Spring Boot (Java) and React (Javascript)

It's a office reservation system. The requirements outline a comprehensive system for managing team schedules and room reservations, utilizing React for the frontend and Java for the backend. The implementation will leverage a CI/CD platform with GitLab CI to ensure continuous integration and delivery. Unit testing is essential, with frameworks like JUnit for Java being employed to ensure code reliability.

Code quality must be maintained through tools like SonarQube, along with linting tools to enforce coding standards. Before starting implementation, wireframes and mockups of the user interface should be created to guide the design process.

The system will provide an overview of team presence, indicating who is present, where, and when. Team management functionalities will allow administrators to manage team members effectively, while users can specify their work location and indicate part-time schedules with options for leave days.

The reservation system will support both logged-in and non-logged-in users, featuring a login screen without registration options. Logged-in users will have access to pending notifications, room management, and reservation capabilities, including creating, canceling, and recurring reservations, along with a waiting list for full rooms.

An admin portal will allow the creation of users and linking them to specific teams, ensuring manageable teams even when a manager is unavailable. The architecture should follow a layered approach, and separate the frontend and backend components. Finally, a Minimum Viable Product (MVP) approach should be adopted for sprint delivery, focusing on essential features to gather early user feedback for future development.

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Level of education: Bachelor

Impact on society

What impact is expected from your technology?

What is exactly the problem? Is it really a problem? Are you sure?

After the pandemic, remote work became more common, and even as things returned to normal, many employees continued working from home. In this company, a hybrid work model is in place where employees alternate between working from home and coming to the office. However, the office doesnt have enough space to accommodate everyone at once. As a result, the company wants to implement an office reservation system to allow employees to easily schedule their in-office days and enable team managers to track attendance more effectively.

The real issue they are trying to solve is the lack of organization and the absence of a system to manage this hybrid approach efficiently. Im confident this is a genuine problem because if it wasnt, they wouldnt be requesting a software solution to address it.

Are you sure that this technology is solving the RIGHT problem?

Yes. Because we are doing the web-app asked to solve exacly the problem that the client has.

How is this technology going to solve the problem?

Automating and making it easiar for workers in a company to schedule and reserve their hours to work presentially in the office. That way the admins and team manager can have a overview of the reservations as well.

What negative effects do you expect from this technology?

None.

In what way is this technology contributing to a world you want to live in?

It will help workers to organize theirselves better, and have more time on the end of the week to spend with their families and friends.

Now that you have thought hard about the impact of this technology on society (by filling out the questions above), what improvements would you like to make to the technology? List them below.

- Enhanced User Experience (UX):

Make the system intuitive with a user-friendly interface, allowing employees to easily book and modify their office schedules.

Include features like notifications, reminders, and calendar integrations to streamline the booking process.

- Dynamic Space Allocation:
Implement algorithms to automatically allocate office space based on the number of people scheduled for a specific day, optimizing the use of available space and preventing overbooking.
Introduce real-time updates on office availability to provide immediate feedback on space capacity.

- Team Collaboration Features:
Allow team managers to coordinate schedules more effectively by enabling group bookings for collaborative work.
Add a feature to suggest optimal days for teams to work together in the office based on individual availability.

Hateful and criminal actors

What can bad actors do with your technology?

In which way can the technology be used to break the law or avoid the consequences of breaking the law?

While the office reservation system is designed to facilitate efficient workspace management, it is crucial to consider the potential for misuse. Addressing these risks through robust security measures, clear policies, and ethical guidelines is essential to prevent illegal activities and protect users' rights and well-being. Implementing strict access controls, monitoring for suspicious behavior, and educating users about privacy and security best practices can help mitigate these risks

Can fakers, thieves or scammers abuse the technology?

Yes, fakers, thieves, and scammers can potentially abuse an office reservation system in various harmful ways:
Impersonation and Fake Accounts, Disruption and Sabotage,Creating Societal Unrest,Invasion of Privacy and Data Exploitation, Addressing these risks through robust security protocols, monitoring for unusual activities, and establishing clear policies regarding acceptable use is crucial in preventing abuse. Additionally, fostering a culture of respect and accountability within the organization can help mitigate these risks and promote a safer and more positive work environment.

Can the technology be used against certain (ethnic) groups or (social) classes?

The potential for an office reservation system to be misused against certain (ethnic) groups or (social) classes highlights the need for careful consideration in its design and implementation. To prevent discrimination, organizations should focus on creating inclusive policies, employing fair algorithms, and ensuring that the technology accommodates the diverse needs of all users. Additionally, fostering a culture of respect, equity, and inclusivity is essential in mitigating the risks associated with such technology. Regular audits of system usage and outcomes can also help identify and address any biases or discriminatory practices that may arise.

In which way can bad actors use this technology to pit certain groups against each other? These groups can be, but are not constrained to, ethnic, social, political or religious groups.

The potential for bad actors to use an office reservation system to exacerbate divisions between groups is significant. By manipulating data, exploiting biases, and inciting tensions through targeted communication, these individuals can polarize society and create conflict. To mitigate these

risks, it is essential to implement robust security measures, maintain transparency in data handling, and foster a culture of inclusivity and respect within organizations. Regular assessments of the system's impact on user interactions can also help identify and address any emerging issues related to division and discrimination.

How could bad actors use this technology to subvert or attack the truth?

Creating Fabricated Reservations,Spreading Misinformation through Data Manipulation,Exploiting User Trust, Manipulating Resource Availability

Now that you have thought hard about how bad actors can impact this technology, what improvements would you like to make? List them below.

Robust User Authentication and Access Control,Data Integrity and Monitoring,Anomaly Detection Algorithms,Transparent Reporting and Analytics,Communication Controls,Anonymous Reporting Mechanism

Privacy

Are you considering the privacy & personal data of the users of your technology?

Does the technology register personal data? If yes, what personal data?

Yes, it registers the e-mail and password of the users of it.

Do you think the technology invades the privacy of the stakeholders? If yes, in what way?

No.

Is the technology is compliant with prevailing privacy and data protection law? Can you indicate why?

Yes. Because we don't ask nothing more of data besides an email adress and a password. So, we don't collect unecessary information that can have a risk to be leaked.

Does the technology mitigate privacy and data protection risks/ concerns (privacy by design)? Please indicate how.

I think the risk is really low, beacuse the software is only for the company, not beeing open to the public, so the data should not be acess by outsiders, most of them won't even know the software exists

In which way can you imagine a future impact of the collection of personal data?

We don't collect sensitive information, and for the app to work we don't need sensitive personal data, so: minimum impact.

Now that you have thought hard about privacy and data protection, what improvements would you like to make? List them below.

Encryption of passwords and names for outsiders, only visible to admins, to avoid data leaks

Human values

How does the technology affect your human values?

This category is not applicable for this technology.

Stakeholders

Have you considered all stakeholders?

This category has not been filled yet.

Data

Is data in your technology properly used?

This category has not been filled yet.

Inclusivity

Is your technology fair for everyone?

This category is only partial filled.

Will everyone have access to the technology?

no, because the application is only beneficial for the company

Does this technology have a built-in bias?

no

Does this technology make automatic decisions and how do you account for them?

our current technology is not going to be automatic since the user can assign and reserve a spot themselves, if we do the Schedule for work then yes we do automatic scheduling but it is not based because the application doesn't look directly at a person but more towards the rules that set when they can work and going to be standard procedures

Is everyone benefitting from the technology or only a a small group? Do you see this as a problem? Why/why not?

This question has not been answered yet.

Does the team that creates the technology represent the diversity of our society?

This question has not been answered yet.

Now that you have thought hard about the inclusivity of the technology, what improvements would you like to make? List them below.

This question has not been answered yet.

Transparency

Are you transparent about how your technology works?

This category is not applicable for this technology.

Sustainability

Is your technology environmentally sustainable?

In what way is the direct and indirect energy use of this technology taken into account?

The direct energy use is managed by optimizing server and device processes, while indirect energy use considers the environmental impact of upstream infrastructure like data centers. Hosting on energy-efficient, renewable-powered servers reduces the overall energy consumption

Do you think alternative materials could have been considered in the technology?

Since our project is software-based, alternative physical materials may not apply directly. However, the infrastructure supporting our technology, like servers, could utilize more eco-friendly options, such as data centers powered by renewable energy, which would reduce environmental impact.

Do you think the lifespan of the technology is realistic?

Yes, the lifespan of the technology seems realistic if it is designed with scalability and regular updates in mind. By ensuring easy maintenance, compatibility with evolving technologies, and providing updates, we can extend the life of the system and reduce the need for complete overhauls or replacement. This also minimizes the environmental impact by preventing early obsolescence. Though, it wouldn't be us that are maintaining it

What is the hidden impact of the technology in the whole chain?

The "hidden impact" of your technology includes both upstream and downstream effects that aren't immediately visible. Upstream, it involves the energy and resources used by suppliers (like data centers and server infrastructure),while downstream impacts include how users interact with and eventually dispose of the technology. For instance, how much energy is used during the technologys lifecycle and whether it contributes to e-waste after its usage ends are key considerations

Now that you have thought hard about the sustainability of this technology, what improvements would you like to make? List them below.

Optimize Energy Use: Reduce energy consumption by optimizing server and client-side processes.
Ensure Compatibility: Design the software to be compatible with a range of devices to prevent frequent hardware upgrades and reduce e-waste.
Encourage Lifespan Extension: Provide clear documentation for the company

to maintain and update the software, extending its lifespan.

Future

Did you consider future impact?

What could possibly happen with this technology in the future?

In the future, this technology could either be maintained and enhanced by the company, ensuring its relevance, or become outdated if not regularly updated. Technological advancements could also lead to its expansion or replacement, depending on how well it adapts to evolving needs.

Sketch a or some future scenario (s) (20-50 years up front) regarding the technology with the help of storytelling. Start with at least one utopian scenario.

The technology has evolved into a core system for smart, eco-friendly workspaces. Companies worldwide use it to manage hybrid teams with AI-driven insights, optimizing energy use in office spaces. Fully renewable-powered data centers support its operations, and it adapts to users' needs seamlessly. Employees enjoy efficient, well-balanced work environments, improving both productivity and well-being, while reducing environmental impact.

Sketch a or some future scenario (s) (20-50 years up front) regarding the technology with the help of storytelling. Start with at least one dystopian scenario.

he technology is neglected and outdated, becomes vulnerable to security breaches. Offices struggle with inefficiencies, and the system contributes to e-waste due to a lack of maintenance, straining resources and creating environmental issues.

Would you like to live in one of this scenario's? Why? Why not?

For utopian scenario, we think it's a nice thing to be able to manage teams using a well developed application, but I think there are hundreds of other tools nowadays, so it wouldn't matter a lot

For the distopian scenario, I would just move on to other tools.

What happens if the technology (which you have thought of as ethically well-considered) is bought or taken over by another party?

If the technology is bought or taken over by another party, its ethical principles may be compromised. The new owners could prioritize profit over ethical considerations, such as privacy, inclusivity, or sustainability. They might use the technology for purposes not originally intended, such as invasive data collection or limiting access based on social biases.

Alternatively, the new party could enhance its ethical design by investing in more sustainable practices or improving user transparency, depending on their values and objectives.

Impact Improvement: Now that you have thought hard about the future impact of the technology, what improvements would you like to make? List them below.

Strengthen Privacy: Ensure better protection of user data.
Increase Flexibility: Make the system adaptable for future updates.
Improve Sustainability: Optimize energy usage to reduce environmental impact.
Maintain Ethics: Set guidelines to preserve ethical usage under new ownership.