I3308 - Final Year Project 2017-2018

Mobile Application – JobConnector

Interim Report

Department of Computer Science

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Table of Contents

ACKNOWLEDGEMENT 2

ABSTRACT 1

CHAPTER1 INTRODUCTION 1

1.1 PROJECT OVERVIEW 1
1.2 PROBLEM STATEMENT 1
1.3 PROJECT CONTRIBUTIONS 1
1.4 WHAT DO PEOPLE EXPECT FROM JOBCONNECTOR? 2
1.5 DEVELOPMENT TOOLS AND PROGRAMMING LANGUAGES 2
1.5.1 Development Tool 2
1.5.2 Programming languages 3
1.6 PLAN OF THE REPORT 3

CHAPTER2 APPLICATION MODELING 5

2.1 ENTITY-RELATIONSHIP DIAGRAM 5
2.2 SCHEMA 7
2.2.1 Tables Relations 7
2.2.2 Tables Description 8

CHAPTER3 APPLICATION DEVELOPMENT 11

3.1. HOMEPAGE 11
3.2. LOGIN PAGE 11
3.3. REGISTRATION PAGE 12
3.4. EMPLOYEE REGISTRATION 1 ADD PERSONAL 12
3.5. EMPLOYEE REGISTRATION 2 13
3.6. EMPLOYEE REGISTRATION 2 (CONT) ADD EXPERIENCE 13
3.7. EMPLOYEE REGISTRATION 3 14
3.8. SELECT DATES 14
3.9. WHOM IS HIRING 15
3.10. COMPANY REGISTER 1 15
3.11. COMPANY REGISTER 2 16
3.12. COMPANY REGISTER 3 16
3.13. COMPANIES MYJOB PAGE 17
3.14. POST JOB 17
3.15. JOB DESCRIPTION 18
3.16. JOB LOCATION 18
3.17. CITY CHOOSE 19
3.18. NEEDED EXPERIENCE 19
3.19. NEEDED LANGUAGES 20
3.20. SPECIFYING GENDER (1) 20
3.21. SPECIFYING GENDER (2) 21

3.22. Finishing Posting. 21
3.23. Applied Employees 22
3.24. Pending, Accepted, Rejected Employees Pages 22
3.25. Company myProfile page 23
3.26. Company Search for employee's page 23
3.27. Employee Search Filter 24
3.28. Request Employee Notification 24
3.29. Employee View my Profile 1 25
3.30. Employee View my Profile 2 25
3.31. Employee View my Profile 3 26
3.32. Edit and Add Experience 26
3.33. Employee profile when searched 27
3.34. Request Button 27
3.35. Chat Button 28
3.36. Rate Button 28
3.37. View Rates Button 29
3.38. Applied Employee profile 29
3.39. Employee Ratings Page 30
3.40. Employee My Jobs Page 30
3.41. Search Job page 31
3.42. Redirected Search Page 31
3.43. Search Jobs filter 32
3.44 Post Details 32
3.45. Save, Apply Post 33
3.46 Chat Company 33
3.47. Receive apply notification 34
3.48. Accepted, Rejected Employee Applications Notification 34
3.49. Employee Job Requests 35
3.50 Company Notification Chat 35
3.51 More Page 36
3.51 Account Settings 36

CHAPTER4 CONCLUSION 37

4.1. Conclusion 37
4.2 Challenges 37
4.2.1 Young Developers 37
4.2.2 Technology 37
4.2.3 Time 37
4.3. Upcoming Project Features 38
4.3.1 Set posts alarm 38
4.3.2. Email Confirmation 38
4.3.3. Getting Offers 38
4.3.4. Uploading Resumes 38
4.3.5. Video Interview 38

ABSTRACT

You're busy, your life is hectic, you don't have a lot of time for job searching, and you don't want to be stuck to your laptop or use your work computer to job hunt. You don't need to. Just like almost everything else in your life, job searching has gone mobile and you can do it on the go.

There isn't much you can't do with one of the apps that connects job seekers with available positions. Most of the application process can be done with your phone or tablet, though it can be a bit cumbersome at times. Even so, you can search, apply for jobs, post jobs and search for employees without using a computer.

Chapter1 Introduction

1.1 Project overview

The era of mobile technology opens the windows to the android app. The websites are vanishing and the mobile phones are emerging .It's the time to change from websites to apps, which has become the part of our daily routine. From ordering food to looking for love, there's an app for that. The job search is no different. These days, looking for a job doesn't mean combing through newspaper listings or being confined to desktop websites. Instead, there is *JobConnector*, the android application software that we are introducing, which helps users to find jobs, and stay connected and on top of their job hunt, even while on the go. It also helps companies to find their desired candidates for specific jobs that they offer. Thus, it connects people with each other via job opportunities.

1.2 Problem statement

Every minute of every working hour, someone is either looking for a job, or someone is hiring for a job. That minute usually turns into hours and sometimes even days when the whole process of job recruitment has been complete. The ardor of reviewing resumes, job application letters, interviewing, checking references, client liaison and contract negotiation never seems to stop.

Surely, there is a simpler way Yes there is and JobConnector has a solution that you have been waiting for that will save you time, energy and money. JobConnector purpose-build recruitment apps speed up the process to make everyone's life a lot easier. The recruitment apps for Android provide all the critical information at your fingertips on your phone no matter where you are in the world. The jobConnector app takes away the need for pens, resumes, note-taking and all the old methods of recruiting and finding jobs and gives you the new way any time of the day that you want it.

1.3 Project contributions

The contributions of this project work are:

- Design and develop a Smartphone job research app, called *JobConnector*, to produce a job guide for finding jobs and employees .This application is to be a user-friendly job connector over Android operating system for Lebanon. And allows mobile users to both access thousands of up-to-date job listings while getting first-hand knowledge of companies.

- Transform a smartphone powered by the Android mobile operating system into a powerful job hunting device with the right application.

- Make the connection between jobseeker and recruiter easier.

1.4 What Do People Expect From JobConnector?

Both employers and job seekers expect the following functionalities from this application:

- People can view jobs they make the search for .And can register as job seekers, build their profiles, and look for jobs matching their skill sets.

- Users can upload their existing resumes. If they do not have one, they should be able to fill out a form and have a resume built for them.

- Users can apply directly to posted jobs.

- Companies can register, post jobs, and search job seeker profiles.

- Company representative can view a list of job applicants and can contact them, initiative an interview, or perform some other action related to their post.

- Registered users should be able to search for jobs and filter the results based on location, gender, required languages, experience level, *etc*.

1.5 Development Tools and Programming Languages

1.5.1 Development Tool

- **Android Studio**

Android Studio IDE from Google allows developers to build apps running on mobile, desktop and other emerging technologies running on Android. Follow: Android Studio is an integrated development environment (IDE) from Google that provides developers with tools needed to build applications for the Android OS platform. We used Android 3.0.1 to develop the whole project.

Android Studio is used to develop the App

- **Notepad++**

Notepad++ is a text editor and source code editor for use with Microsoft Windows. It supports tabbed editing, which allows working with multiple open files in a single window. It helped us to implement the php code and sql queries.

Notepad++ is used to write the php code.

1.5.2 Programming languages

- **Php**

PHP is designed to pull and edit information in the database. Its most commonly bundled with databases written in the SQL language.

- **Java**

Java is designed to have the look and feel of the C++ language, but it is simpler to use than C++ and enforces an object-oriented programming model.

1.6 Plan of the report

The rest of the report is split into three chapters organized as follows:

Chapter 2: is the core of the modelling part. It introduces the ER model, the relational model…

Chapter 3: is the core of application developing part. It introduces our application JobConnector and details the pages …

Chapter 4: presents the conclusion and some future works.

Chapter2 Application Modeling

2.1 Entity-Relationship Diagram

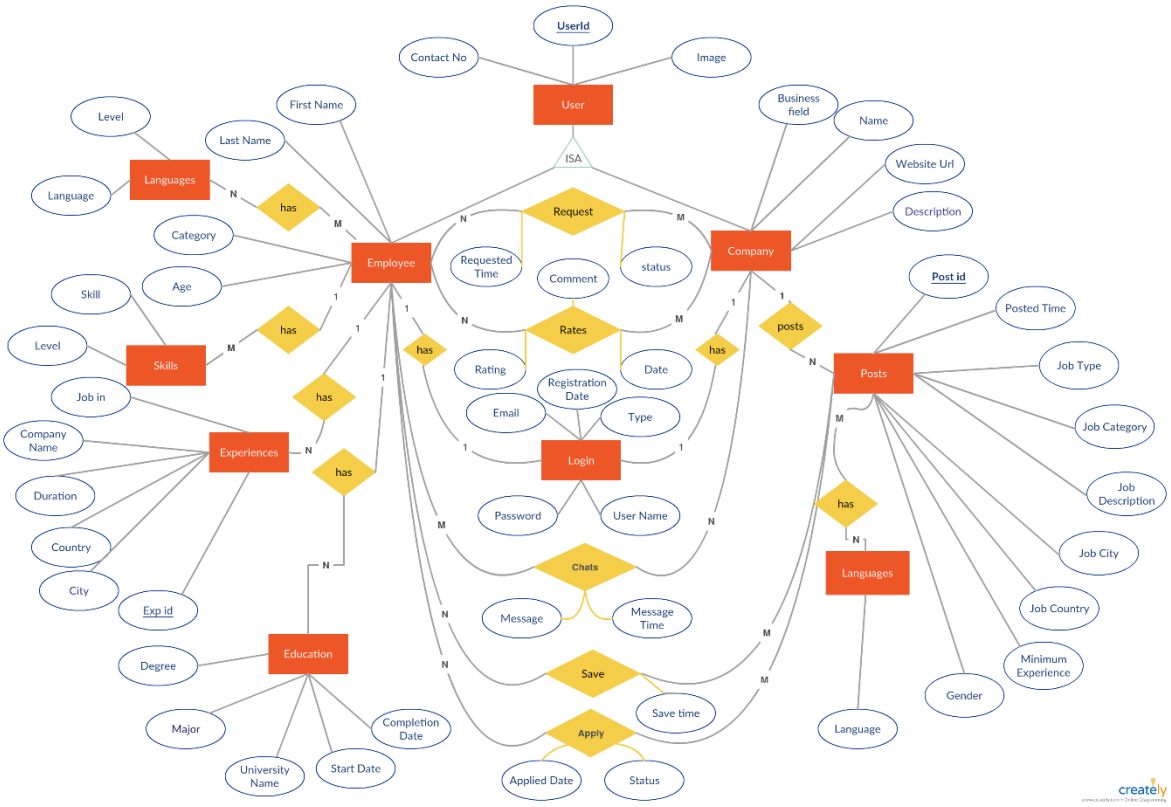


Figure 1 ERD

Figure 1 shows the Entity-Relationship Diagram (ERD). In this paragraph every relation between entities is described.

- Employee --- Apply --- Posts

An employee can apply several posts; the employee entity holds attributes describing properties concerning the employee. The posts entity holds attributes that describes the job post being applied too. This relation holds attributes such as Status to track the status of the application (pending/accepted/rejected).

- Company ---Posts --- Posts

A company can post several posts; the company entity holds attributes describing properties concerning the company. The posts entity holds attributes that describes the job post that is added.

- Employee --- Has --- Languages

This relation tracks the language's which are mastered by an employee.

- Employee --- Has --- Experience

This relation tracks the Experiences owned by an employee.

- Employee --- Has --- Skills

This relation tracks the skills mastered by an employee.

- Employee --- Has --- Education

This relation tracks the Education which is owned by an employee.

- Posts --- Has --- Languages

This relation tracks the Languages needed for the job post.

- Employee ---Chats --- Company

Both Employees and Companies can open chat with each other. An Employee chats the company that has a job post, and a company can chat an employees which it searched or applied to its posts.

- Company --- Rate --- Employee

A company can rate the employee, précising the number of ratings, and a certain comment describing its view on the employee.

- Company --- Request --- Employee

An employee can requested by many companies to work for, and a company can request many employees to work for.

- Employee --- Save --- Posts

An employee can save many posts to review later.

- Employee --- has --- Login

An employee can login to the application via his account.

- Company --- Save --- Posts

A Company can save many posts to review later.

2.2 Schema

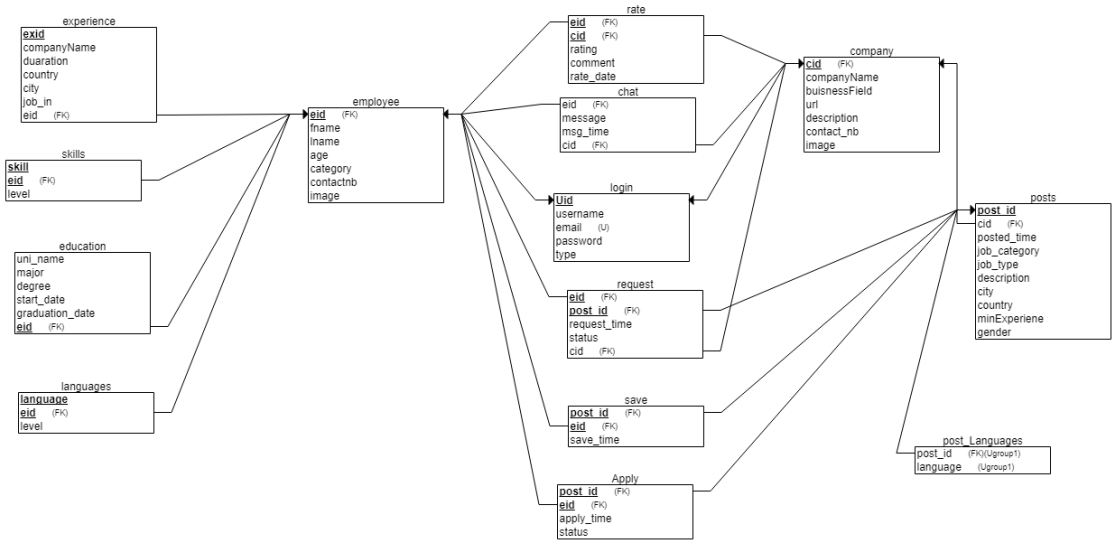


Figure 2 Schema

Diagram 2 shows the Database Schema. This schema brakes down the cardinalities from ERD and shows how the tables in the database are truly related. These relations are described below.

2.2.1 Tables Relations

An employee or a company have one account and this account belongs to only one employee or company .So adding the account Id (‘Uid’) to Employee as eid and to company as cid as foreign keys brakes the one to one relation between user and both Employee and Company tables.

An employee could has many experiences, skills or languages. So adding Employee ID (‘eid’) brakes down the one to many relation between employee table and other tables. But he has only one education experience so we have added eid to experience table to brake the one to one relation.

A company can create many posts. So, adding the company id (‘cid’) in the post table breaks down the one to many relation between company and post tables.

A post could have many languages. So, adding the post id (‘pid’) in the **post_Languages** table breaks down the one to many relation between post and **post_Languages** tables.

A company can rate or chat many employees, and an employee can be rated or chat many companies. So, we have created a new table called rate and a table called chat that contains the employee id and the company id with the relational attributes.

A company can request many employees for a post, and an employee can be requested from many companies. So, we have created a new table called request that contains the employee id and the post id with the relational attributes.

An employee can save or apply to many posts, and a post can be saved or applied by many employees. So, we have created a new table called save and a table called apply that contain the employee id and the post id with the relational attributes.

In order to let the users to communicate with each other inside the application, we have created a chatting part inside it. The chat activity mainly consist of two pages, one for the users who has been added by the user or they have added him, and the other is for group chatting that lets the companies to create a group at least for two and here the employees can only see the groups that they have been added to; this one is fore future work.

2.2.2 Tables Description

There are primarily two types of JobConnector application users:

Companies and recruiters (Employees).

First off all, we have created a table 'Login' that contains:

UID – This is both the table's primary key and a unique identifier for each user.

This UID will be referred to by other tables in the data model.

Username – this holds the username that should be used in communication.

Email – This column holds the user's email address. It acts as another user ID for the portal.

Password – This stores the account password (created by users during registration).

Type – This signifies whether the user is a job seeker or a recruiter.

Then we have created the table 'employee' that contains or related to all information needed for the employees and it contains:

First and last name of the employee as fname and lname respectively.

His age as age

Category – the category of work that the employee work in.

Contactnb – used for another user wants to communicate.

Image – holds any picture the user want for his profile.

Then we have 4 more tables that has more information about an Employee

Experience that contains:

Exid – which is the id referred to this experience

CompanyName – contains the company that an employee worked in

Duration – contains the duration of his experience

Country – in what country this work is done

City – in what city this work is done

Job_in – the work that the employee had in this experience

Skills that contain

Skill – what skill this employee has

Level – how good this employee in the above skill

Languages that contain

language – what language this employee know

Level – how good this employee in the above language

Education that contains

Uni_name – the university that the employee has his education in

Major – what is his major

Degree – what degree he took

Start_date – in what date did he start

Graduation_date – in what date did he graduated

Then we have reached the table 'company that contains or related to all information needed for the company and it contains:

cid – the id for this company

companyName – the name of the company

business_field – in what field this company works

url – what is the website address for the company(if it has)

description – what is this company known for

contact_nb – the number that the user can contact this company

image – the image that will be located in its profile

The companies can post jobs for the employees , and all these posts is found in the ‘posts’ table that contains

Post_id – a unique identifier for every post

Posted_tiame – in what time this post has been announced

Job_category – for what category does the job belong

Job_type – what is the type of the work

Description – contains a little description for the job

Country – in what country is the job

City – in what city is the job

Min_experience – what is the minimum experience needed for this job

Gender – what is the preferred gender for this job?

And these posts needs some languages to be known, found in ‘post_languages’ that contains

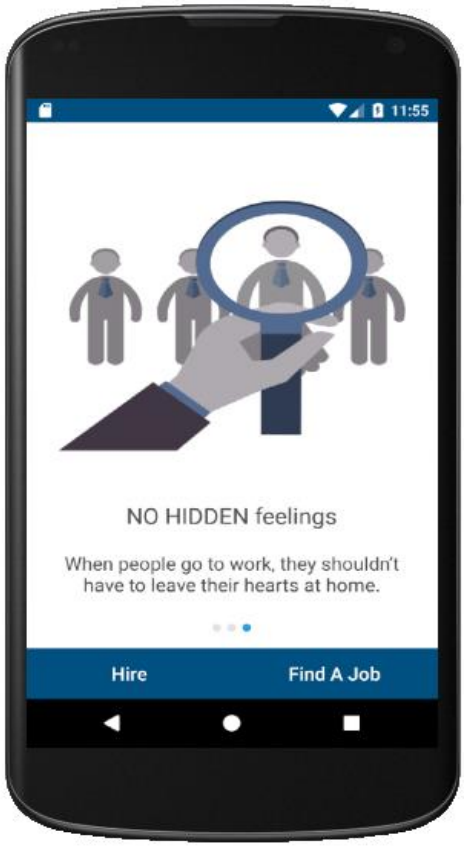
Language – the language that is needed followed by the post_id

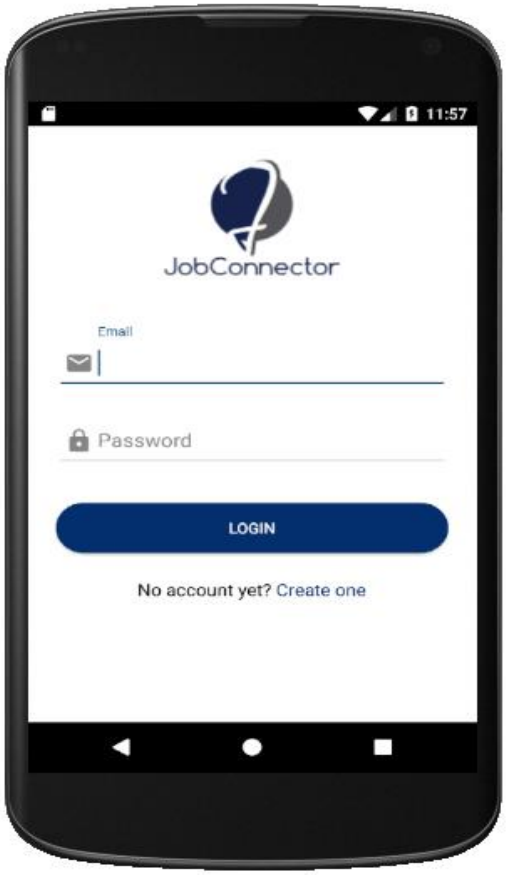
And we have some other tables that has been created from many_to_many relations from the above tables (i.e. chat, request, apply, save and rate)

Chapter3 Application Development

3.1. Homepage

The homepage is simply a view of the application. Users could be either a jobseeker or a company .Thus a user chooses whether to **Find a job** or **Hire**.



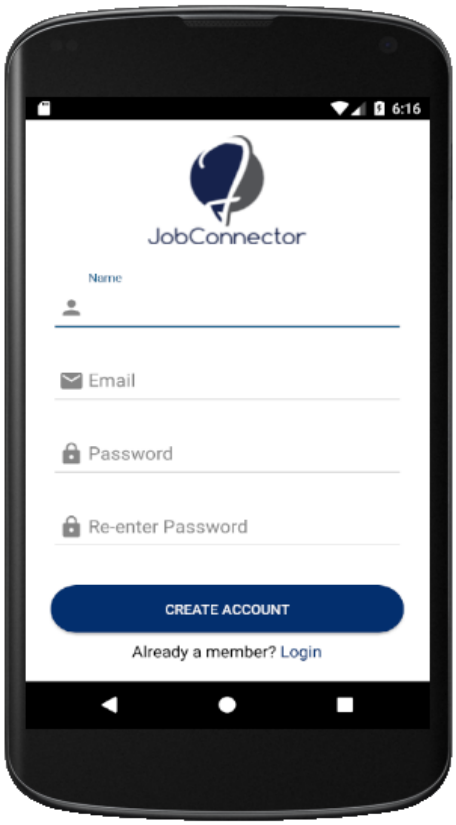


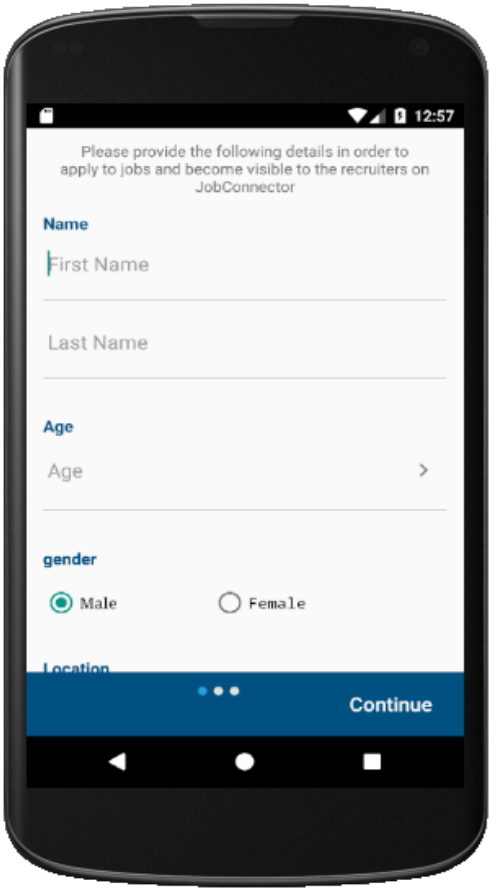
3.2. Login page

Just after the users choose between the two buttons, a login page opens and the users can login with their registered account or register for a new account.

3.3. Registration page

Users can use their email address to register for an account.



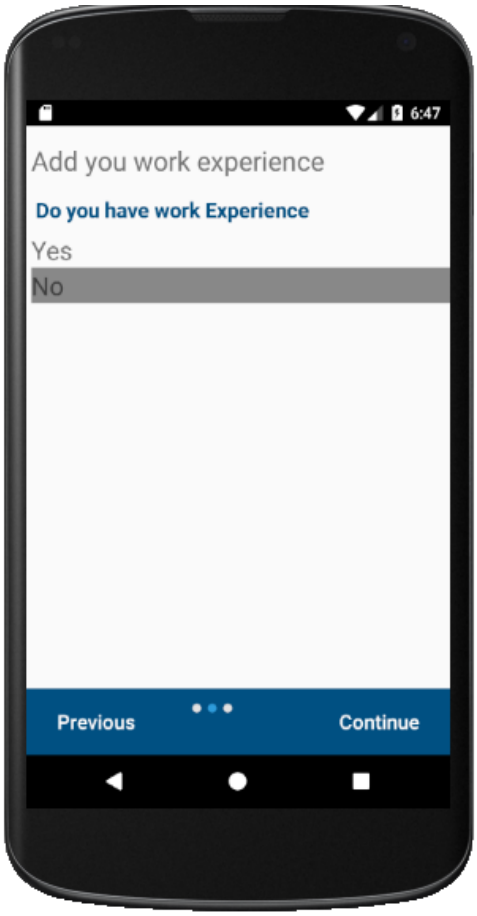


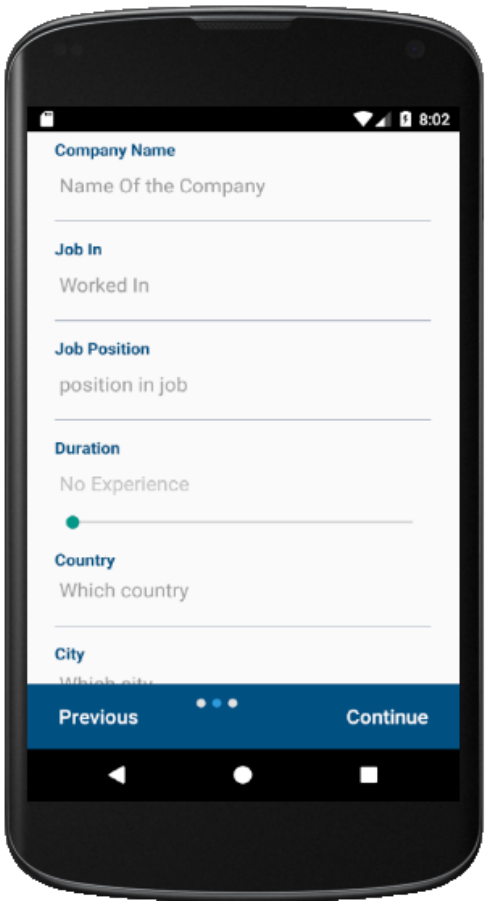
3.4. Employee Registration 1 Add Personal

Employee's Registration is done with 3 steps. First the user should fill his necessary personal information. It includes; Full name, age, gender, location, phone number, and category.

3.5. Employee Registration 2

The second step in Employee's Registration is forcing the users to list if they had an experience or not. If **yes**, they should fill some information about it.



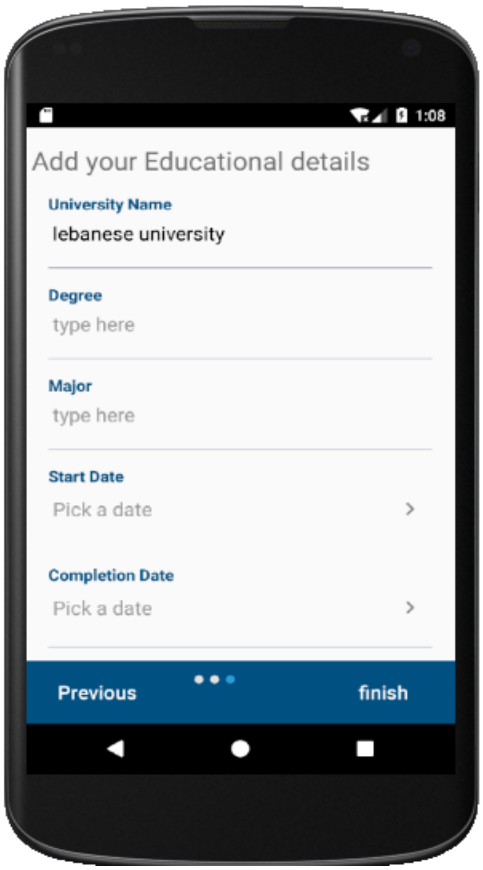


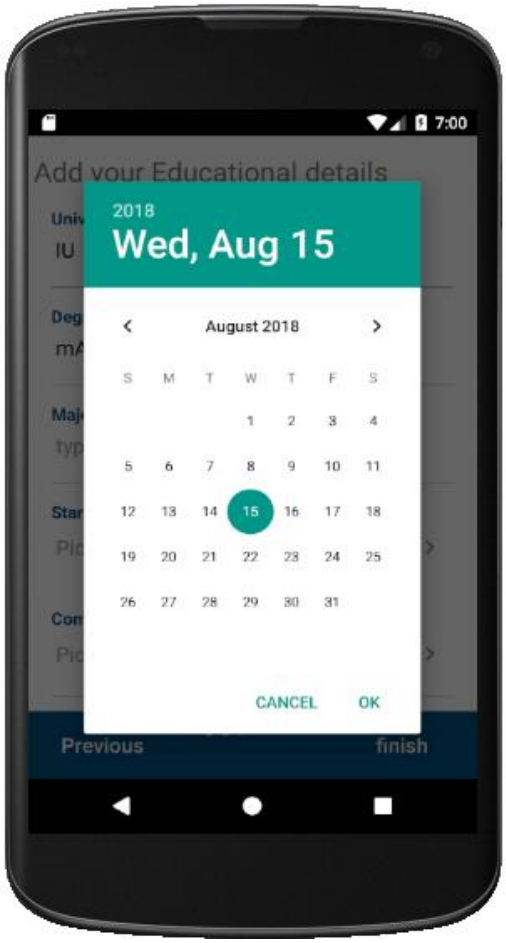
3.6. Employee Registration 2 (cont) Add Experience

If yes they should add information about this experience, company name, and job in, position, duration, location and also a description.

3.7. Employee Registration 3

The third step in Employee's Registration is forcing the users to specify their educational history. And with the finish button, registration is completed.



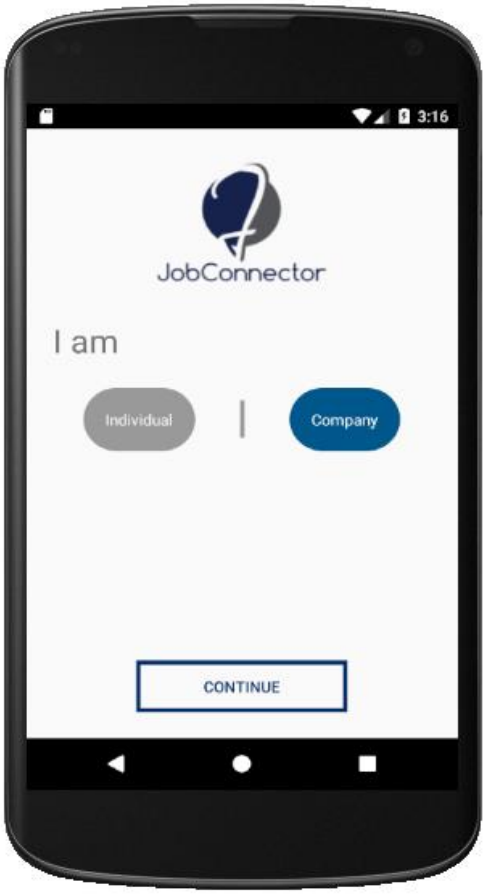


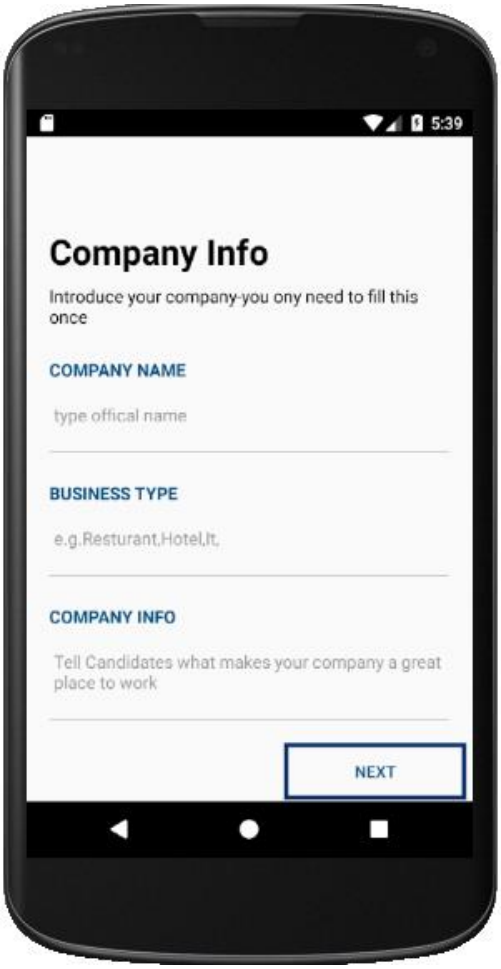
3.8. Select Dates

When the user clicks on pick a date a calendar appears allowing him to enter his dates (start and completion Dates).

3.9. Whom is hiring

The user should specify his type before His full registration as a user who wants to hire .For now there's only **Company** type in this application.



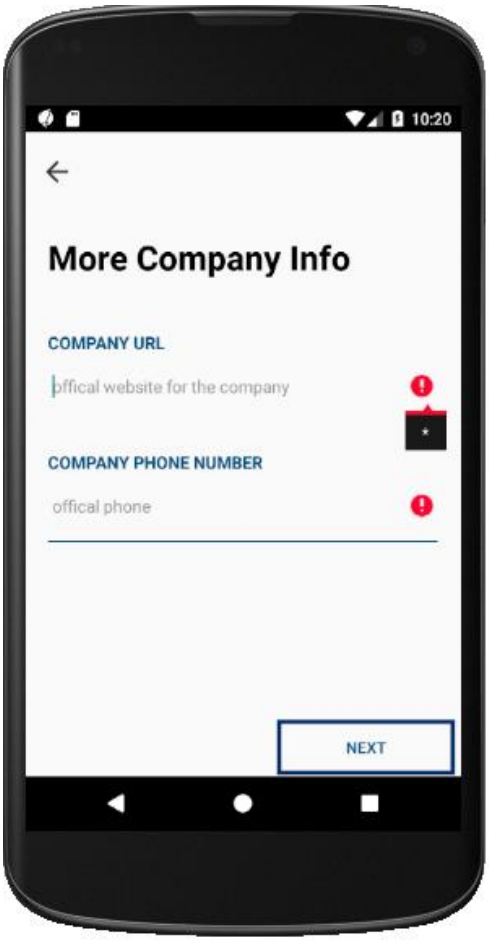


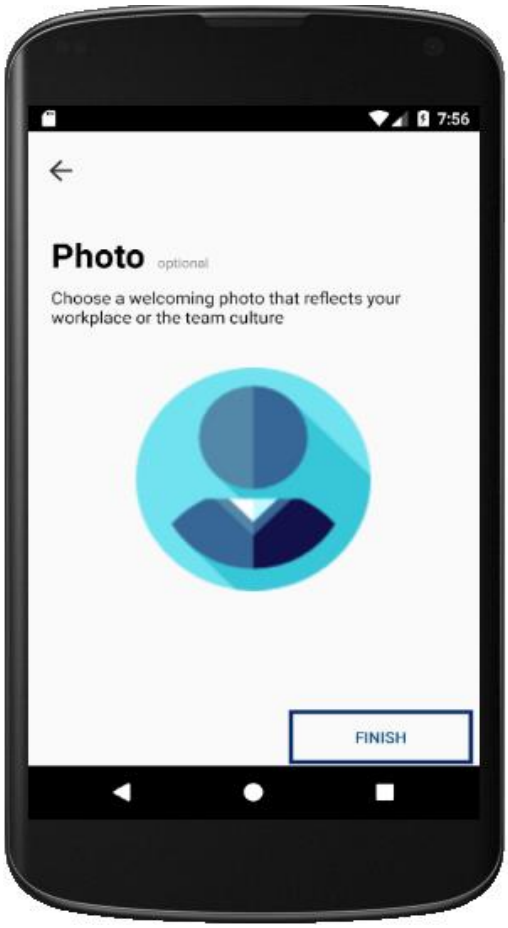
3.10. Company Register 1

As Employees Registration, Companies Registration is also done with 3 steps. First begins with Company information's, company name, business type, and information about it in general.

3.11. Company Register 2

Company should specify its official website for employees to visit and its contact numbers.



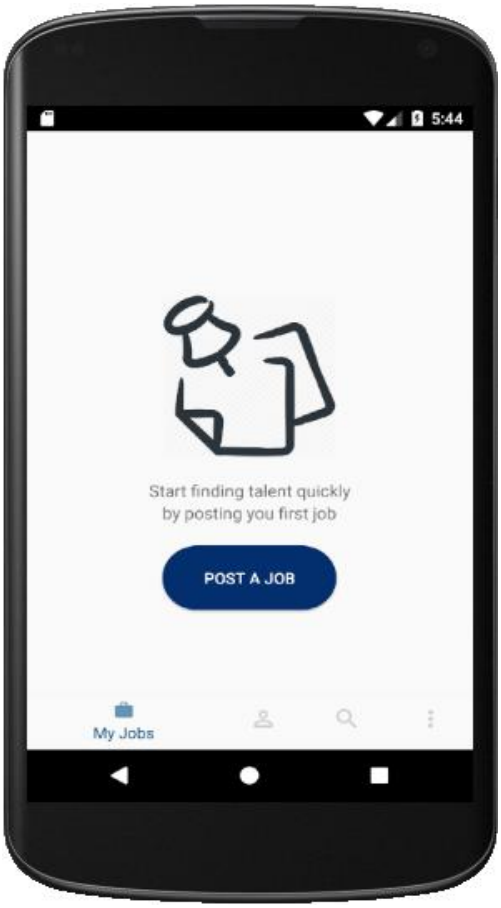


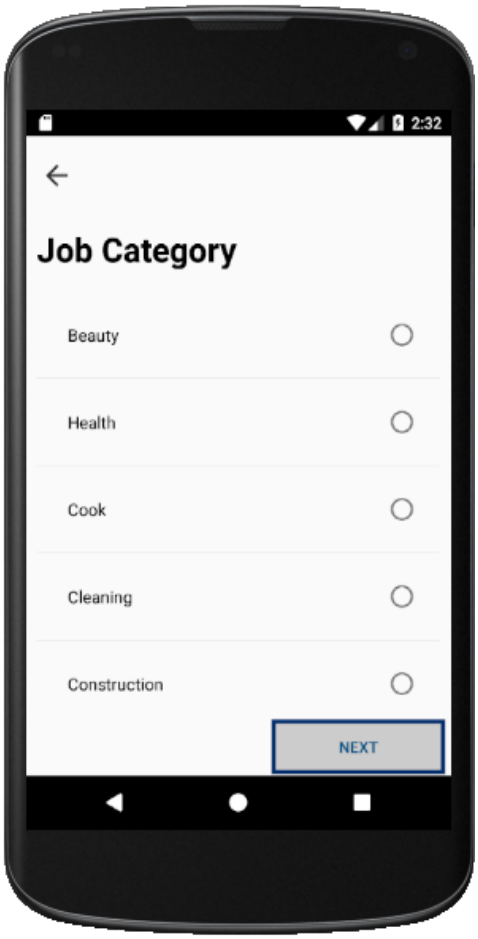
3.12. Company Register 3

This one is optional. The company would or would not put an image for its self.

3.13. Companies MyJob page

Initially, companies has not yet posted and jobs. There with clicking “Post a Job”; posting a job function starts.



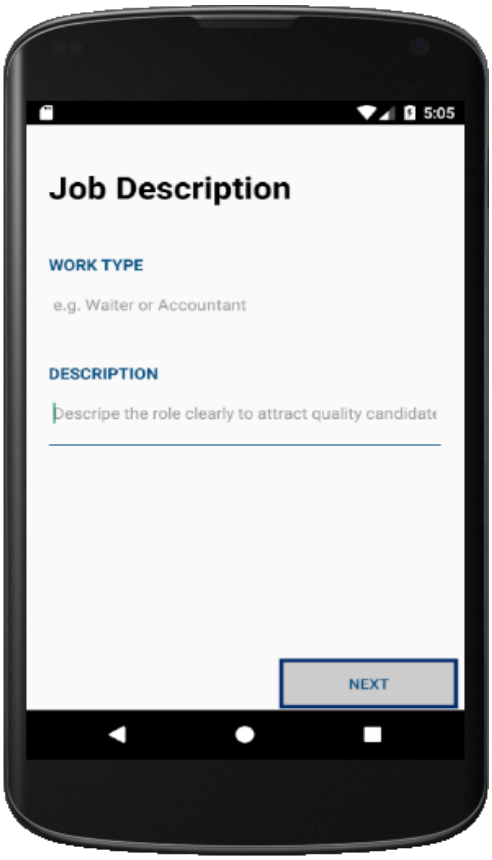


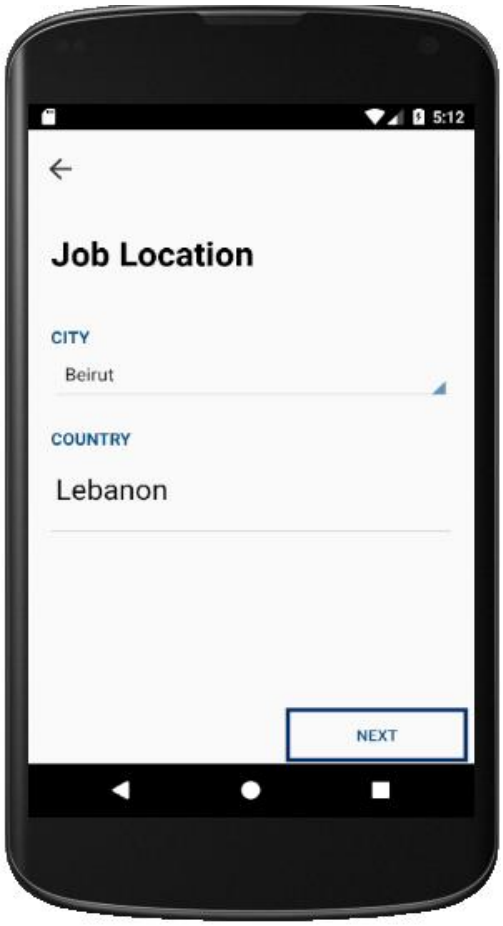
3.14. Post Job

When users tap the “Post Job” box, several steps will be shown to complete this action.
First to choose the category of the job that will be post.

3.15. Job Description

Second is to specify the position for the job and detailed description for it, for the employees to understand the job role the company is posting. And the company posting the job cannot go to the second step unless specifying the details, otherwise the next button will remain disabled.



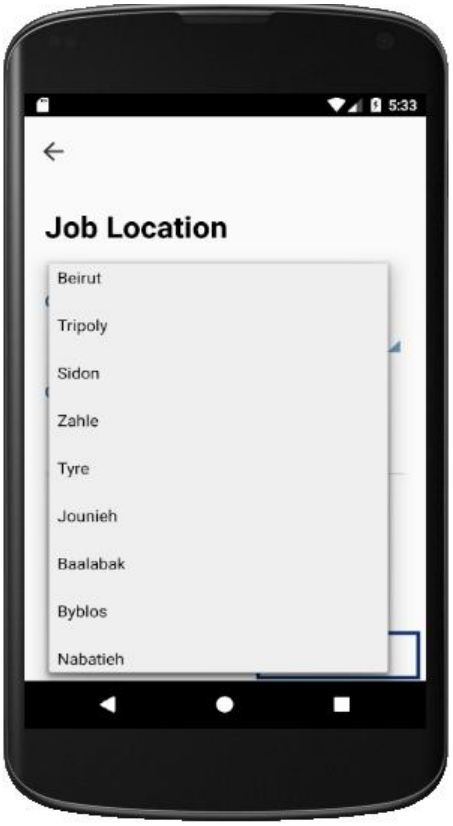


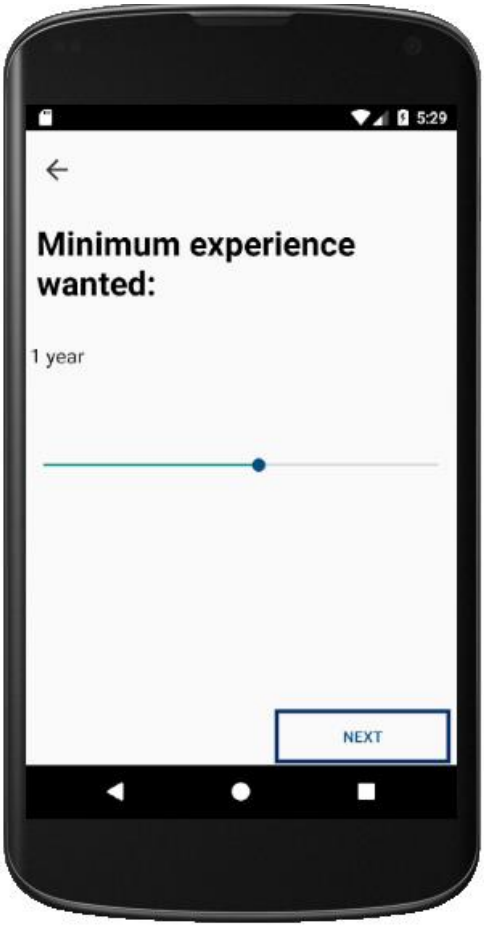
3.16. Job Location

Third, specifying the location for the proposed job, by default the country is Lebanon since for now this application is for Lebanon's job offers.
Company can choose the city the job will be in.

3.17. City Choose

When clicking on the city a dropdown spinner appears allowing the user to choose the city he wants.



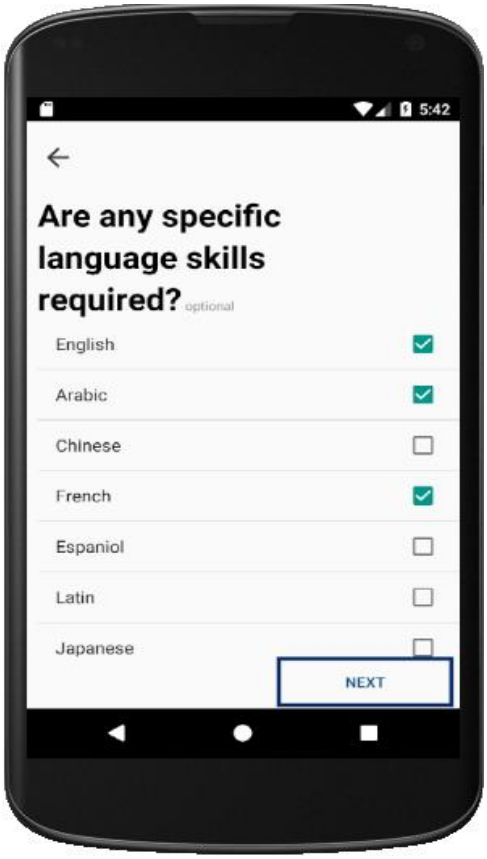


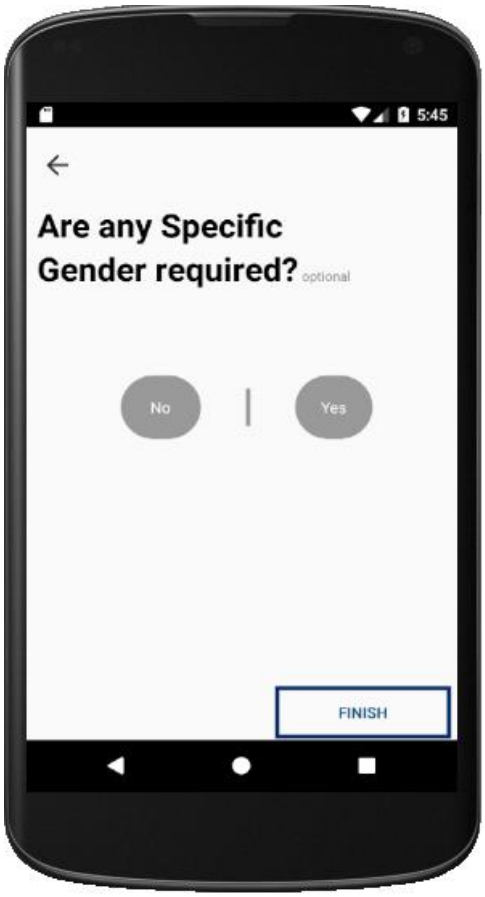
3.18. Needed Experience

The minimum experience needed for the job can be specified with minimum number of months or years. Note that it could not be specified also.

3.19. Needed Languages

This one is optional. A company would and would not want to specify certain language skills for the job.



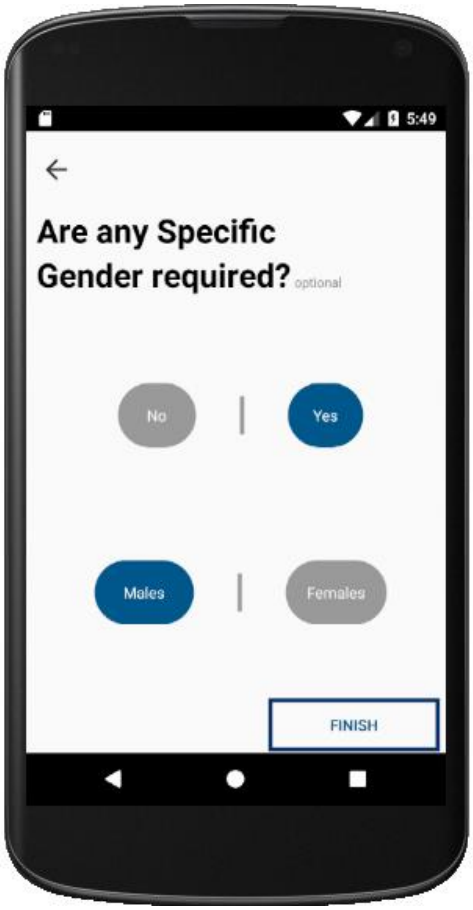


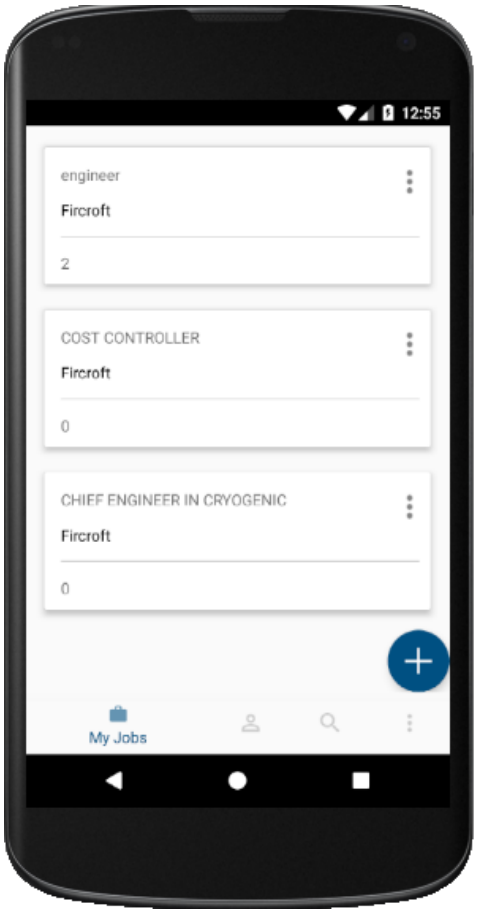
3.20. Specifying Gender (1)

This is also optional. A company would or would not need a specific gender for the work, so it's left for them to specify.

3.21. Specifying Gender (2)

Clicking **yes,** a company should choose either **males** or **females** to be able to finish posting, or if changed their mind, it can choose no and click **Finish**.



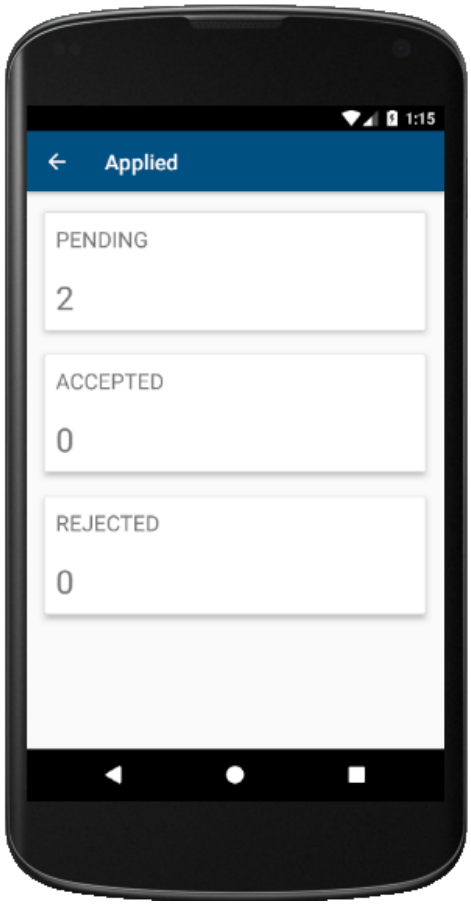


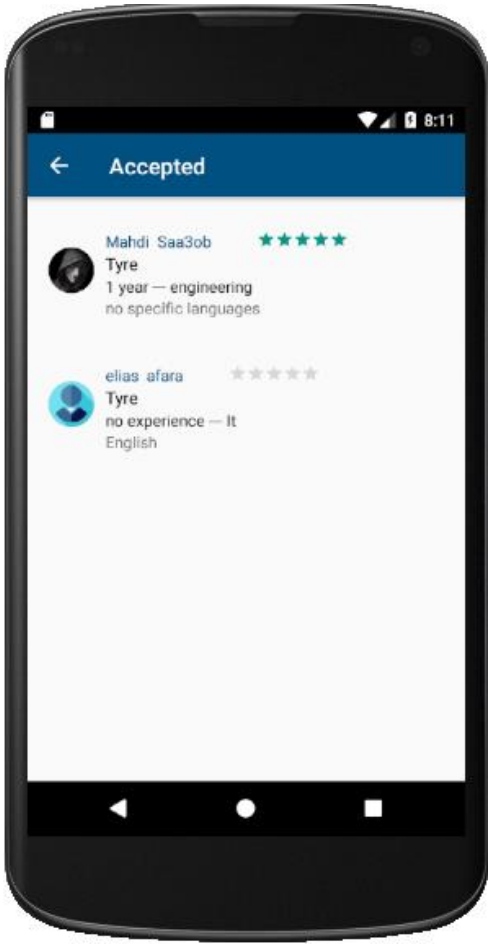
3.22. Finishing Posting.

Clicking the **Finish** box, posting is finished. Company Job posts will be listed in this page. And it can press the **plus** button to add a new post.

3.23. Applied Employees

When employees apply, their status is set to pending by default. And they could be accepted or rejected.
This page lists the number of employees in each status.



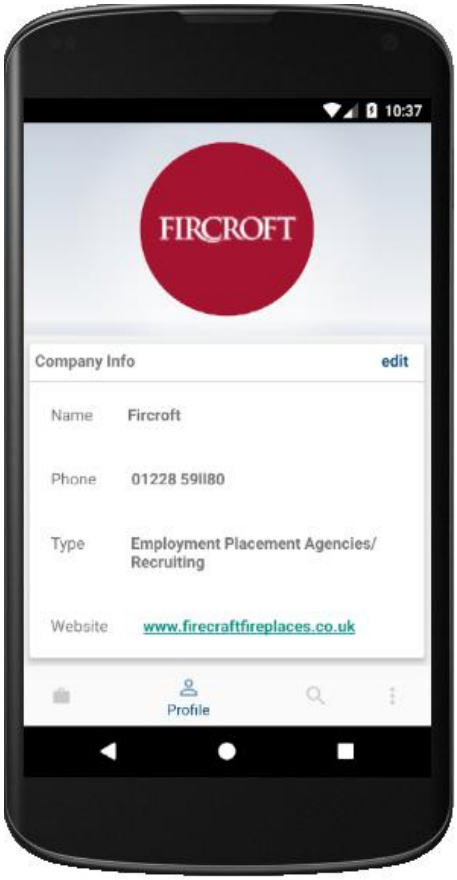


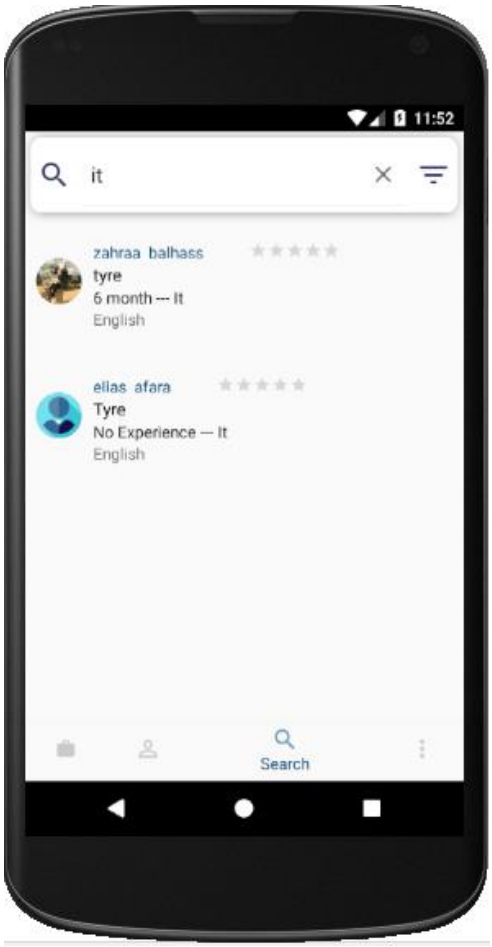
3.24. Pending, Accepted, Rejected Employees Pages

Pending Page lists of all the newly applied employees who are not yet been accepted neither rejected.
Listing for every employee full name, number of experiences, gender, and languages known.
And the other two pages lists the accepted and rejected employees respectively.

3.25. Company myProfile page

A company information that was previously registered will be shown, allowed for editing and changing picture when wanted.



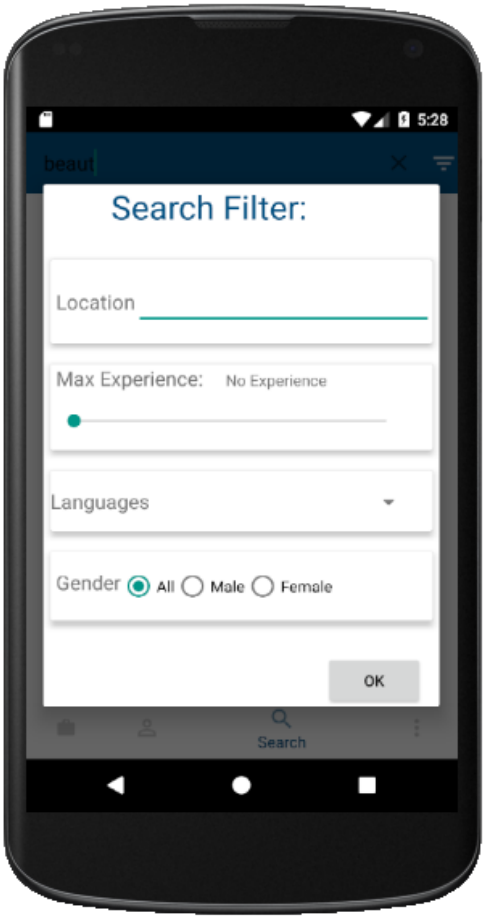


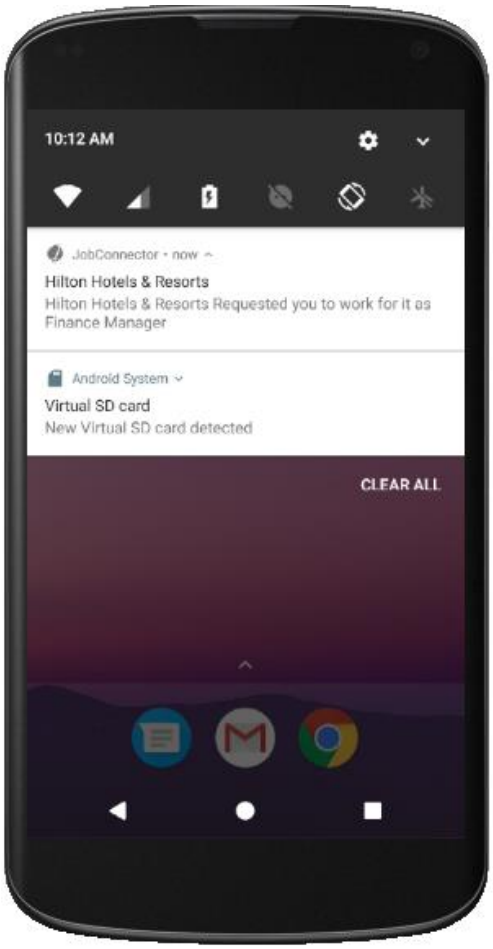
3.26. Company Search for employee's page

A company searches for employees that they need and want for a certain job according to, category, minimum experience, gender …etc. After that it can request them.

3.27. Employee Search Filter

A company can filter its search according to several criteria such as, search for employees in specific location, or has a certain experience, or also knows specific needed languages, and also has a specific gender.



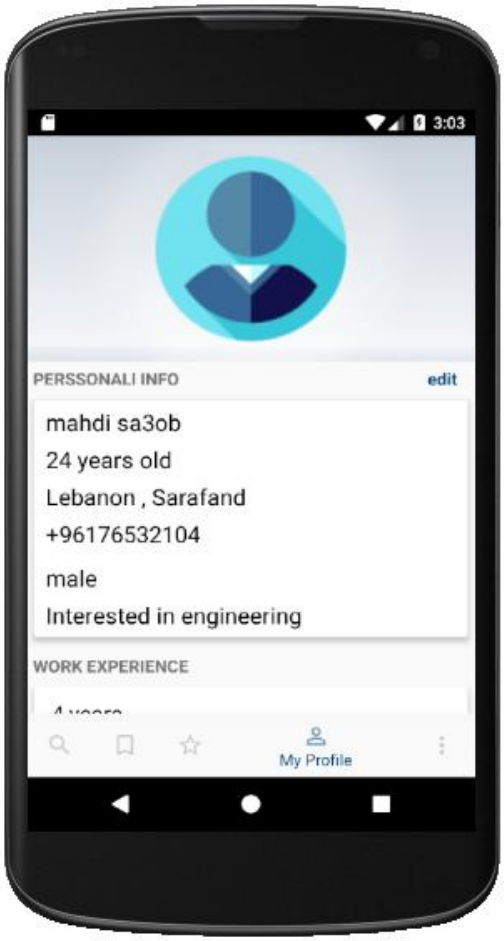


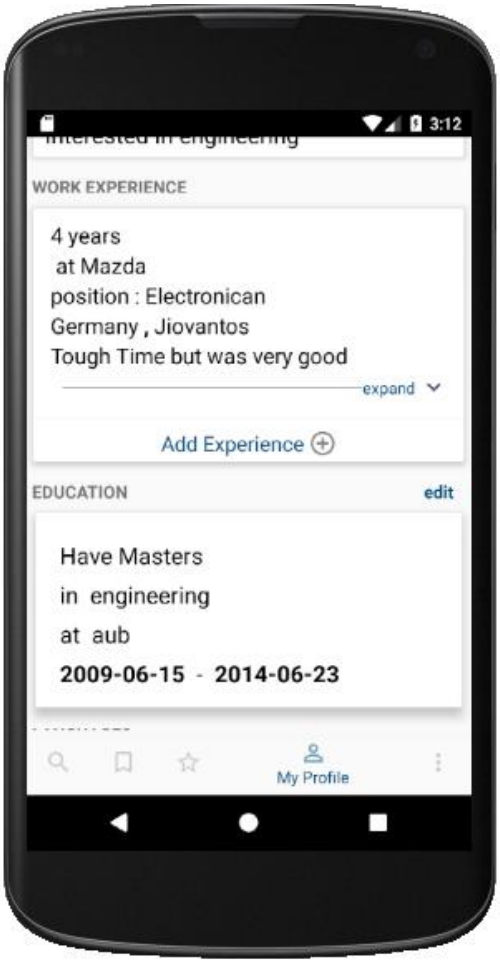
3.28. Request Employee Notification

When a Company Requests an employee for a certain job post from its posts, the requested employee receives a notification for this request as follows.

3.29. Employee View my Profile 1

In this page an employee can view his details added while registering and edit them. Moreover can add more optional details. As you can see in this figure, he can add a personal picture and for the personal information, it lists his full name, age, location, phone number, gender and the category of jobs he is interested in.





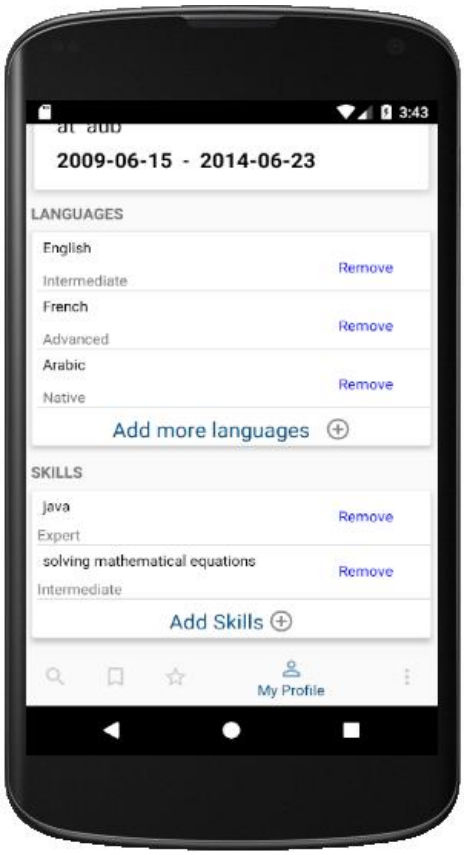
3.30. Employee View my Profile 2

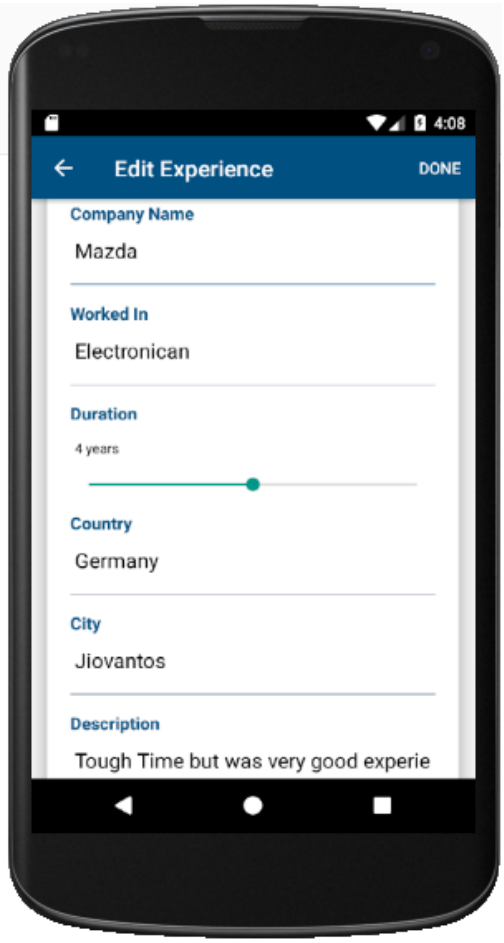
Also, employees **my Profile** view this work experience if added which with a long click on it he will get two options either to delete it or, edit it. Moreover, weather experience/s is/are added or not he has the option to add another experience.

Furthermore, the educational information previously added are shown and could be edited.

3.31. Employee View my Profile 3

There is also the add languages and skills options. An employee could add the languages that he knows with the level of mastering it, same for adding mastered skills. And both languages and skills could be removed.



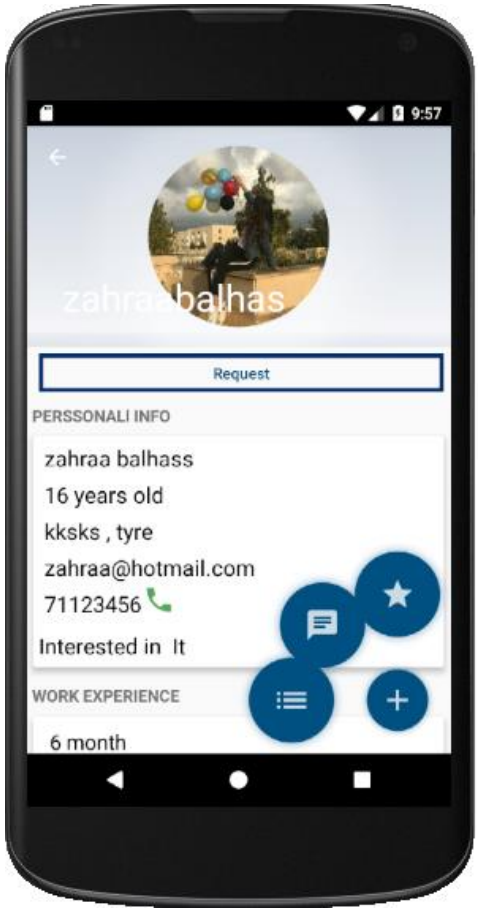


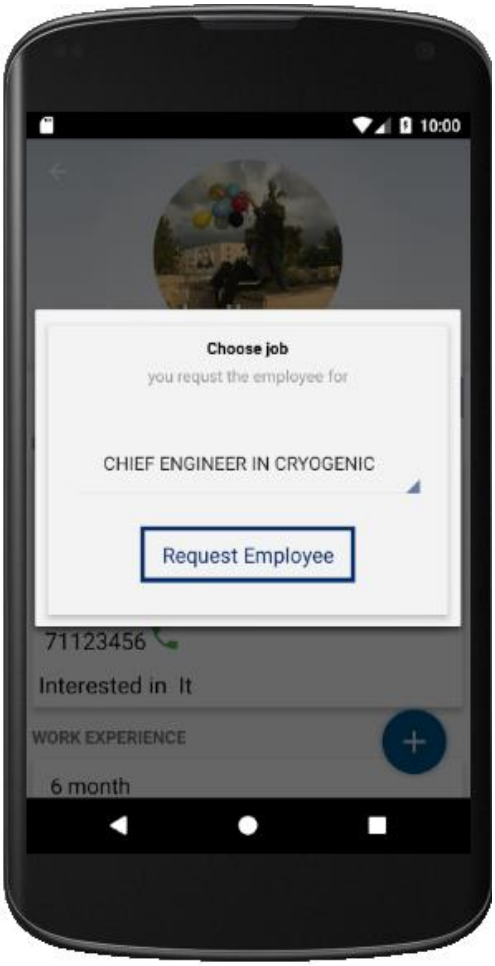
3.32. Edit and Add Experience

Clicking edit for a certain experience allows the user to edit any of the information listed in this experience. While as clicking add more experience allows him to add another new experience (pages look like each other).

3.33. Employee profile when searched

Employee could be requested by a certain company to work for.



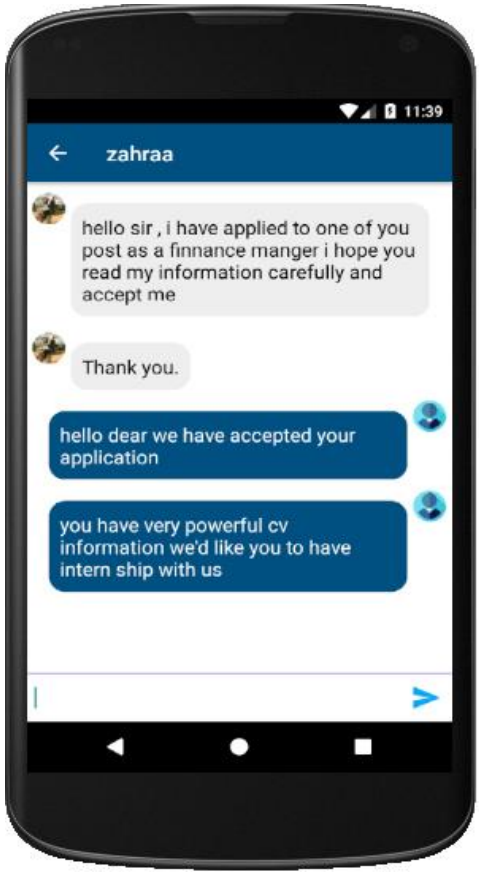


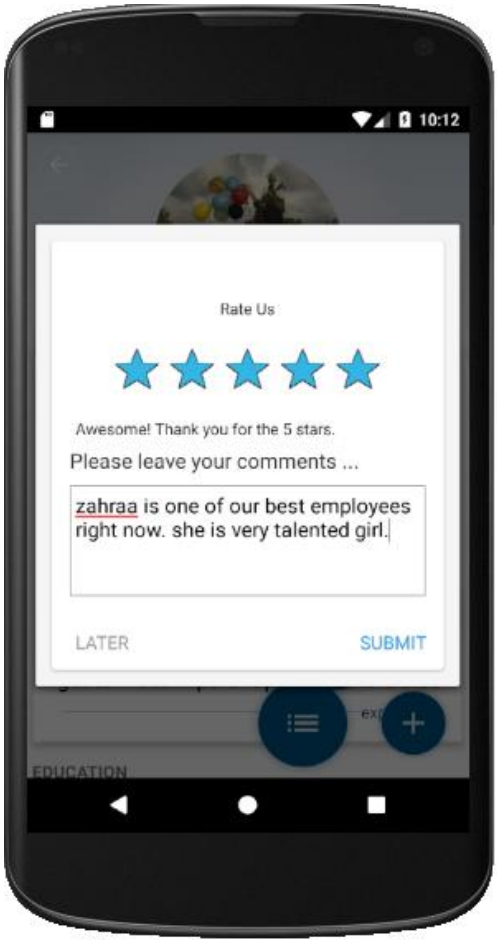
3.34. Request Button

Clicking the request button request the searched employee for a certain job position in the company that the company choose.

3.35. Chat Button

Clicking the chat option opens a chat page between the company and the current employee.



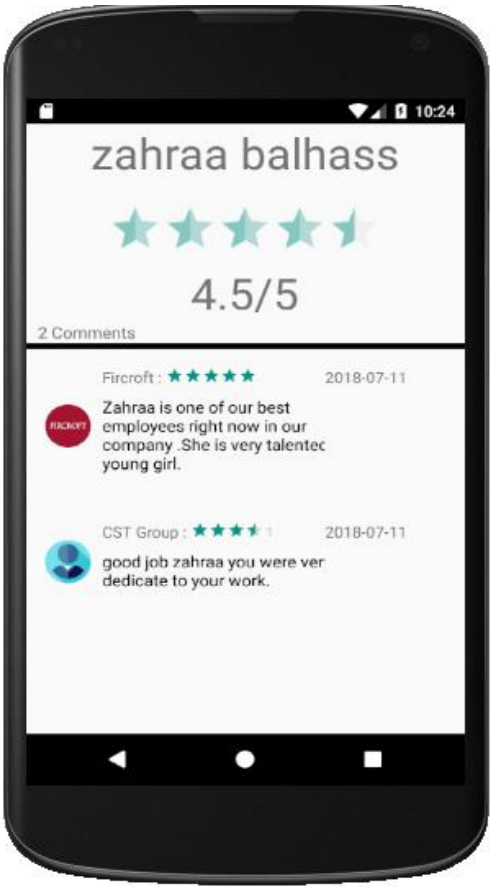


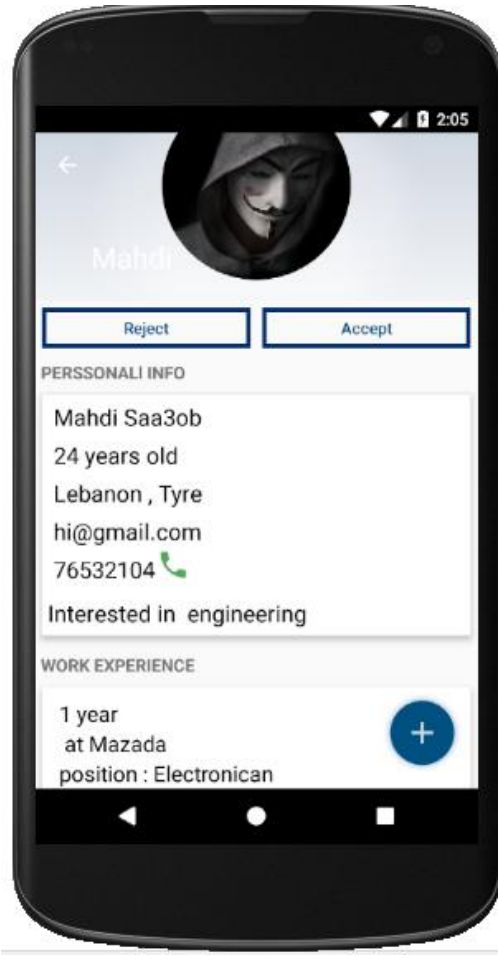
3.36. Rate Button

Company can rate the employee the stars that it sees he/she deserves and can leave a comment.

3.37. View Rates Button

Company can view the comments and rates for the employee.



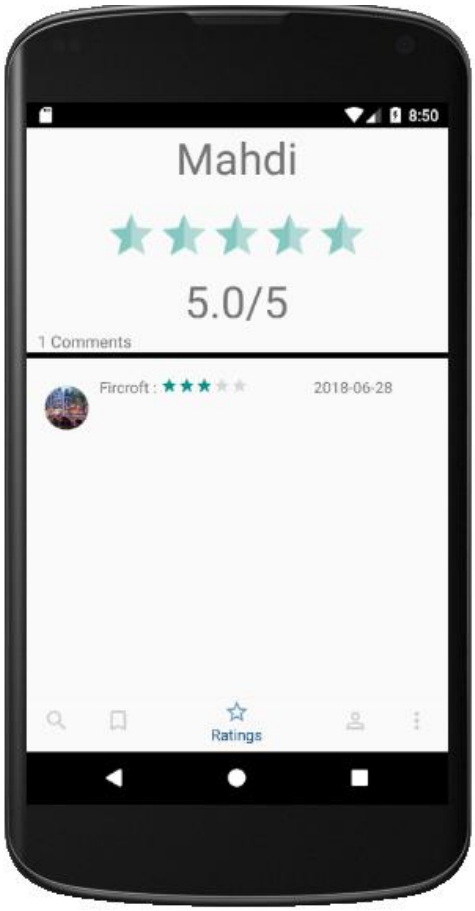


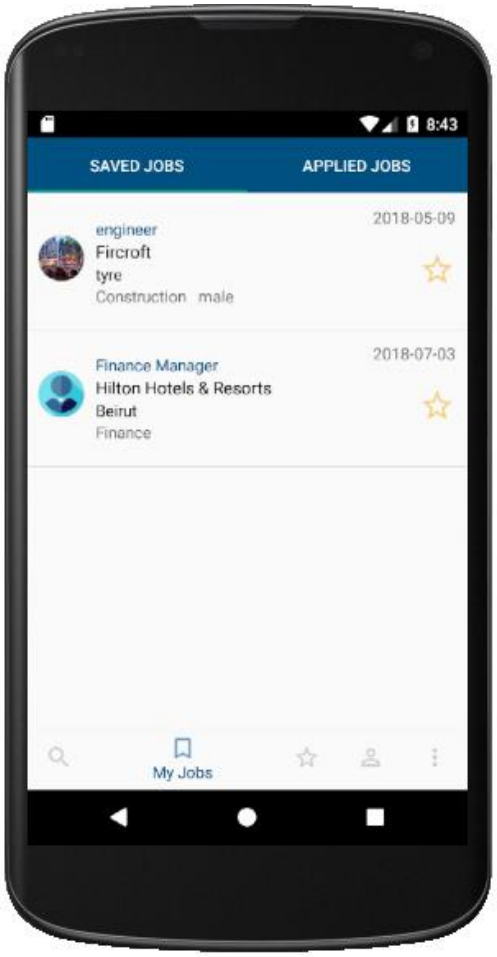
3.38. Applied Employee profile

Company can either accept or reject an applied employee, after viewing his information and may call him or open a chat with him.

3.39. Employee Ratings Page

This page shows for the employee the average rate that he got and the comments he received.



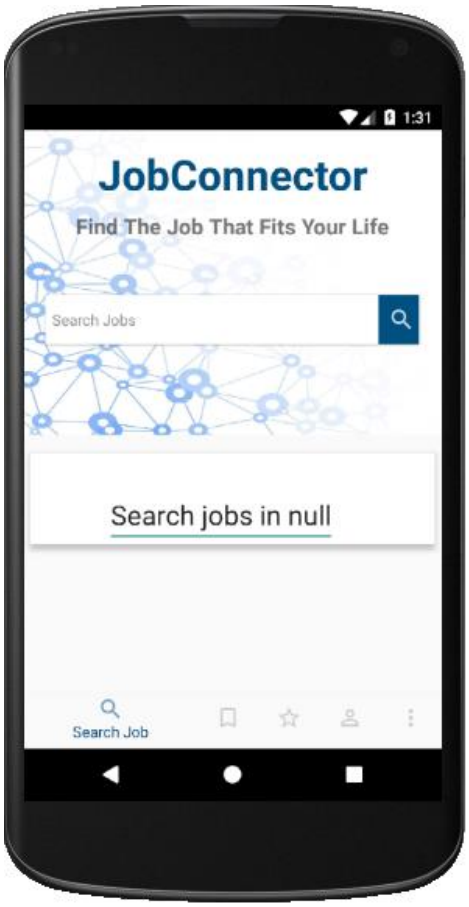


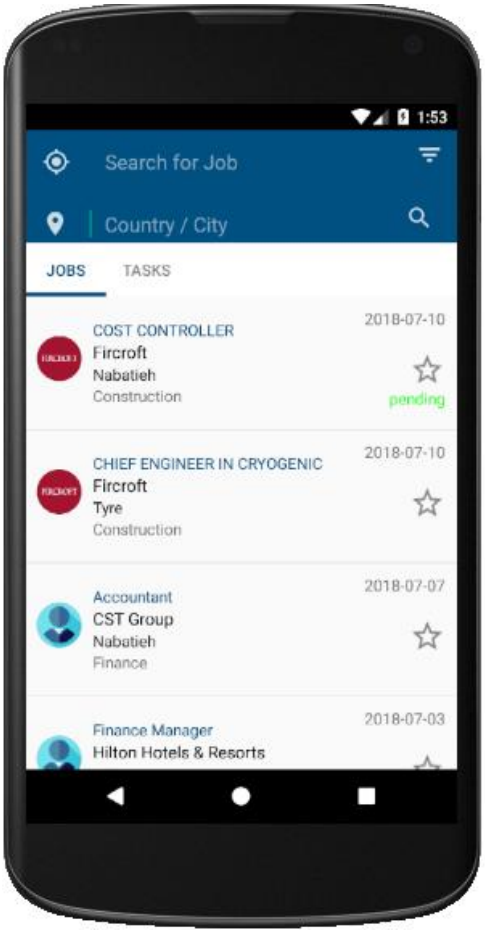
3.40. Employee My Jobs Page

This shows the stared jobs that he saved, and the applied jobs that he applied. Users can tap on any one of them to review the posts.

3.41. Search Job page

Clicking on the search bar, the user is redirected to the search page. And he is allowed to quickly get the job post in his current location. Thus clicking on the find job in 'current location', it redirect him to the same search page with the searched job in current location results. (Null since there is no location in the emulator)



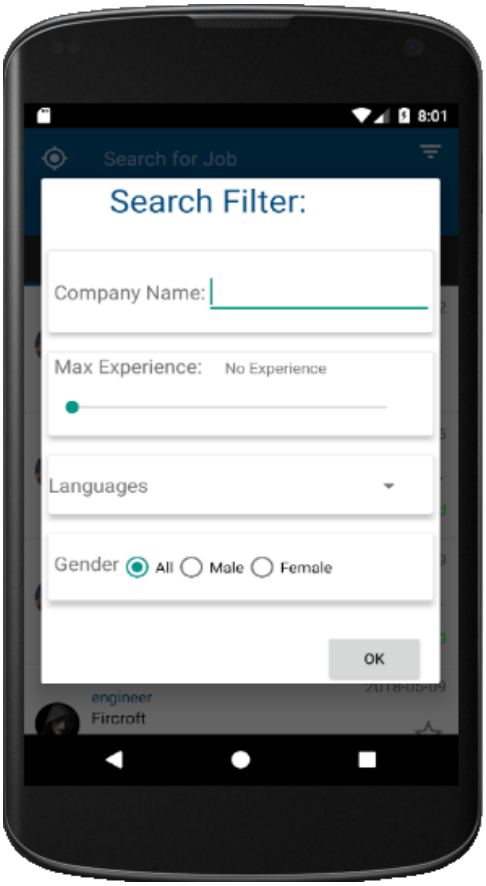


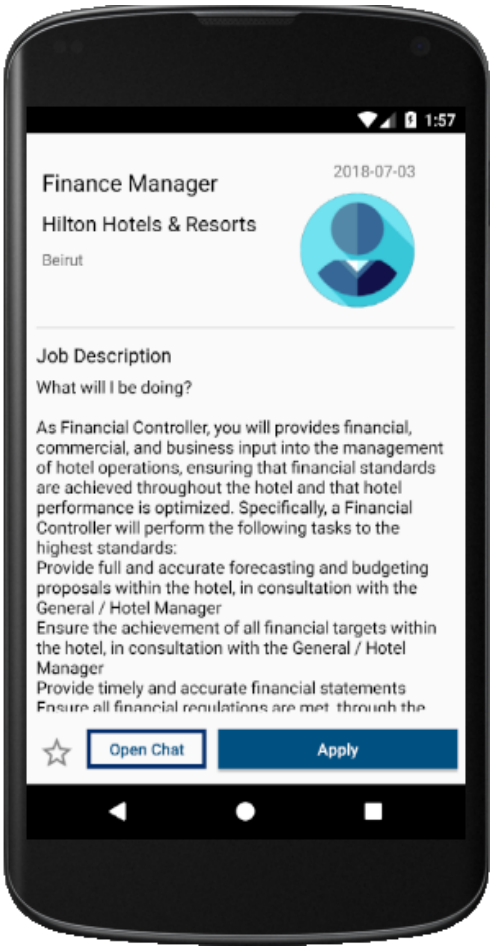
3.42. Redirected Search Page

This view is used by employees. They can any category or job they want in the first box and in the second they can enter location they want the job in. Moreover they can filter their search.

3.43. Search Jobs filter

User can search job posts for a certain company, or by deciding maximum experience for jobs, for specific languages that he choose, or even jobs for certain genders.



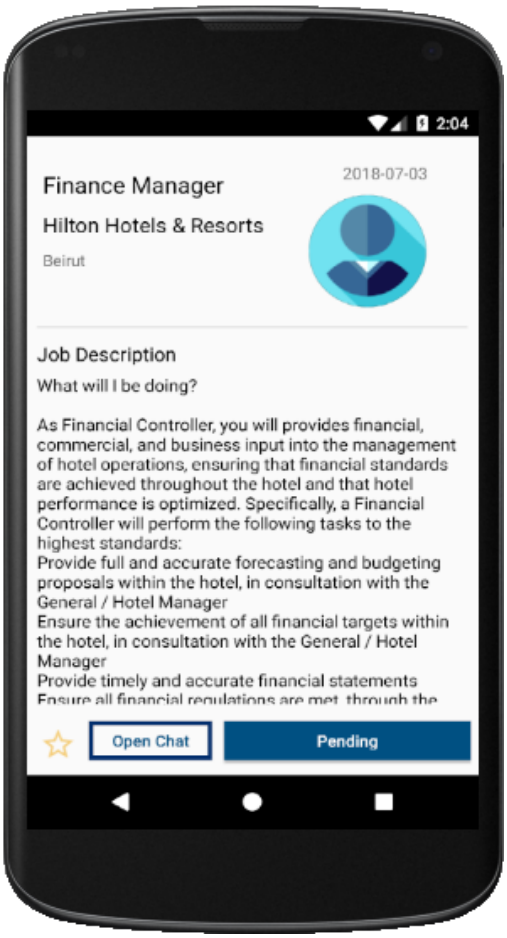


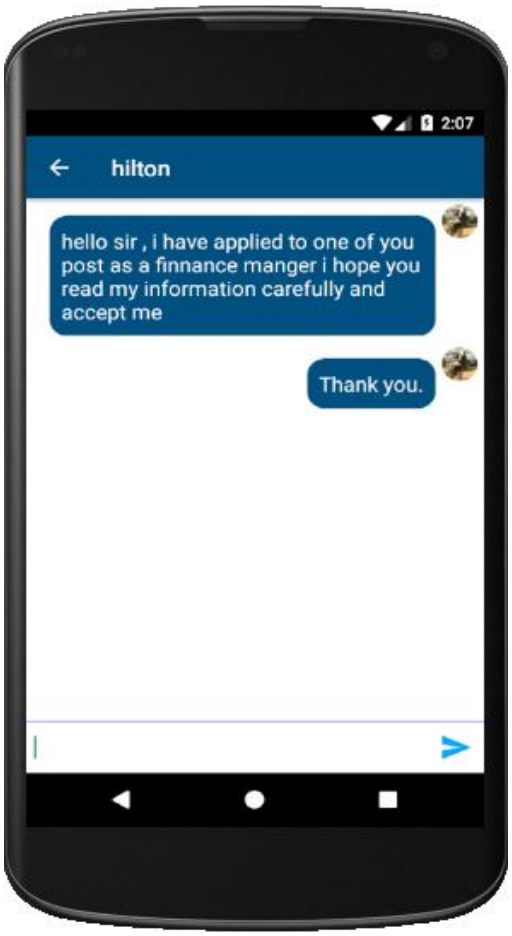
3.44 Post Details

This shows the details on the post. Including job description, job location, job category, languages, minimum experience required and required gender.

3.45. Save, Apply Post

User can save the post for later to see 'clicking the star' becoming yellow color, and un save it .And also he can apply to the job post, automatically his status become pending waiting for either to be accepted or rejected.



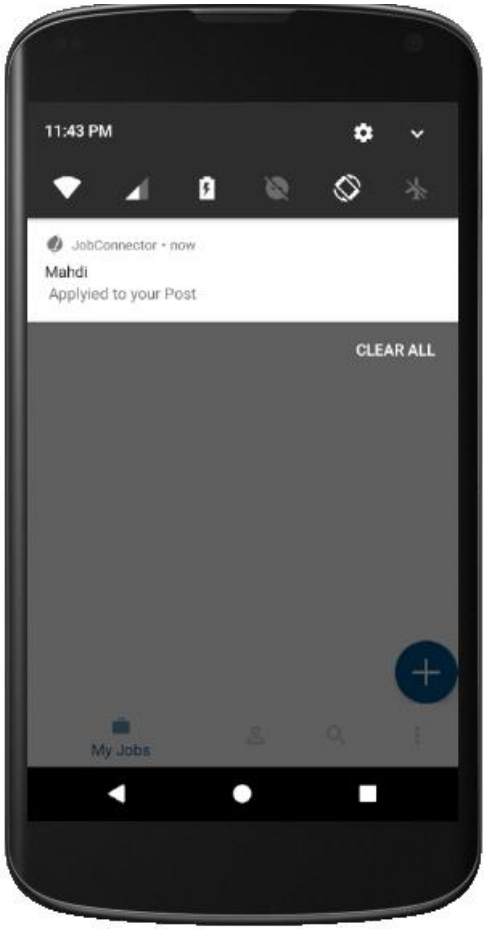


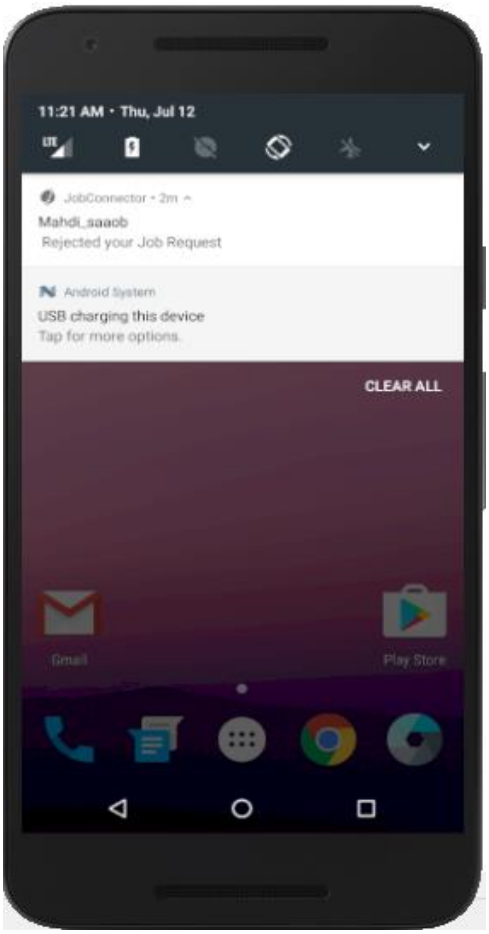
3.46 Chat Company

And also can open a chat with the company to chat and ask for certain details for example.

3.47. Receive apply notification

Each company will get a notification for to every **Apply Job** to their posts.



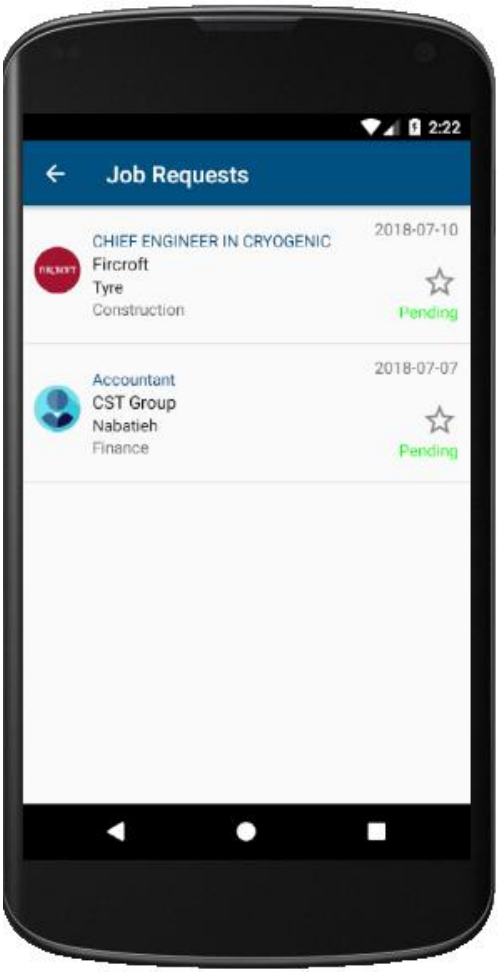


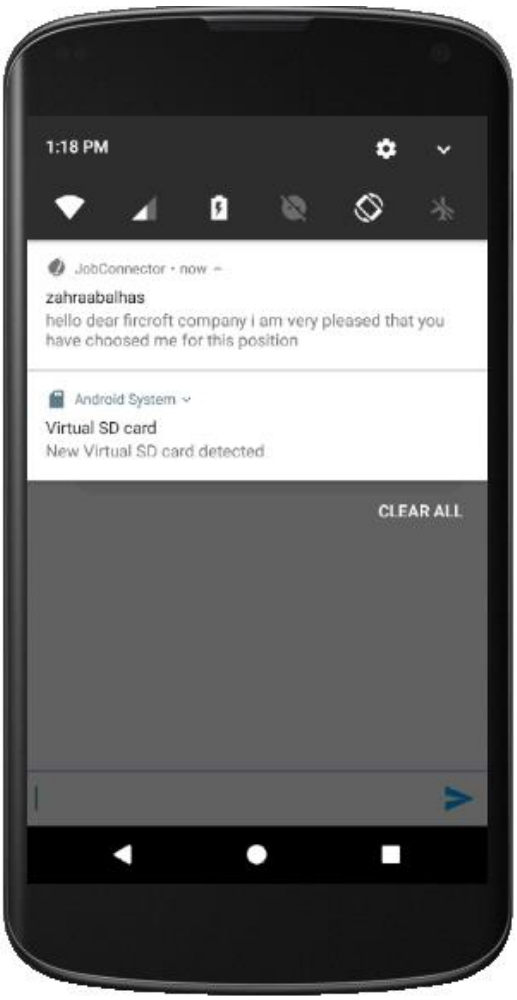
3.48. Accepted, Rejected Employee Applications Notification

Whenever a company accepts or rejects an application, the employee belonging to this application will get a notification and his status changes to either accepted or rejected.

3.49. Employee Job Requests

Lists the job requests that the employee gets from companies. Clicking them shows the information's about the job offer.



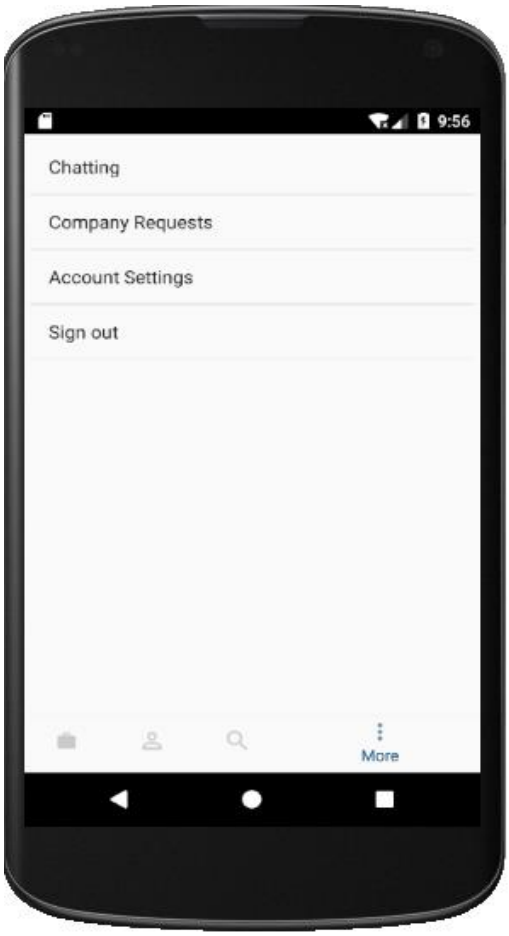


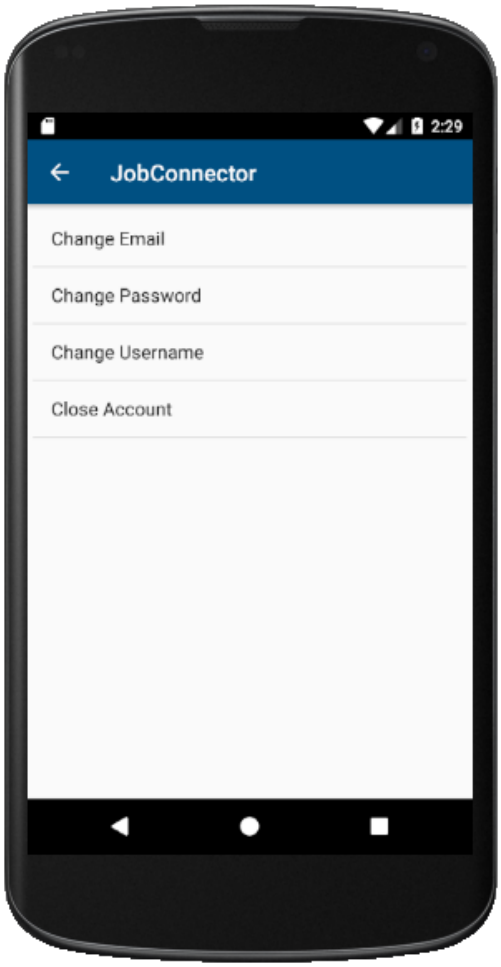
3.50 Company Notification Chat

When an employee chats a company a notification for the message is sent to the company directly.

3.51 More Page

More page for both company and employee main pages shows more options such as chatting, company /jobs Requests, Account Settings, and the option of sign out.





3.51 Account Settings

Account setting for both company and employee is the same containing: change email, change password, change username and an option of closing the account.

Chapter4 Conclusion

4.1. Conclusion

The JobConnector application is an important tool for both jobseekers and recruiters. Most of the traditional methods are time consuming. The main purpose of the proposed project is to save the time of employee as well as the employers. The JobConnector system provides an easy to use menu where user can select different buttons according their needs. Find jobs & hire quality candidates for your company fast! With JobConnector, you can job search and get notifications for work requests. Find work fast and build your career in a single click.

4.2 Challenges

4.2.1 Young Developers

We believe through this process and with challenges we faced, we have become four young developers that have learnt how to

- Have an idea
- Think about it
- Research around the concept
- Not to be afraid to confess about being wrong
- Do what it takes to finish the job
- Deliver well designed and developed app

4.2.2 Technology

Android development is like a puzzle where you have to put the right tiles together in order to get working. This process at the beginning was a bit challenging, as we had to make Android SDK to connect to a web server to process information from the server to access the database—like a direct line from user to database.

4.2.3 Time

The last, but not least which can be even called our biggest challenge in this work has been the factor of time as both of us are working full time and studying beside it. To agree on appointments and meet up was one of the most challenging parts of the job, as the project itself was a very interesting subject and it was fun to get the job done, but we learnt quite a lot from this process to be well structured and plan a head.

4.3. Upcoming Project Features

4.3.1 Set posts alarm

To facilitate users, we propose to provide a function that user can choose the companies he/she would like to keep updates with its all newly job posts. This function saves all efforts on searching for companies posts.

4.3.2. Email Confirmation

To authenticate the user, we plan to send a short message to the user's email upon registration. This prevents users from using fake email addresses.

4.3.3. Getting Offers

We'll create one more table, user_log in the database that stores a record of users' (employees) last login date and their last job application date. There are a lot of features which can be built from this knowledge. For example, we can use this information to answer the question; is user X actively looking for a job? If so, they can be offered a product for creating an effective resume. Users who aren't actively looking for a job would not receive such an offer.

4.3.4. Uploading Resumes

We'll allow employees the option of uploading their resume, when companies would be able search for employee with cv's and print their resumes and choose according to it.

4.3.5. Video Interview

Companies and Employees would be able directly to make an interview with a click of a button.