Introduction to Datarobot for Android

SDJUG 2014

A lightweight persistence framework

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At a glance

- Open Source lightweight persistence framework
  => "Non-invasive"
- No dealing with Android SQLite database
  => But you can!
- Annotation based approach

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Find it on github:

https://github.com/arconsis/datarobot

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Main Features

- Annotation based implementation
- No hardcoded Strings in your code
- Code generation for the repeating tasks
- Compile time protection when renaming fields or tables
- Fall back to Android default API is always possible

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Simple to setup for ...

- Eclipse
- IntelliJ IDEA
- Maven / Gradle
- Android Studio with Gradle

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Example setup for Android Studio w/ Gradle (build.gradle)

```
buildscript {
    repositories {
        mavenCentral()
        mavenLocal()// Only if you want to use your local maven repo
    }
    dependencies {  // Add annotation processor and android tools dependencies
        classpath 'com.android.tools.build:gradle:0.13.3'
        classpath 'com.neenbedankt.gradle.plugins:android-apt:1.4'
    }
}
allprojects {
    ...
}
```

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Configure the annotation processing (app/build.gradle)

```
apply plugin: 'android' //add the apt plugin
apply plugin: 'android-apt'  // the normal android section
android { ... }

// configuration for the annotation prossecor
apt {
    arguments {
        manifest '/path/to/AndroidManifest.xml'
    }
}
dependencies { // add datarobot dependencies
    apt 'com.arconsis:datarobot.processor:0.1.3-SNAPSHOT'
    compile 'com.arconsis:datarobot.api:0.1.3-SNAPSHOT'
    // ... more dependencies
}
```

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Generated sources are under:

/app/build/source/apt/debug/your/package/generated/

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First steps...

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Creating a database

```
@Create
@Update
@Persistence(dbName = "sdjug.db", dbVersion = 1)
public class PersistenceConfig  implements DbCreate, DbUpdate {

    @Override
    public void onCreate(SQLiteDatabase db) {
    }

    @Override
    public void onUpdate(SQLiteDatabase db, int oldVersion, int newVersion) {
    }
}
```

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Creating an entity

```
@Entity
public class Event {
    @PrimaryKey
    @AutoIncrement
    @Column
    private Integer _id;
    @Column
    private String name;

    public Event() {
    }

    ...
}
```

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Creating an entity

```
@Entity (authority = "com.arconsis.datarobotsdjug.event.provider", contentProvider = true, exported = false)
public class Event {
    @PrimaryKey
    @AutoIncrement
    @Column
    private Integer _id;
    @Column
    private String name;

    public Event() {
    }

    ...
}
```

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Storing an entity

```
// Create an event POJO
Event event = new Event();
event.setName("Event #1");

// Use EntityService to store event POJO
EntityService<Event> entityService = new EntityService<Event>(this, Event.class);
entityService.save(event);
```

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Loading all entities

```
// Use EntityService to load all events
EntityService<Event> entityService = new EntityService<Event>(this, Event.class);
List<Event> events = entityService.get();
```

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Query entities

- Use standard Android ContentResolver

```
Cursor cursor = contentResolver.query(
  BaseContentProvider.uri(DB.EventTable.TABLE_NAME), null,
  DB.EventTable.NAME + "= ?", new String[]{"Event #1"},
  null
);
```

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Convert to ObjectCursor

→ Use CursorUtil to map cursor to POJO

```
Cursor cursor = contentResolver.query( ... );
ObjectCursor<Event> objects = CursorUtil.getObjectCursor(cursor);

objects.moveToLast();
objects.moveToPrevious();

Event event = objects.getCurrent();
```

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Convert to collection

```
Cursor cursor = contentResolver.query( ... );
ObjectCursor<Event> objects = CursorUtil.getObjectCursor(cursor);

Collection<Event> events = objects.getAll();
```

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Resolve Associations 1:1

```
// Add relationship to Event

@Relationship
private Place place;
```

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Resolve Associations 1:1

```
Event event = new Event();
event.setName("SDJUG Meeting");

Place place = new Place();
place.setPlaceName("Mira Mesa");
event.setPlace(place);

EntityService<Event> entityService = new EntityService<Event>(this, Event.class);
entityService.save(event);

for (Event e : entityService.get()) {
    entityService.resolveAssociations(e, 2);
    String placeName = e.getPlace().getPlaceName();
}
```

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Resolve Associations n:m

```
// Add 1:n relationship to Event

@Relationship
private Collection<Participant> participants = new LinkedList<Participant>();
```

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Resolve Associations n:m

```
Event event = new Event(); event.setName("SDJUG Meeting");

Participant p1 = new Participant(); p1.setName("Paul");
Participant p2 = new Participant(); p2.setName("Steve");

event.addParticipant(p1);
event.addParticipant(p2);

(new EntityService<Event>(this, Event.class)).save(event);

for (Event e : entityService.get()) {
    entityService.resolveAssociations(e);
    int numberOfParticipants = e.getParticipants().size();
}
```

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Let's see how using Datarobot impacts existing apps?!

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Live-Demo the steps to transform the Notes app to Datarobot...

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Roadmap

- Named relations
- Bidirectional association
- Fluent query api
- Constraints for @Columns (e.g. not-null, unique)
- Broadcast intents
- Projection Support

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Thank you!

github.com/arconsis/datarobot

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