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Web-Based Method to Connect Organizations and IT People Using Iterative Model

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Abstract: Nowadays the actual problem is that there is not any proper platform where software houses can collaborate or any proper marketplace where people related to IT fields can get jobs. The people fear whether the organizations are real or fake or whether they are registered or not and the individuals are finding registered organizations to get jobs. This work is making a project to solve all these problems. This work has made this project solve these kinds of problems. This project has used the iterative model, the iterative model is used to do all steps of development iteratively. This model helps make a project step by step. This project consists of two breakthroughs first one is a mobile app and the second one is the web. In mobile apps and the web, this work has used the Iterative model, first, the admin panel is made where the organizations can be managed by the admin and after that, the user interface of a mobile app is designed and then the app relates to the database which is mongo dB and with backend which is made in node Js. Similarly, on the web, this work has first made the user interface and then it relates to the database and back end like mobile, and technologies used on the web are the same as mobile. This work has done great research work to make this system and our system better than the existing systems and has removed all flaws that were in the existing systems. This work has collected data from registered organizations. These organizations are real and registered. This work also made a feedback system from their people who can give their feedback and this work can improve our system according to their needs.

Index Terms: Connect Organizations, Jobs, Collaboration, Web, and Mobile App.

1. Introduction

The actual problem of the present day in collaboration platforms and the freelancing marketplace is the lack of confidence between organizations as they are real or a scam, and job opportunities provided by these organizations get required a person for a selected job. In case of individual who is in search of a job can get a certified job without any risk is very hard to find [1]. There is no specific platform where software houses can collaborate, and people can't find a real and suitable software house and apply for a job. All these kinds of inconveniences lead us toward delays and hard to complete a project and if it is larger becomes hard and unable to complete. In the case of big organizations if they need to hire someone then it becomes difficult [2]. In software houses, if they need some help from other organizations,

they are unable to do this. If a software house required some help as they don't have enough manpower it becomes hard to fulfill so they may need to leave the required project if an unemployed person is a good developer it is hard to get the job if doesn't have too many resources [3]. If an organization needs to make collaboration, then it becomes harder as of privacy risk in older system, so they stop them to make rely on other organization. How to make secure their online resources? As their information about their clints and deals between customers are very important information which is not good for them to be unsecure as security, reliability and many other like these terms are the most important one for the organization to consider. Determining what kind of collaboration, they need? How to handle time zone? [4]Like they want to collab on a single project or multiple projects or maybe only on a single domain of a project all kind of information is important for both organizations and stakeholders to think about it [5] and that's why this work needs to take care of them.

How to check skillful people for a job? As this work gives them the option of advertising their job vacancies and allows them to post an ad as they need a different kind of developer according to their requirements. How to manage the project if it becomes hard to complete? This work has already discussed this in security and more precisely this work can say as they have some difficulty in completing their project so they can call someone to handle their extra burden by dividing their project work. How to handle and maintain project collaboration with conversation? The administrator is the main person in this problem to handle project collaboration to create a stream between the organization's conversation and provide the required protection and security and privacy between them and provide the required tools to them as they collaborate with ease despite this complex world. But the solution for all these kinds of massive problem should be a unified platform that is certified and accept only real people and organization and have the capacity to block and restrict every kind of scammer and immediately come out from any kind of risky situation. To tackle all kinds of these inconveniences these organizations and software houses can use our system which will give them the option to advertise job vacancies according to their requirement (a developer can get a job according to his/her requirements and ability) and can make collaborate in case of need and decrease their burden and can get help [6]. The main motivation for developing that kind of environment is to solve the problem and make it easy for people and organizations to work collectively in a collaborative environment [7]. Make it robust against any kind of wrong people who may try to get benefits by harming others or simply harming other people and making them worry and they may quit their great work. Every organization and administrator has a role in this system other people can see the job opportunities and manage their profiles [8]. Organizations can post jobs according to their requirements and also post about their collaboration status, admin will allow the organizations to get registered and can also remove anyone and can put a fine in case of any unlawful activity and make everyone follow terms and conditions to run the system smoothly [9]. The objective of this project is to develop a system in the light of above requirements and make organizations advertise their required job person or developer through this collaboration system when an organization uses this system, they need to pay charges for its users to make it more useable and reliable as well as successful as a marketplace [10].

There is no proper tool for organization and software houses collaboration and if there is any like fiver people and organization does not get collaboration as the main service from these tools. They are designed for people-to-people and people-to-organization interaction but the organization to organization is very rare [11]. Our motive in developing this system is to solve the problem of organization-to-organization collaboration and make it possible for an organization, software houses, and people to work collectively in a collaborative and certified environment. Make it robust against any kind of wrongdoings by people who always try to get negative benefits by harming other hardworking people or simply harming them. People may quit their job but this work is motivated to resolve all that kinds of problems related to their satisfaction and decrease all kinds of risks [12].

Our involvement in this world of connectivity by software and through this IT solution is to resolve all kinds of flaws in the existing system like improving security and confidentiality of people-to-people connection and in organization-to-organization collaboration. This work has done a great kind of research work to point out flaws of ex systems and make all kinds of improvement which can be done by us. This work develops it on that kind of model in which this work can improve it on feedback bases also. This work has collected data from the registered organizations and the data is accurate and people can see real organizations and jobs offered by organizations. Organizations' names can be searched from the search field and users can apply for jobs. The design of mobile apps and the web is responsive and can be run easily in any system and is attractive also.

2. Related Work

The existing systems represent those types of technologies that have put a great impact on organizations' work in this modern era of technology. For example, from Zoom to Slack to others, collaboration tools become very famous in these fast-moving sectors, particularly in the technology industry [13]. The adoption of this technology platform has quickened with the rising of remote working & distributed labor forces around the globe. When cooperation, culture [14], and communication have become more critical, these systems have gotten in to help teams in achieving project milestones and sharing information.

Last year the most comprehensive and most advanced collaboration tools are supported by the strongest customer success and give help in building sustainable organizations as following this work discussed briefly. Smith et al. [15]

proposed a new technique and said in their article that collaboration is the need of the hour and this work doesn't need to spend our money on transport as this work communicates and shares files online with each other through networking tools. In education, it plays a great role in online learning platform development. Collaboration and technologies like this make information more accessible than at any time in the past and it is one of the biggest benefits of technologies like this. Jackson et al. [16] proposed a new technique and said in their article about the benefits of internet and collaboration software for students in this era of great connectivity and networking. Today students don't need to come face-to-face to get classes as they can take them online through collaboration software.

This can decrease the time spent on the study as they directly come to study online without the hustle of transport and come to the institution and give their time as of their choice. Rich et al. [17] proposed a new technique and said in their article about the collaboration of a human and computer through software which has case a great impact on human history as this work created an intelligent bot talking with us and helping us. This gives us a great leap forward and helps us make collaboration software in this era in which people can do remote work and get benefit from a vast amount of information available on the internet and is a type of collaboration. Mullarkey and Matthew [18] proposed a new technique and said in their article about the GitHub tool which helps the developer collaborate in programming code. People share their work on this platform, and anyone can get benefits from this work. Developers can make collaboration with other developers of their type or their required working need.

Maydell and Karsten [19] proposed a new technique and said in their article that APIs (application programming interfaces) play a great role in the collaboration of a team developing software as it divides the work between different people working on different module and connect them with different APIs and then combine them in a one product software with the help of these APIs. As it is a way of collaboration between different team members in a software organization working on the development of a software product. Banker et al. [20] proposed a new technique and said in their article that Previous research pointed out that supply chains collaborate enabled companies in competing more efficiently in the overall global economy.

They investigate a class of collaboration software in product design and development that gives the name collaborative product commerce (CPC). Executing from previous research in their media richness theory and their organizational science, they develop a great theoretical framework to the make study impact full on CPC on product development. Stand on data collected from about 71 companies, they test their research hypotheses based on the impact of CPC on all product design quality on their design cycle time and development cost. They find out that CPC implementation is also associated with greater collaboration between product design teams. This kind of collaboration has great significance, and a great positive impact on reducing cycle time, product quality, and product development cost.

Furthermore, analyses show that CPC implementation relates to further cost savings that can result in improvements in product design quality, design development time, design reuse, rework costs, and lower product design documentation. Janssen et al. [21] proposed a new technique and said in their article that Collaboration personas are a tool that is used in design for groups. Previous work posits that collaboration personas can give help in improving tool adoption by giving help to designers in creating collaboration tools that are better targeted to the main goals, also as needs, and interactions of members in collaborative groups. They present a comparable study design and user experience users who used both individual personas and collaboration personas. Participants made a mind-blowing walkthrough and gave redesign suggestions in a collaboration tool. Their results give that the focus of the great walkthrough and make redesign task changed, along with collaboration personas giving more group focus. Collaboration personas make them a great complete discussion, as shown by a larger amount of time used on the work other than individual personas.

Despite previous training and experience with individual personas, collaboration personas were preferable and better give support to the task, since they have focused on their interactions and groups of people. Lanubile et al. [22] proposed a new technique and said in their article that Software engineering includes people collaborating in the development of better software. Collaboration is more challenging, especially in different time zones and if it were without face-to-face meetings. In such cases use collaboration tools in all alongside the product life cycle of software to let them work together, stay connected, and achieve goals together. It also provided a great overview of technologies and tools for a great collaboration. Their article summarizes trends and experiences selected from recent IEEE International Conference on Global Software Engineering (IGSCE) conferences. Borissova et al. [23] proposed a new technique and said in their article that Worldwide trends in digital field transformation and the increasing importance of remote collaboration of different teams' members connected through specific software platforms.

In difficult times and crisis mode, the chief information officer (CIO) must propose different digital collaboration tools to make it possible for employees to work remotely as a great solution for the short term. Predicting the best software products needed in the involvement of different experts in this area of IT, IT specialists including CIO and digital service team. Towards this goal, a group of decision-making models suitable for fast evaluation is only proposed. This model is also capable of making the group decision considering the opinions with different possibilities. The three main products are suitable for business companies, research organizations, and in universities. The out results show the practical applicability of the group in the decision-making model by objective and motivated decisions.

3. Materials and Methods

3.1 Overview

Our system provides services using a software system that is developed based on an iterative waterfall model and changes are continuous according to feedback as shown in Fig. 1. It is a mobile application as well as a desktop and web application run on mobile, computer, and web. This work is using Nodejs as a backend which is developed on the bases of JavaScript and is very famous and fluent in this era and used by most of the big tech companies like the meta parent company of Facebook, Instagram, and WhatsApp Messenger. On the Application front end, this work is using Flutter very well-known due to its parent company Google and the language of Flutter is Dart. Everyone knows about google. This Flutter app development is their recent framework for mobile and desktop as well as a web application with single code equally famous to React Native of Facebook. The web frontend is being developed on Reacts JS which is again developed on the bases of JavaScript which is again an extension of simple java language, and this Reacts JS is also much more popular because of the same Facebook company backing. In last the database of our system is on MongoDB which is a NoSQL database management program. It is an open-source NoSQL. NoSQL is used as an alternative to a traditional database. NoSQL data is quite useful for working with a large set of distributed data. MongoDB is a tool that can manage document-oriented information. Users need to login into our system after their registration as an individual, Organization, or as Administrator and can operate it. Run on the go and help every organization and software house to get benefits by using it.

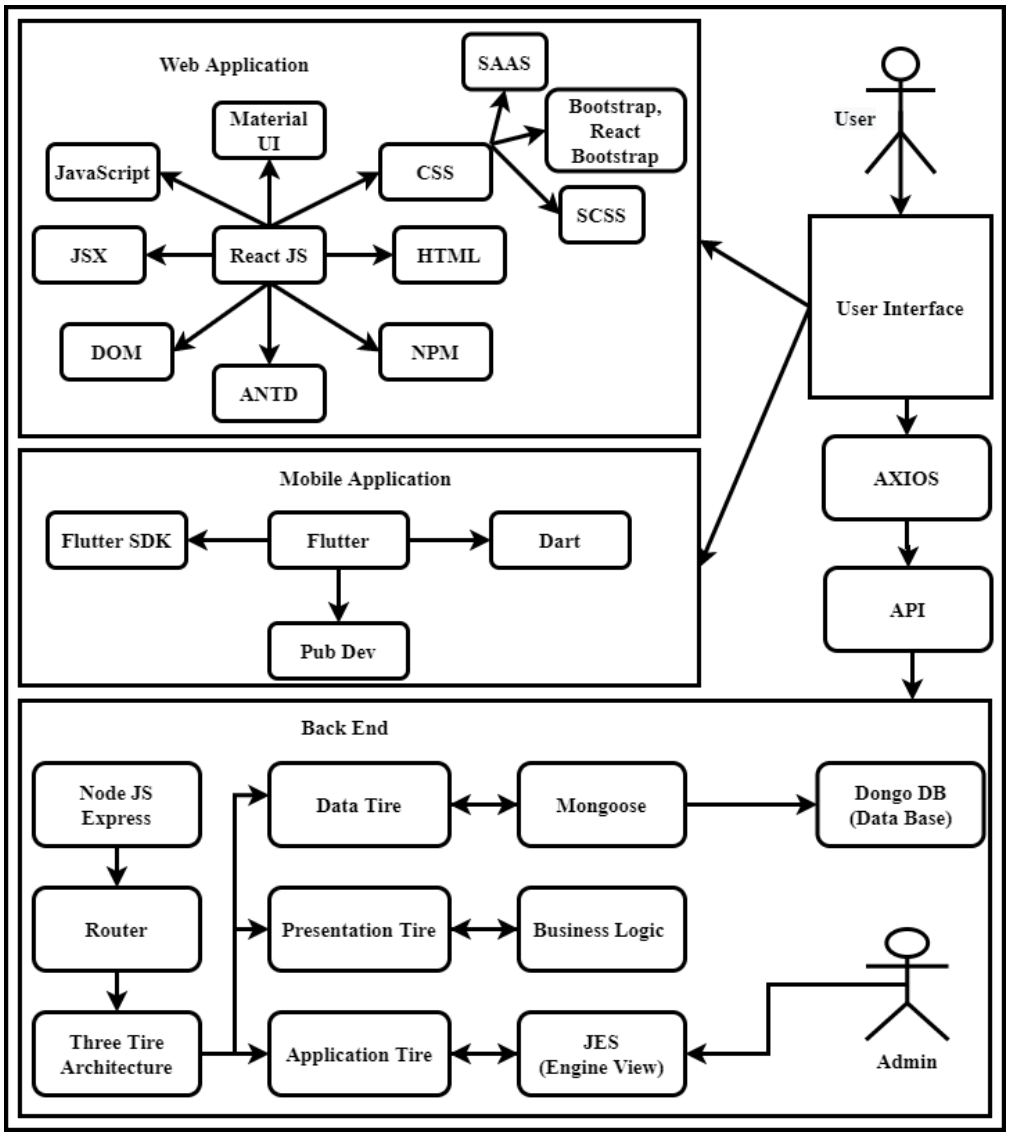


Fig. 1. Proposed model diagram

3.2 Organization and Data Collection

The number of organizations and people connected through this system is not specific because it is a marketplace and as many people can join it as they want after fulfilling all kinds of legal certifications and agreeing on terms and conditions. For testing purposes, as the system is working, this work takes consideration of some 7 to 10 organizations to join it and this work fulfills our test. But in this kind, this may seem like nothing as it will handle multiple organizations and people and can easily get failed. To counter this kind of scenario this work needs to upgrade our system on a regular basis and take all feedback and flaws into consideration. Many systems use the same kind of approach in this situation as this work doesn't have enough resources for testing. The only possible scenario is to change with time and resources.

3.3 Web with React JS

This work is using React JS in the Front-End of our website so that users can interact and use our website. React JS is an open-source Front-End JS library for creating UI components-based user interfaces. Meta (previously Fb) and a network of independent developers and corporations manage it. The advantages of using React JS are performance, speed, flexibility, reusable components, usability, etc.

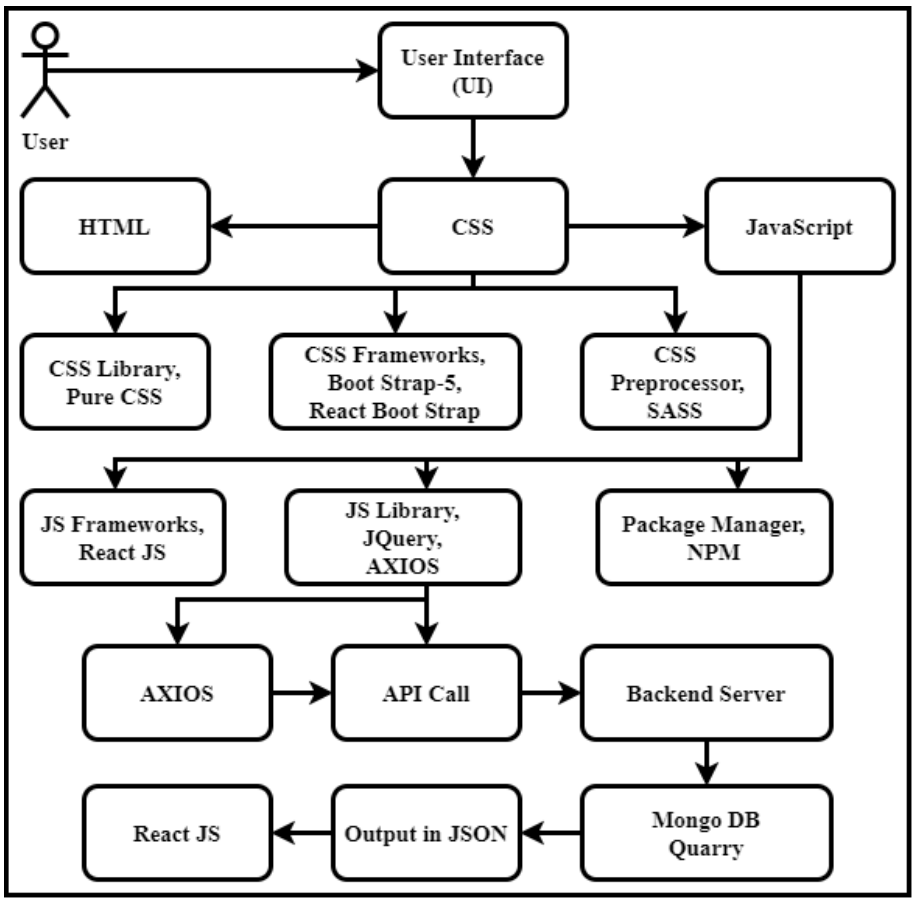


Fig. 2. Web React JS Workflow

According to Fig. 2, the user will first interact with the UI of React JS. When the user opens the website the HTML, CSS, SCSS, Bootstrap, React Bootstrap, and JavaScript files will be loaded and provide GUI and Functionality. When the user signs in, log out, or opens an organizations page or jobs page, etc. the JS library Axios will call the API and the API will get the data from the database which relates to the backend server and after getting or posting data it will show the data in React JS website to which user can interact.

3.4 Mobile App with Flutter

This work is using flutter framework of Dart Language for our mobile application interface and Dart is the language developed or made by google. Flutter is an open-source and free user interface software development kit made by Google. That is possible to develop cross-platform programs for Linux, Android, iOS, Google Fuchsia, macOS, Windows, and the web with a solitary codebase. Fig. 3 shows the flow of the mobile app.

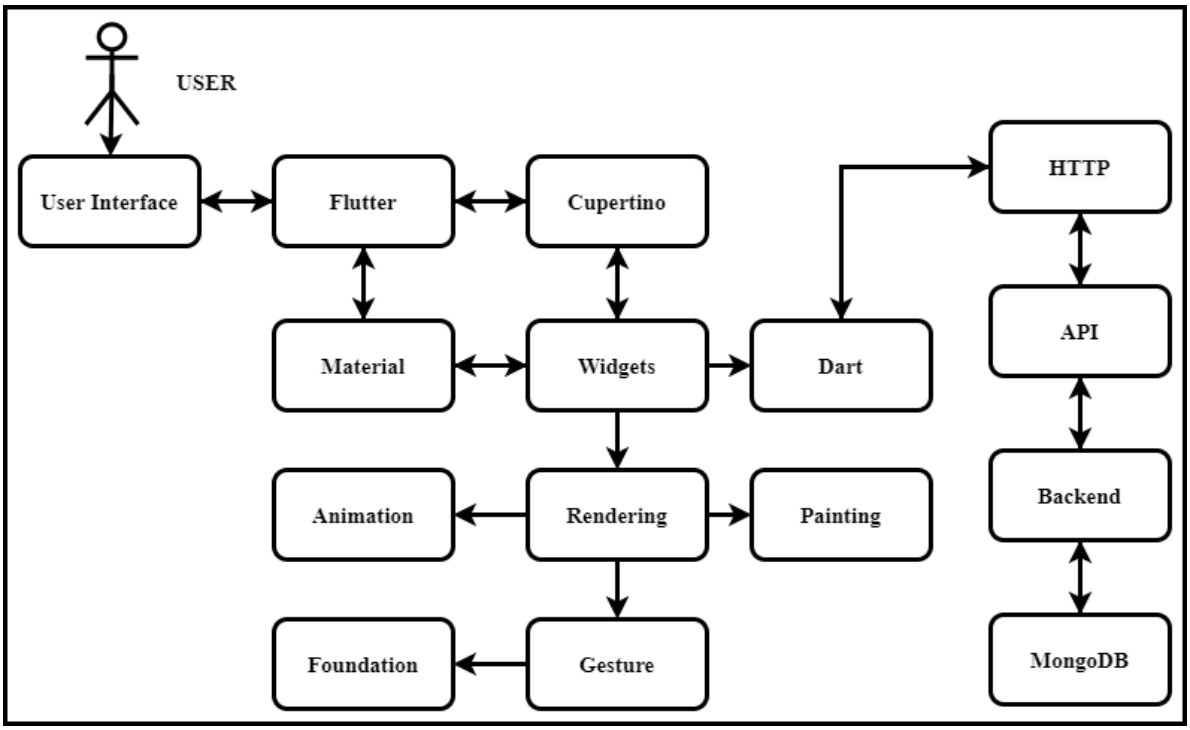


Fig. 3. Mobile App (Flutter) Workflow Diagram

Dart is a client-side language of programming that was designed for online and mobile app development. That was built by Google and may be used to construct both server and desktop apps. It's a C-style object-oriented, garbage-collected, class-based language. In the Flutter framework, widgets are the most important class hierarchy. A widget is an immutable representation of a user interface component. Elements that govern the underlying render tree can be inflated from widgets. Widgets do not have a changeable state (all their fields must be final). When a Stateful Widget is inflated into an element and included in the tree, it generates a state object (through Stateful Widget create State). A widget can appear in the tree one, two, or three times. A single widget, for example, can be inserted into the tree several times. When a widget is added to the tree, it inflates into an Element, which is a widget that can be moved about. The Material design language is used in a suite of iOS, Android, web, and desktop apps called Material widgets. Apple's Human Interface Guidelines are used to apply the current iOS design language to Cupertino widgets. Material design was created for all operating systems, not only Android. A Material app developed in Flutter looks and feels like a Material app on any device, including iOS. If you want your app to seem like a regular iOS app, you should utilize the Cupertino library. Cupertino applications may function both on Android & apple, although owing to licensing issues, Cupertino will not have the required fonts on Android. Consequently, use an iOS-specific device to design a Cupertino app. HTTP is used in a flutter to fetch and post some data to the Database using API. This is the main kit that is helpful in the communication of the mobile app front end with the backend. And perform the required functionality same on the mobile app and the web in this way, you can see the same data both on the mobile application and on the web application.

3.5 Backend with Nodejs and Express

This work uses JavaScript language and the most popular Framework of Nodejs Express. Nodejs is a cross-platform Engine that runs JavaScript code outside the browser. This work Builds our backend rest application programming interface with Nodejs Express Framework. Node.js is used by many developers across the world to build I/O-intensive web applications such as single-page apps, video streaming sites, online chat apps, and other web applications. The platform has a lot of benefits over other server-side technologies like PHP or Java, making it a preferable choice.

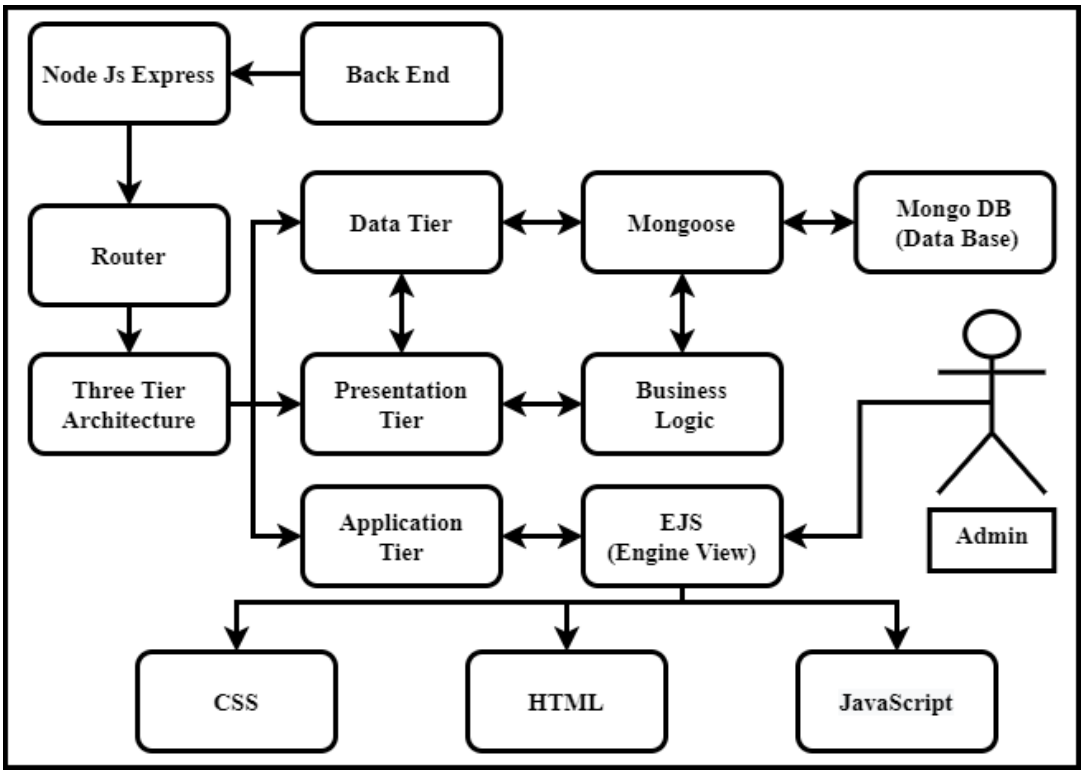


Fig. 4. Backend Workflow Diagram

Fig.4 shows the flow of the backend. The most popular Framework of Nodejs. Nodejs is a cross-platform Engine that runs JavaScript code outside the browser. The way an application's endpoints react to client requests is referred to as routing. Basic routing is a good place to start if you're new to routing. Routing is established using Object methods of Express app corresponding to HTTP methods, such as an app. get () used for GET requests, and POST requests app. post() is used. The app has a thorough list. METHOD. With app. all (), you may handle all HTTP methods, but with the app. use(), you can implement middleware as a callback function. When the program gets a request to the provided HTTP method and route (endpoint), such methods for routing give a callback function (also known as "handler functions"). Alternatively, the app "listens" for requests that match the set route(s) and answers appropriately. This work is following the three-tier architecture in our backend when any of the users interact with our mobile app or web app then the user gets the response after going through the request through our business three-tier architecture. In this, there are three layers one is the presentation layer, the presentation tier, and the data tier. The communication layer and user interface through which the user interacts with a program is known as the presentation tier. The main purpose of the presentation layer is to collect data and give information to the user. E.g., this top-level layer can be accessible by a web browser, desktop software, or a “Graphical user interface (GUI)”. Web presentation levels are typically created using HTML, JS, and CSS. Desktop applications, depending on the platform, may be written in a variety of languages. The application layer, sometimes stated as the middle tier or logic tier, is the application's beating heart. That tier processes data from the presentation layer using business logic, which is a collection of business rules that is occasionally compared to data from the data tier. The data layer's data can be removed, added, or changed by the application tier. The application layer, which interfaces with the data tier via API calls, is commonly written in Perl, Python, PHP, Ruby, or Java. The data tier, also recognized as the data access tier, database tier, or back-end, is where the application data is maintained and stored. It is conceivable to operate a relational database management system like MySQL, PostgreSQL, MariaDB, DB2, Oracle, Informix, or MS SQL Server, and a NoSQL DB server like CouchDB, Cassandra, or MongoDB. In this 3-layer application, the application tier routed all the communication. The presentation and data tiers are not able to connect directly. Mongoose is a JavaScript object-oriented programming framework that integrates MongoDB with Express. EJS stands for Embedded JavaScript, which is a sort of JavaScript that is embedded in a webpage. The templating engine is known as “Templating” used by Node.js. The template engine allows you to create an HTML template with minimal coding. Before creating the final HTML, it may also insert data into an HTML template on the client side. EJS is a simple templating language that builds HTML markup with plain JavaScript. It also makes it easier to include JavaScript in HTML websites.

4. Result and Discussion

4.1 App Result

After making all strategies and following our model this work made a mobile application using the flutter framework of dart and Dart is developed by Google.

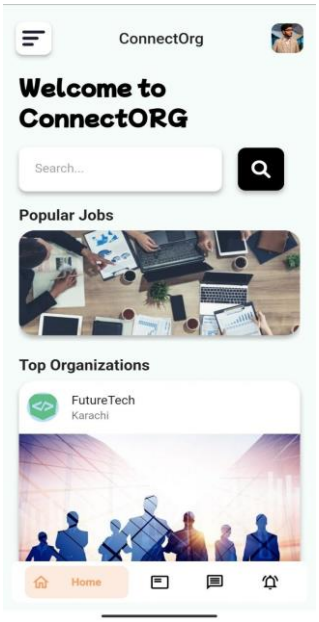


Fig. 5. Home

Fig. 5 shows the home screen. When a user entered the right email and password then the user can access the home screen. On the home screen user can view all the organizations and, on the top, there is a slider for top organizations.

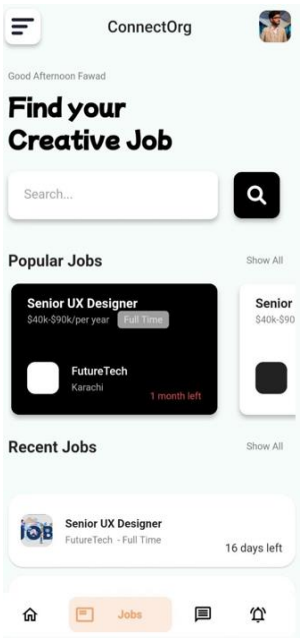


Fig. 6. Jobs Screen

Fig. 6 shows the Jobs screen. Users can view all the jobs that are created by the organizations, and they marked them as an active job.

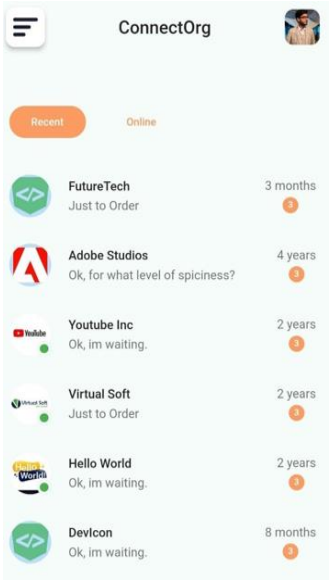


Fig. 7. Chat Screen

Fig. 7 shows the chat screen. Users can view all their friends whom user contacted in the past. When a user contacts any user then that user becomes his friend and will show on his/her friend list. Users can contact or message again in the future.

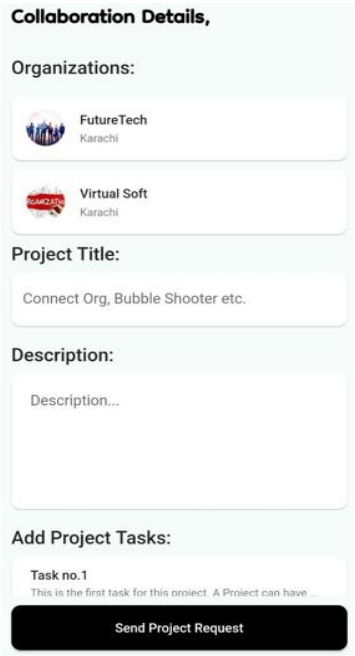
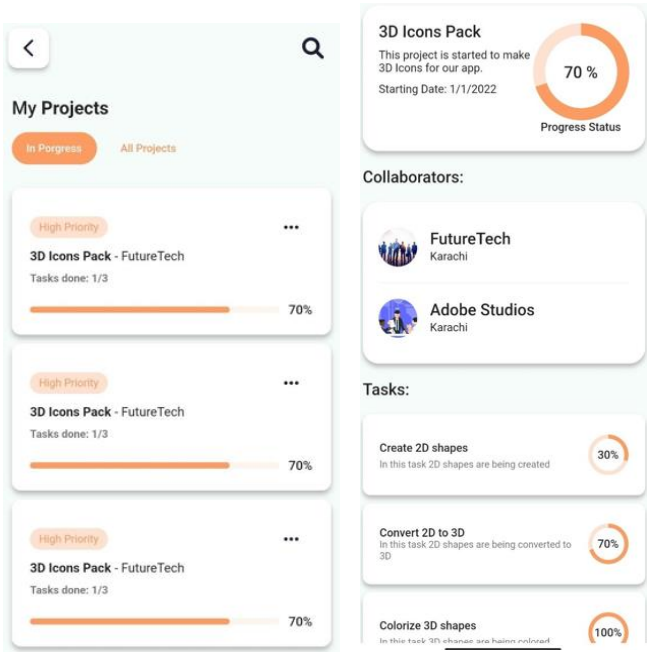


Fig. 8. Collaboration Screen

Fig.8 shows the collaboration screen. Fig.7, is a details screen. After clicking on the collaboration button the user will be able to see this screen and can assign a task to another user and us. User can add tasks as much as he/she wants. And finally, can send a request for collaboration.



a (Projects) b (Details)

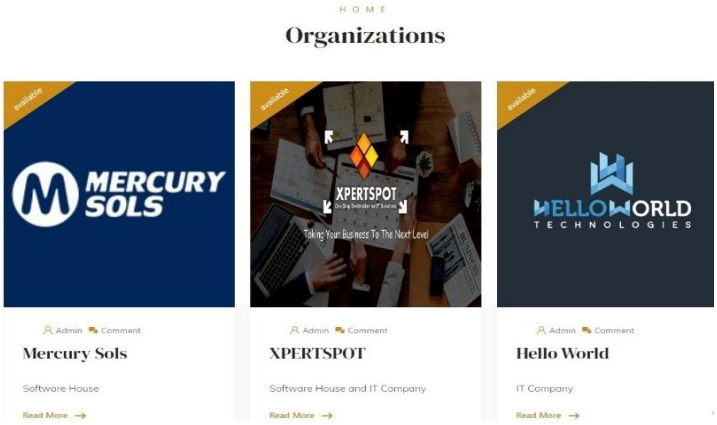
Fig. 9. Projects and their Detail

In Fig. 9 the part is the project screen, and the b part is detail screen. If the user logged in as a manager, then the user can see all their projects that are in progress and can also view all the projects. Then after clicking on the project individually user can view, it, it's detailed individually and can view the progress of the project that how much is it done, and how much time it will take.

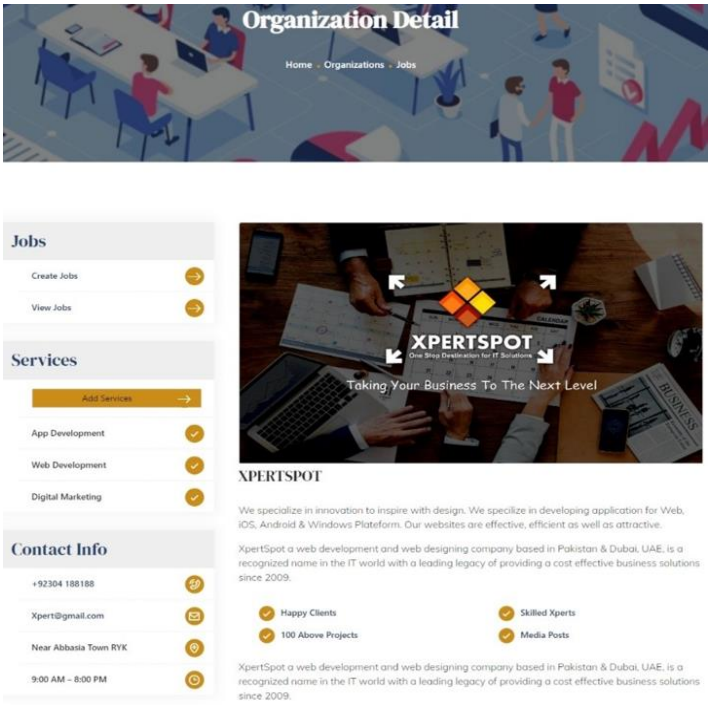
Fig. 10. Dashboard

Fig. 10 is the dashboard screen. This is the dashboard for the manager here users can view the summary of themselves like how many projects are in progress and how many projects have been completed. And much other information related to their organizations and their popularity likes etc. Managers can also view the owned organizations, and jobs opened or closed. Currently which project is in progress and what is the starting and ending date all this kind of information is mentioned on the dashboard. It gives ease to the manager to visualize the summary from just one viewpoint.

4.2 Web Result



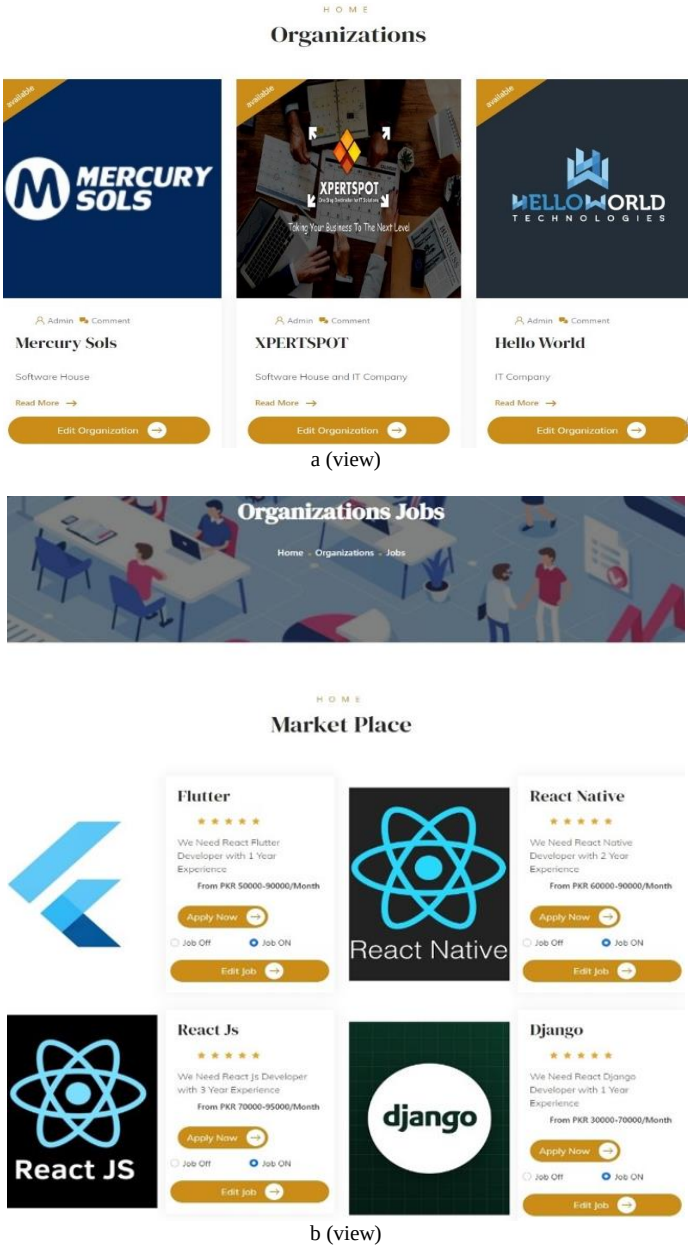
a (Organizations)



b (Organization and Detail)

Fig. 11. Organization and detail

Fig.10(a) shows the organizations and details of organizations; part shows the organizations and part b shows the organization's details in Fig. 10 (b). Here the user can view the approved organization and can also view the detail of the organization after tapping on the specific organization. In the detail section, there is more detail like reviews and services of the organization also.



a (view)

b (view)

Fig. 12. Owned Organizations and their Job

Fig.12 (a) shows the organizations and Fig.12 (b) shows the organizations' jobs. The manager can view all owned organizations on this screen. When a manager clicks on any organization then he/she can view all the job offerings of tapped organization and can on or off the job. If the job is the simple user can view that on their home screen else, they cannot view that job and cannot apply. When the manager clicks on the organization or on a job more options will be shown to the manager like he/she can edit the organization or job data.

4.3 Test and Result

After learning all the existing results and our model results, this work comes at this point that many other systems are also providing collaboration system, but they are not going through the procedure of security as our system take care of this thing so importantly. If any organizations are found in any illegal case, then the user can report that specific organization and after that admin can view all the reports on the admin panel section and Admin can perform the following action on it to decrease the illegal activities from an organization and many other organizations. As shown in Fig. 13.

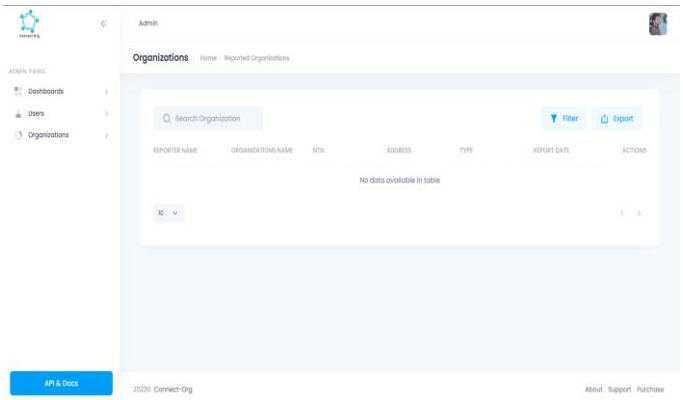


Fig. 13. Reported Organizations

I do not think any system provides as much security as our system provides to users. Admin must take care and investigate first then after investigation admin confirms that report. The Model this work follows for our system is also different than another system. This work is using an Iterative model system to support our system and work well in the market. The requirements can change as time passes and as our users' needs change according to the era. Choices and likes and dislikes can change as time goes on. Users must see new specifications in a new system then they must want to see those functionalities in the system then this work also must keep a section where users can reach out to us and talk to us without any hesitation. Our users will be most happy with our system as this work must take care of their choices.

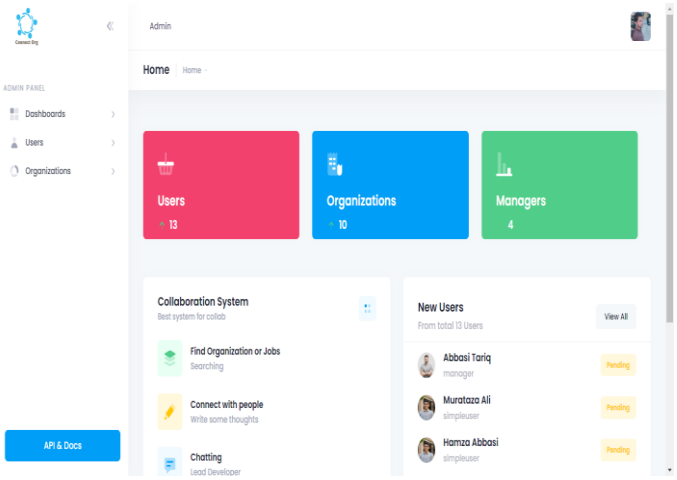


Fig. 14. Admin Panel

Fig. 14 shows the admin panel. Here the admin can see the users, organizations, and their managers. The admin can manage all of them. He can see how many users, organizations, or managers are registered in the system.

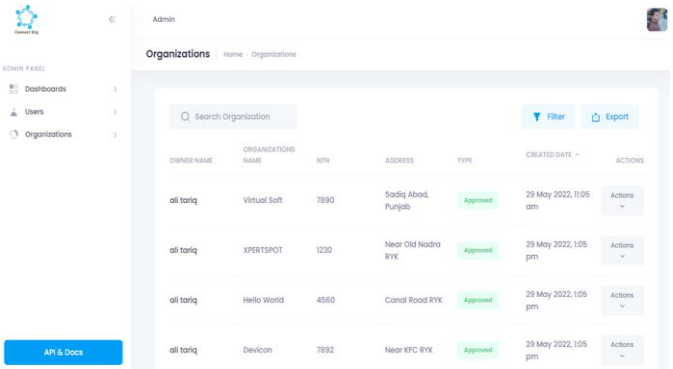


Fig. 15. Organizations dashboard

Fig.15 shows the organization's dashboard, where all the organizations can be approved and disapproved, if the admin approves them then they will be shown in the system to users otherwise not. The admin will approve them after checking all the requirements of registering the organizations and can disapprove if the requirements are not completed by the organization manager.

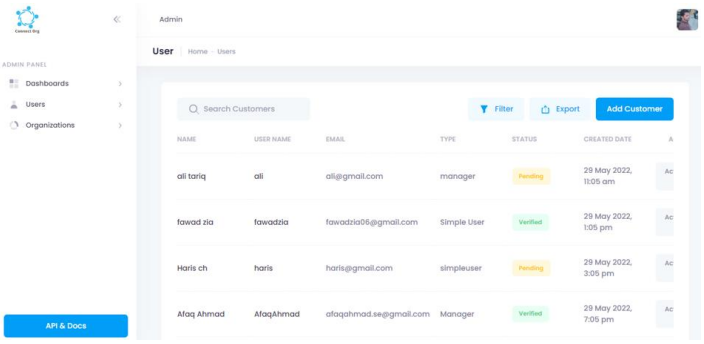


Fig. 16. User dashboard

In Fig.16 this work can see the user dashboard its functionality is like the organization dashboard, here the admin can see the users and can verify and remove them. The admin will verify the users by checking their data and users can be a manager or simple users.

4.4 Comparison

The complex and lengthy software development process necessitates technical expertise and project management skills. Adopting the right strategy before beginning a new development is crucial as it decides the project's success or failure in the future. A comparison of the developed and reported websites for online reservation. The websites are compared based on the developed model, model complexity, languages used to develop the project, location identification system integration, customer feedback, and some other strengths and weaknesses. [3] With these needs in mind, developed a new collaborative tool named EGRET (Eclipse-based global requirements tool) for distributed requirements management. [8] The Collaboration suggested in this model is a combination of face-to-face and collaboration software tools. [9] This system provides the 5 facts to the people that are trust, extraversion, conscientiousness, emotional stability, and openness to experience. [11] The purpose of the study of this project is to build a tool or software through which a team of collab can communicate or send and receive instant messages among themselves. [22] It provides collaboration tools all along the product life cycle to let us work together, stay together, and achieve results together. This work is based on the Web and Mobile Application using an Iterative Model Connect Org is a web-based and hybrid mobile application based which provide collaboration between the different organization and provides job opportunity for the simple user too. This system provides the 5 facts to the people that are trust, extraversion, conscientiousness, emotional stability, and openness to experience.

5. Conclusion and Future Work

5.1 Conclusion

First, this work enables all activities that enable the system to be used. System process based on development, testing, and monitoring. Based on requirements this work develops all the activities and then tests whether they are fulfilling the requirements. The method that this work uses for building, testing, and deployment of new code will impact how fast the system responds to changes in user preferences or requirements. This work uses an iterative waterfall model in which this work can change our system on feedback bases. If this work needs to upgrade our system or finds that requirements are not met, then this work can change on the go. This system is a win-win situation for us and the user of this system and for the organization as they are fulfilling their needs of collaboration. This study starts with a characterization of collaboration based on organizational work requirements. This model describes collaboration in the world of software development as following four "practices": identifying mutual goals, objectives, and rewards; collaboratively made product ownership, interfaces, and processes, and developing work plans.

5.2 Future Work

As for the future, this work also has some great plan to run it globally as our user base become stronger and as this work become unable to handle the required traffic and as this work get financially stronger and stable. This work also has some other plans like adding more services and functionality to this system. This work also has a plan to give more and more comfort to our users and make them addicted to this system as it becomes harder for them to run their organization without this system. This work also has some future in the learning and training side using this platform.

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