Initial Report of Group InfluxUI-PG02

Project of ATSYS

No-Code Solution for InfluxDB

LeStartUP

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Project Vision

Our vision is based on three dimensions. First, creating the 'No-Code Solution for InfluxDB' project and delivering value to ATSYS's customers and users. We aim to build a user-friendly system that enhances the user experience for ATSYS's customers.

Secondly, our team's positivity will drive the project to success. Before the kickoff, we thoroughly analyzed and discussed the project requirements, initial architecture, and technology stacks. We are determined to achieve project success and ensure customer satisfaction.

Finally, as a student development team, we aim to overcome the challenges of software development and agile project management. Key success factors include transparent stakeholder engagement, clear communication, efficient teamwork management, and adaptability to any changes in our SCRUM process. We strive to successfully deliver the product while enhancing the agile development abilities of each team member.

Customer Q&A

- Questions and the confirmation to the customer representative and the product owner.

  Q: Should we integrate Grafana at the beginning of the project, or should we first complete the non-extension requirements and integrate Grafana later?
  A: You should integrate Grafana from the beginning, and the exact timing is based on the group sprint plan.

  Q: Are there any specific accessibility requirements for the drag-and-drop interface?
  A: As a user, I just need a drag and drop interface and how I want to make it right.

  Q: How should the interface handle invalid selections or combinations of

data sources? How should error handling be implemented, especially in cases where the generated Flux query is invalid or returns no results?
A: It would be better including error messages and ensure a user-friendly interface.

Q: When users log in to the page, should there be authorization steps that check which data sources users have permission to view/query?
A: Yes, there should be authorization checks.

Q: When a user selects a different data source, should the application dynamically update the available measurements and fields?
A: Yes, it should dynamically update.

Users

- **User story 1: Drag-and-Drop Interface for Selecting Data Sources**

Goal	As a user, I want to use a drag-and-drop interface to select the bucket, measurements, and fields from InfluxDB, so that I can easily choose the data I need without writing code.
Actors	User
Pre-conditions	The user is logged into the no-code interface.
Main Flow	- The user logs into the no-code interface. - The user is presented with a list of available buckets, measurements, and fields. - The user selects the desired data sources by dragging and dropping items into the query builder area. - The interface automatically prepares these selections for the next steps in the data query process.
Post-conditions	- The selected buckets, measurements, and fields are ready for filtering and querying. - The user successfully prepares the data sources without writing any code.

Acceptance Criteria	- The interface must allow the user to drag and drop items to select buckets, measurements, and fields. - The selected items must be accurately reflected in the query builder.

- **User story 2: Filter application via drag-and-drop**

Goal	As a user, I want to apply filters to my selected data using a drag-and-drop interface, so that I can refine the data retrieval process without having to write complex queries.
Actors	User
Pre-conditions	- The user has selected the bucket, measurements, and fields using the drag-and-drop interface. - The data sources are ready for filtering.
Main Flow	- The user accesses the filter options in the no-code interface. - The user drags and drops filter criteria onto the selected data fields. - The user sets parameters for the filters (e.g., date range, value thresholds). - The interface prepares the filtered query based on the user's inputs.
Post-conditions	- The user's filters are applied to the selected data, refining the query. - The system is ready to execute the query with the applied filters.
Acceptance Criteria	- The interface must allow the user to drag and drop filters onto the selected data fields. - The applied filters should accurately reflect the user's input. - The interface should provide clear feedback on how the filters are affecting the data selection.

- **User story 3: Automatic Query Generation and Execution**

Goal	As a user, I want the interface to automatically generate and execute the Flux query based on my drag-and-drop selections, so that I can retrieve the data I need without writing any code.
Actors	User
Pre-conditions	The user has selected the relevant data sources and applied filters via the drag-and-drop interface.
Main Flow	- The user completes the data selection and filtering process using drag-and-drop. - The interface automatically generates the corresponding Flux query in the background. - The user initiates the query execution by clicking a 'Run Query' button. - The system processes the query and retrieves the data.
Post-conditions	- The user retrieves the data without manually writing or modifying any code. - The system displays the results for further analysis or visualization.
Acceptance Criteria	- The system must accurately generate the Flux query based on the user's drag-and-drop inputs. - The query execution must return the correct data based on the applied filters and selections. - The interface should provide clear feedback on the query execution status and display the results promptly.

- **User Definition**

User Definition	
Business Analyst	• Background: e-commerce company • Responsibility: monitoring key performance indicators (KPIs) and generating reports.

	• Objective: - Quickly access relevant data from InfluxDB to track website traffic, sales trends, and customer behaviour. - Apply filter and visualise the data in Grafana dashboards in a user-friendly version to generate reports for management team.
Operation manager	• Background: manufacturing company • Responsibility: mitigating resourcing and identify any issue or anomaly in case of shortage or overuse • Objective: - Easily access and analyse production data stored in InfluxDB, with direct comparison to industry level. - segment the data into the query builder by production line, filter by equipment type, and analyse metrics over specific time periods.

- **Assumption based on user stories**

- Non-programmer: The user is assumed to lack programming expertise, particularly in writing Flux queries for InfluxDB.
- Data explorer: The user needs to query and analyse time-series data stored in InfluxDB.
- Visualiser: The user aims to create visual representations of the queried data, potentially using Grafana.
- Interface navigator: The user interacts with a drag-and-drop interface to select data sources, apply filters, and initiate queries.

- **Characteristics of the User**

- *Non-Programmer*: The user lacks the skills to write or understand complex queries, particularly in InfluxDB's internal language, Flux.
- *Data-Driven*: Despite not being a programmer, the user is focused on obtaining, filtering, and analysing data from InfluxDB for purposes such as monitoring.
- *Visual Thinker*: The user prefers graphical interfaces that allow drag-and-drop operations to simplify the data selection and filtering process.

- *Efficiency-Seeking*: The user values tools that automate the generation of queries and seamless integration between InfluxDB and Granfana, enabling them to retrieve and manipulate data quickly without needing to write any code

Software Architecture

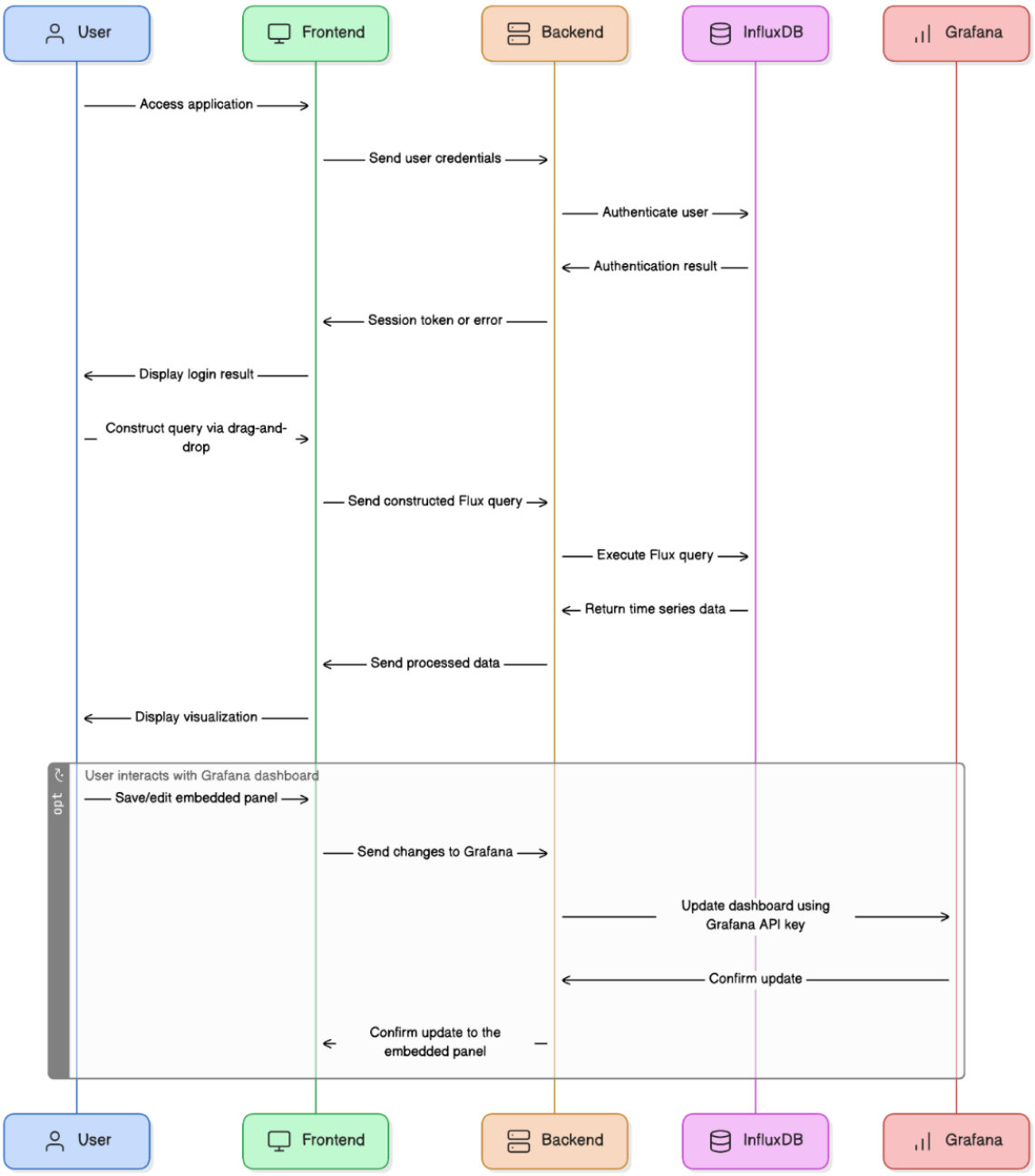
Our software architecture outlines a no-code solution for interacting with InfluxDB, providing users with an intuitive interface for data querying and visualization. The system consists of four main components: User Interface, Frontend, Backend, and InfluxDB, with optional integration to Grafana for advanced dashboarding

- **User Authentication:**
  - Users access the application through the Frontend.
  - Credentials are securely transmitted to the Backend.
  - The Backend authenticates with InfluxDB.
  - Upon successful authentication, a session token is provided to the Frontend
- **Query Construction:**
  - Users construct queries using a drag-and-drop interface in the Frontend.
- **Query Construction:**
  - The Frontend sends the constructed Flux query to the Backend.
  - The Backend validates and executes the query against InfluxDB.
  - InfluxDB processes the query and returns time series data.
- **Data Visualization:**
  - The Backend processes the raw data from InfluxDB.
  - Processed data is sent to the Frontend for visualization.
  - The Frontend renders the data in user-friendly charts and graphs.
- **Grafana Integration (Extension):**
  - Users can interact with Grafana dashboards for more advanced visualizations.
  - Changes made in the Frontend are sent to the Backend.

- The Backend updates Grafana using its API.
- Grafana confirms the update, which is then relayed to the user.

This architecture enables users to leverage InfluxDB's powerful time series capabilities without needing to write complex queries, while also providing the option for advanced visualizations through Grafana integration. The separation of Frontend and Backend concerns allows for scalability and easier maintenance of the system.

- **UML diagram:**



Tech Stack and Standards

- **Front-end stacks:**

  For our InfluxDB no-code solution, we have selected a front-end tech stack that balances performance, maintainability, and developer productivity. We have chosen technologies with strong community support and rich ecosystems to ensure access to resources and integration. This stack aims to support an intuitive drag-and-drop interface for query building while providing robust state management for complex application logic. We have incorporated industry-standard tools for styling and testing to blend innovation with proven practices. The table below details our specific technology choices and the reasoning behind each.

Categories	**Proposal**	**Proposal explanation**
Language	TypeScript	Type Safety Easier Error Handling Good Developer Experience
UI Library	ReactJS	Best Community Support Huge Ecosystem Good Developer Experience
Framework	NextJS	Comprehensive Features Good community Support Good Developer Experience
Styling	TailwindCSS + shadcn/ui	Large Community Robustness Good Developer Experience
State Management (Optional)	Zustand or *XState (for complex state)*	Large Community Comprehensive Features Good Documentation Good Developer Experience

Categories	Proposal	Proposal explanation
Drag & Drop Flowchart Library	React Flow	Best Community Support Comprehensive Features & APIs Good Documentation Works Well with Other Technologies (Framework, State management, Styling) Good Developer Experience
Code Editor Component for Flux Code	@monaco-editor/react	Easy Integration with NextJS Good Community Support Good Developer Experience
Testing	• Vitest (unit tests) • React Testing Library (component tests) • Playwright (end-to-end tests)	Industry Standard Testing Suite for React Apps Good Community Support & Documentation Good Developer Experience
Linting + Formatting	ESLint + Prettier	Industry Standard Good Community Support & Documentation Good Developer Experience

- **Back-end stacks:**

The microservices architecture was selected because it supports scalability and flexibility during project development. Therefore, the tech stacks at the server side are proposed based on the microservice concepts and the analyses of client requirements.

Categories	Proposal	Proposal explanation
Language	Python (v3.10)	Flexibility
Framework	Django	Support MVC
API documentation	Swagger	Centralize API docs
Primary Database	InfluxDB OSS (v2.7)	Required by the client

- **Containerization and Orchestration stacks:**

Categories	Proposal	Proposal explanation
Containerization	Docker	Flexibility and reliability

- **Monitoring and Logging stacks**

Categories	Proposal	Proposal explanation
Monitoring	Grafana (v9.5.3)	Flexibility and reliability

- **CI/CD stacks**

Categories	Proposal	Proposal explanation
Platform	GitHub & GitHub Action	GitHub ecosystem Flexibility and reliability

- **Coding standards**
  - Front-end standards
    - Linting: ESlint + NextJS default style config
    - Format: Prettier
    - Commit Message: Conventional Commit
    - Branch Name
  - Back-end standards
    - Naming convention
    - Response bodies
    - API versioning
    - Response status codes
    - API documents

- **Version control standards**
  - Based on GitHub, CI/CD … concept

- **Communication platform**
  - Microsoft Teams: for flexibility

- **Documentation platform**
  - University of Adelaide: for security reasons. Explain as this is secured.

Group Meetings and Team Member Roles

- **Group meeting roles:**

Types	Purpose	Time
Daily meeting	• Daily communication • Quick updates information	• On WhatsApp treat as 15 min stand-up. • Face-to-face in the Uni If necessary.
Weekly meeting	• To synchronize each working stage and situation • Weekly retrospective • Work together	• 17:00 -18:00 on Monday • 16:00-17:00 on Wednesday • 17:00-18:00 on Friday
Sprint meeting	• Customer requirements updated from Product owner Sanchi Verma. • Sprint work present. • Sprint retrospective.	• 17:00-17:30 on Wednesday biweekly

- **Communication with Product Owner (Sanchi Verma):**
  - Teams chat for real time communication
  - Outlook calendar for official meetings

- **Team Member:**
  - Scrum Mater:

Sprint	Name
1st	Shih-Han Lin (Peter)
2nd	Baojing Li (Elias)
3rd	Ziqi Zhang (Kelvin)
4th	Jen-Hao Liu
5th	Feinan Guo

  - Development Team:

- Front end:

Role	Name
Leader	Hao Jiang (Johnny)
Developer	Ziqi Zhang (Kelvin)
Developer	Baojing Li (Elias)
Developer	Xiaoqing Zhao
Developer	Zilin Song (Harry)

- Back end:

Role	Name
Leader	Dang Quy Duong (Tom)
Developer	Jen-Hao Liu
Developer	Feinan Guo
Developer	Shih-han Lin (Peter)

- Cross function team:

  Dynamically allocate human resources based on each sprint.

Snapshot

Snapshot Week 05 of Group PG02

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Product Backlog and Task Board

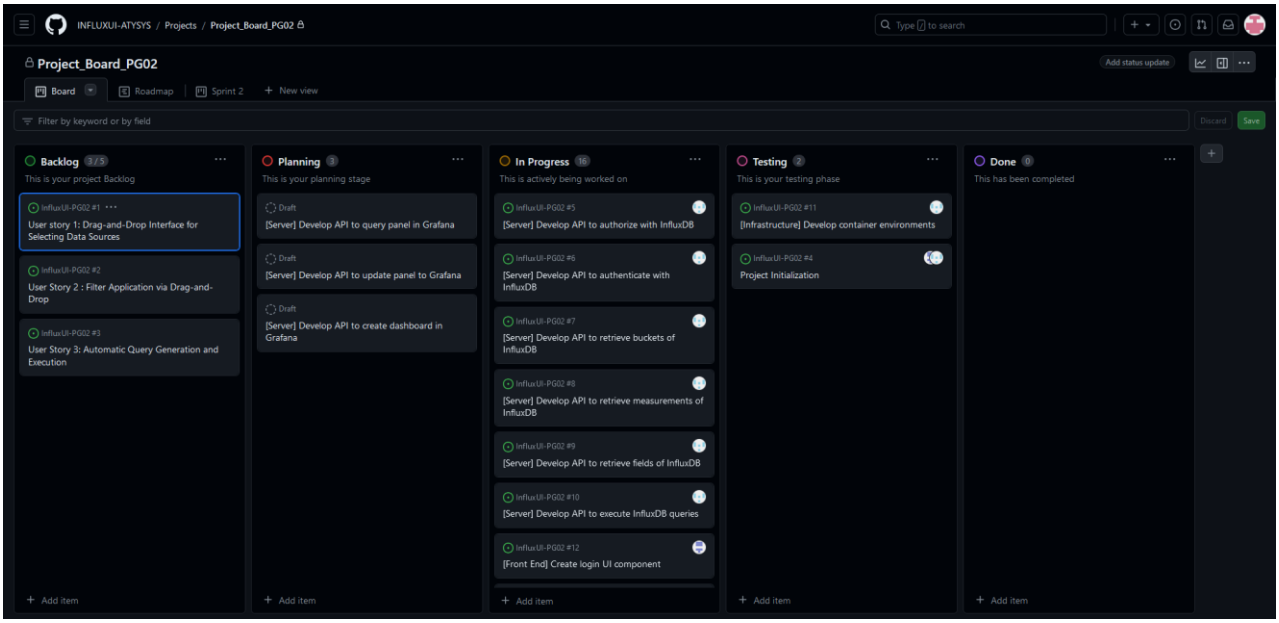
- The product backlog (continuous changes)

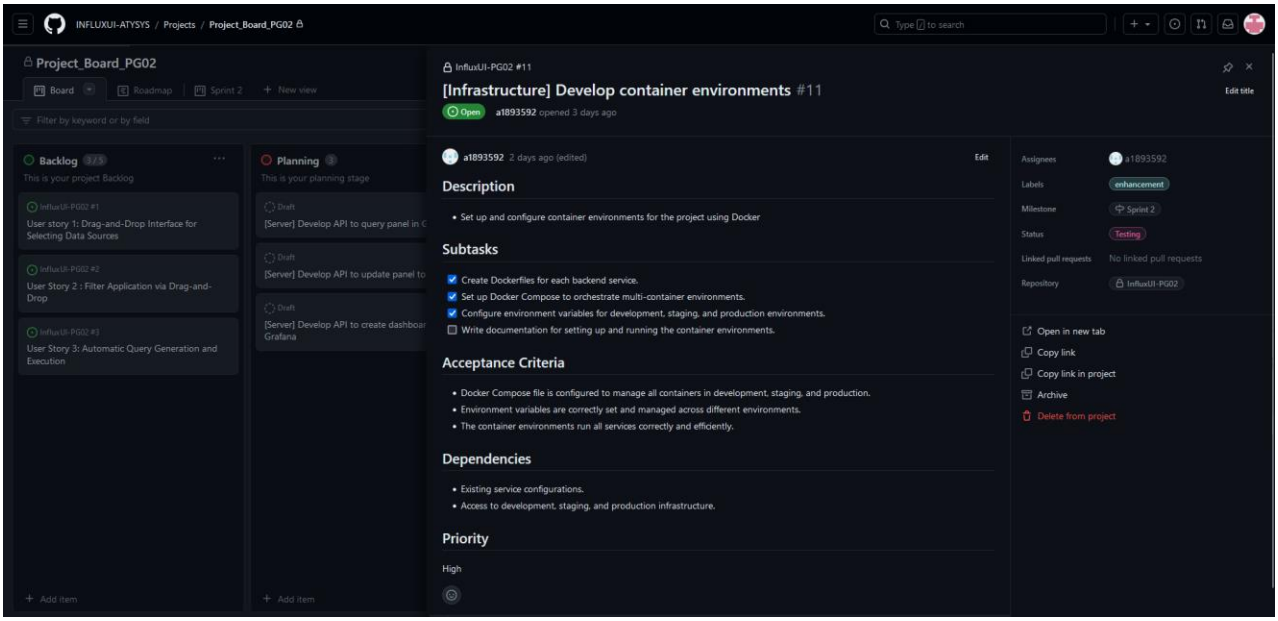
Category	Features	note
Front end	A single-page application using NextJS	
Front end	A login interface for user authentication at the same level of InfluxDB	
Front end	An intuitive drag-and-drop query builder for the Flux language	
Front end	Real-time Flux query generation	
Front end	Option to view the generated Flux query code	
Front end	Data visualization through native implemented charts and graphs	
Front end	Optional integration with Grafana dashboards and panels	
Back end	User authentication against InfluxDB	
Back end	Query validation and processing	
Back end	Data retrieval with InfluxDB	
Back end	Data processing for visualization	
Back end	Optional integration with Grafana dashboards and panels	
InfluxDB	Time-series database that powers the authentication of the web app and serves as the data source	
Grafana	Optional integration for saving and editing data queries and visualization dashboards.	

- The task board

Items	Tasks	Status
1	Software architecture	Version 1
2	Infrastructure for dev/staging/prod stages	On-going
3	Infrastructure for local InfluxDB, Grafana, Server and FE	On-going
4	From user story 1, form features + API of the app	On-going
5	Keep forming features and APIs	On-going
6	Develop BE using Django and APIs defined (Specifically query schema of IDB, query IDB, get/update/create Grafana panel	On-going

- The GitHub repository we are working on

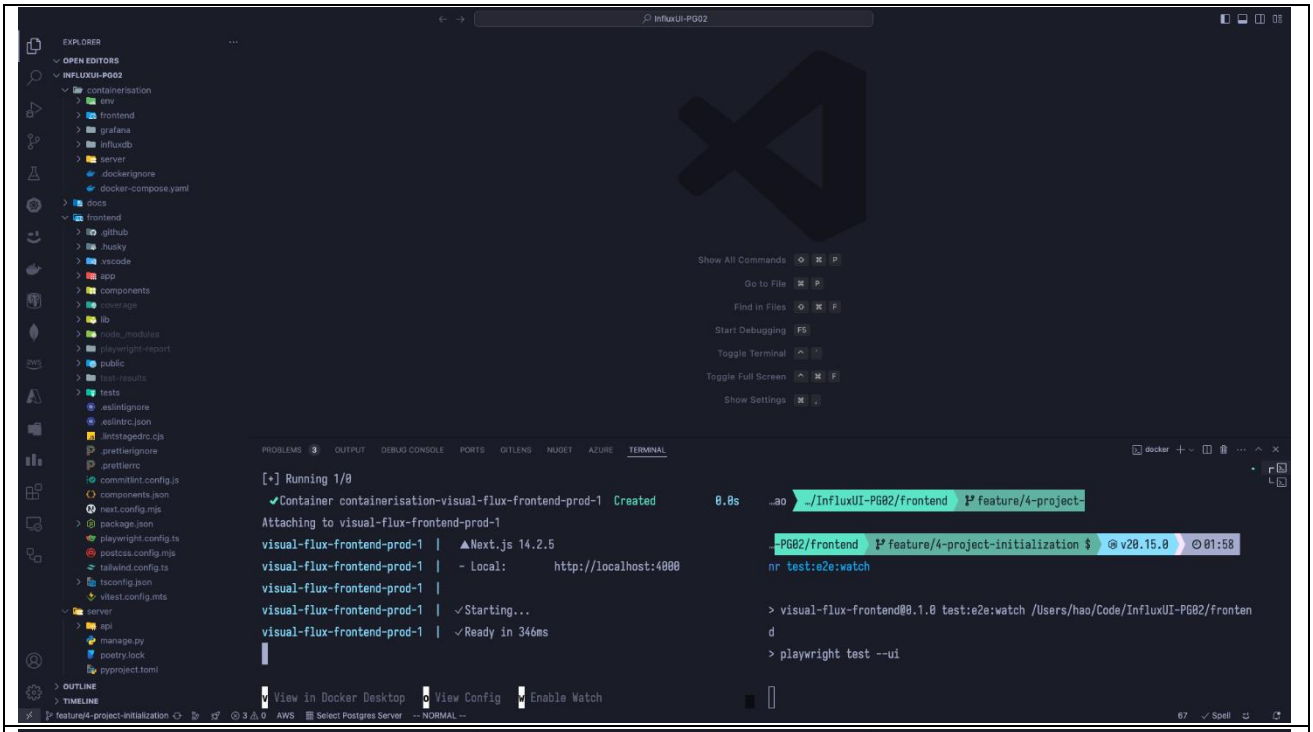


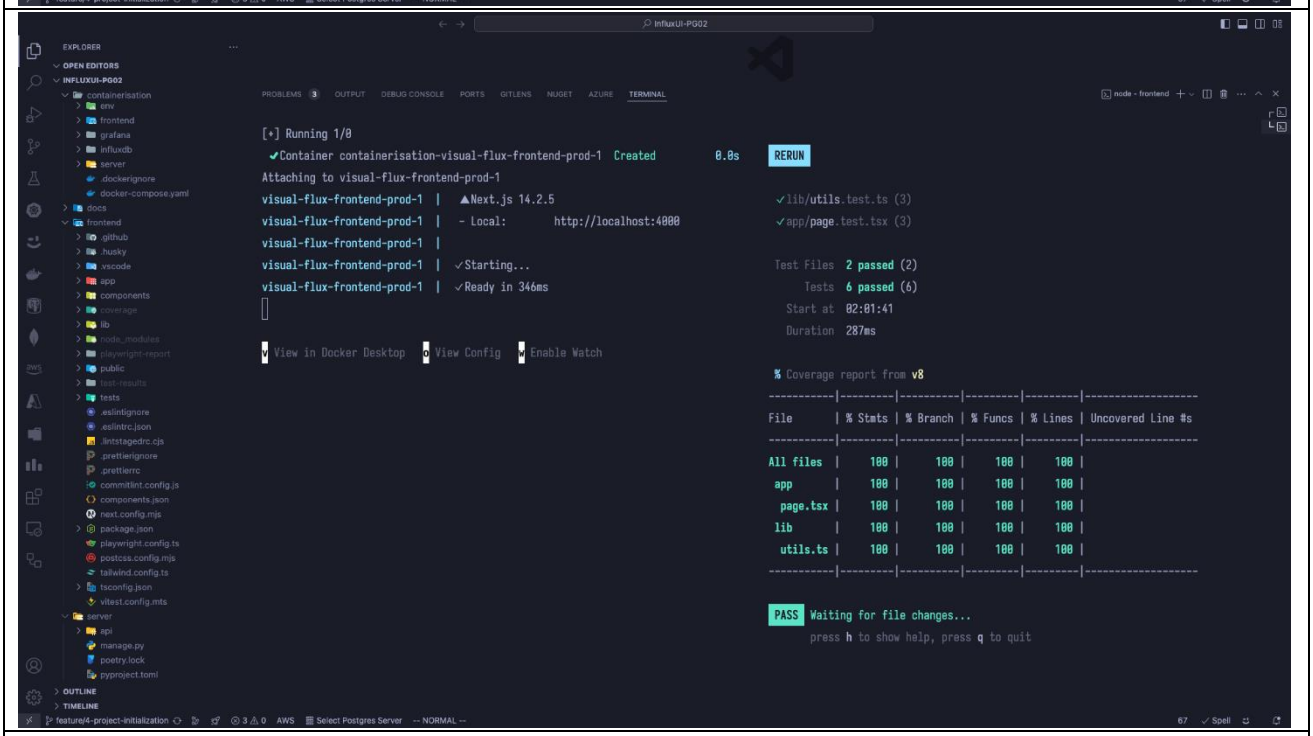


Sprint Backlog and User Stories

- The screenshot of the sprint backlog

Items	Tasks	Status
1	Software architecture	Version 1
2	Infrastructure for dev/staging/prod stages	Done
3	Infrastructure for local InfluxDB, Grafana, Server and FE	Done
4	From user story 1, form features + API of the app	On-going
5	Keep forming features and APIs	On-going
6	Develop BE using Django and APIs defined (Specifically query schema of IDB, query IDB, get/update/create Grafana panel	On-going


InfluxUI-PG02
EXPLORER
OPEN EDITORS
INFLUXUI-PG02
Show All Commands
Go to File
Find in Files
Start Debugging
Toggle Terminal
Toggle Full Screen
Show Settings
PROBLEMS
OUTPUT
DEBUG CONSOLE
PORTS
GITLENS
NUGET
AZURE
TERMINAL
[+] Running 1/0
✔Container containerisation-visual-flux-frontend-prod-1 Created 0.0s
Attaching to visual-flux-frontend-prod-1
visual-flux-frontend-prod-1 | ▲Next.js 14.2.5
visual-flux-frontend-prod-1 | - Local: http://localhost:4000
visual-flux-frontend-prod-1 |
visual-flux-frontend-prod-1 | ✓Starting...
visual-flux-frontend-prod-1 | ✓Ready in 346ms
View in Docker Desktop
View Config
Enable Watch
nr test:e2e:watch
> visual-flux-frontend@0.1.0 test:e2e:watch /Users/hao/Code/InfluxUI-PG02/frontend
> playwright test --ui


InfluxUI-PG02
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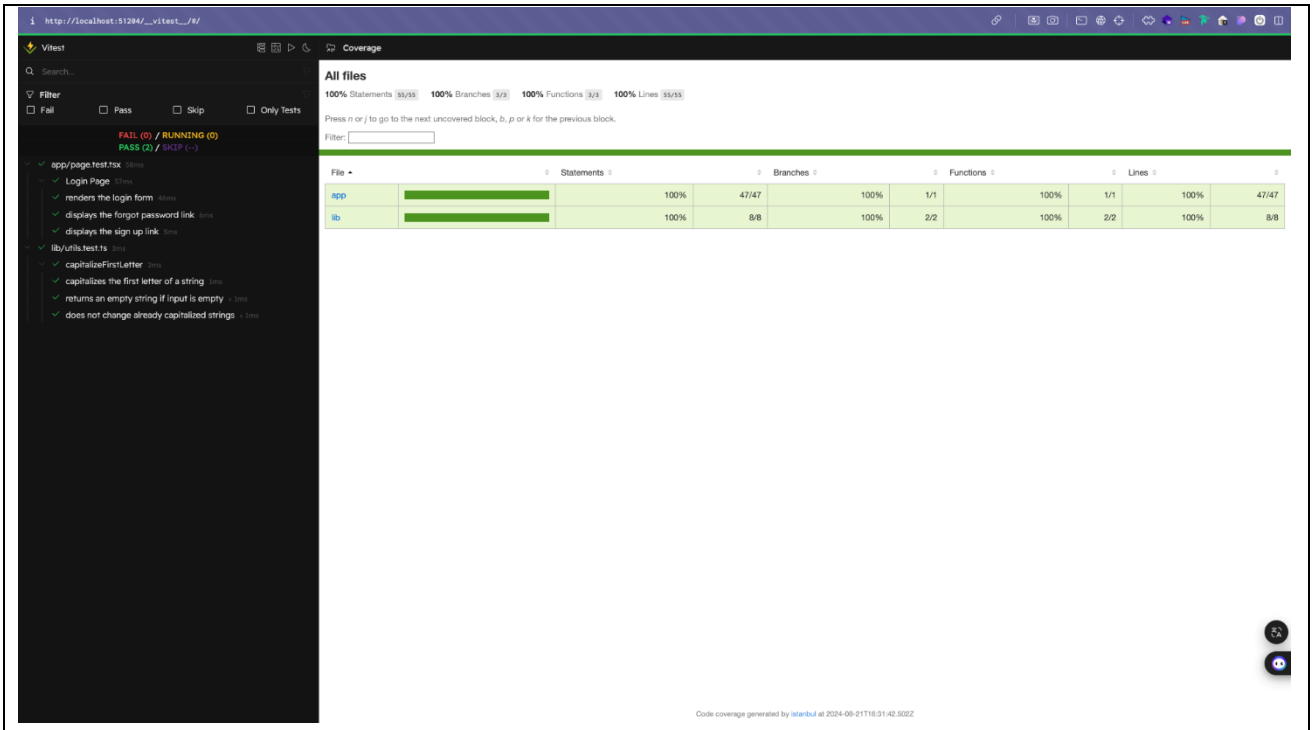
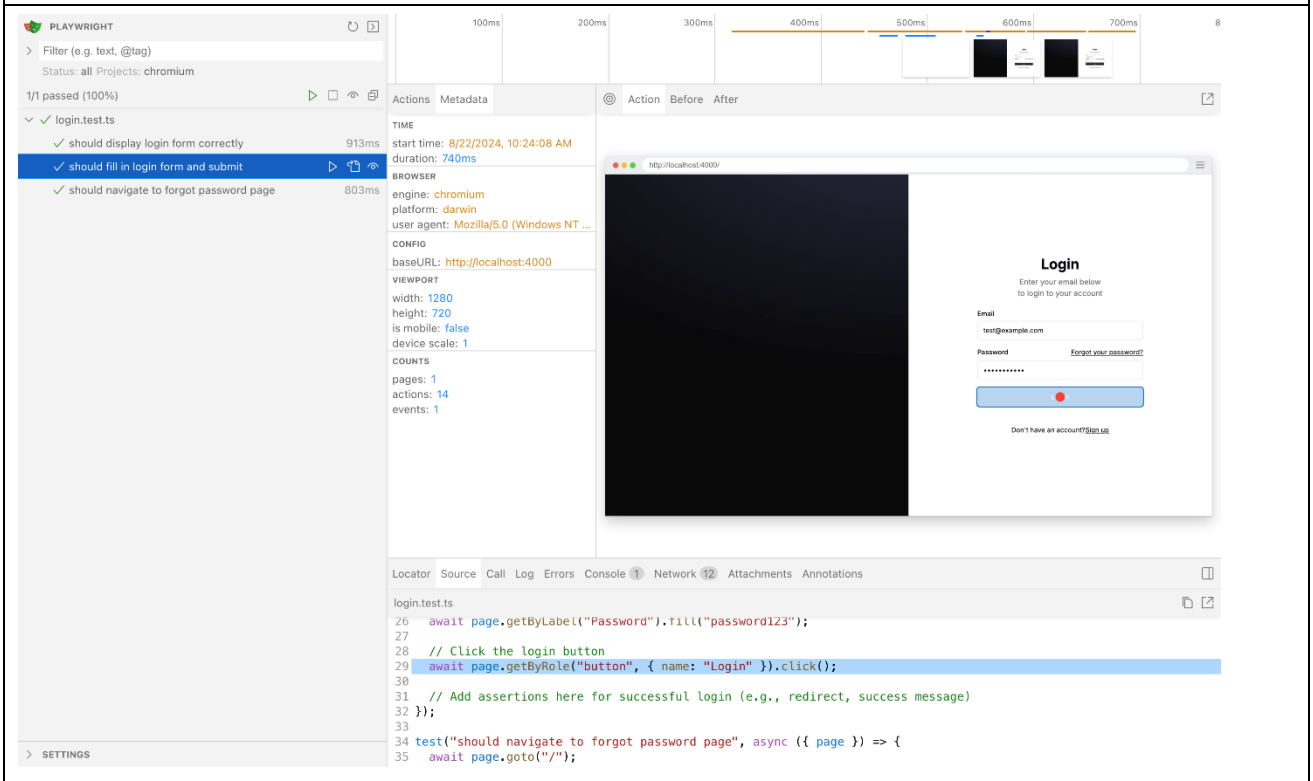
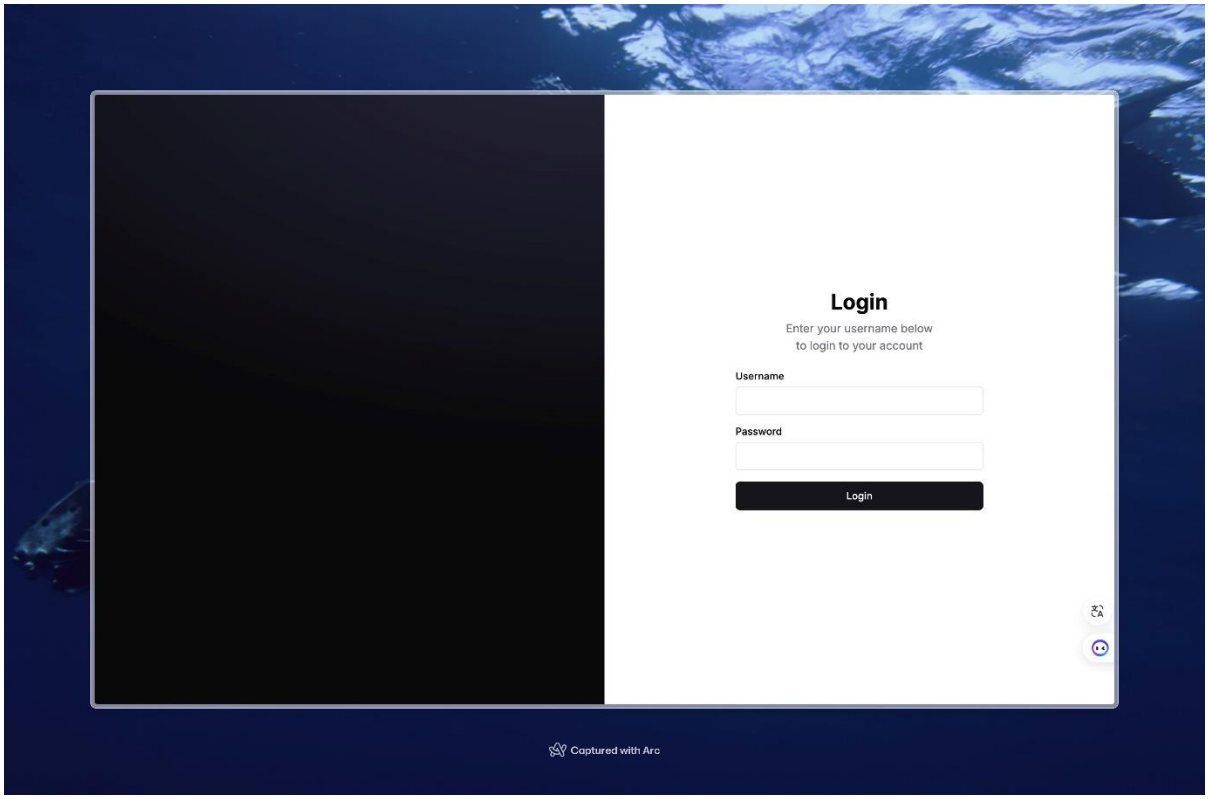
[+] Running 1/0
✔Container containerisation-visual-flux-frontend-prod-1 Created 0.0s
Attaching to visual-flux-frontend-prod-1
visual-flux-frontend-prod-1 | ▲Next.js 14.2.5
visual-flux-frontend-prod-1 | - Local: http://localhost:4000
visual-flux-frontend-prod-1 |
visual-flux-frontend-prod-1 | ✓Starting...
visual-flux-frontend-prod-1 | ✓Ready in 346ms
View in Docker Desktop
View Config
Enable Watch
RERUN
✓lib/utils.test.ts (3)
✓app/page.test.tsx (3)
Test Files 2 passed (2)
Tests 6 passed (6)
Start at 02:01:41
Duration 287ms
% Coverage report from v8
File | % Stmts | % Branch | % Funcs | % Lines | Uncovered Line #s
All files | 100 | 100 | 100 | 100 |
app | 100 | 100 | 100 | 100 |
page.tsx | 100 | 100 | 100 | 100 |
lib | 100 | 100 | 100 | 100 |
utils.ts | 100 | 100 | 100 | 100 |
PASS Waiting for file changes...
press h to show help, press q to quit


http://localhost:51204/__vitest__/#/
Vitest
Coverage
Search...
Filter
Fail
Pass
Skip
Only Tests
FAIL (0) / RUNNING (0)
PASS (2) / SKIP (--)
app/page.test.tsx
Login Page
renders the login form
displays the forgot password link
displays the sign up link
lib/utils.test.ts
capitalizeFirstLetter
capitalizes the first letter of a string
returns an empty string if input is empty
does not change already capitalized strings
All files
100% Statements 55/55
100% Branches 3/3
100% Functions 3/3
100% Lines 55/55
Press n or j to go to the next uncovered block, b, p or k for the previous block.
Filter:
File
Statements
Branches
Functions
Lines
app
100%
47/47
100%
1/1
100%
1/1
100%
47/47
lib
100%
8/8
100%
2/2
100%
2/2
100%
8/8
Code coverage generated by istanbul at 2024-08-21T16:31:42.502Z


PLAYWRIGHT
Filter (e.g. text, @tag)
Status: all Projects: chromium
1/1 passed (100%)
login.test.ts
should display login form correctly 913ms
should fill in login form and submit
should navigate to forgot password page 803ms
SETTINGS
100ms
200ms
300ms
400ms
500ms
600ms
700ms
Actions
Metadata
TIME
start time: 8/22/2024, 10:24:08 AM
duration: 740ms
BROWSER
engine: chromium
platform: darwin
user agent: Mozilla/5.0 (Windows NT ...
CONFIG
baseURL: http://localhost:4000
VIEWPORT
width: 1280
height: 720
is mobile: false
device scale: 1
COUNTS
pages: 1
actions: 14
events: 1
Action
Before
After
http://localhost:4000/
Login
Enter your email below
to login to your account
Email
test@example.com
Password
Forgot your password?
Don't have an account? Sign up
Locator
Source
Call
Log
Errors
Console 1
Network 12
Attachments
Annotations
login.test.ts
26 await page.getByLabel("Password").fill("password123");
27
28 // Click the login button
29 await page.getByRole("button", { name: "Login" }).click();
30
31 // Add assertions here for successful login (e.g., redirect, success message)
32 });
33
34 test("should navigate to forgot password page", async ({ page }) => {
35 await page.goto("/");



- The user stories in the Sprint.
  - **User story 1: Drag-and-Drop Interface for Selecting Data Sources**

Goal	As a user, I want to use a drag-and-drop interface to select the bucket, measurements, and fields from InfluxDB, so that I can easily choose the data I need without writing code.
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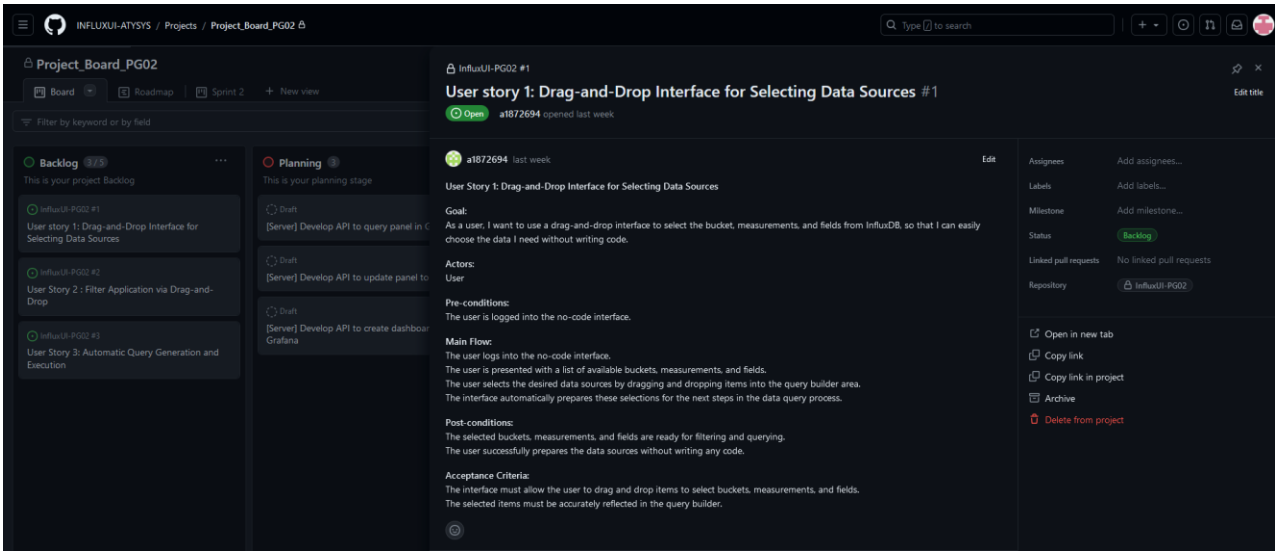

Definition of Done

- Our current "definition of done":
  - Unit test passed.
  - End-to-end test passed.
  - Code reviewed in process: individual and group reviewed.
  - Non-functional requirements met. (If there is one)

Completed items

- In the 1st Sprint, our team had completed:
  - The team rules including hierarchy of periodic meetings and

communication platform.

- The team roles: Division of work including Scrum Master, front-end sub team and back-end sub team.
- The initial tech stack.
- Group development rules.
- Define the tasks of user story 1 on GitHub.
- The initial report which will be delivered to the client (Submission).

Meeting Minutes (in GitHub and Teams Files)

The 1st group meeting / The kick-off meeting 15:00-16:00, 2nd Aug 2024
The kickoff Sprint meeting / Q&A session with PO Sanchi Verma 15:00-16:00, 9th Aug 2024
The 1st Sprint meeting / Q&A session with PO Sanchi Verma 17:00-17:30, 14th Aug 2024
Meeting type: The 2nd group meeting 16:00-17:00, 15th Aug 2024
Meeting type: The 3rd group meeting 15:00-18:00, 23rd Aug 2024

Summary of Changes

In the first sprint, our team focused on establishing team rules, allocating roles, and laying the foundation for the development environment in accordance with the client's requirements. We successfully set up the development environment, including the front-end and back-end frameworks. The team was organized into specialized roles to enhance productivity, and responsibilities were clearly defined. Initial user stories were broken down into tasks, and we began work on implementing the core functionalities. We initiated the development process by creating the basic structure of the user interface, which will allow users to log in to the application.

This sprint primarily involved setting up the technical infrastructure and aligning the team to ensure a smooth development process in subsequent sprints. We

will continue to work on ensuring the integration with InfluxDB and Grafana for data visualization in future sprints.