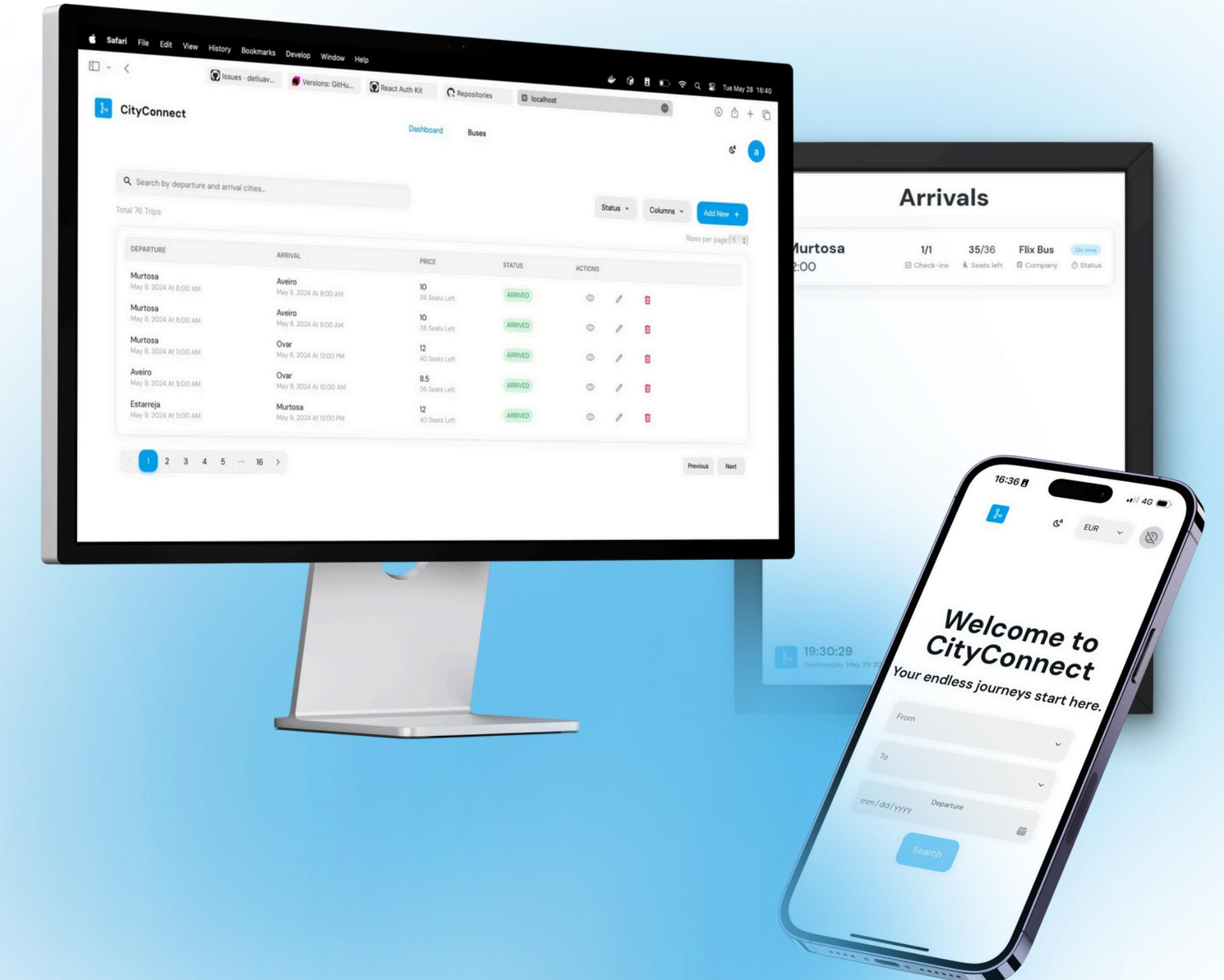


TQS Project



Bárbara Galiza – 108989,
Diana Miranda – 107457,
Diogo Falcão – 108712,
Rúben Garrido – 107927





Context

- **Project Overview:**

- Development of a Minimum Viable Product (MVP) for a bus service digital platform
- Focus on Software Quality Assurance (SQA), Continuous Testing, Integration, and Delivery
- Components: Client Portal, Staff Portal and Digital Signage

- **Product Goals:**

- Simplify bus service operations
- Enhance user experience
- Unify digital services



Personas



Luísa Almeida (Staff)

- Gender: Female
- Age: 38
- Needs: Efficient online system for managing trips.



Miguel Cruzeiro (Client)

- Gender: Male
- Age: 22
- Needs: Mobile app for last-minute ticket purchases.



Daniel Perreira (Client)

- Gender: Male
- Age: 52
- Needs: Easy-to-use app for purchasing tickets and managing reservations.



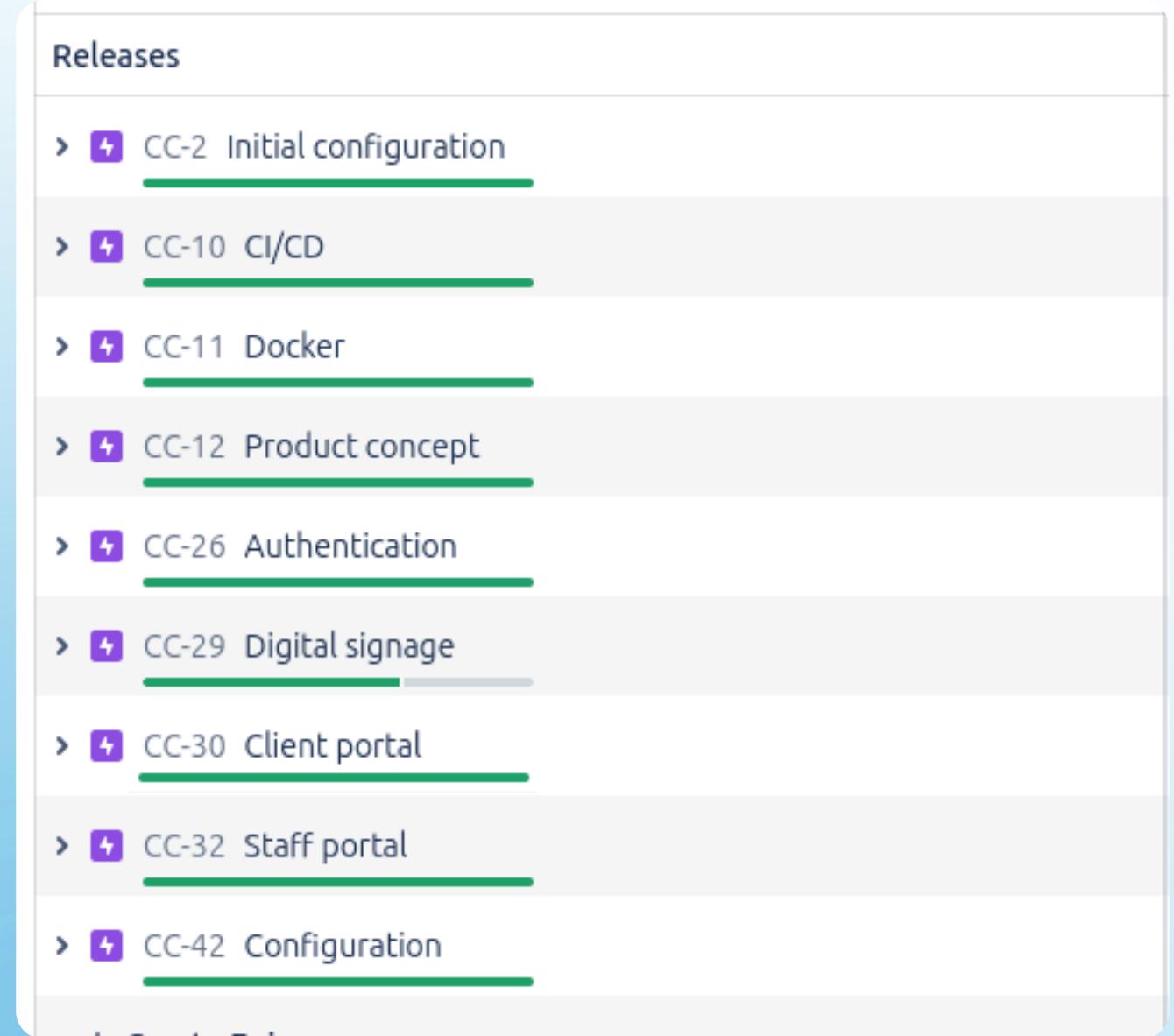
Scenarios

- **Scenario 1: Book a Trip**
 - Daniel books a trip from Aveiro to his hometown.
- **Scenario 2: Check Trip State**
 - Daniel checks the call screen for bus status.
- **Scenario 3: Create Trip**
 - Luísa adds a new trip in the system.
- **Scenario 4: Update Trip Details**
 - Luísa updates trip departure time due to delay.
- **Scenario 5: Buy Last-Minute Tickets**
 - Miguel buys a ticket at the station using the app.

The screenshot shows a software interface titled 'Create reservation'. At the top, there are navigation links for 'CC-30 / CC-73' and the 'CityConnect' logo, along with standard icons for lock, refresh, and close. Below the title, there are five small icons: a person, a location pin, a bus, a checkmark, and three dots. A green 'Done' button is highlighted. To its right are two other buttons: a grey 'Done' button with a checkmark and a grey 'Actions' button with a lightning bolt icon. A 'Description' field contains the text: 'As Daniel, I want to make a reservation for my destination, so that I can travel there at one specific date and time.'

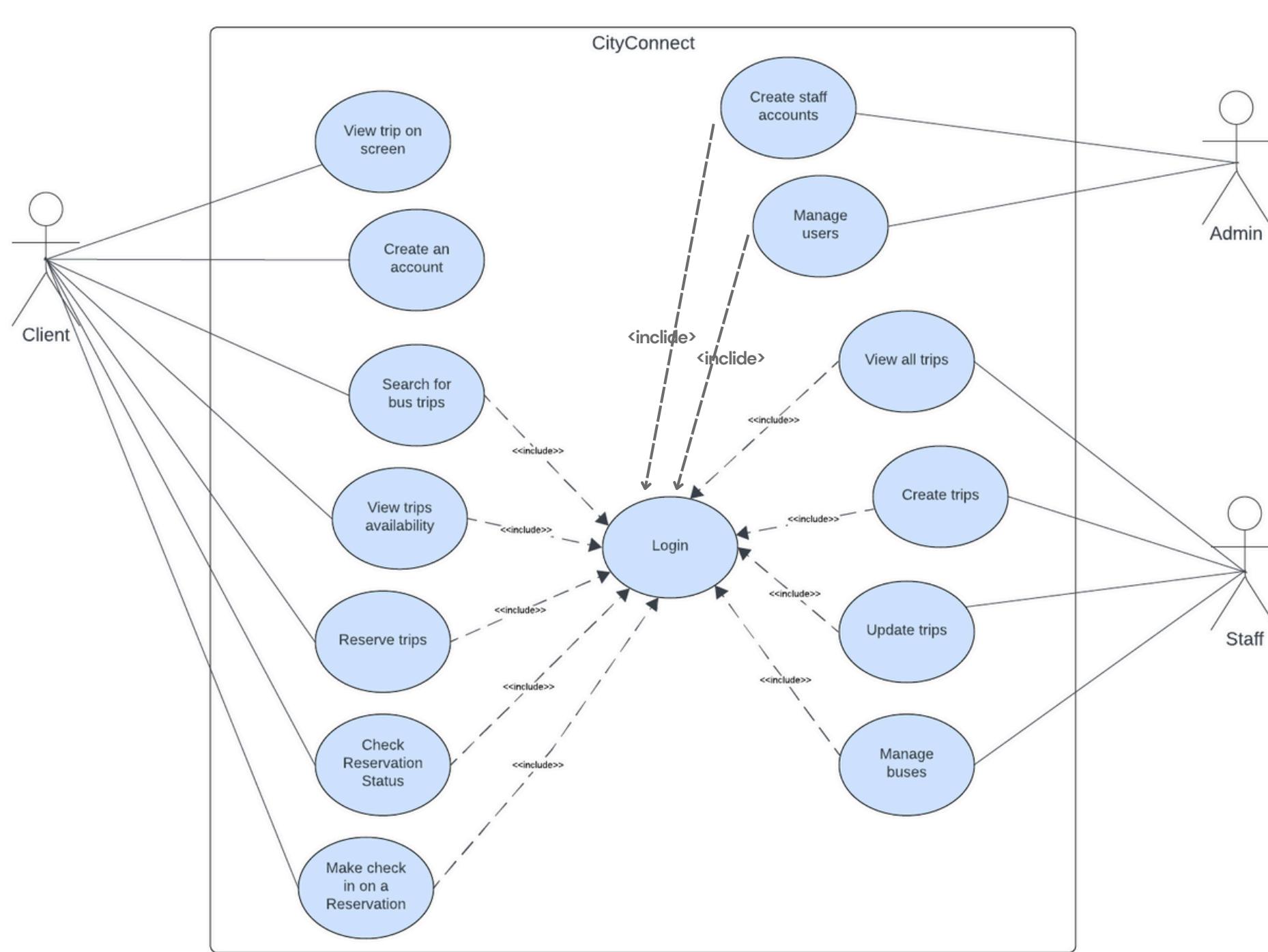
Epics

- **Epic 1: User and Staff Authentication**
 - Goal: Secure login and account creation.
 - Priority: High
- **Epic 2: Staff Portal**
 - Goal: Manage trips and buses.
 - Priority: High
- **Epic 3: Client Portal**
 - Goal: Book trips and check reservations.
 - Priority: Medium
- **Epic 4: Digital Signage**
 - Goal: Display real-time trip information.
 - Priority: Medium



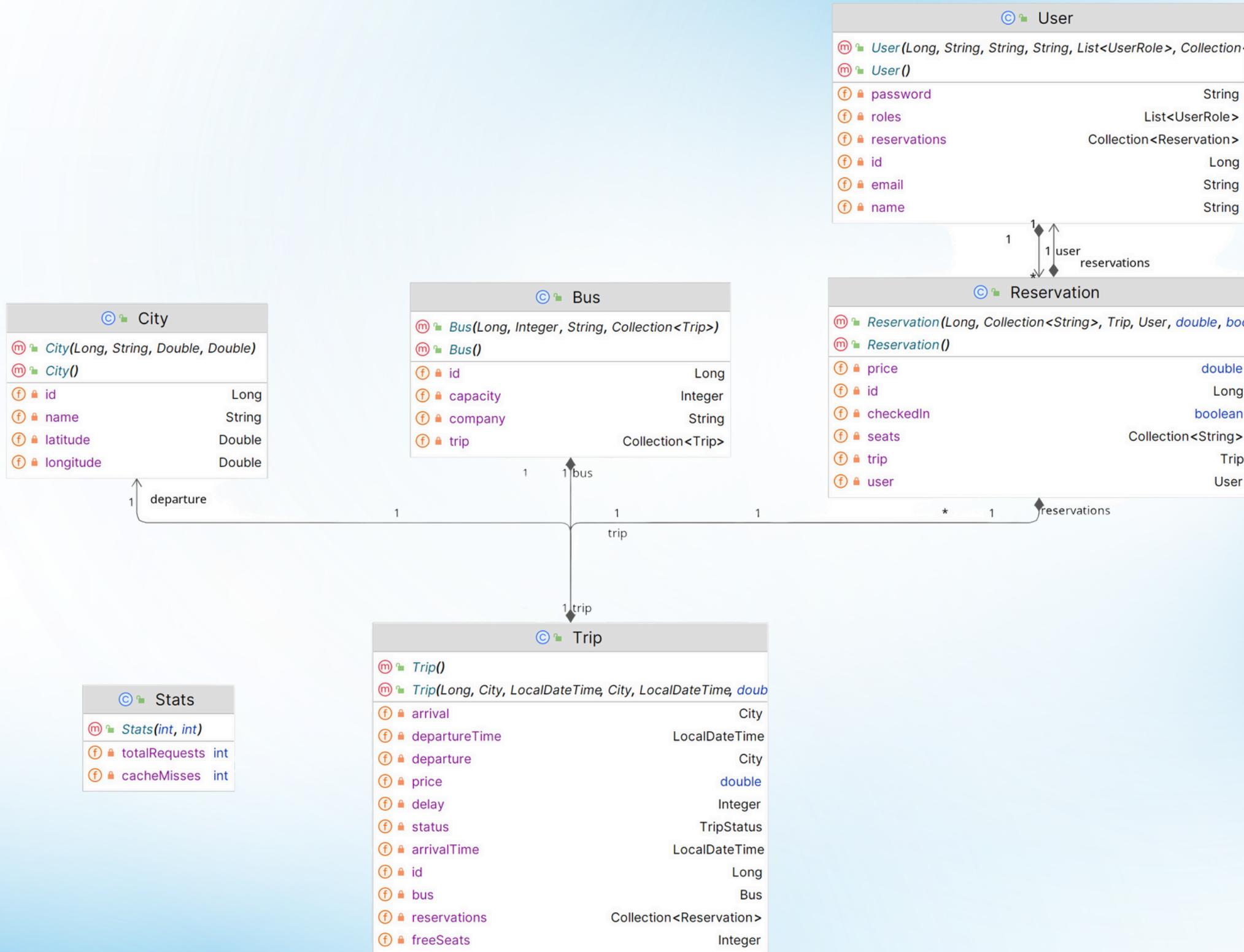


Use Cases



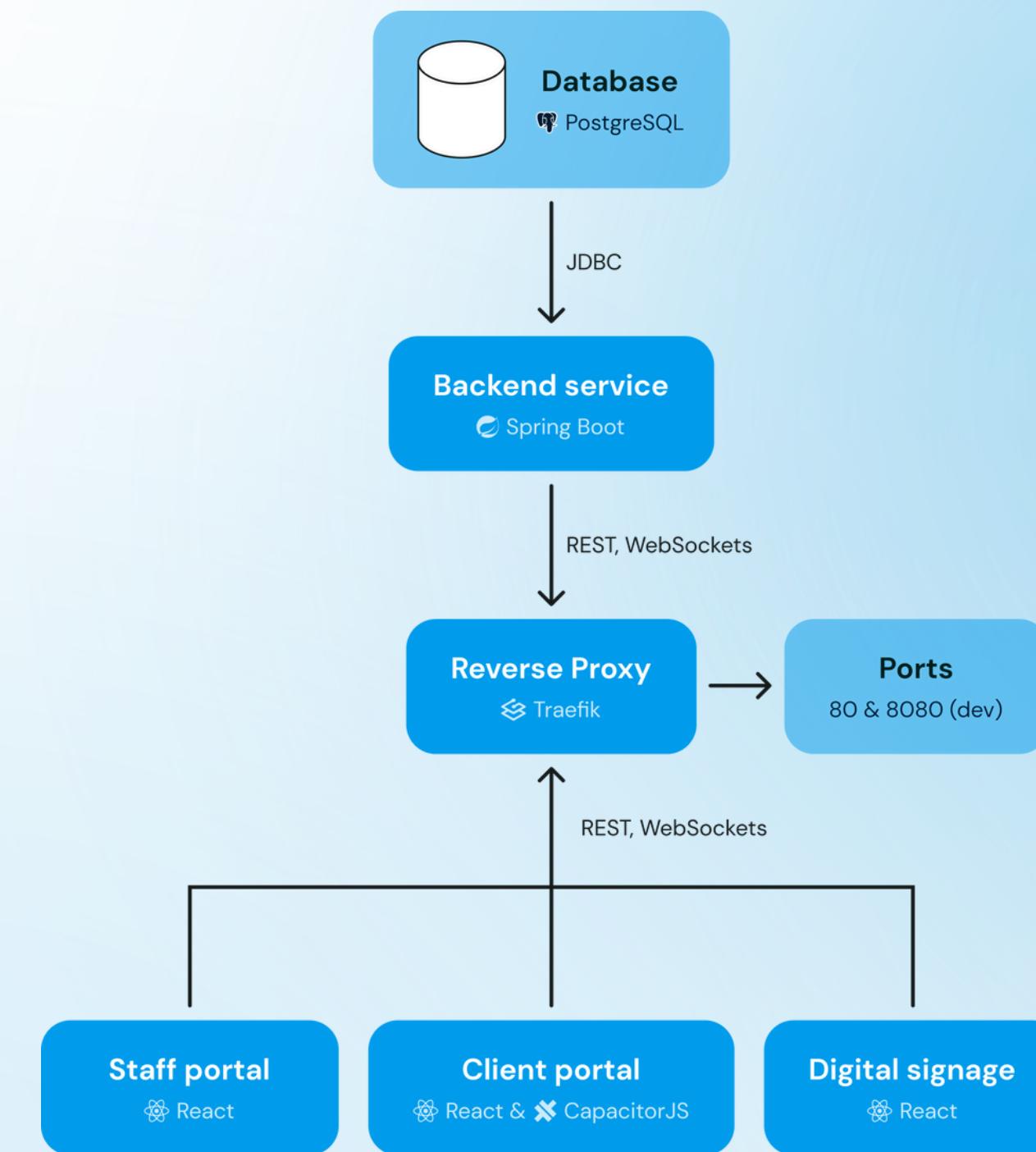


Domain Model





Architecture



We used a capacitor to export the website to native mobile apps



Project Management



Team



Diogo Falcão

Team Coordinator



Bárbara Galiza

Product Owner



Diana Miranda

QA Engineer



Rúben Garrido

DevOps Master



Agile Backlog

Jira Your work Projects Filters Dashboards Teams Apps Create

Search BG

CityConnect Software project You're on the Free plan UPGRADE

Projects / CityConnect Iteration 5 Oral presentation/defense; 4 days ⚡ ⚪ ⚫ Complete sprint ...

Search Epic Type GROUP BY None

PLANNING

- Timeline
- Backlog
- Board**
- List
- Reports
- Goals
- Issues

You're in a team-managed project Learn more

TO DO 1 View number of check-ins on DS DIGITAL SIGNAGE CC-339 + Create issue

IN PROGRESS 1 Create mobile app CLIENT PORTAL CC-335 2

IN REVIEW

DONE 4 Switch from subdomains to paths CONFIGURATION CC-333 2 Add LightHouse analysis

CC-29 / CC-339

View number of check-ins on DS

Attach Add a child issue Link issue Test Coverage

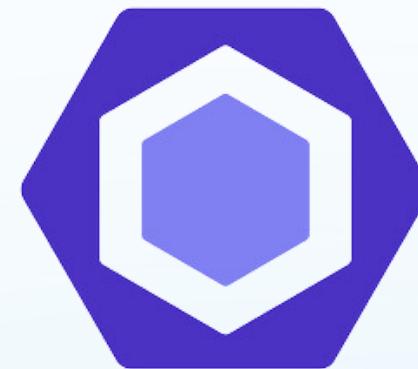
Description

As Daniel, I want to view the number of check-ins done on the terminal's screen, so that I have an idea of how long it will take for me to check-in and/or of how full will the bus be.



Code Quality Management

Coding Style

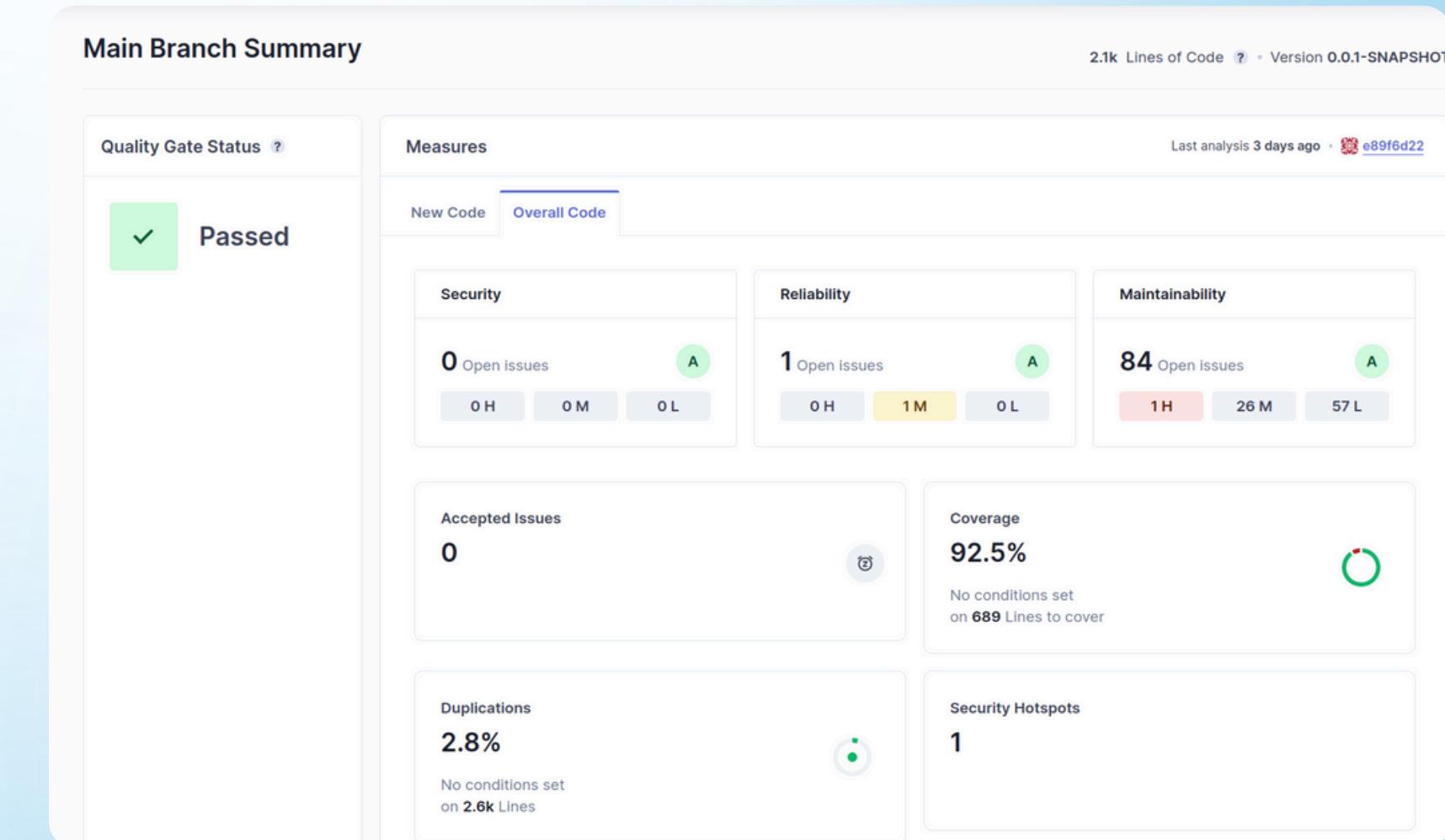


ESLint



AOSP Java Code style

Sonar Quality Gate and Dashboard





CI Pipeline

Sonar integration



Xray upload to Jira

All checks have passed

6 successful checks

✓		Build package & update submodule in control-room / build (push)	Successful in 28s	Details
✓		CodeQL / Analyze (java-kotlin) (dynamic)	Successful in 2m	Details
✓		Frontend tests / Build and test frontend (push)	Successful in 4m	Details
✓		Tests & Sonar analysis / Build, test and analyze (push)	Successful in 4m	Details
✓		Build package & update submodule in control-room / submodule (push)	Successful in 9s	Details
✓		SonarCloud Code Analysis	Successful in 30s - Quality Gate passed	Details

<input type="checkbox"/>	<input checked="" type="radio"/>	CC-119	whenGetTripById_thenReturnTrip	DONE
<input type="checkbox"/>	<input checked="" type="radio"/>	CC-120	givenManyTrips_whenGetTrips_thenReturnJsonArray	DONE
<input type="checkbox"/>	<input checked="" type="radio"/>	CC-121	whenGetTripByInvalidId_thenReturnNotFound	DONE
<input type="checkbox"/>	<input checked="" type="radio"/>	CC-122	whenPostTrip_thenCreateTrip	DONE
<input type="checkbox"/>	<input checked="" type="radio"/>	CC-123	whenUpdateTrip_thenUpdateTrip	DONE
<input type="checkbox"/>	<input checked="" type="radio"/>	CC-124	whenFindAllTripsOnBackoffice_thenReturnAllTrips	DONE
<input type="checkbox"/>	<input checked="" type="radio"/>	CC-125	when GetUserByValidEmailAndPassword_then GetUser	DONE
<input type="checkbox"/>	<input checked="" type="radio"/>	CC-126	when GetUserByInvalidEmailAndPassword_then Get Null	DONE
<input type="checkbox"/>	<input checked="" type="radio"/>	CC-127	whenDeleteUser_thenDeleteUser	DONE
<input type="checkbox"/>	<input checked="" type="radio"/>	CC-128	whenPostNormalUser_thenCreateUser	DONE
<input type="checkbox"/>	<input checked="" type="radio"/>	CC-129	whenPostUser_thenCreateUser	DONE
<input type="checkbox"/>	<input checked="" type="radio"/>	CC-130	when GetUserById_then GetUser	DONE
<input type="checkbox"/>	<input checked="" type="radio"/>	CC-131	whenGetUsersByDescriptionByUserId_thenGetUsersByDescription	DONE



CI Pipeline

Changes approved
1 approving review by reviewers with write access. [Learn more about pull request reviews.](#)

✓ **1 approval**

👤 **2 pending reviewers**

✓ **No unresolved conversations**
There aren't yet any conversations on this pull request. [View](#)

✓ **All checks have passed**
4 successful checks [Hide all checks](#)

✓ CodeQL / Analyze (java-kotlin) (dynamic) Successful in 1m	Details
✓ Tests & Sonar analysis / Build, test and analyze (pull_request) Successful in 4m	Details
✓ Code scanning results / CodeQL Successful in 3s — No new alerts in code changed by this pull r...	Details
✓ SonarCloud Code Analysis Successful in 28s — Quality Gate passed	Required Details

✓ **This branch has no conflicts with the base branch**
Merging can be performed automatically.

Merge pull request ▾ You can also [open this in GitHub Desktop](#) or view [command line instructions](#).

Workflow file for this run

.github/workflows/test.yaml at e89f6d2

```
1 name: Tests & Sonar analysis
2
3 on:
4   push:
5     branches:
6       - main
7     pull_request:
8       types: [opened, synchronize, reopened]
9     workflow_dispatch:
10
11 jobs:
12   build:
13     name: Build, test and analyze
14     runs-on: ubuntu-latest
15     permissions: read-all
16     steps:
17       - name: Checkout code
18         uses: actions/checkout@v4
19         with:
20           fetch-depth: 0
21
22       - name: Set up JDK
23         uses: actions/setup-java@v4
24         with:
25           java-version: 21
26           distribution: "zulu"
27
28       - name: Cache SonarCloud packages
29         uses: actions/cache@v4
30         with:
31           path: ~/.sonar/cache
32           key: ${{ runner.os }}-sonar
33           restore-keys: ${{ runner.os }}-sonar
34
35       - name: Cache Maven packages
36         uses: actions/cache@v4
37         with:
38           path: ~/.m2
39           key: "${{ runner.os }}-m2-${{ hashFiles('**/pom.xml') }}"
40           restore-keys: ${{ runner.os }}-m2
41
42       - name: Build and analyze
43         env:
44           GITHUB_TOKEN: ${{ secrets.GITHUB_TOKEN }}
45           SONAR_TOKEN: ${{ secrets.SONAR_TOKEN }}
46           CURRENCY_API_KEY: ${{ secrets.CURRENCY_API_KEY }}
47         run:
48           SPRING_APPLICATION_JSON='{"currencyapi.apikey":"${CURRENCY_API_KEY}"' \
49           mvn -B '-Dtest=!pt.ua.deti.tqs.backend.functional.*** verify failsafe:integration-test sonar:sonar \
50           -Dsonar.projectKey=CityConnect-TQS_backend
51
52       - name: Publish results to Xray
53         uses: mikepenz/xray-action@v3
54         with:
55           username: ${{ secrets.XRAY_CLIENT_ID }}
56           password: ${{ secrets.XRAY_CLIENT_SECRET }}
57           testFormat: "junit"
58           testPaths: "**/surefire-reports/TEST-*.xml"
59           testExecKey: "CC-94"
60           projectKey: "CC"
```



CD Pipeline



Build and push a Docker image to the GitHub Container Registry (ghcr.io)

- Build updated Docker images from each repository's production Dockerfile based on the latest main branch updates.
- Push the updated images to the GitHub Container Registry for deployment use.



Commit the submodule to the control room repository and recreate containers

- Git submodules require a commit to update in the parent repository for each change in the submodule's default branch. GitHub Actions do that automatically.
- Containers are recreated using latest images.



Code review

RGarrido03 requested review from dianarrmiranda, Barb02 and falcaodiogo last week

sonarcloud (bot) commented last week

Quality Gate passed

Issues

- ✓ 0 New issues
- ⌚ 0 Accepted issues

Measures

- ✓ 0 Security Hotspots
- ✓ 100.0% Coverage on New Code
- ✓ 0.0% Duplication on New Code

[See analysis details on SonarCloud](#)

falcaodiogo approved these changes last week

falcaodiogo left a comment • edited

Everything as expected, good work! Will approve and merge if it passes on the Sonar 😊

falcaodiogo merged commit `0e04992` into `main` last week

4 checks passed

[View details](#) [Revert](#)

Cc 54 frontend #2
RGarrido03 merged 15 commits into `cc-38-create-trip` from `CC-54-Frontend` last month

CC-54 add input validations

RGarrido03 requested changes last month

RGarrido03 left a comment • edited by dianarrmiranda

I added some comments and requested changes about using the built-in NextUI error messages, as well as color scheme and SVGs.

src/components/modalCreateTrip.tsx Outdated

```
137 +           })
138 +           onBlur={handleBlur}
139 +
140 +           {state.meta.errors && <span className="text-red-500">{state.meta.errors}</span>}
```

RGarrido03 last month

NextUI components support the `isValid` and `errorMessage` props. Please use them instead of plain `span` below the component.

src/components/modalCreateTrip.tsx Outdated

```
167 +           >
168 +             {(item) => <AutocompleteItem key={item.id} textValue={item.name}>{item.name}</AutocompleteItem>}
169 +
170 +           {state.meta.errors && <span className="text-red-500">{state.meta.errors}</span>}
```

RGarrido03 last month

NextUI components support the `isValid` and `errorMessage` props. Please use them instead of plain `span` below the component.

src/components/modalCreateTrip.tsx Outdated

```
198 +           onBlur={handleBlur}
199 +           calendarProps={{className: "bg-transparent"}}
200 +
201 +           {state.meta.errors && <span className="text-red-500">{state.meta.errors}</span>}
```

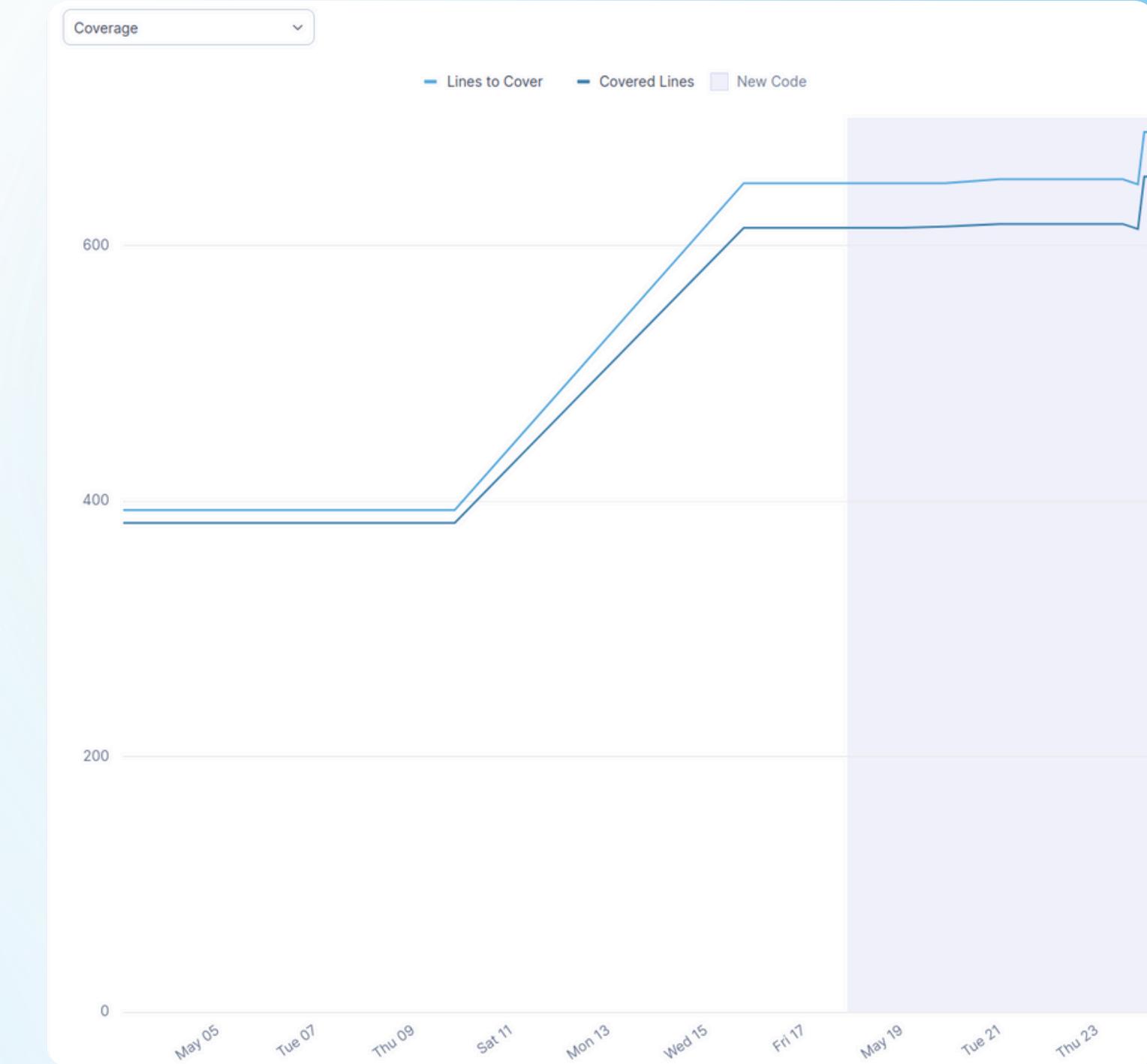
RGarrido03 last month

NextUI components support the `isValid` and `errorMessage` props. Please use them instead of plain `span` below the component.



Strategy for Testing

- Tried to follow a Test-Driven Development (TDD) approach;
- Unit tests, integration tests, functional tests, and performance tests were conducted throughout the development process;
- Ensured clean code and correct functionality from the start.





Functional Tests

```
@Suite
@IncludeEngines("cucumber")
@SelectClasspathResource("pt/ua/deti/tqs/backend/functional/client")
@ConfigurationParameter(key = GLUE_PROPERTY_NAME, value = "pt.ua.deti.tqs.backend.functional.client")
public class ClientCucumberTest {

    private static WebDriver driver;

    public static WebDriver getDriver() {
        if (driver == null) {
            FirefoxOptions options = new FirefoxOptions();
            options.addArguments("-headless");
            driver = new FirefoxDriver(options);
        }
        return driver;
    }
}
```

Feature: Check existing trips

Scenario: Check existing trips

```
When I navigate to "http://localhost/"
And I fill in departure with 3
And I fill in arrival with 1
And I search for trips
Then I should see a list of trips
```

Scenario: Check existing trips on a specific date

```
When I navigate to "http://localhost"
And I fill in departure with 3
And I fill in arrival with 1
And I fill in date with "05/24/2024"
And I search for trips
Then I should see a list of trips on date "05/24/2024" or after this date
```

```
public class CheckTripsSteps {
    private final WebDriver driver = ClientCucumberTest.getDriver();

    @When("I fill in departure with {int}")
    public void iFillInDepartureWith(int number) throws InterruptedException {
        Thread.sleep(millis: 1000);
        driver.findElement(By.id("origin")).click();
        driver.findElement(By.id("departure" + number)).click();
    }

    @And("I fill in arrival with {int}")
    public void iFillInArrivalWith(int number) {
        driver.findElement(By.id("destination")).click();
        driver.findElement(By.id("arrival" + number)).click();
    }

    @And("I fill in date with {string}")
    public void iFillInDateWith(String date) {
        String[] parts = date.split(regex: "/");
        driver.findElement(By.cssSelector("#departureTime>div>div>div:nth-child(1)").sendKeys(parts[0]);
        driver.findElement(By.cssSelector("#departureTime>div>div>div:nth-child(3)").sendKeys(parts[1]);
        driver.findElement(By.cssSelector("#departureTime>div>div>div:nth-child(5)").sendKeys(parts[2]);
    }

    @And("I search for trips")
    public void iSearchForTrips() throws InterruptedException {
        driver.findElement(By.id("searchBtn")).click();
    }
}
```



Unit Tests

- Ensures individual components function as expected;
- Uses **JUnit** and **Mockito** for writing granular, isolated tests;
- Integrated into the **CI/CD pipeline** for automatic execution with every build;

```
225 @Test
226 void whenUpdateUser_thenUpdateUser() throws Exception {
227     User user = new User();
228     user.setId(1L);
229     user.setName("John Doe");
230     user.setEmail("johndoe@ua.pt");
231     user.setPassword("password");
232     user.setRoles(List.of(UserRole.USER, UserRole.STAFF));
233
234     LoginResponse loginResponse = new LoginResponse(user.getId(), user.getName(), user.getEmail(), user.getRoles(), "token", 123456789L);
235
236     when(service.updateUser(Mockito.any(Long.class), Mockito.any(User.class))).thenReturn(loginResponse);
237
238     mockMvc.perform(put("/api/backoffice/user/1")
239                     .contentType(MediaType.APPLICATION_JSON)
240                     .content(new ObjectMapper().writeValueAsString(user)))
241                     .andExpect(status().isOk())
242                     .andExpect(jsonPath("$.id", is(1)))
243                     .andExpect(jsonPath("$.name", is("John Doe")))
244                     .andExpect(jsonPath("$.email", is("johndoe@ua.pt")))
245                     .andExpect(jsonPath("$.roles", hasSize(2)))
246                     .andExpect(jsonPath("$.roles[0]", is(UserRole.USER.toString())))
247                     .andExpect(jsonPath("$.roles[1]", is(UserRole.STAFF.toString())));
248
249     verify(service, times(1)).updateUser(Mockito.any(Long.class), Mockito.any(User.class));
250 }
251
252 @Test
253 void whenDeleteUser_thenDeleteUser() {
254     RestAssuredMockMvc.given().mockMvc(mockMvc)
255                     .when().delete("/api/public/user/1")
256                     .then().statusCode(200);
257
258     verify(service, times(1)).deleteUser(1L);
259 }
260 }
```



Manage bus

[Attach](#) [Add a child issue](#) [Link issue](#) [Test Coverage](#) [...](#)

Description

As Luísa, I want to be able to add a new bus, edit one that already exists, and delete one that is no longer in use, so that I can control and keep updated all the buses for each company.

Test Coverage

[Add Tests](#) [Execute](#)

Analysis & Scope

Scope: Latest Final Status

OK

Status	Key	Summary	Test Status
DONE	CC-95	whenGetBusByInvalidId_thenReturnNotFound	PASSED
DONE	CC-96	whenGetBusById_thenReturnBus	PASSED
DONE	CC-97	whenUpdateBus_thenUpdateBus	PASSED
DONE	CC-98	givenManyBuses_whenGetBuses_thenReturnJson...	PASSED
DONE	CC-99	whenPostBus_thenCreateBus	PASSED
DONE	CC-100	whenDeleteBusById_thenDeleteBus	PASSED
DONE	CC-137	whenFindAllBuses_thenReturnAllBuses	PASSED
DONE	CC-138	whenUpdateBus_thenBusShouldBeUpdated	PASSED
DONE	CC-139	whenFindBusById_thenReturnBus	PASSED
DONE	CC-140	whenInvalidBusId_thenReturnNull	PASSED

Prev 1 2 Next



Integration Tests

- Verifies that different modules or services in the application work together as expected.
- Used **SpringBootTest** with **Test Containers** and **RestAssured** for comprehensive coverage and effectiveness.
- Combined tools enabled efficient and reliable execution of integration tests.

```
139  @Test
140  void whenFindTripsByArrival_thenReturnCorrectTrips() {
141      City city = Utils.generateCity(entityManager);
142      Bus bus = Utils.generateBus(entityManager);
143
144      Trip trip1 = new Trip();
145      trip1.setDeparture(city);
146      trip1.setArrival(city);
147      trip1.setBus(bus);
148      trip1.setDepartureTime(LocalDateTime.now());
149      trip1.setArrivalTime(LocalDateTime.now().plusHours(3));
150      trip1.setPrice(50);
151      Trip trip2 = new Trip();
152      trip2.setDeparture(city);
153      trip2.setArrival(city);
154      trip2.setBus(bus);
155      trip2.setDepartureTime(LocalDateTime.now());
156      trip2.setArrivalTime(LocalDateTime.now().plusHours(2));
157      trip2.setPrice(100);
158      Trip trip3 = new Trip();
159      trip3.setDeparture(city);
160      trip3.setArrival(city);
161      trip3.setBus(bus);
162      trip3.setDepartureTime(LocalDateTime.now());
163      trip3.setArrivalTime(LocalDateTime.now().plusHours(1));
164      trip3.setPrice(50);
165      Trip trip4 = new Trip();
166      trip4.setDeparture(city);
167      trip4.setArrival(city);
168      trip4.setBus(bus);
169      trip4.setDepartureTime(LocalDateTime.now());
170      trip4.setArrivalTime(LocalDateTime.now().plusHours(1));
171      trip4.setPrice(50);
172      trip4.setStatus(TripStatus.ARRIVED);
173
174      entityManager.persist(trip1);
175      entityManager.persist(trip2);
176      entityManager.persist(trip3);
177      entityManager.persist(trip4);
178
179      Iterable<Trip> trips = tripRepository.findByArrivalAndStatusNotOrderByArrivalTimeAsc(city, TripStatus.ARRIVED, Limit.of(2));
180      assertThat(trips).hasSize(2).contains(trip3, trip2);
181  }
```



Performance Tests

A screenshot of a GitHub Actions comment card. The card header shows the GitHub Actions bot icon and the text "github-actions bot commented last week". Below this, there is a link "⚡ [Lighthouse report](#) for the changes in this PR:". A table below the link displays Lighthouse scores for five categories:

Category	Score
● Performance	58
● Accessibility	91
● Best practices	96
● SEO	85
● PWA	38

At the bottom of the card, it says "Lighthouse ran on <http://localhost/staff/>" and features a small smiley face emoji.

Lighthouse analysis in CI/CD

The screenshot shows the CityConnect client portal interface. At the top, there is a logo for 'CityConnect' with a blue icon of two people holding hands. To the right are buttons for currency ('EUR') and a search function. The main heading 'Available trips' is displayed in large, bold, black font. Below it are four input fields: 'Departure' set to 'Aveiro', 'Arrival' set to 'Murtosa', 'People' set to '1', and 'Date' set to '05/30/2024'. A blue 'Search' button is positioned next to the date field. Below these fields, a trip summary is shown for May 26, 2025, at 3:00 PM, arriving at 4:00 PM. The trip details include: departure from Aveiro, arrival in Murtosa, cost of 9,00 €, and travel by 44-seat bus. It also notes that 44 seats are available. A cursor icon is visible near the bottom right of the trip summary box.

Available trips

Departure: Aveiro

Arrival: Murtosa

People: 1

Date: 05/30/2024

Search

May 26, 2025 at 3:00 PM

Arrival at 4:00 PM

⇄ Aveiro

📍 Murtosa

9,00 €

44-seat bus

44 seats available

Videos available on the link:

<https://github.com/CityConnect-TQS/control-room/tree/main/docs/demo>

The screenshot shows a staff portal for 'CityConnect'. At the top, there's a navigation bar with 'CityConnect' logo, 'Dashboard', 'Buses', and a user icon. Below the navigation is a search bar with placeholder 'Search by departure and arrival cities...' and a date range selector from 'April 19, 2024' to 'June 21, 2024'. There are also buttons for 'Status', 'Columns', and 'Add New +'. A message 'Total 60 Trips' is displayed above the table. The table has columns: DEPARTURE, ARRIVAL, PRICE, STATUS, and ACTIONS. The data includes five rows of trip details, each with a status of 'DEPARTED' and three actions: a circular icon, a pencil icon, and a square icon.

DEPARTURE	ARRIVAL	PRICE	STATUS	ACTIONS
Estarreja April 19, 2024 At 4:30 PM	Murtosa June 19, 2024 At 5:00 PM	15 36 Seats Left	DEPARTED	○ / edit / delete
Aveiro April 19, 2024 At 4:30 PM	Murtosa June 19, 2024 At 5:00 PM	15 36 Seats Left	DEPARTED	○ / edit / delete
Murtosa April 20, 2024 At 3:20 PM	Aveiro June 20, 2024 At 4:00 PM	15 36 Seats Left	DEPARTED	○ / edit / delete
Estarreja April 20, 2024 At 4:30 PM	Aveiro June 20, 2024 At 5:00 PM	15 36 Seats Left	DEPARTED	○ / edit / delete
Murtosa April 21, 2024 At 10:00 AM	Estarreja June 21, 2024 At 12:00 PM	15 36 Seats Left	DEPARTED	○ / edit / delete

1 2 3 4 5 ... 12 > Previous Next

Videos available on the link:

<https://github.com/CityConnect-TQS/control-room/tree/main/docs/demo>

The image shows a digital signage application interface. On the left, a "Book confirmation" section displays a message: "Your trip is booked! The reservation ID is 3 and you booked 2 2A, 2B". Below this, travel details are listed: "May 26, 2025 at 3:00 PM" (Arrival at 4:00 PM), "Aveiro" to "Murtosa" (9,00 €, 44-seat bus), and "42 seats available". A user menu is open, showing "Signed in as admin", "Log Out", "My Reservations", "Settings", and "Help & Feedback". At the top, there are currency and language settings (EUR) and a search bar (a). On the right, a large "Departures" header is followed by a card for a bus trip from Murtosa to Aveiro. The card includes: "Murtosa" (Arrival 15:00), "0/2" (Check-ins), "42/44" (Seats left), "Rede Expressos" (Company), and "On time" status.

Videos available on the link:

<https://github.com/CityConnect-TQS/control-room/tree/main/docs/demo>

15:09:57
Thursday, May 30 2024

Hi! It's 10°C here in
Aveiro

22

Thank you!



Bárbara Galiza – 108989,
Diana Miranda – 107457,
Diogo Falcão – 108712,
Rúben Garrido – 107927

