Cloud Computing Workshop with AWS

Project Proposal Document

This document will describe the product in terms of usage and design. Includes the project description, expected components, and planned work (estimated length: 5-10 pages). The document will be written in English. The specification document must be submitted on GitHub for all workshops by **December 15, 2024**, along with a link to the GitHub repository and the project registration on the workshop's website.

Project Information

Project Name:
Fillit

Student Names:
David Weiss, Ben Cohen, Izabella Svavolya Rudy

Project Track:
Applicative

1. Background

Provide a brief introduction to the field of study or technology your project is related to. Include relevant historical and current context.

The project is related to the cloud technology field, specifically to AWS cloud provider – the pioneer and the biggest (to date) cloud provider in the world. Today AWS is leading with the most advanced cloud technology services and a vast variety of services. Cloud computing can be traced back to the 1960s, while AWS was created in 2006 with the launch of S3 and EC2 services. In general, cloud computing refers to the delivery of computing services such as storage, processing power, networking, databases, and software over the internet, rather than relying on local servers or personal devices. It allows users and businesses to access and manage resources on-demand, offering flexibility, scalability, and cost-efficiency. With cloud services, data and applications can be stored and accessed remotely, enabling collaboration, reducing the need for physical infrastructure, and providing a more agile environment for innovation and growth.

2. Problem Statement

What is the problem you are trying to solve?
Describe the specific problem or challenge your project aims to address.

Our idea started with the understanding that there is a lack of communication through the process of filling shifts in organizations, especially non-profit ones. inspired by our personal experience as volunteers in Magen David Adom.. In most cases the process of filling in shifts is conducted via WhatsApp or Facebook groups, which doesn't always provide an immediate solution to the issue of a currently absent worker/volunteer. Additionally, this kind of approach is inefficient, complex, and disorganized, hence requires constant intervention from the managers.

3. Proposed Solution

Describe briefly, in high level, your presumed solution:
Outline your initial approach to solving the problem stated above.

Our solution is designed to address the challenge of efficiently filling shift spots within organizations by focusing on two core aspects: an enhanced user experience and a robust, scalable and adaptive technological framework.

Efficient and Intuitive Shift Management

The platform aims to streamline the process of managing shifts by offering a clean, user-friendly interface (UI) and a seamless user experience (UX). The focus is on simplicity and ease of use, enabling both volunteers and coordinators to quickly fill shift spots with minimal effort. Features such as real-time notifications, integrated calendars, and personalized preferences will ensure that users can respond promptly and effectively, eliminating unnecessary back-and-forth communication.

Scalable and Customizable Technology

Leveraging AWS services, our solution provides a scalable, cloud-based backend infrastructure capable of supporting organizations of varying sizes and complexities.

Customizable Templates:

The platform will feature a generic server and frontend, with customizable templates that allow any organizations to tailor the app to their specific needs by simply filling out a user-friendly configuration form. This ensures flexibility and ease of adoption for a wide range of use cases, from emergency services like Magen David Adom to other non-profit or community-focused organizations.

Smart Features for Optimized Operations

The platform will include intelligent features such as automated shift-matching, priority-based alerts, and data-driven personal insights such as analytics of your progress as a volunteer and more. These tools will help organizations ensure shifts are filled quickly and effectively while also providing valuable analytics to inform better planning and decision-making.

Multi-Platform Accessibility

Designed with a universal accessibility in mind, the solution will be available across mobile, tablet, and desktop platforms.

This approach not only addresses the immediate need for an efficient and user-friendly shift management system but also delivers a scalable and adaptable solution that organizations can rely on for long-term use. By combining an intuitive design with advanced cloud technologies, the platform provides a robust, modern solution to a common operational challenge we faced as volunteers and believe others felt as well.

4. Alternative Approaches & Market Research

Are there other approaches?
Discuss any alternative methods or solutions that exist for addressing the same problem.

Analyze existing solutions in the market and highlight what sets your project apart.

There are several solutions to this problem. The most common one is to hire an administrator who performs the function of a scheduler. This approach is outdated and expensive. On the other hand, there are several online platforms that resolve this issue:

Magen David Adom currently relies on Google Sheets to manage shift updates, but this method does not provide an efficient way to notify volunteers of last-minute shift vacancies. There is an app called Shift Organizer, but it is plagued with bugs and does not meet the organizations' needs. This makes it difficult to ensure smooth and effective communication with volunteers when a shift is left unfilled.

There are more profit-oriented online application solutions that solve this issue such as Monday, Jira, and Slack. However, those applications are meant to solve a broader number of problems and aren't cost-free.

6. Innovation

What is our project renewing?
Explain any novel aspects or innovations your project brings to the field or problem area.

The platform will include intelligent features such as automated shift-matching, priority-based alerts, and data-driven personal insights like analytics of volunteer progress and performance. It will also offer an AI-powered assistant box to provide quick help and recommendations, a chat feature for seamless communication between volunteers, and an integrated map highlighting "activity" spots to help volunteers locate their assigned areas easily. Furthermore, the system will support a high level of customization such as a generic form for coordinators to fill, allowing organizations to tailor the platform to meet their specific operational needs. These tools collectively ensure that shifts are filled quickly and effectively while providing organizations with actionable analytics to enhance planning and decision-making.

7. Target Audience

Who are the expected users of the application?
Identify and describe the primary users or beneficiaries of your project.

Non-profit organizations and volunteers seeking to fill last minute shifts, as well as companies and small businesses and their workers and managers looking to improve their shift organization.

8. Features and User Flow

What will be the main features and flows of the (different) user(s)?
Detail the key functionalities of your project and how users will interact with them.

1. Map of "activities": The project will incorporate Google Maps integration, allowing users within the same organization to identify locations where additional manpower is needed. For example, in the context of MDA (Magen David Adom), a map displaying ambulance station locations will be provided. Volunteers will be able to view areas with staffing gaps, facilitating more efficient resource allocation.

2. Chat: To enhance communication efficiency between users and coordinators regarding shift schedules, an online chat feature will be implemented.

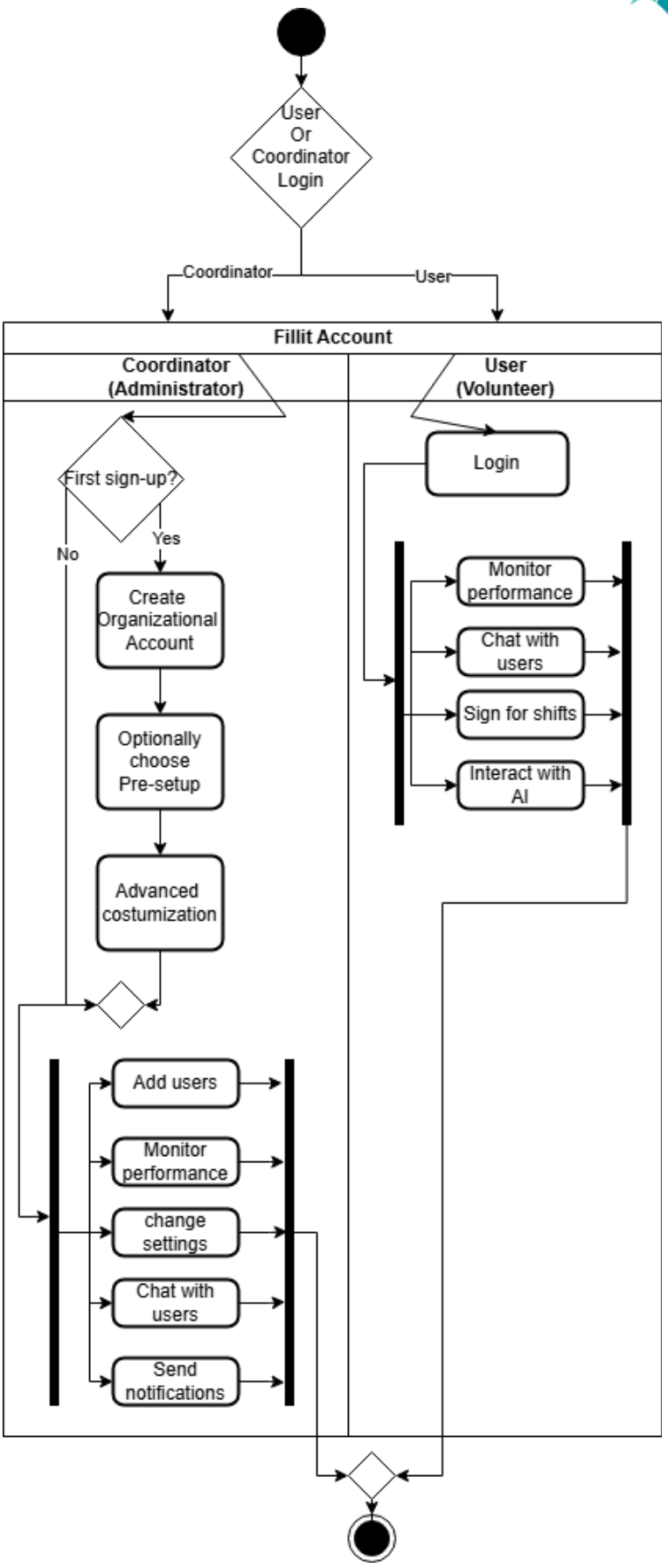
3. Interaction with the schedule calendar: A calendar feature will be integrated, enabling users to view the shift schedule and submit their time preferences. This functionality will adhere to the limitations and settings defined by the organization.

4. AI chat box: A generative AI chatbox will be incorporated to assist users and coordinators in interacting with the application. For instance, the AI will be capable of analyzing the schedule and providing summaries of staffing gaps that need to be addressed.

5. Start form to adjust the system to organization need: To ensure a user-friendly interface, a startup form will be introduced during the registration of a new organization. This form will allow coordinators to select from platform presets and customize settings to meet the specific needs of their organization.

6. Progress analytics: As stated above, the platform will provide data-driven personal insights, including analytics on volunteer progress and performance. This feature will enable both users and coordinators to track achievements, identify areas for improvement, and foster growth.

7. Push notifications: The platform will include push notification functionality to ensure timely communication with users. Notifications will be used to remind volunteers about upcoming shifts, alert them to schedule changes, and notify them of urgent updates or gaps that need to be filled. This feature will help improve responsiveness and keep users engaged with the platform.


User Or Coordinator Login
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Coordinator (Administrator)
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First sign-up?
Yes
No
Create Organizational Account
Optionally choose Pre-setup
Advanced costumization
Add users
Monitor performance
change settings
Chat with users
Send notifications
Login
Monitor performance
Chat with users
Sign for shifts
Interact with AI

9. External Dependencies

Are there any external dependencies?
List any external resources, libraries, or services your project depends on.

Boto3, GenAI (OpenAI - ChatGPT), Google maps API, Google API's (Calendar), Socket IO, SQL, React.

Using AWS tools such as Amplify, DynamoDB, RDS, EKS, API Gateway, SES, SNS, Route53 (domain purposes) and CI/CD Tools like Jenkins/AWS code pipeline in order to follow best practices of full stack deployments.

10. Deliverables

The project deliverables (i.e., mobile application, web site etc...):
Specify the tangible outputs you expect to produce by the end of the project.

Designed with a universal accessibility in mind, the solution will be available across mobile, tablet, and desktop platforms.

Submission Details

GitHub Link:
https://github.com/Benco351/Fillit

Workshop Website Registration Link:
[Provide the link to the project registration on the workshop website]

Additional Notes

[Use this space for any additional notes or information relevant to your project proposal]