



Knight Foundation
School of Computing
and Information Sciences



Engineering
& Computing

Knight Foundation School of Computing & Information Sciences

Spring 2023 Capstone 2

Sensor Data Visualization

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PROBLEM

Koios aims to provide a versatile tool that can cater to various study types, and can be scaled up to accommodate future expansions. The primary objective is to enable comprehensive management of individual studies and serve as an interface between companies/organizations and their specific sensing requirements. By doing so, the system can facilitate greater efficiency in data quality, particularly under limited resources, and enhance cost-effectiveness.

REQUIREMENTS

The focus of this research project is on developing a comprehensive web application that involves using various technologies. To facilitate this study, we conducted research on several aspects of the project, including:

1. Installing MySQL Workbench to run the Koios Database.
2. Installing IntelliJ and VSCode for running the backend and frontend, respectively.
3. Learning how to use React in VSCode to write frontend code.
4. Learning how to use Spring in IntelliJ to write backend code.

IMPLEMENTATION

For this project, we utilized various technologies to develop a functional web application. These technologies included:

1. GitHub, which served as the platform for creating, storing, and updating all project documents.
2. React in VSCode, which was used for frontend development to display the user interface.
3. Spring, which was utilized for backend development, and IntelliJ served as the integrated development environment for creating the backend code.
4. Postman, which was used for testing the web API.
5. MySQL, which was utilized to retrieve queries from the database.

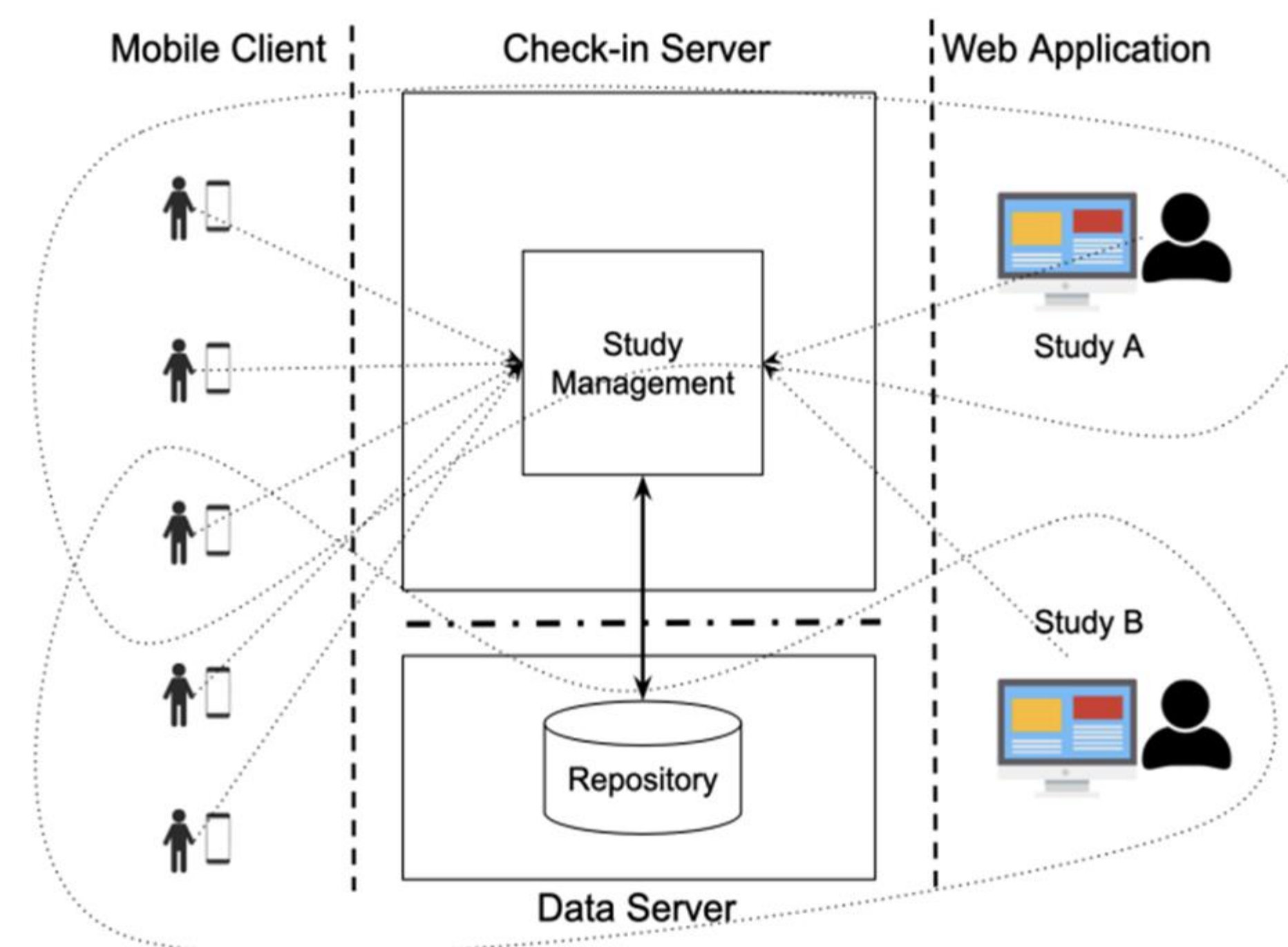
ACKNOWLEDGEMENT

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CURRENT SYSTEM

Currently, the system features a two-pronged approach for user interaction: a mobile application constructed using Flutter, and a web application created using Java Web Toolkit. On the administrative end, a standalone web application has been built utilizing React.js, SASS, axios, and Spring Boot, along with a MySQL backend server. This administrative system possesses the capability to process login requests, provide authentication, access the database for loading studies and surveys, and display the data in the form of charts. Additionally, the Flutter application is equipped to communicate with the server and efficiently store user data in the database. Furthermore, it provides effective data visualization using graph-based representations, thereby making it more user-friendly.

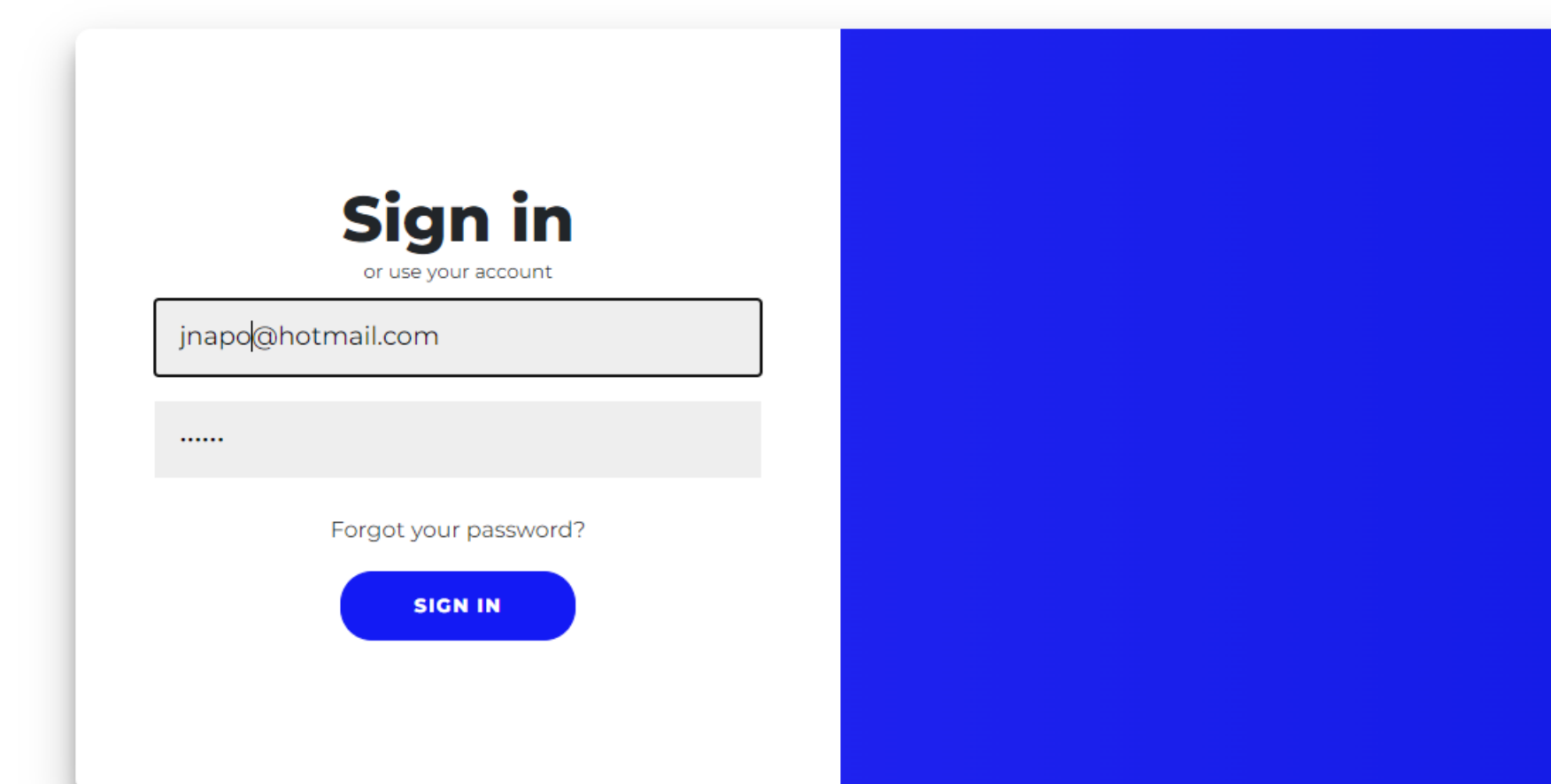
SYSTEM DESIGN



SUMMARY

In summary, our team has created a robust full-stack application that simplifies research studies and provides a multitude of functionalities, including user data processing and health-based study tracking. Our development cycle encompassed planning, development, deployment, and security, with an emphasis on data visualization for diverse studies and catering to end-user requirements while building the mobile app. Furthermore, we closely monitored the system post-deployment and identified future areas of improvement to sustain the project's triumph.

SCREENSHOTS



Studies						
Select Version: 1						
#	Question	1 - 2022-05-24 responses: 130	Type	Child Trigger	ParentId	Show Graph
1	Please enter your gender.	2 - 2022-05-24 responses: 5	selection			Expand
2	Please specify your gender.	3 - 2022-05-24 responses: 8	text	Other (please specify)	1	
3	How would you describe yourself?	4 - 2022-05-25 responses: 2	choice			Expand
4	Please specify your previous answer.	5 - 2022-05-25 responses: 4	text	Other (please specify)	3	
5	What is your age?	6 - 2022-05-25 responses: 0	selection			Expand
6	Are you:		selection			Expand
7	What is your native language?		text			
8	What is your profession?		selection			Expand
9	Please specify your profession		text	Other (please specify)	8	
10	What is your rank/title?		selection	Law enforcement officer	8	Expand

Verification

The verification process commenced by scrutinizing the parsing of data in the administrative application to verify that the information is exhibited accurately, and that the SQL queries are performing as intended.

REFERENCES

<https://legacy.reactjs.org/docs/react-api.html>
<https://spring.io/guides/tutorials/rest/>