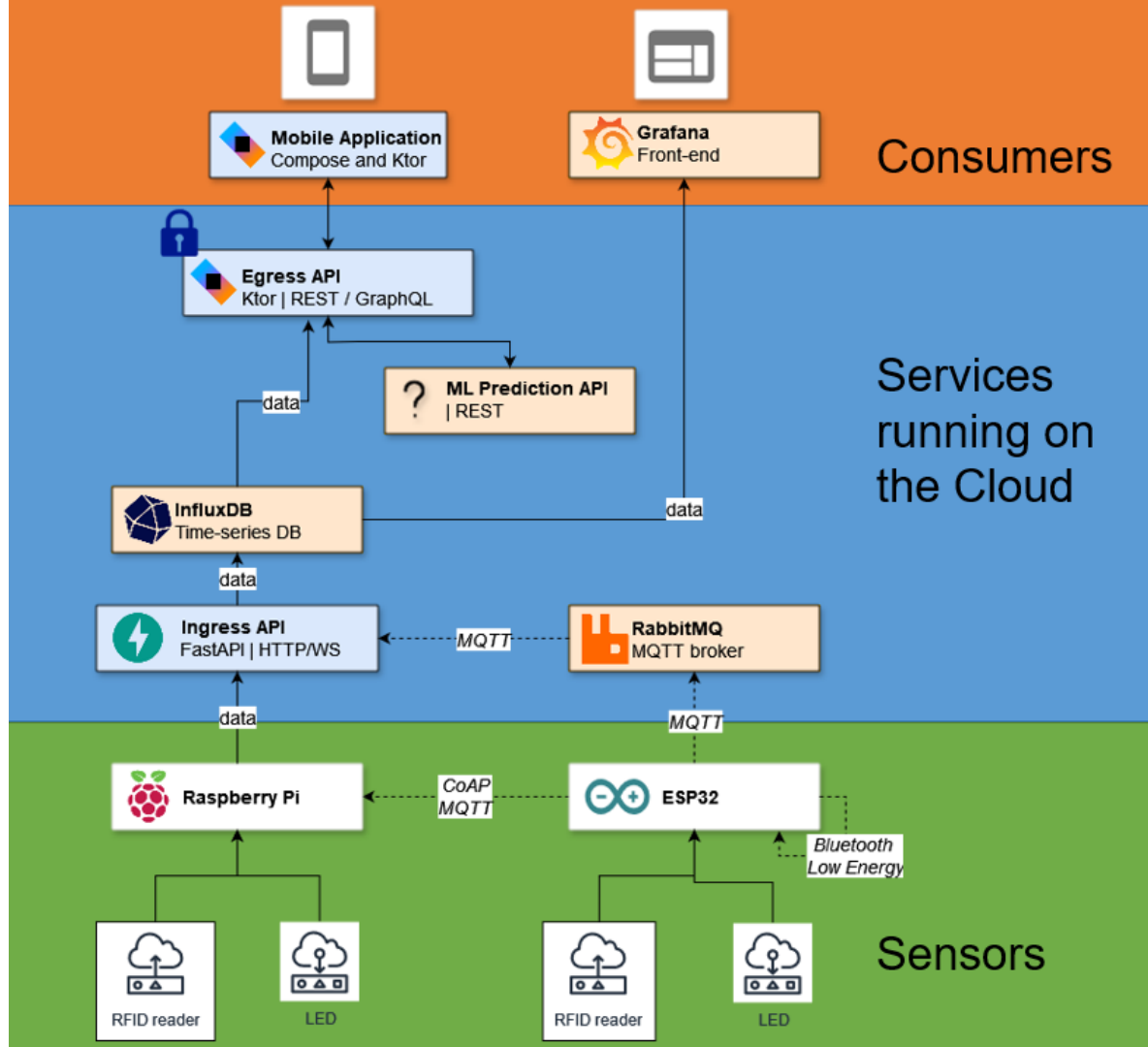
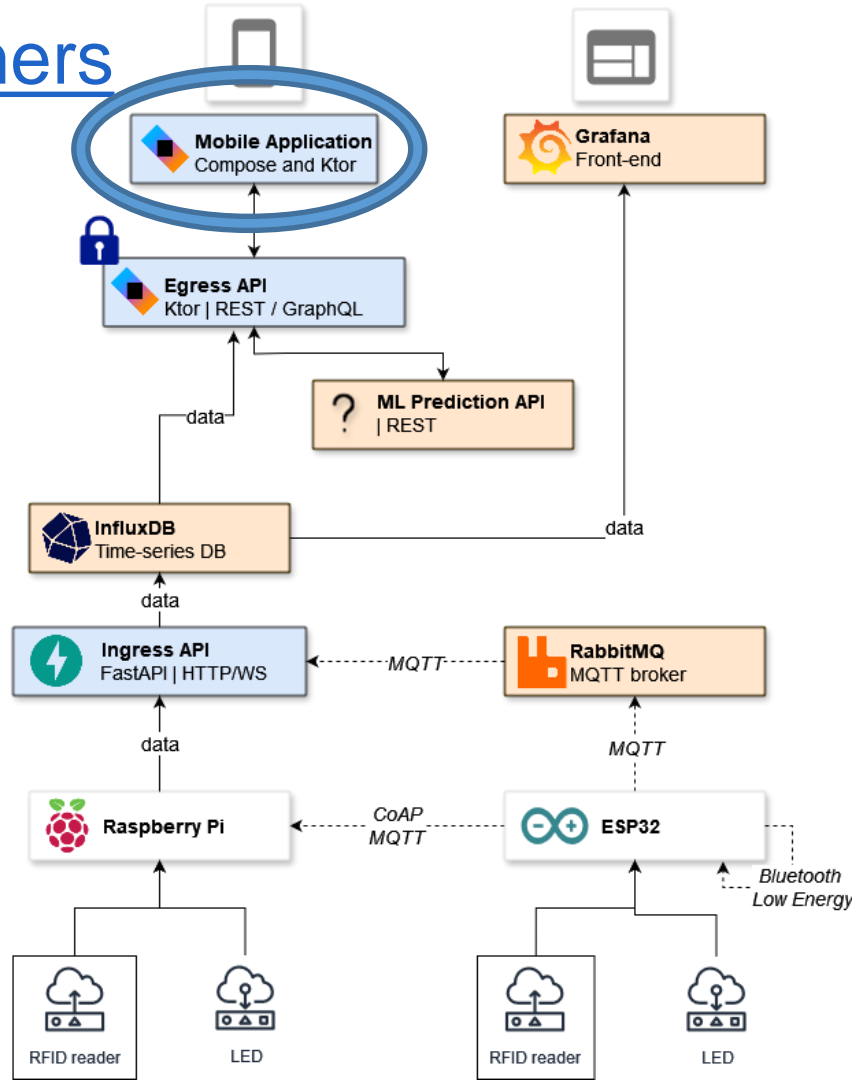


LAB6: Mobile Development with Kotlin

Cloud and mobile applications



This Lab: Consumers

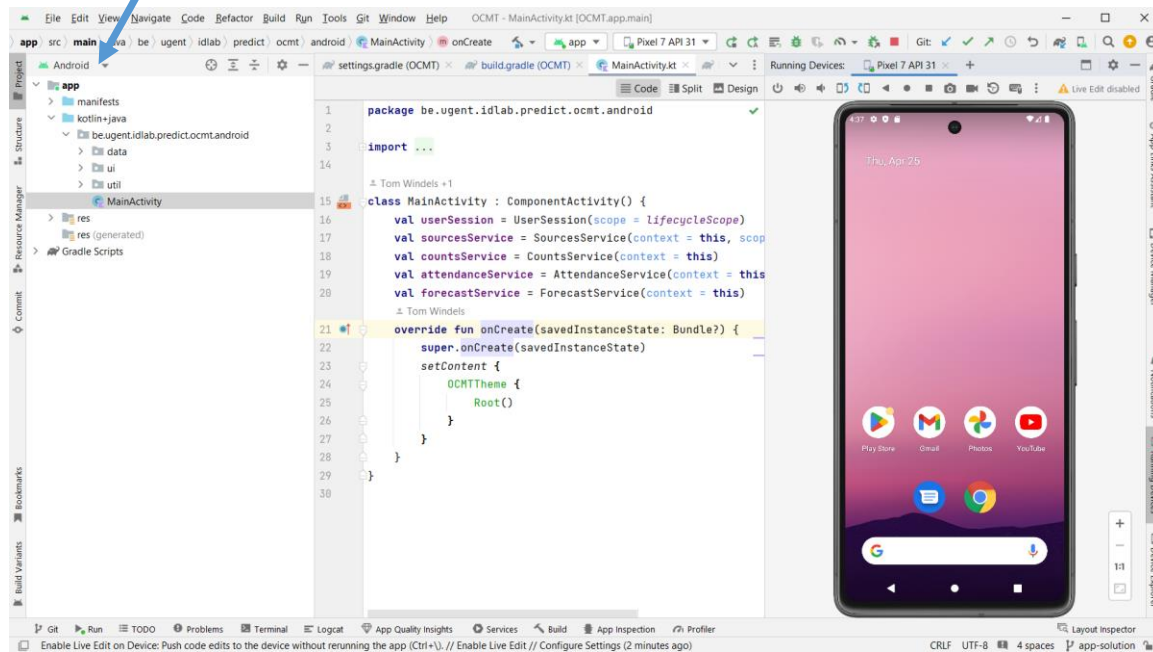


Goals

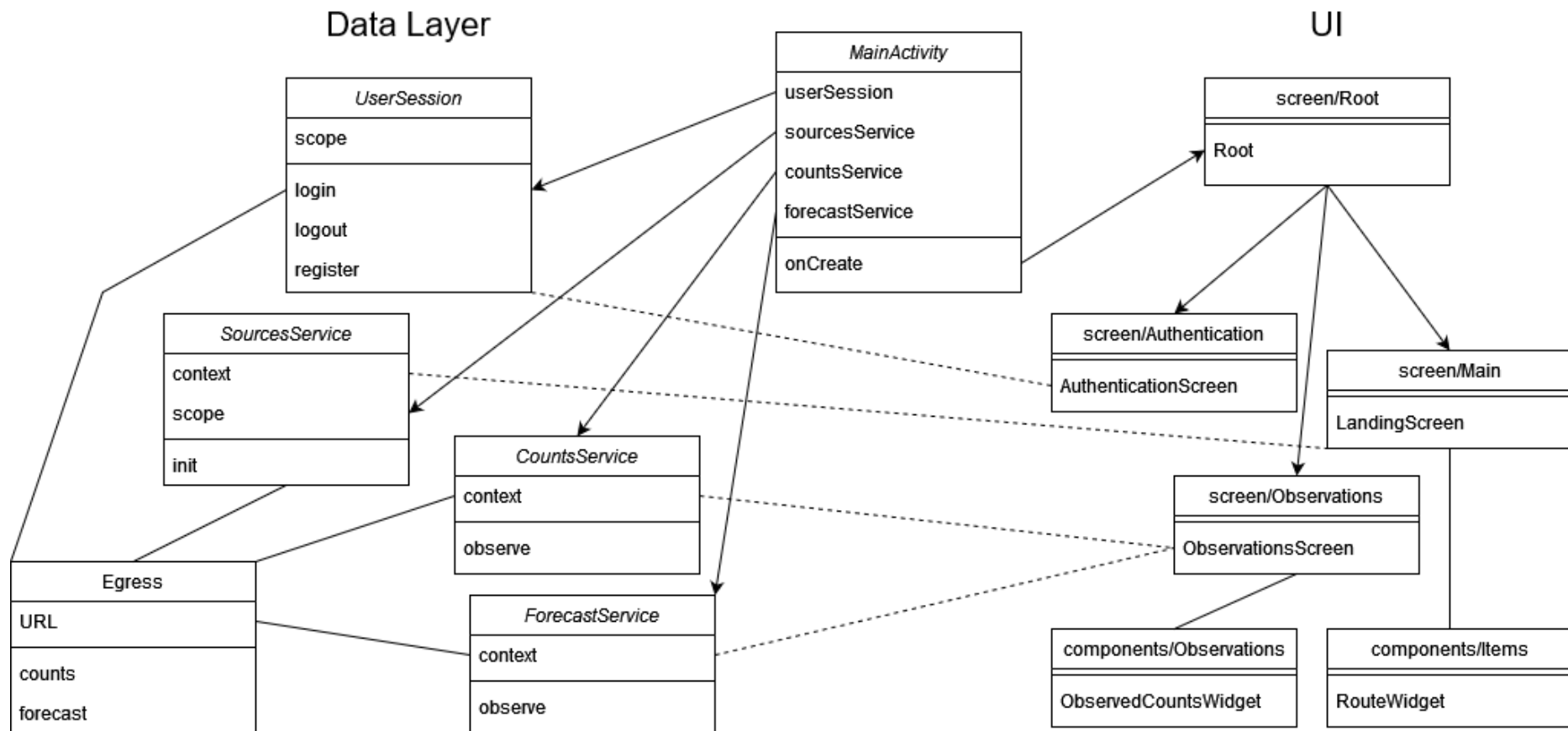
1. Creating a mobile application.
2. Finishing our IoT stack development, from sensors through microservices to consumers.
3. Interpreting a given source code and expanding it with extra functionality.

@Home: Preparation Part

- Install Android Studio and emulator (Section 3.1)
- Tutorial 1: Understanding Jetpack Compose
- Tutorial 2: Project view in Android Studio



In Lab: Tutorial 3: Consuming the Egress API



In Lab: Task0 Running the app: URL in Egress.kt and run

The screenshot displays the Android Studio IDE interface. The top toolbar includes standard development tools like File, Edit, View, and Run. The left sidebar shows the Project structure with the following hierarchy:

- app
 - manifests
 - kotlin+java
 - be.ugent.idlab.predict.ocmt.android
 - data
 - ui
 - util
 - MainActivity
 - res
 - res (generated)
 - Gradle Scripts

The main editor window shows the `MainActivity.kt` file with the following code:

```
1 package be.ugent.idlab.predict.ocmt.android
2
3 import ...
4
14
15 class MainActivity : AppCompatActivity() {
16     val userSession = UserSession(scope = lifecycleScope)
17     val sourcesService = SourcesService(context = this, scope = lifecycleScope)
18     val countsService = CountsService(context = this)
19     val attendanceService = AttendanceService(context = this)
20     val forecastService = ForecastService(context = this)
21
22     override fun onCreate(savedInstanceState: Bundle?) {
23         super.onCreate(savedInstanceState)
24         setContentView {
25             OCMTheme {
26                 Root()
27             }
28         }
29     }
30 }
```

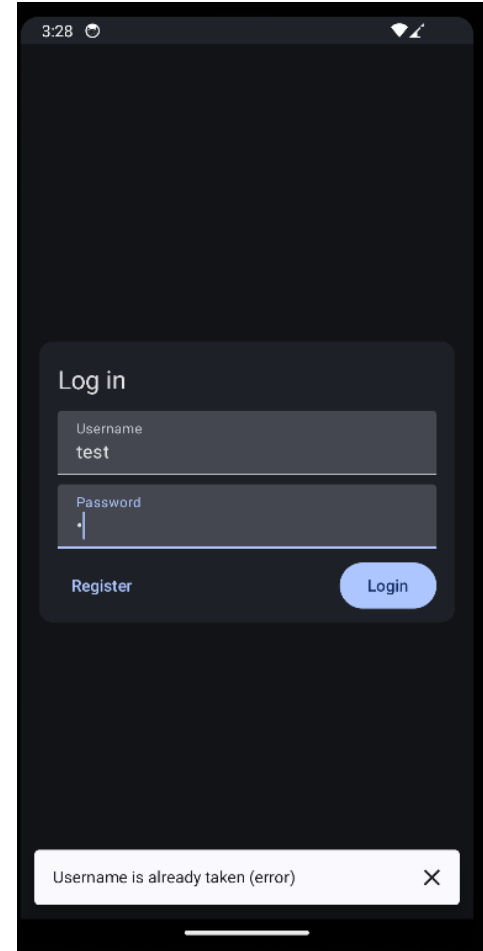
The right sidebar shows the Running Devices section with a Pixel 7 API 31 device. The emulator screen displays a login form with the following elements:

- Header: Log in
- Username input field
- Password input field
- Register button (blue)
- Login button (blue)

The bottom status bar shows the following information: CRLF, UTF-8, 4 spaces, app-solution.

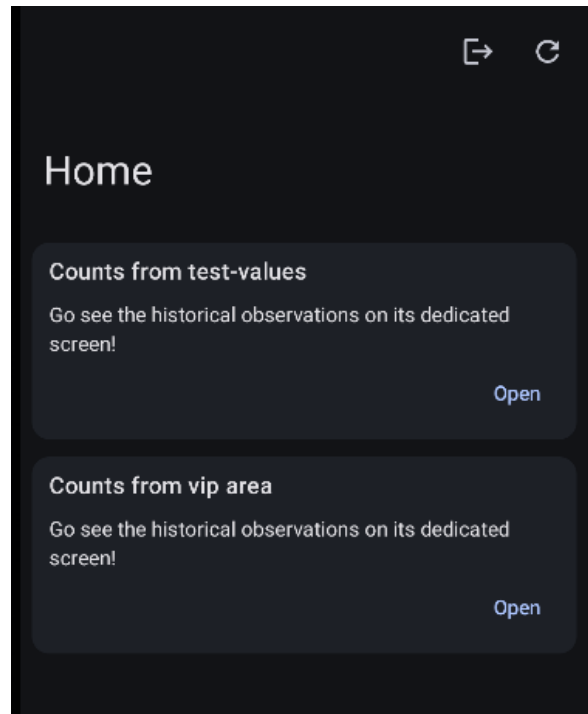
In Lab: Task1

- Authentication
 - UserSession: register & login functions with credentials
- Communicate with Egress



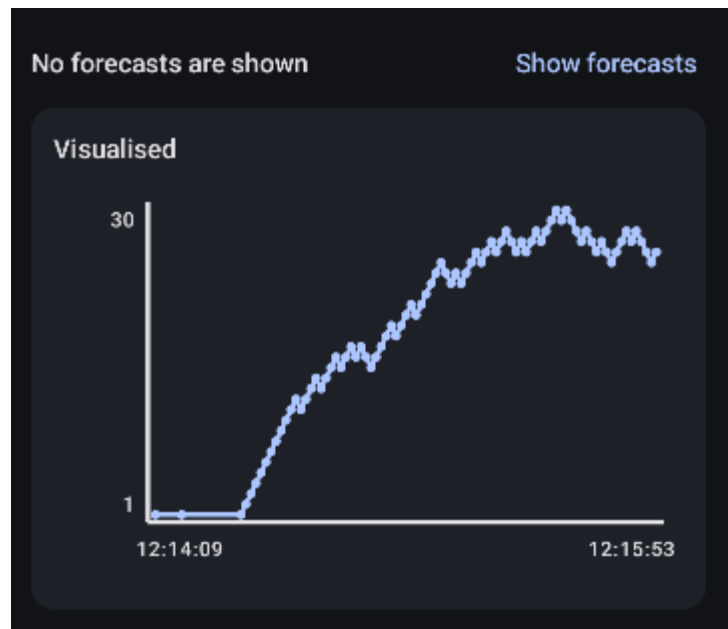
In Lab: Task2

- Sources overview
 - sensor_names from InfluxDB
- SourcesService
- Communicate with Egress
- Use token from Task1



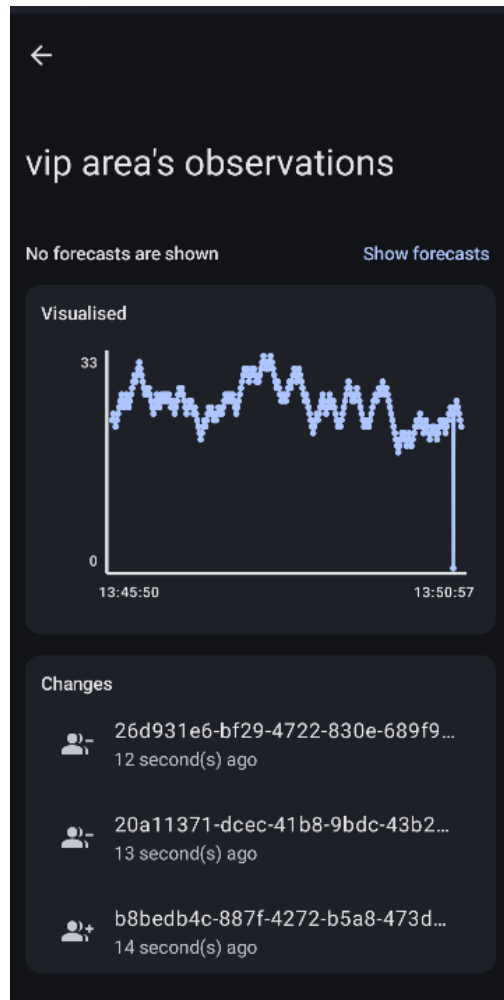
In Lab: Task3

- Counts & forecast
 - CountsService
 - ForecastService
 - Return a Flow, a stream of data asynchronously retrieving new values
 - Use token from Task1



In Lab: Task4

- Attendance
 - AttendanceService
 - You implement UI widget below graph
 - Compose is your friend!



In Lab: Extra tasks to get above 14 / 20

- Add extra functionality to your mobile application for the last 6 points of the assignment
- List of potential tasks, or you choose your own
- Be creative!



Material to submit

- Preparation part at home: due **Thursday 8 May at 10:00**
 - Checklist on Ufora
- Archive (Lab6_FamilyName_FirstName.zip): **due Tuesday 22 May @10:00**
 - Lab report in .pdf
 - Explanation of code
 - Screenshots of task results
 - Questions
 - Source code
 - Just app/src folder is sufficient
 - Video of task results (if applicable)
 - **Demo** after you turn in your exam on **5 June!**

Ing. Tom Windels

PhD student

Tom.Windels@UGent.be

Ing. Cedric Bruylandt

PhD student

Cedric.Bruylandt@UGent.be

Dr. Jennifer B. Sartor

Onderwijsbegeleider

Jennifer.Sartor@ugent.be