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S2



Hire

Conceptual Design Documents

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SoftStart

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Glossary

iOS The mobile operating system created by Apple for the iPhone and iPad product lines. 22

REST The software architectural style used for the world wide web, more simply how platforms present data to be consumed on the internet. 23

Android The open source mobile operating system created by Google for smartphones. 22

API Application Programming Interface. 23

Client A system consuming files, such as webpages, over the internet. 22

Database An organized collection of data that can be easily altered and accessed. 22

Digital Ocean A reliable cloud based server provider,
<https://www.digitalocean.com/>. 22

Front end The portion of the application that the user interacts directly with, e.g., a website or mobile app's interface. 22

Horizontal scaling A strategy for allowing a platform to handle more traffic by adding more servers. 22, 23

iOS iPhone Operating System. iii, 22

PayPal The largest online payment system provider, <https://www.paypal.com>. 23

Relational A digital database whose organization is based on the relational model of data. 23

REST Representational State Transfer. iii, 23

Scalable A scalable system is one where performance does not suffer as the userbase grows. 23

server A computer serving files, such as webpages, over the internet. iii, 22

strongly typed language A programming language is more likely to generate an error if the argument passed to a function does not closely match the expected type. 23

Executive Summary

SoftStart was given the task of developing and implementing an application that allows users and contractors to find each other locally. Ability provided us with requirements surrounding this task, and *SoftStart* moved forwards in creating an RFP that would accurately convey the requirements for the project.

Here at *SoftStart* we strive to make the best software in the world. We're looking forward to bringing the Hire platform into reality. This report details the Conceptual Design that we have for the Hire application. The three main sections of the report are,

User Interface Interface Mockups of the Hire Interface.

Use Cases How users, both hires and hirees, will interact with the Hire platform.

Data Management Where the data is coming from and how it will be used within the application.

This report should provide a clear picture of our plans for the Hire platform going forward. *SoftStart* is excited to make Hire a reality.



1 Introduction

This report details *SoftStart's* formal high level overview of the Hire Application. This document will outline our plans for the user interface, data management and design for Hire.

Section 2 will cover the user interface that will be presented to users. Section 3 will outline some of the use cases that will be commonly performed in the application. Lastly, section 4 will give insight into the hardware we are building for, and the expected performance of the application.

2 User Interface

At *SoftStart* we think that the most important part of an interface is not what you put in, its what you keep out. Our interfaces are designed to be minimal and clean while allowing the user to reach their intended action in minimal time.

The following interface prototypes (mockups) showcase the core interface layouts for Hire. Additionally the following features are included in the mockups.

Hire Board A board that contains all of the jobs Hirer's have posted around you.

Hire Map A map which contains way point representations of the jobs in the Hirer Board. Clicking on a way point reveals the job and it's payout. Way points are color coded using a legend ranging from manual labour to desk work.

Hirer/Hiree Feedback System Through the rating system, hirers and hirees can rate each other and give feedback for future job seekers to look over when making their decision.

Social Media Authentication Authentication with Facebook, Google, and Twitter APIs.

HireChat An integrated chat service that allows hirers and hirees to converse seamlessly over the Internet to determine if adequate service can be provided.

Escrow Payment System When a hirer and a hiree have agreed on a task, the hirer will escrow a payment to the application, which will hold funds until the task has been completed by the hirer.

Photo-Acknowledge Confirmation When hirees are finished their task, they take a picture of their completed activity. The hirers will then confirm the task and payment will leave escrow.

2.1 Authentication

A user's credentials will be cached on the devices however on first launch they will have to log in (figure 1b) or sign up (figure 2) which will be done from the splash screen (figure 1a).

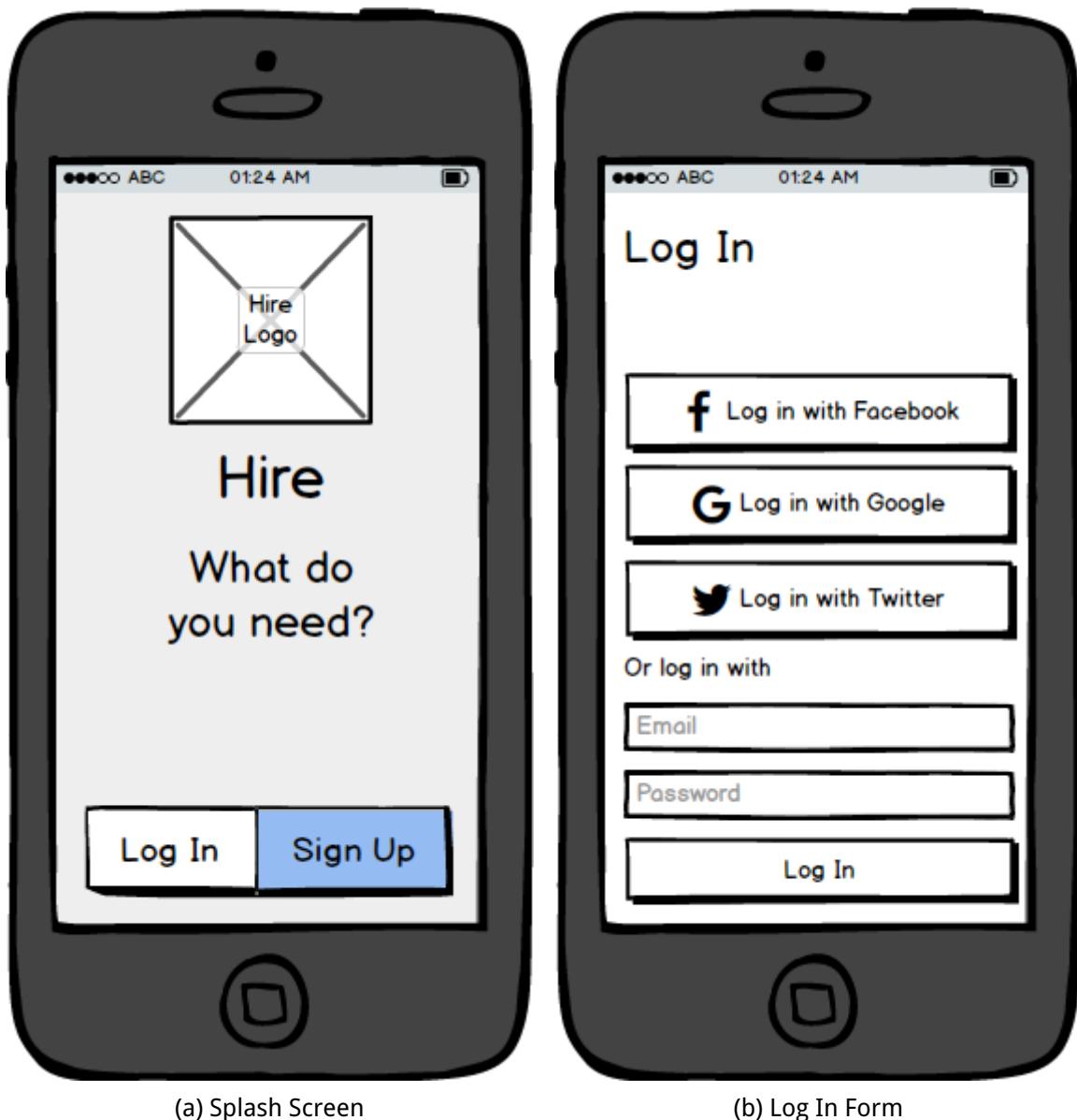


Figure 1: Authentication Process

The Sign Up screen will offer to connect to a social media account (figure 2a) before having the user fill out a sign up form as shown in figure 2b.



Figure 2: Sign Up Process

2.2 Job Board

Jobs will be listed for hirees in the job Board tab (figure 3) where the jobs can be viewed as either a list (figure 3a) or on a map (figure 3b). Viewing a job will allow a hiree to make an offer for how much they would be willing to complete the job for (not shown).



Figure 3: Job Listings

2.3 Jobs

Jobs that the user is currently interacting with, either as a hirer or hiree will be listed in the Jobs tab shown in figure 4a. From the Jobs tab the user can also create new jobs as shown in figure 4b.

The image shows two smartphones side-by-side. Both phones have a dark grey background and a white status bar at the top displaying signal strength, battery level, and the time (01:24 AM).

(a) Jobs Tab: This screen is titled "Your Jobs" and "Current Jobs". It features a "New" button in the top right corner. Below it is a table with two rows. The first row has columns for "Job" (Help Infiltrate Meeting), "Status" (Active), and "Frodo Baggins". The second row has columns for "Job" (Help get to Rivendell), "Status" (Review), and "Frodo Baggins". A "Past Jobs" section follows, containing a list of five past tasks with their descriptions, dates, and amounts: "Do Gardening" (12\$), "Do Landscaping" (24\$), "Butter Some Muffins" (2\$), "Do Gardening" (12\$), and "Do Gardening" (22\$). At the bottom are three buttons: "Board", "Jobs" (which is highlighted in blue), and "Profile".

(b) New Job Form: This screen is titled "New Job" and includes a "Cancel" button in the top right. It contains several input fields: "Job" (e.g. Walk my dog), "Suggested Price" (e.g. \$10), "Location" (123 West 1st Ave with a location pin icon), "Time" (By the end of the day), and "Notes" (e.g. My dog only likes people with red hair). At the bottom is a large "Create Job" button.

Figure 4: Jobs the User is Interacting With

Looking at an accepted job the user can see current information about the job including the agreed price, current status, and location as shown in figure 5a. From here the user can get directions to the job which will open in their selected maps application or chat with the corresponding hirer or hiree as shown in figure 5b. Once their done the job, they can also mark it as complete which is show in figure 6a.



Figure 5: An Active Job and Job Chat

When a user is ready to mark a job as complete they do so from the job screen. This is shown for a hiree in figure 6a. After the job has been marked complete payment is transferred and the user can leave a review as shown in figure 6b.



Figure 6: An Job being Completed and Reviewed

2.4 Profile

The user can view and edit their Hire profile on the Profile tab as shown in figure 7a. From here they can



Figure 7: The Users Profile

3 Use Cases

As we hope to make the application beneficial and approachable for a wide range of individuals, the target age for our application are people from ages 18 - 75. Individuals seeking work are expected to be in the ages of 18-60, while those looking to hire others are expected to be in the range of 25-75. Users may be either male or female. We also wish to target unemployed users who are in need of work and income.

3.1 Environments

Hire will focus on two main environments,

At Home Either around the house or at work, wherever the user is settled.

On the Go Travelling, commuting or just out and about, wherever the user is going.

In both these environments, Hire will be easy to use and readily available for hirers and hires.

3.1.1 For Hirers

When a hirer is either at home or at work, Hire will provide accessible and contextual information. The suggestions for both jobs and hires will tailor themselves to the location of the user and their context. For example, at work around lunch time a suggestion might be lunch delivery with the option to drop it off with reception. Hire will remember previous contexts like where you like your coffee from.

When a hirer is out on the go, perhaps traveling in a foreign city or commuting, Hire will provide contextual suggestions based on your location. This could be suggesting food delivery in the area or someone to grab you coffee as you drive between meetings.

3.1.2 For Hires

When a hiree is at home, Hire will provide situational notifications of jobs in their area. The information made available to the hiree will be tailored based on schedule, previous experience, and interests. The hiree will have control over these settings so they can be notified when a job appropriate for them is available.

When on the go, a hiree will have the option to be made aware of local jobs that relate to their skill sets. Hires could also be made aware of possible tasks when during a trip or a commute at their discretion. For example a hiree could be notified of a food delivery on their way home from work.

3.2 Scenarios

The following section details two example interactions between hirer or hires and the Hire platform. The two scenarios are,

Hiring from home Sarah would like some help unclogging her shower drain which is full of hair.

Getting hired on the go Andy gets notified about a job to pick up a hirer's dry cleaning on his way home from work.

3.2.1 Hiring from Home

Sarah's roommate has complained about the shower not draining and now Sarah is tasked with cleaning out the drain. Sarah tries cleaning it with a drain snare but quickly realizes she doesn't have the stomach for it.

Sarah decides to contact someone for help. She grabs the Hire app from her devices app store. Being a first time user Sarah is prompted to sign up upon opening the app. She chooses to create an account using her Facebook account and the app pulls her details from Facebook. She is then prompted to add a credit card. The interface provides either the option to fill in credit card details or to read the details off her credit card using the camera. After choosing the latter Sarah is brought to the home screen where the on boarding wizard offers to help her create her first job.

Sarah fills out the fields for job description, location (inferred by the app), offer amount, notes, and time frame. Sarah's job is called "Clean out my shower drain", she gives it a time frame of a couple hours and an offer amount of \$20. In the notes Sarah mentions that she already has a drain snare.

About twenty minutes after posting, Sarah receives a notification that Joe, a hiree, has offered to do her job but for \$30. After reviewing Joe's hiring history and reviews, Sarah agrees and a hold is placed for the \$30 on her credit card. Joe sends a message through Hire to Sarah asking if she has any Draino before he comes over. Sarah responds that she does and sends Joe her address.

Joe shows up a half hour later and gets started cleaning out the drain while Sarah watches TV in the other room. When Joe's done, he marks the job done on his phone and logs a picture with the app. Sarah is notified and also marks it as done which transfers the funds to Joe's PayPal. Joe leaves and a little while later Sarah is prompted to fill out feedback for Joe, she gives him five stars for his prompt service and cheerful attitude.

3.2.2 Getting Hired on the Go

Andy has about an hour left at his work when he gets a notification from the Hire app. Someone nearby would like their dry cleaning picked up and delivered and it's on Andy's route home from work. The job is offering \$15 and, after opening the notification, Andy accepts. He sends a message to Dan, the Hirer, saying he will drop the dry cleaning off in about an hour when he's off work. Dan responds and sends Andy the confirmation number and address to pick up the dry cleaning.

Andy gets off work and drives to the dry cleaners. He picks up the clothes and heads to Dan's place. He arrives and gives Dan the dry cleaning. On the way back to his car, Andy marks the job as done. Several minutes later he's notified that Dan did as well, and the

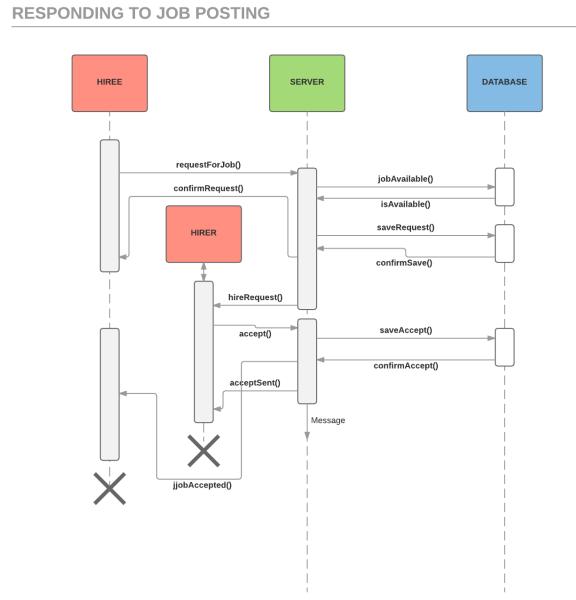


Figure 8: Responding to a posting

funds are deposited into Andy's PayPal account. Andy is offered the chance to offer feedback for Dan and gives him five stars for being prompt and responsive.

A couple weeks later, once Andy has been hired by a few different hirers, he gets a summary of his feedback in an email. He sees that he received all good feedback.

4 Data Management

Referring to figure n, we can see a high level overview of the application flow for Hire.

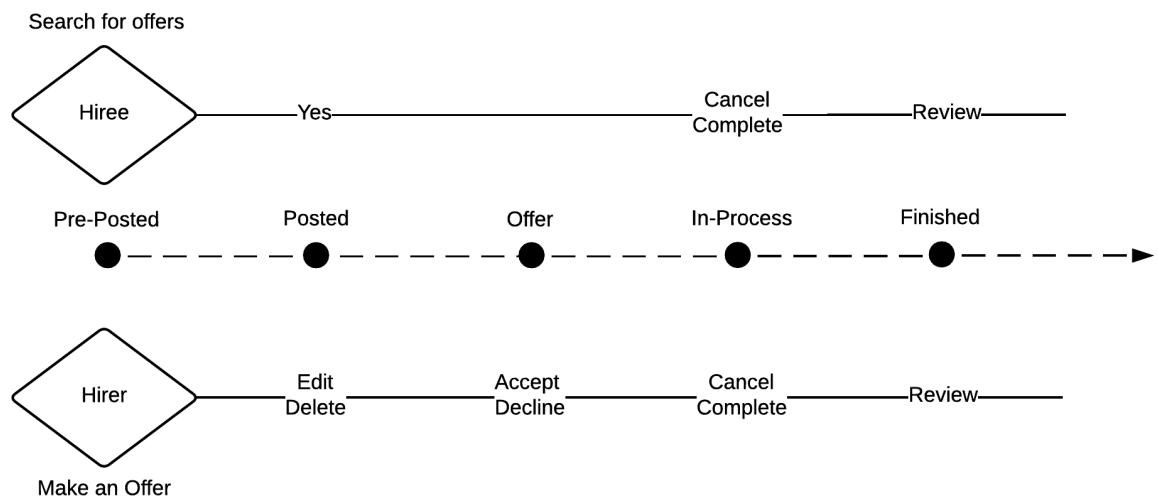


Figure 9: Application Flow

We can break out application flow into 5 distinct sections:

1. Pre-posting: The offer has yet to be posted.
2. Posted: The stage at which the job has been posted, but no offers have yet been made.
3. Offer: The stage at which the offer has been made, but the Hirer has not yet accepted or declined the offer.
4. In-Process: The job is currently in progress by the Hiree.
5. Finished: The job has been finished by the Hirer.

4.1 Implementation

Below are the implementations for our 5 distinct sections represented as UML diagrams.

4.1.1 Pre-Posted

For Hirers When a user saves a posting they will send a request to the server for validation of the job. A valid request will be sent to our database and saved. Upon a successful save the application will send back confirmation to the client of a successful posting as shown in figure 10.

For Hirees Hirees may simply search for jobs using the job board or job map. This process is represented in figure 11

4.1.2 Posted

The posted section indicates that a job has been posted, but an offer has not yet been accepted by the hiree.

For Hirers Hirers may edit or delete their jobs at this point. If additional information becomes relevant for the posting, Hirers can edit the posting to reflect this new information. If the server is no longer required (A outside party completed the contract, or simply the Hirer no longer wishes the service to be completed), the Hirer can delete a job if they desire. This interaction can be viewed in 12

For Hirees Hirees may make offers to hirers during the posted phase. The Hiree will fill out all the relevant information about the job, including their offer, and will send it to the Hirer. This process is outlined in figure 13. If the hirer is interested in the offer, the job will move to the Offer phase.

POSTING A JOB

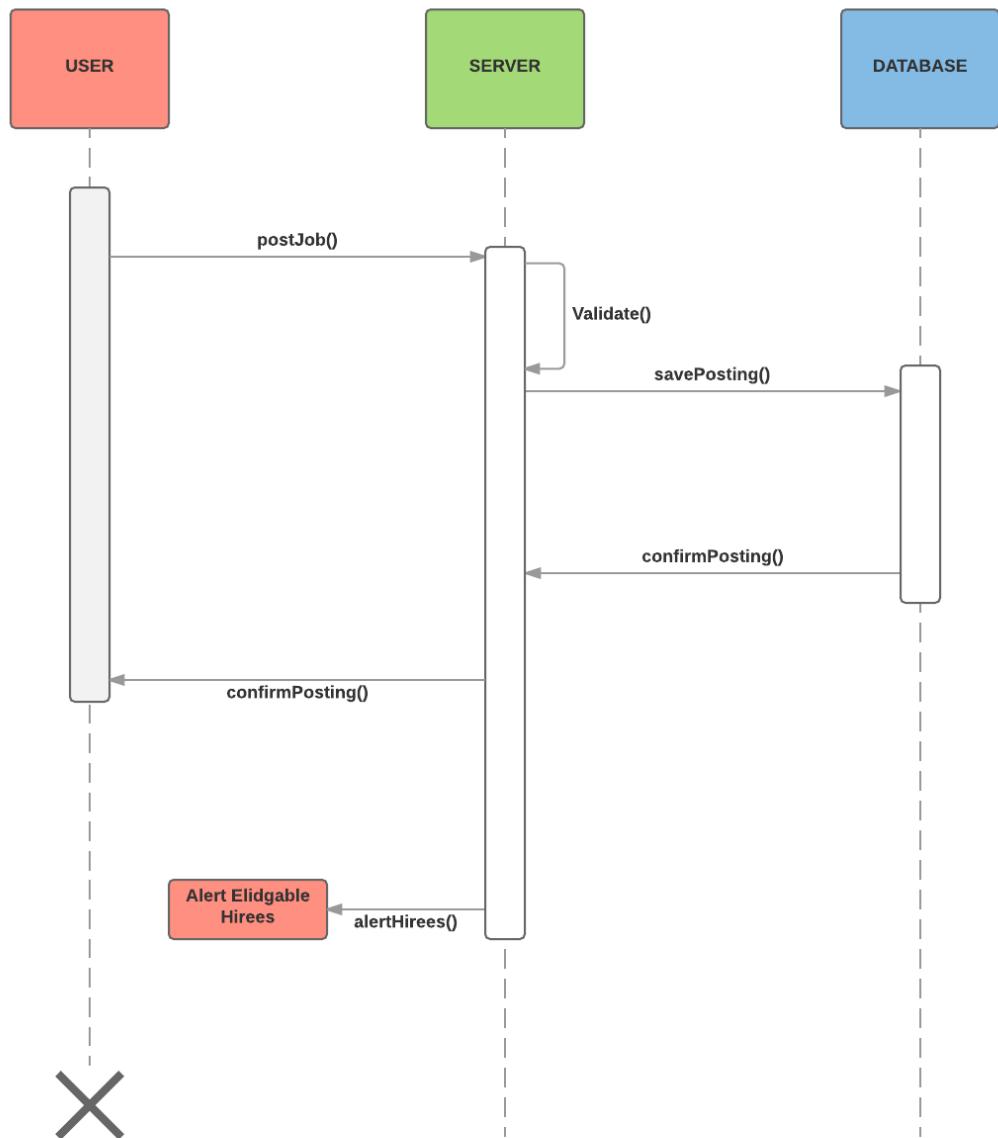


Figure 10: Saving a Posting Implementation

SEARCH FOR A JOB

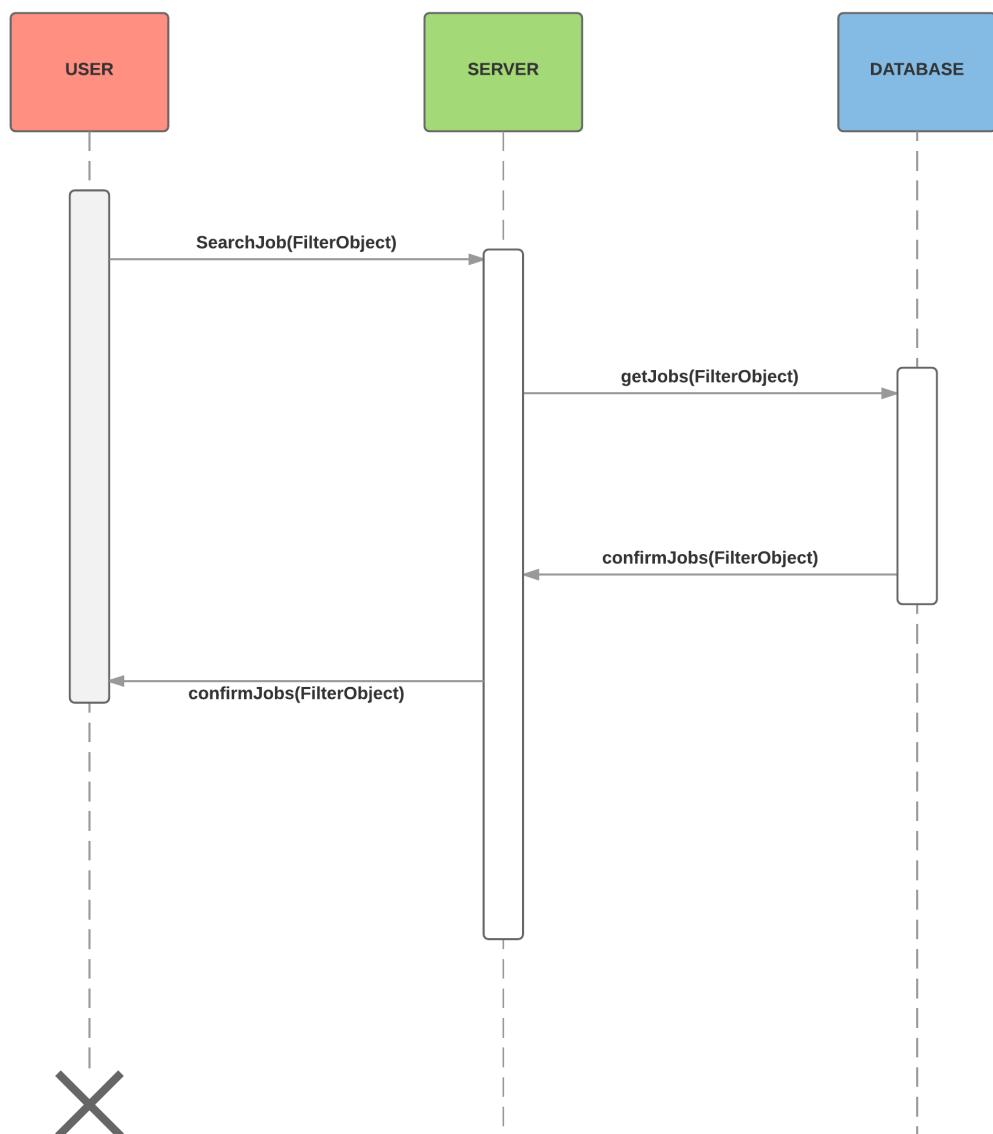


Figure 11: Searching Jobs

DELETE/EDIT JOB

Text

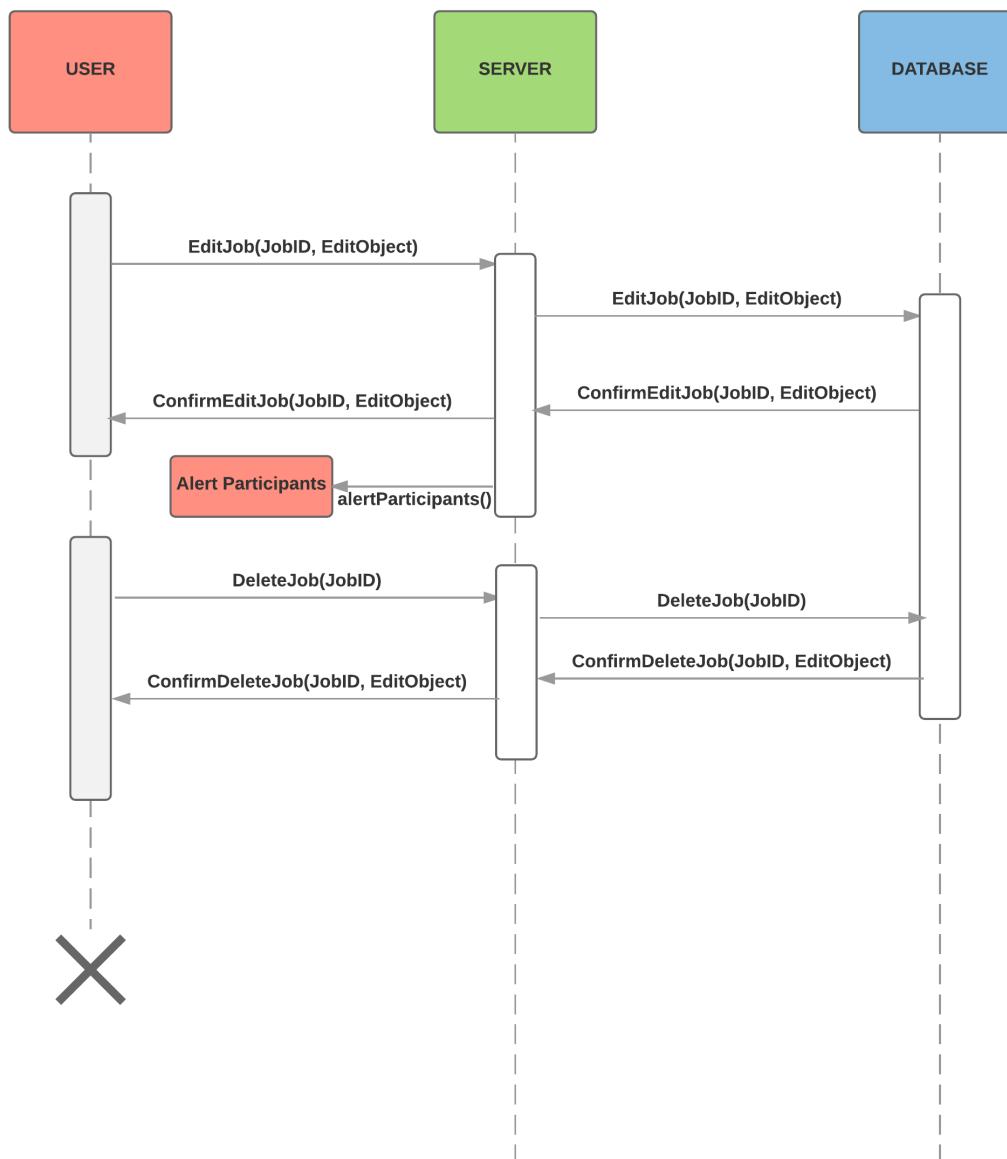


Figure 12: Edit or Delete a Job

MAKE AN OFFER

—Text

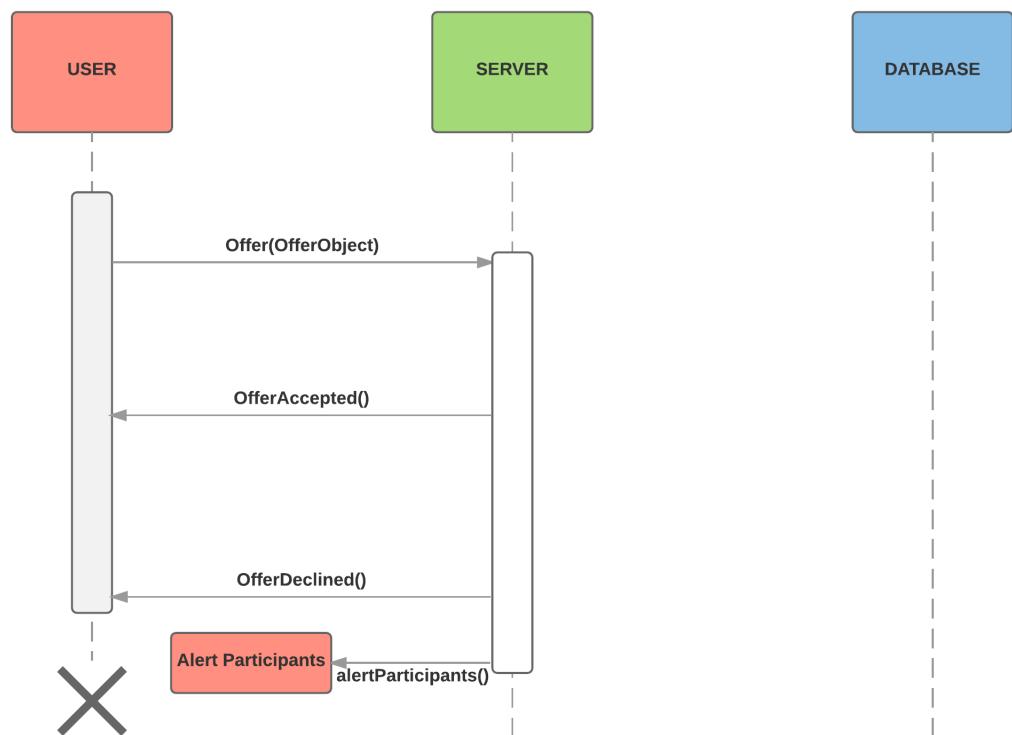


Figure 13: Make an Offer

4.1.3 Offer

The offer section serves only to satisfy the Hirer. During the offer section, Hirers are free to observe the offers of Hires as they come in. Once they select an offer that works for them, the job will move onto the in-process phase.

For Hirers At this point Hirers may accept or decline an offer. Accepting the offer closes the job posting, declining the offer deletes the offer using the offer ID. This interaction can be seen in the UML diagram in figure 14

4.1.4 In-process

The in-process stage signifies that the task is currently being completed by a Hiree. During this stage users have the ability to mark the option as completed, or cancel the job.

For Hirers Once the Hirer has seen the task to be complete, he will mark it as such in the Hire application. The Hirer also has the option to cancel anytime during the task for any reason. Upon cancellation, the Hirer must provide a reason for the cancellation.

Hires Like Hirers, Hires also have the option to cancel a job if they are not satisfied with their work environment. Upon completion, Hires will initiate a complete event. The complete event will prompt them to take a picture of their work to verify that the task has been finished. Once both the Hirer and the Hiree have completed the task, the job will move to the Finished phase.

4.1.5 Finished

This finished section exists to wrap all loose ends of the project up. During the finished section, Hirers and Hires will be able to rate each other. These reviews and interactions will exist as part of their user records for the remainder of the time they are on Hire.

For Hirers and Hires Once the task is finished, the posting is transferred to a finished stage. At the finished stage, the job is considered completed by all parties involved and the reviewing section opens up to both Hirers and Hires. Hirers have the opportunity to post information about the quality of work completed by the Hiree, and Hires have the ability to post about interactions with the hirer. At the end of the review process, both Hirers and Hires are asked to rank each other based on their experience throughout the entire process. Once ranked, other users will be able to see this information about the Hirer/Hiree when making future decisions about who to hire.

ACCEPT/DECLINE AN OFFER

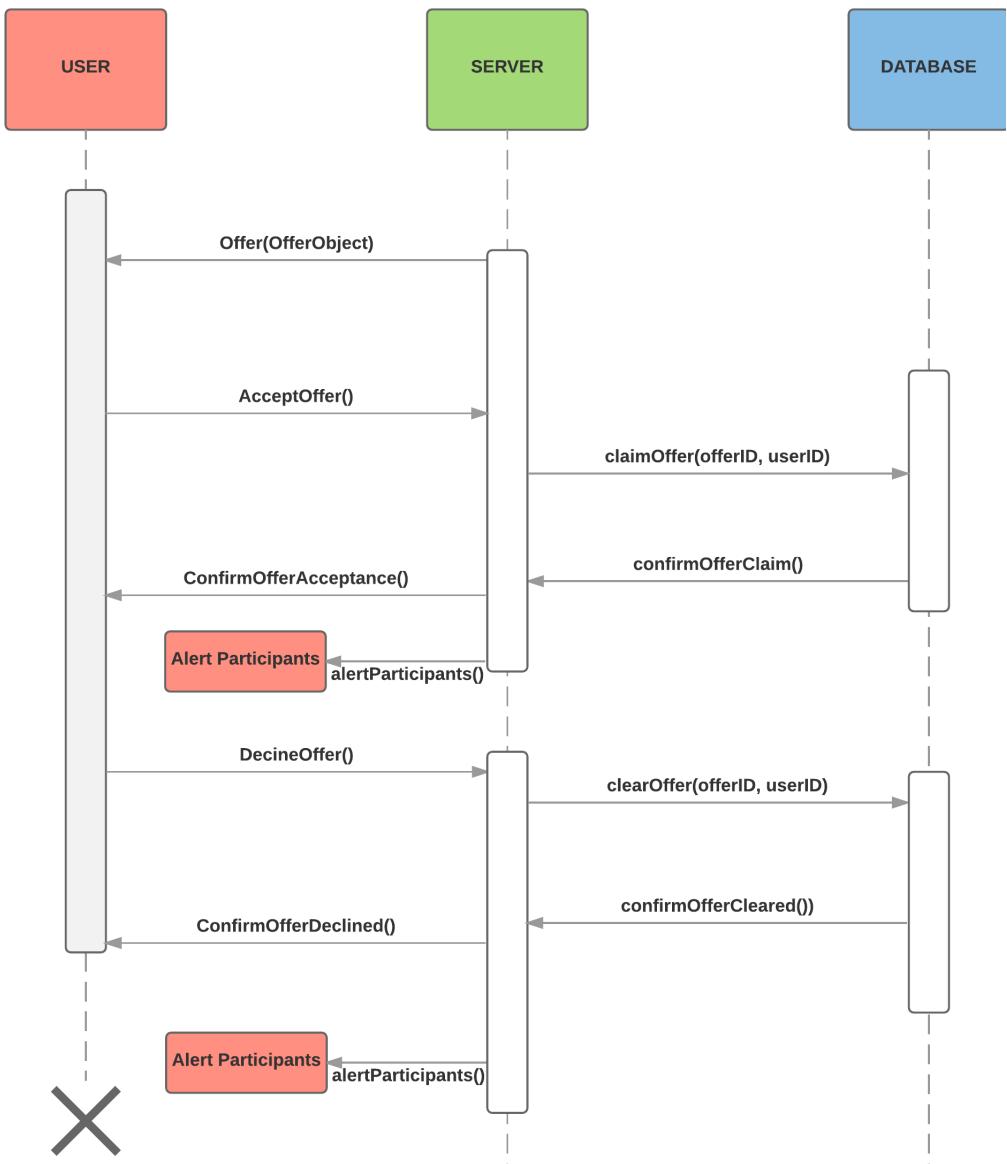


Figure 14: Accept or Decline an offer

COMPLETE A JOB

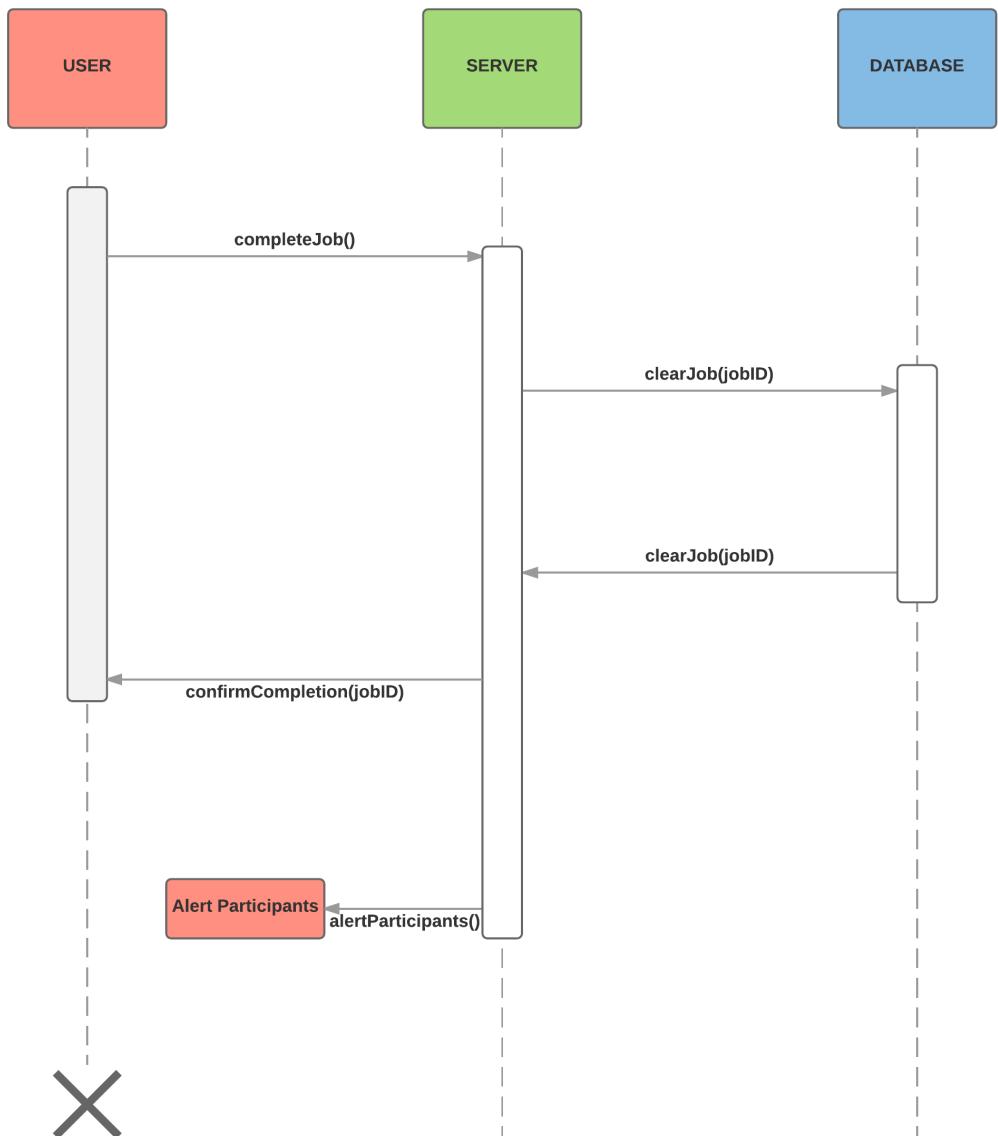


Figure 15: Complete a job

CANCEL A JOB

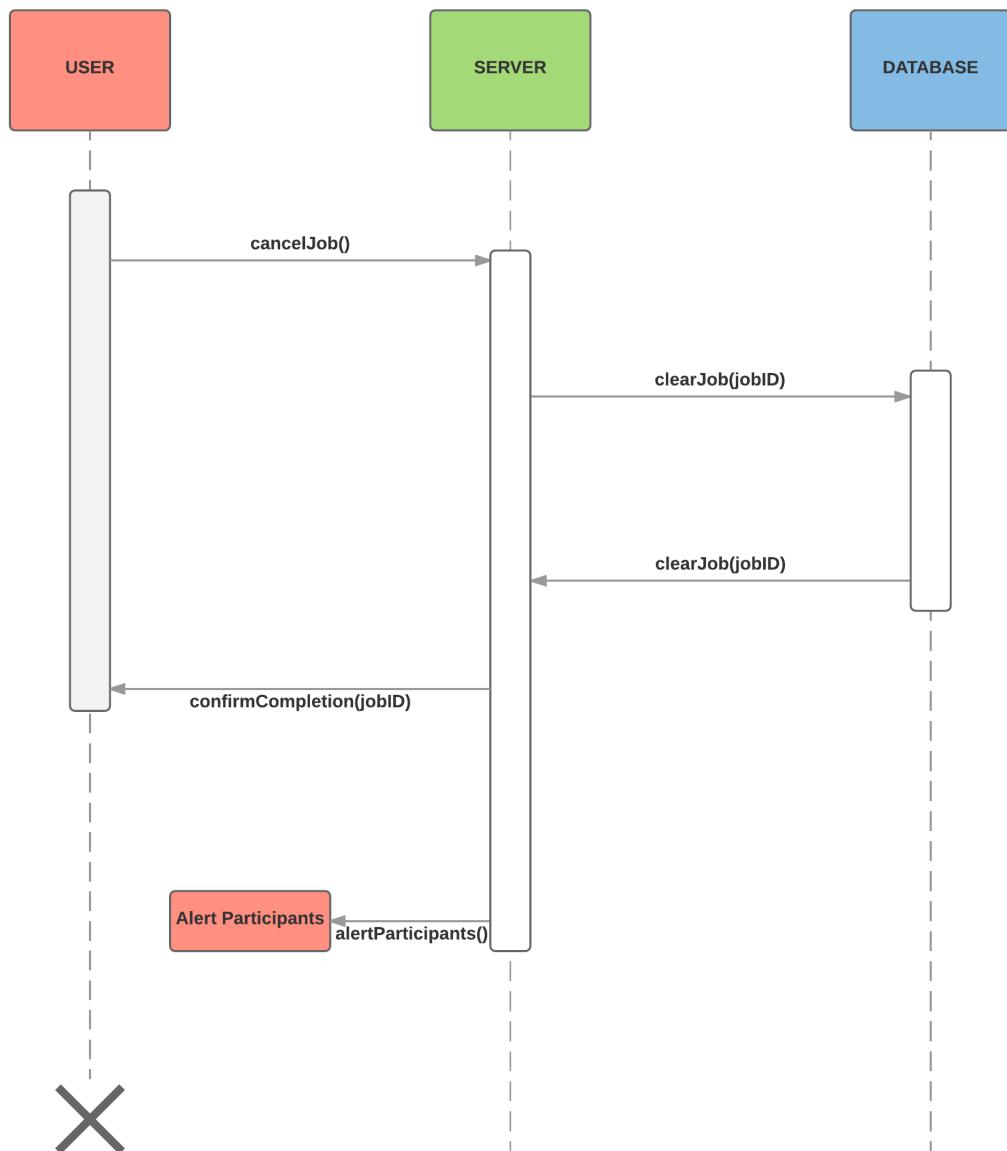


Figure 16: Cancel a job

REVIEW A USER

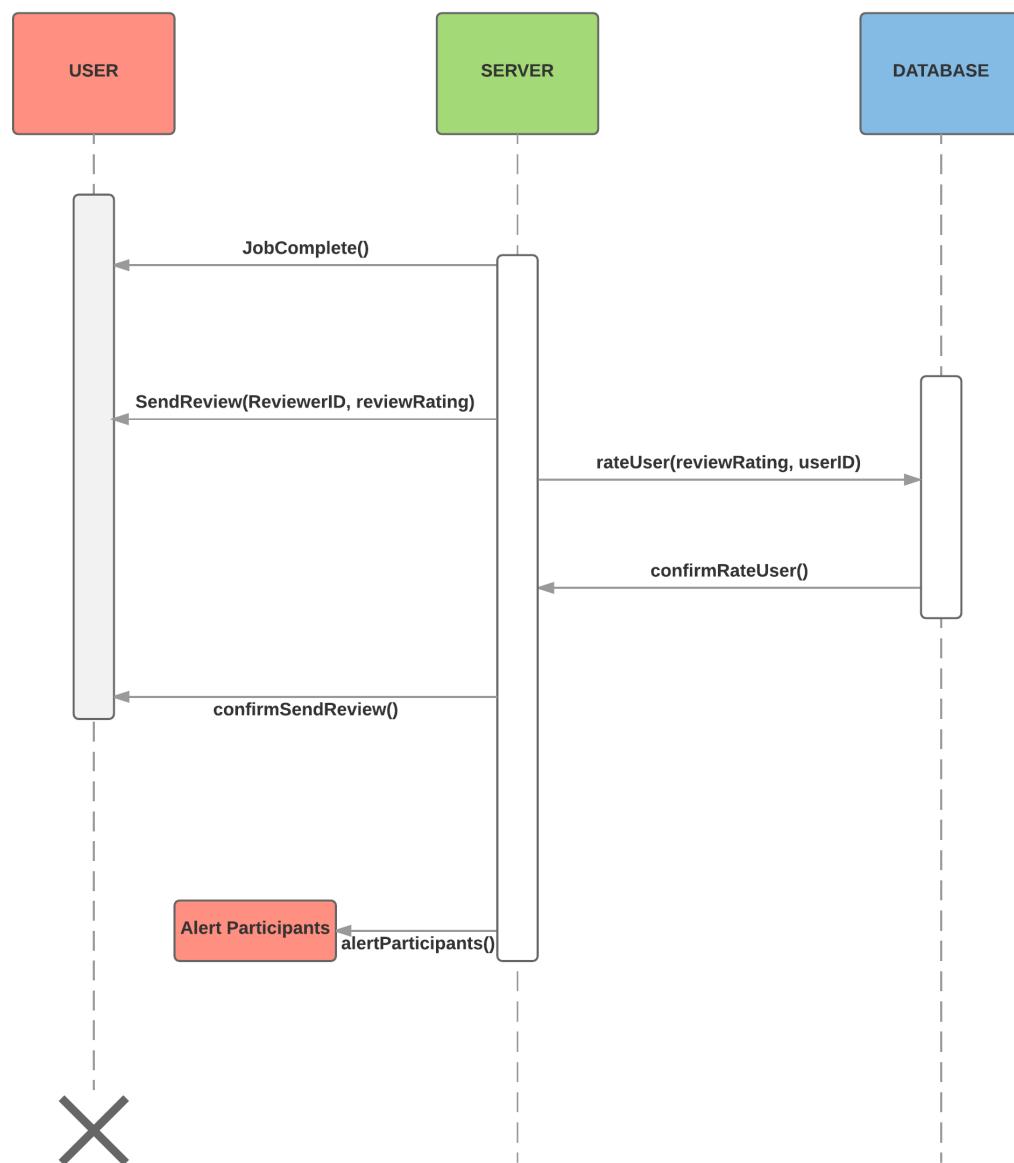


Figure 17: review a job

4.2 Stack

This section will outline our technology stack and will showcase the data flow throughout the application.

Our technology stack will be organized into a Client server model. Connections will be initiated through a Front end (either Android or iPhone Operating System (iOS)) with all data being saved into a single Database.

This server will be securely hosted by Digital Ocean and will be implemented with Horizontal scaling as a top priority. This means that instead of moving our server to a more powerful machine as we get more traffic, we will simply add more servers and split the load between them.

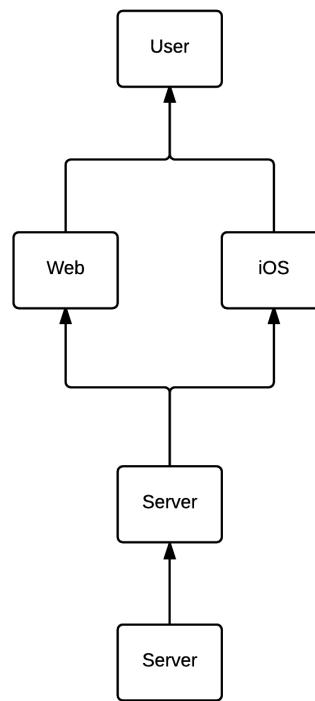


Figure 18: Hire Architecture

4.2.1 Front End

iOS Application

Mobile implementation will be done via iOS. Developing on iOS allows users to download the app from the App Store and allows the user to quickly access Hire from anywhere. This advantage makes the user far more inclined to keep using the application once they download it, as it is readily available for use. Furthermore, building an iOS applications allows Hire to push notifications directly to the users phone, notifying them instantly when users are trying to connect with them, jobs have been completed, or new jobs are posted in their area. iOS currently possess the largest

market share, and the largest revenue stream for application. We feel that Hire will be a good fit into the iOS app ecosystem to due its service application structure.

4.2.2 Back End

Scala

Scala is a programming language that focuses on Horizontal scaling. This language was chosen to make the application fast, efficient and easy to scale by adding more machines. Scala is a strongly typed language which code organization more effortless and code more clean. Furthermore, the semi-functional nature of Scala makes the application backend very flexible to future issues and hangups. Since Scala is built on the JVM, Hire will have access to the millions of Java libraries available to users around the world.

4.2.3 Database

CockroachDB

Cockroach is a Relational database which is Scalable and extremely flexible in the number of servers required to run it. If one server goes down, cockroach will automatically distribute the load to another. Relational databases offer a speed that cannot be matched by non-relational databases, at a cost of more upfront work when it comes to extracting and adding information to the system.

4.2.4 ECommerce

Monetary transactions will be completed using the PayPal or Coinbase Representational State Transfer (REST) Application Programming Interface (API) [1]. Using either of these services will ensure that monetary transactions are fast, secure and simple. This will also offset the amount of time we spend setting up commerce

User security and privacy is a top concern for this application.

5 Summary

Hire allows users to post jobs and find workers in their area. Through the jobs board, Hires can make offers to Hirers about their task. After agreeing on a price, the Hires will complete this task. Upon photo validation, funds will be released to the Hiree.

Hire utilizes an iOS application for the front end and a Scala service for the backend. Cockroach DB is used as the database to make sure the system is stable and fault-tolerant.

6 References

- [1] "Paypal rest api," Website, [https://developer.paypal.com/docs/api/.](https://developer.paypal.com/docs/api/)