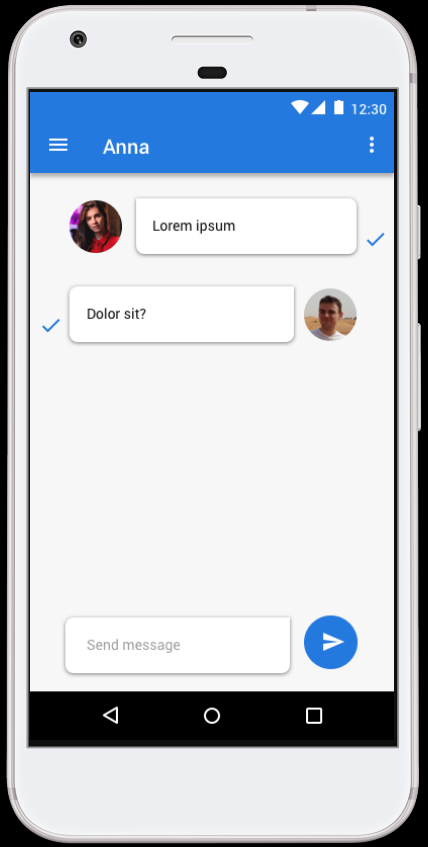

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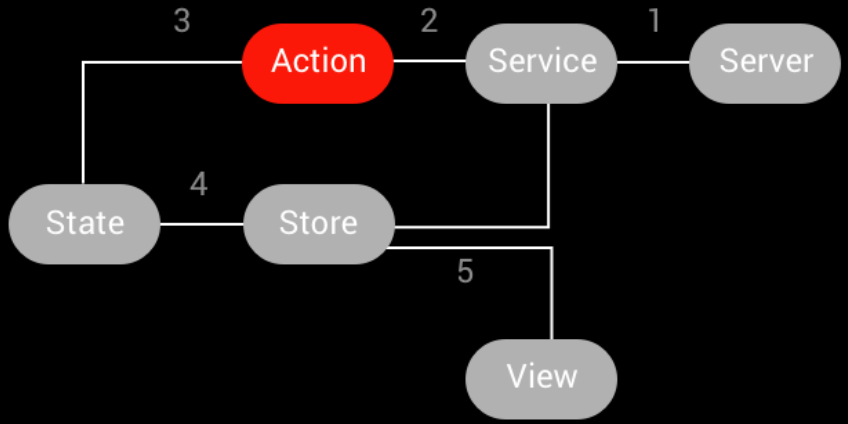

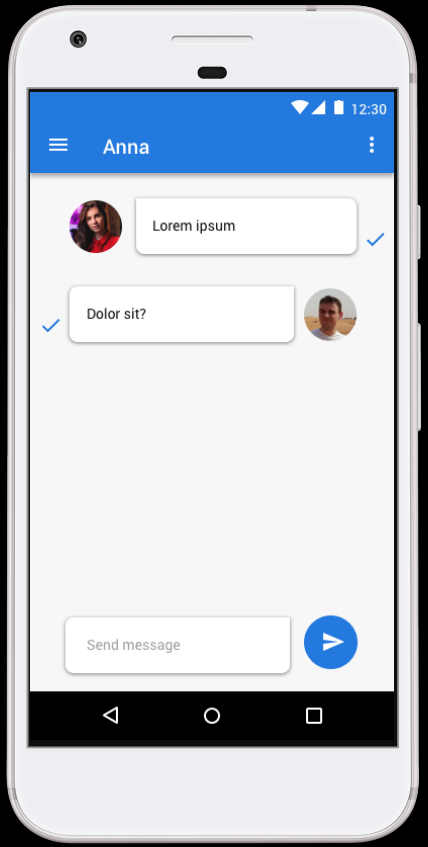

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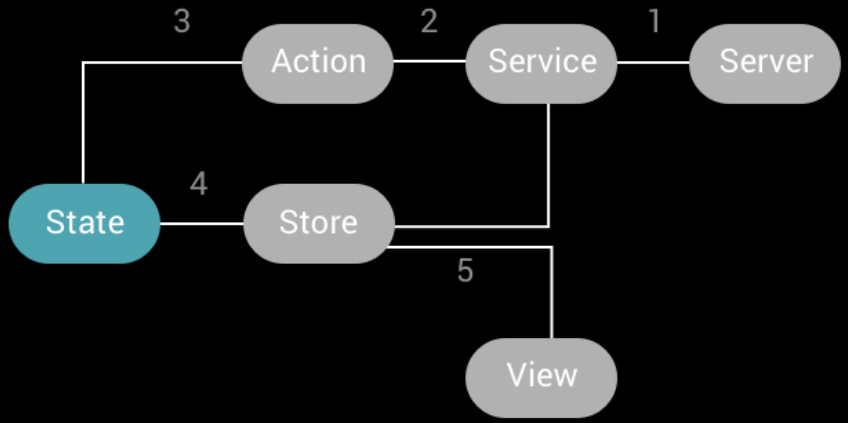

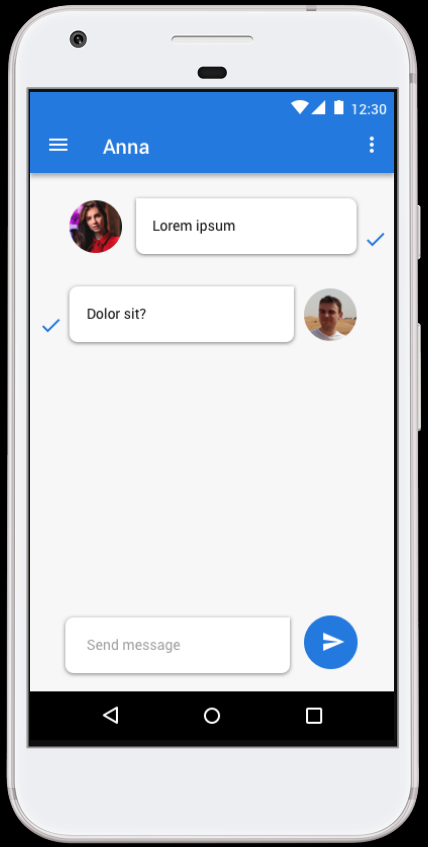

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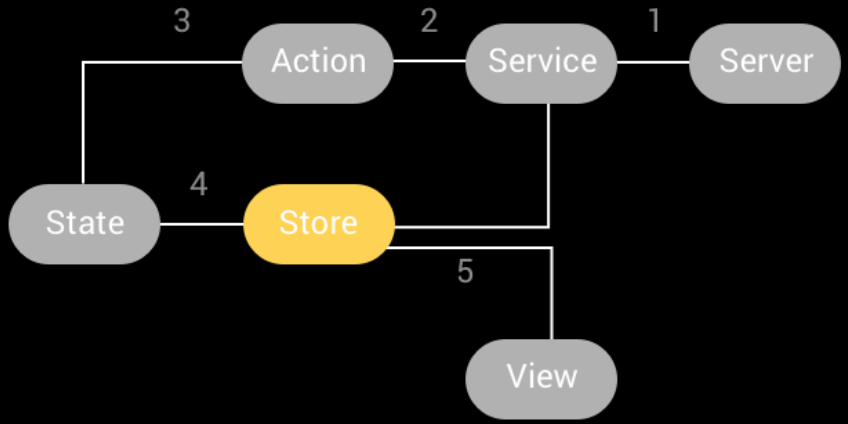

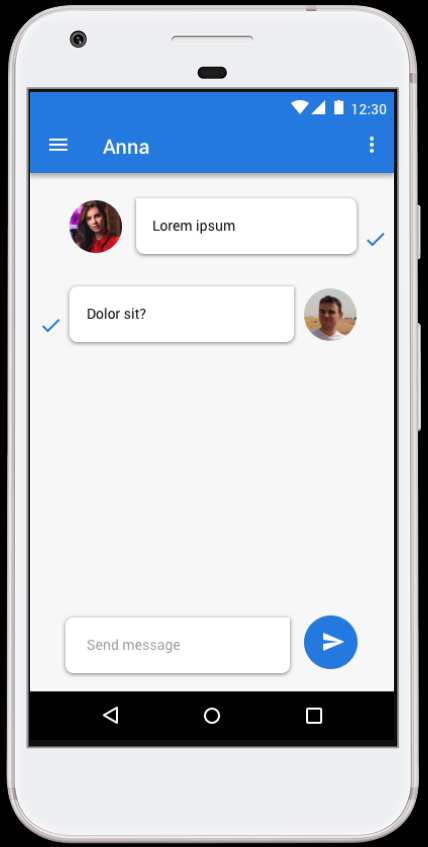

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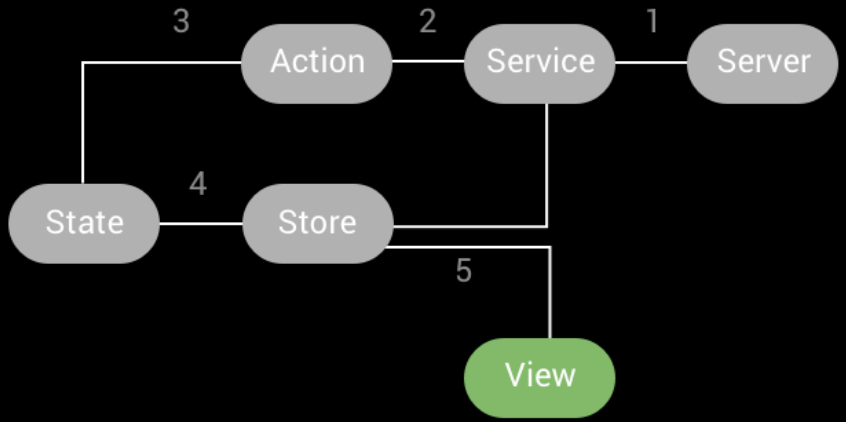

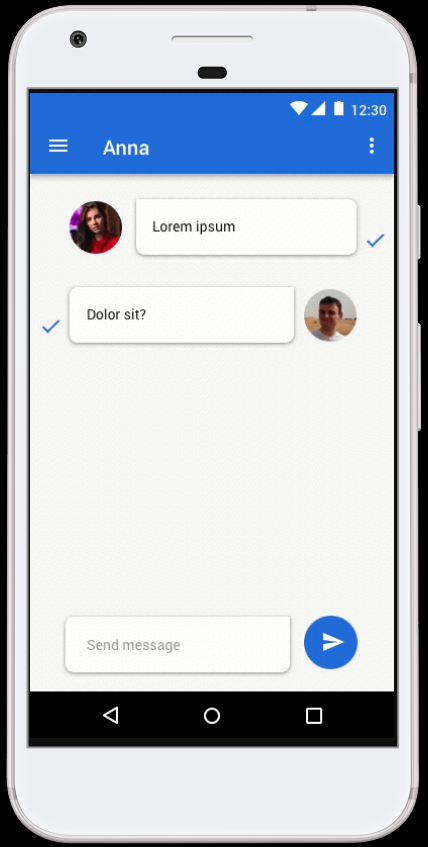

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PROS

- Unidirectional data flow
- State mutation only via actions
- Single source of truth: store
- Automatic re-render after state update

HOW WE IMPLEMENTED IT

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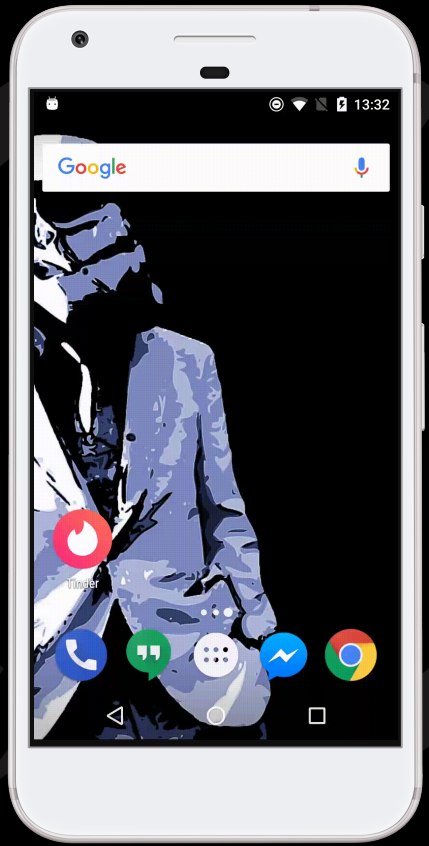

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Thanks for your attention

Contact us!

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Senior Android Developer | Supercharge


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