Enquiry Management System for Small and Medium Enterprises

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Aim to develop a Web Application to provide cus-tomer interaction medium to SME(Small and Medium Enter-prise). Online Presence for any business has became crucial inthis modern era. Providing cheap or freemium services related toweb and application development is in high demand.This productwill have easy setup and deployment process for any organizationmaking the initial step toward digital transformation much easier.

CCS Concepts: • **Computer systems organization** → **Embedded systems**; *Redundancy*; Robotics; • **Networks** → Network reliability.

Additional Key Words and Phrases: SME(Small and Medium Enterprises), Relational Database , Web Application and Consumer interaction.

ACM Reference Format:
Pradyumn Patil, Yashraj Pawar, Shruti Pisal, Vishwajeet Pawar, and PROF.(DR.) Bhutkar Ganesh Dattatray. 2018. Enquiry Management System for Small and Medium Enterprises. In . ACM, New York, NY, USA, 12 pages. https://doi.org/XXXXXXX.XXXXXXX

1 INTRODUCTION

Recent Covid Lockdown adversely affected innumerable Small and Medium-sized Enterprises(SME). Traditional methods of Discovering what people need, Marketing, Sales, Finance were turned obsolete as the world was forced to adapt to social-distancing norms. People, in general, adapted to online services and so were businesses forced to do so . Many organizations that were accustomed to traditional practices faced adversities .This in turn effect the economic stability of almost each adn every sector Consumer confidence and economic sentiment are the critical drivers for future economic growth. The health crisis of the COVID-19 pandemic and lockdowns had a significant impact on society. Those changes can be seen in consumer and business confidence indicators. [12] As stated by The economic consequences of the COVID-19 pandemic, as well as its impact on the general economy and consumer and business sentiment, were analyzed by van der Wielen and Barrios (2020)[13], Coibion et al. (2020)[5], Andersen et al. (2020)[2], Barro et al. (2020)[4], and Chronopoulos et al. (2020). As stated by van der Wielen and Barrios (2020), the COVID-19 crisis and crisis-induced constraints drastically affected households' economic sentiment in Europe. Negative trends in consumption and the labor market emerged. Andersen et al. (2020) analyzed customer spending changes and indicated a spending drop that was larger in the sectors of goods and services directly affected by COVID-19 pandemic-induced restrictions. Baker et al. (2020)[3] analyzed the indicators of newspaper-based economic uncertainty and subjective

Manuscript submitted to ACM

uncertainty in business-expectation surveys and indicated an unprecedented decrease of these measures in the face of the COVID-19 pandemic. To make sure small businesses that don't have enough resources have a chance to survive in this environment of online migration we developed an inquiry management system specially designed for SMEs. this project aims to fill the communication gap caused by consumers and organizations. This will provide all the necessary functionalities needed to achieve this goal.

2 RELATED WORK

The following research paper [8] focuses on the technical aspect of customer enquiry system and how it was applied in the Make-To-order companies.These type of companies are build upon customer interaction and therefore showcased importance of enquiry system.

Enquiry Management system are very popular among education institution . This paper [7] shows its usage in education sector and sub-set of these functionality can be easily imported in business bases environment.

To improve the performance of the system , These two article [11] [9] present system involving Rasa and snatchbot.

3 AIM

- Streamline the process of enquiry related to the institution
- Providing links/gateway to fulfill the request set up by the user
- Provide F.A.Q / support to provide solution to some specific request/question by the user

4 REQUIREMENT ANALYSIS

Whenever Developing a Software , balance of the functional vs. non-functional requirements is of absolute necessity . It is impossible to perfectly predict how the software will be used under what condition by what type of user. So , In order to maximize the efficiency without compromising creativity and innovative design we carry out requirement analysis with help of iceberg principle [6] .

4.1 Functionality

- The system must have a Separate F.A.Q section, displaying the previously entered enquiries.
- The system must allow easy modification/changes in the contents of the organization's front page by the organization user, which could be updated in and under 30 seconds.
- The system should have a filtering option where the user can sort pre-existing enquiries according to the desired parameter (most recent, most voted, controversial).
- The system should provide the user an option to upvote and downvote the previous enquiries

4.2 Usability

- The user should be able to edit the contents of his/her written enquiry using the system-provided edit option.
- The user could get snippets of search results when using the search bar to search about the organization.

4.3 Future Ready

- The system would provide an online chat system for any niche enquiries by the user.

4.4 Supportable

- Statistical report about the feedback and FAQ analysis would be provided to the organizations which they can export in '.csv' format.
- For new niche enquiries by the user, the solution would be sent to the user using Email once the system receives a reply from the organization

4.5 Efficiently built

The system must be able to solve 90% of the user's Enquiry while using online support.

4.6 Risk Manged

- The system should provide a login/sign-up system for both user and organization with verification using email.
- The system must have an Enquiry/rating moderation tool handled by the organization and Admin.

4.7 Performance

- The system should allow easy modification/changes in the contents of the organization's front page by the organization user, which could be updated in and under 30 seconds.
- The user must be one search away from basic information (Type, Location, established date, Overall User rating, and organization description) regarding enquiry of the organization.

5 USE CASE DIAGRAM

A use case diagram was proposed by Ivar Jacobson by 1986 [9]. A use case is a methodology used in system analysis to identify, clarify, and organize system requirements. Use case diagrams are employed in UML (Unified Modeling Language), a standard notation for the modeling of real-world objects and systems [10]. In the Unified Modeling Language (UML), a use case diagram is a sub class of behavioral diagrams.[11] Use Case Diagram is one of the Object Oriented Diagrams. It shows how a system interacts with the external entities. So, it is relatively sparse about the details of how the system behaves internally and how the external environment is arranged.[1]

There are four major symbols in the Use Case Diagrams: (1) Actor: is a person, group of people, organization, or external system the plays a role in one or more interactions with the system. This particular system involves establishing direct communication between user(Who can be a potential consumer) and the organization actively using the build system , These two form the main actors of the software . Another essential part of the entire system is system administrator who holds the typical admin privileges . ALl the functionalities helpd by the actors are mentioned below.

Furthermore, it can be networks, communication devices, computers, or other programs on the same computer. It is represented by stick figure. (2) Use cases: describe a sequence of actions. Those actions must provide the measurable value to an actor. It is represented by horizontal ellipse. (3) Associations: interaction described by a use case. It is represented by lines connecting between use cases and actors with an optional arrowhead on one end of the line. Notice that the arrowheads in use case diagram is used for indicating the direction of the initial invocation of the relationship or to indicate the primary actor (4) System boundary: is the rectangle around the use cases, anything within this boundary is the functionality in scope of the system.

5.1 List of Actors

- Enquirer (primary)
- Organization (primary)
- Web Administrator (secondary)

5.2 List of Functionalities

5.2.1 *Enquirer.*

(1) User Sign Up and Login
(2) Enquiry and Edit
(3) Upvote Downvote option
(4) Search and Sort

5.2.2 *Organization.*

(1) Admin Sign Up and Login
(2) Add Information
(3) Update Information
(4) Block Spam User

5.2.3 *Web Administrator.*

(1) Design and Development
(2) Maintain and troubleshoot website
(3) Database Handling
(4) Data Backup
(5) Security

5.3 Actor Functionality Description

Organization	Block Spam User	Block spam user is a facility provided to the organisation using which they can block the user who is spreading wrong, unnecessary information.

5.4 Use-Case Diagram figure

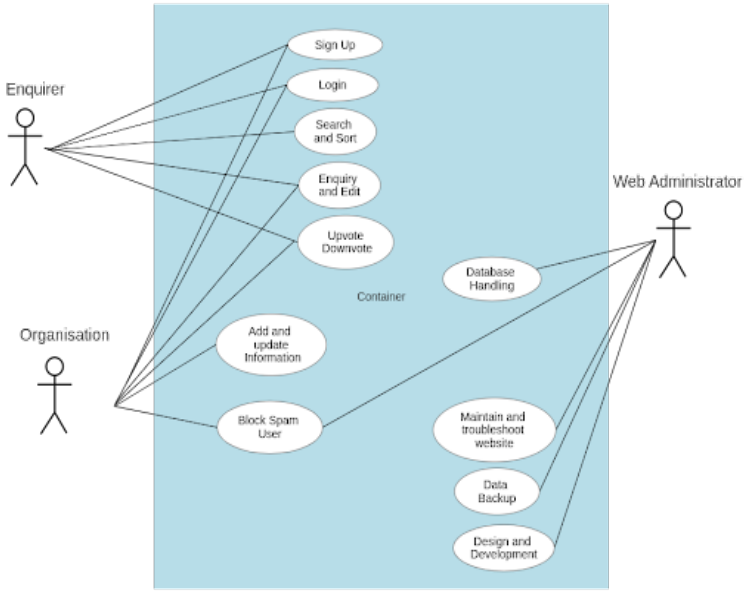

Fig. 1. Use-Case Diagram figure

6 SEQUENCE DIAGRAM

From the previous use case diagram we can note down the action and it corresponding functionalities in the down table.

6.1 List of Actors with their Objects.

Actors	Object
Enquirer	Enquiry Management System, Authentication, Search API, Ask Enquiry, Complaint
Organization	Enquiry Management System , Authentication , Search API , Block User , Complaint Review
Web Administrator	Web Server , Enquiry Database , Enquiry Management System ,Block User,Complaint Review

6.2 sequence diagram for all the Actors

A use-case course describes a sequence of interactions between actors with the system[10] we are using this Sequence diagrams to present the dynamic behavior of system design Fig 2 , Fig 3 and Fig 4 shows interactions between that are arranged objects arranged in a time sequence.

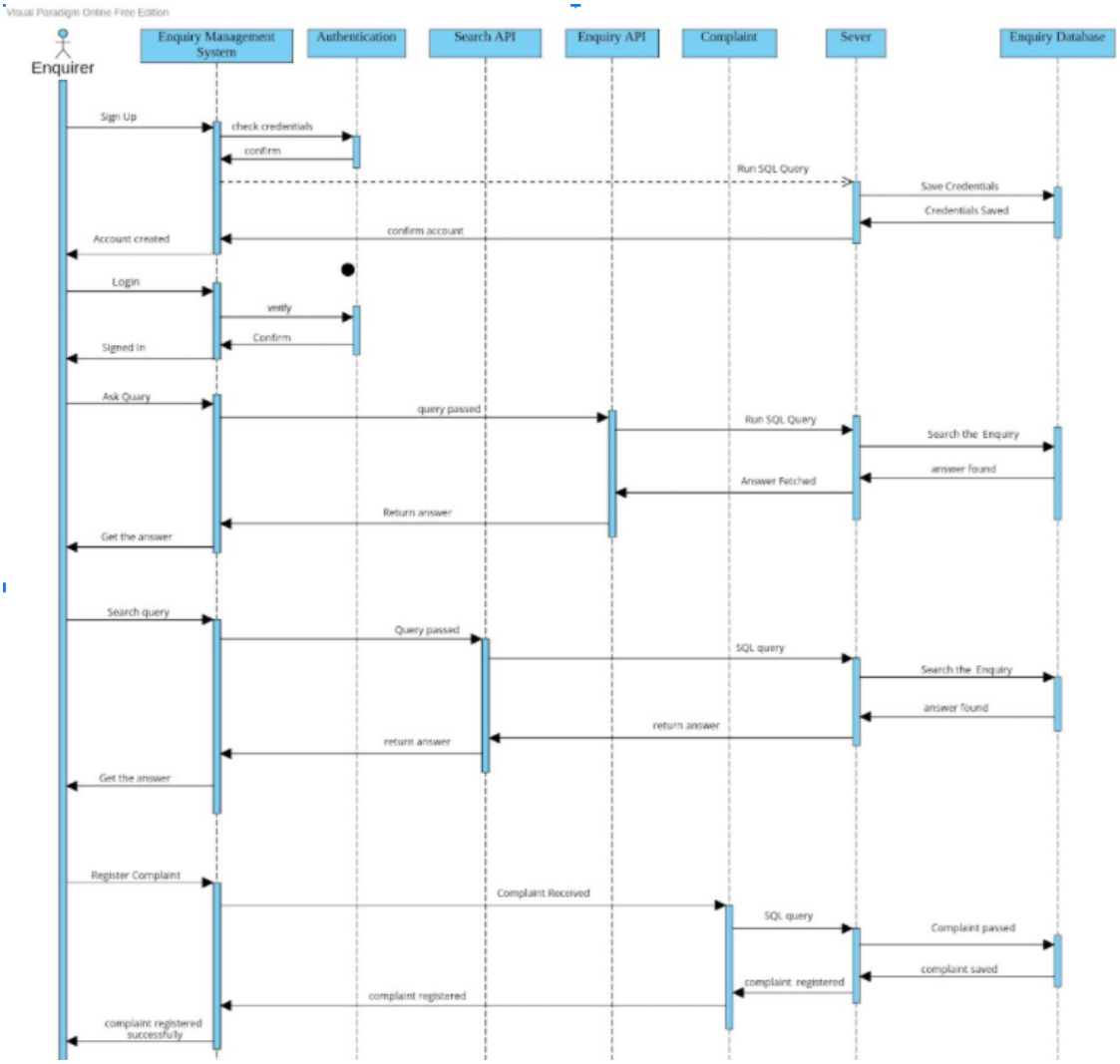

Fig. 2. Enquirer

Role of the enquirer as a Actor is to represent the user that is meant to interact with the organization . the user wants to enquire about the organization status and us presented multiple ways through which its need can be satisfied. Fig 2 shows interaction between Actor:-Enquirer and objects arranged in time sequence which are : . *Search API* , *Enquiry API* , *Server* and *Database* . There are also system methods that are invoked sequentially by Enquirer. The important one like *Sign up (), confirm account()* , *Get the answer()* , *search the enquiry()* and *complaint registered()* display the relationship between actor and system functionality.

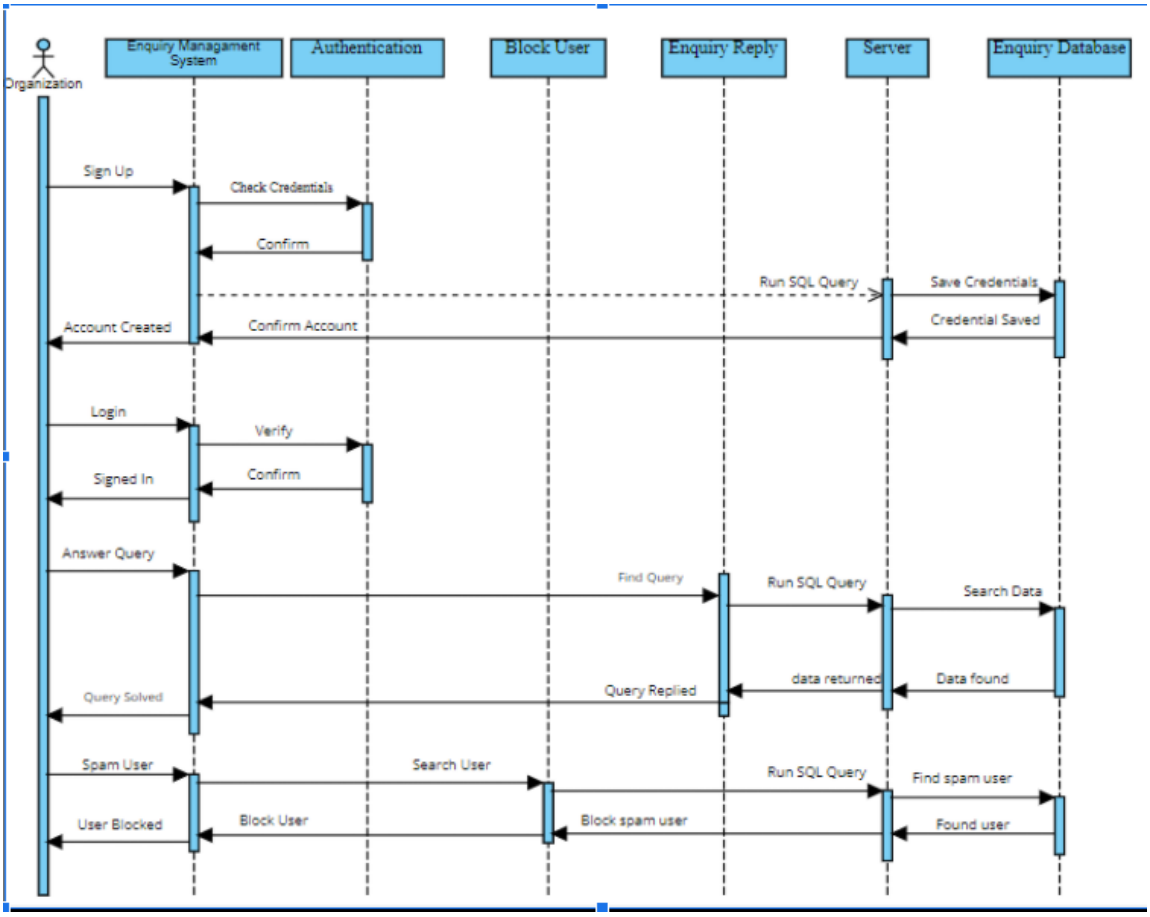

Fig. 3. organization

Role of the organization as a Actor is to represent the entity around which the entire process of establishing customer communication revolves around.they act as the center point to multiple consumers and therefore must maintain constant access with the current and new users that are interacting with the particular or organization.

Fig 3 shows interaction between Actor:-Organization and objects arranged in time sequence which are *Authentication* , *Enquiry Reply* , *Database* and *Block User*.The relevant system methods for its functionality are *Account create()*, *Query Replied()* and *Block Spam User()*

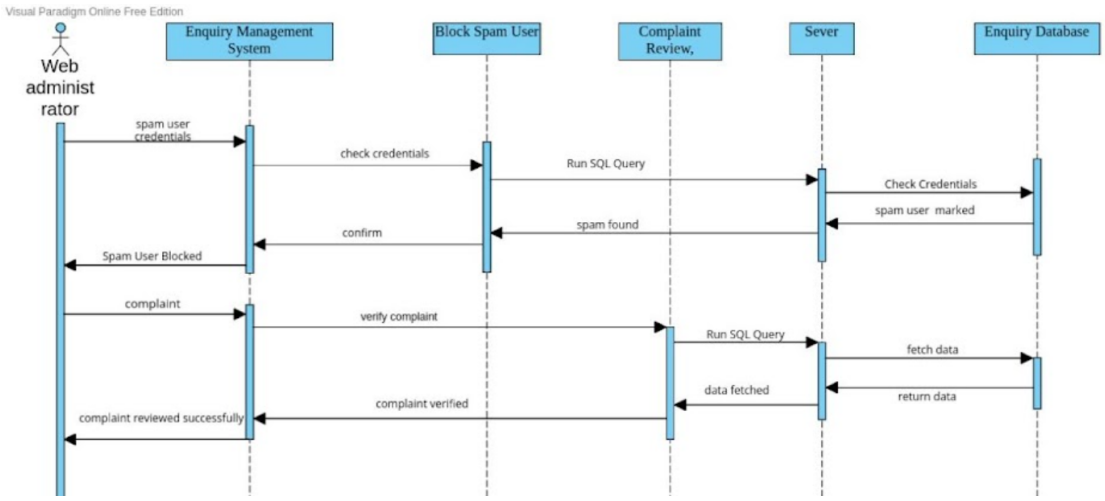

Fig. 4. web administrator

Web administration is staple actor when it comes to designing web application.When the system is expecting access from multiple users. Some form of moderation is necessary to maintain the system functionality .Web administrators involves design, development, maintaining and troubleshooting websites.Also ensure a safe and efficient user experience implementing security protocols, modifying programs, creating backups, resolving software problems. Fig 4 shows Actor:-Web Administrator with objects arranged in time sequence according to how the moderating action would take place. Block Spam user , Complaint review and access to Database are the main objects. And methods namely Spam User Blocked() and Complaint review() are major part of web admin functionality

7 ACTIVITY DIAGRAMS

After looking at all the involved actors and mapping their functionalities , we are able to visualize how they interact with each other to carry out a certain task.

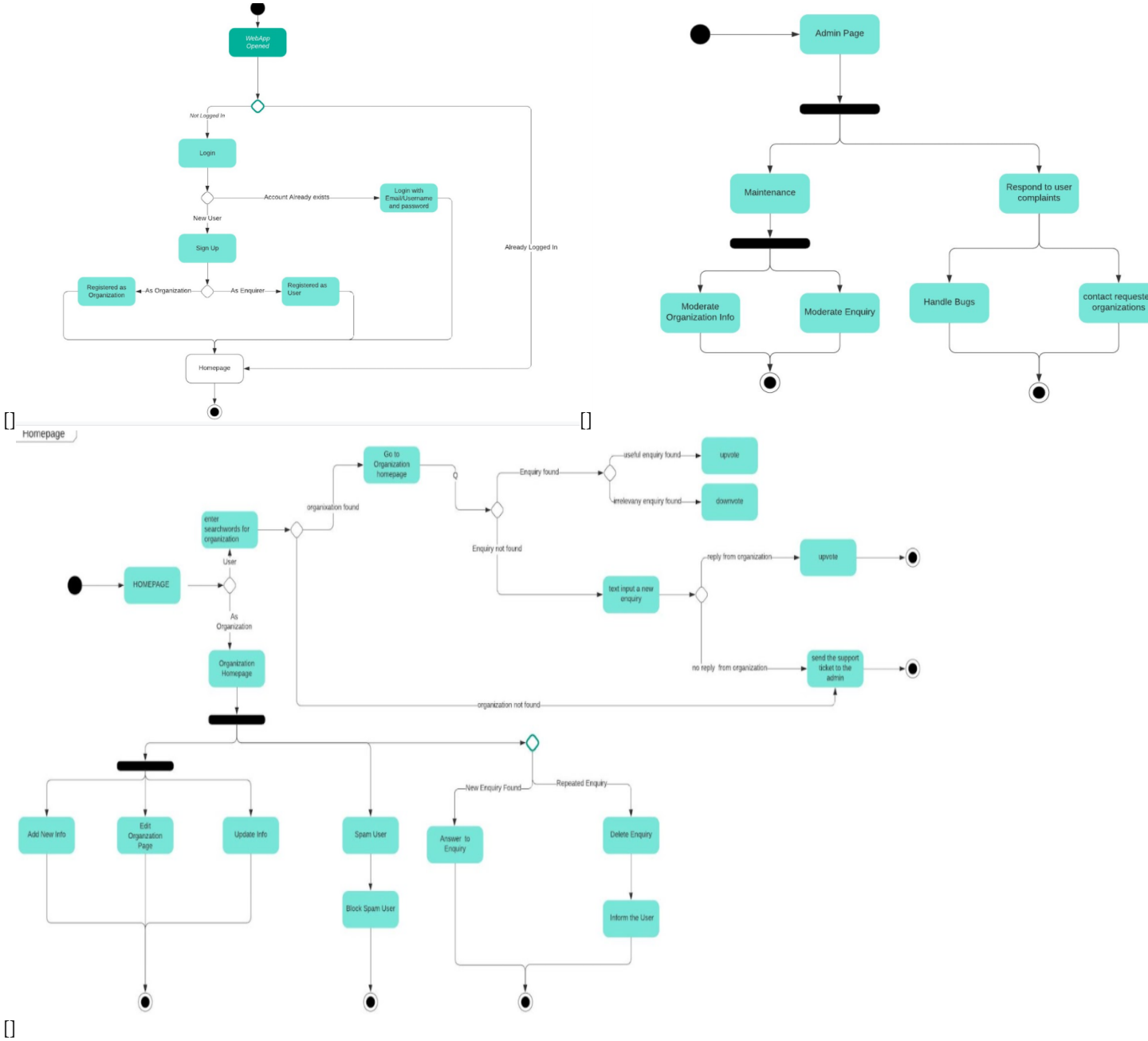

Fig. 5. Activity Diagram, for all Actors

8 RESULT

Using MySQL for the Database adds the needed data security needed when operating a website that deals with copious amount of data. The final product is designed to be simple , easy to use and stable from Both user and organization perspective . Since we are dealing with SME , it is very important ti maintain accessibility to each and every sector.

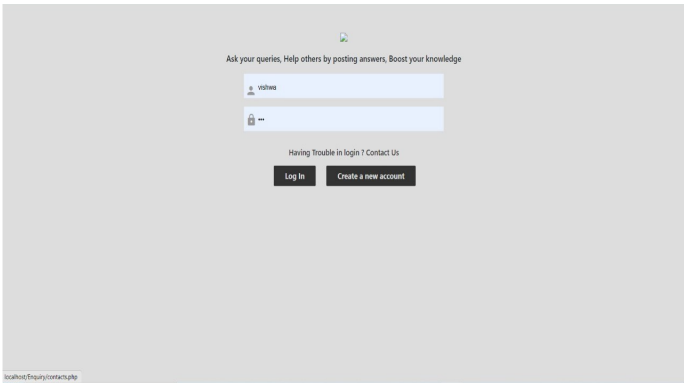

Fig. 6. login page

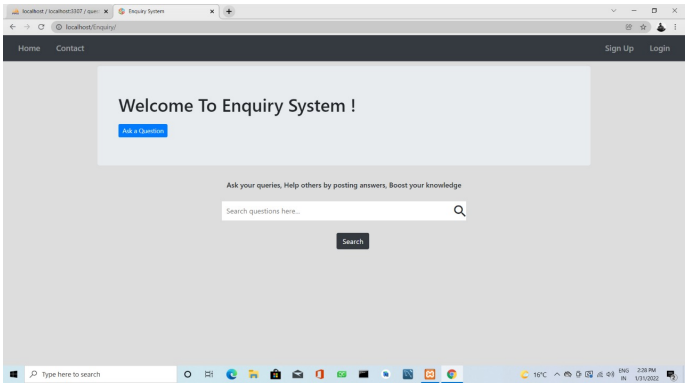

Fig. 7. welcome page

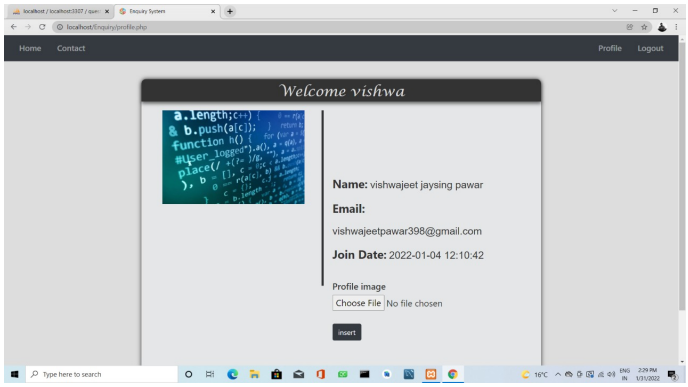

Fig. 8. profile section

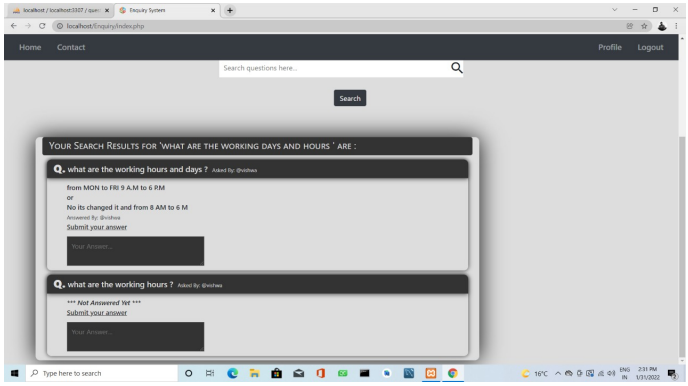

Fig. 9. enquiry page

9 TECHNOLOGY USED

- Programming Language:-PHP
- Server :- Apache
- Database:- MySQL
- Server stack:-XAMP

10 FUTURE SCOPE

- As the organization grows , some level of automation is required to engage with the ever increasing users base . Developing a on-site programmable chat-bot with custom solution for each organization would be a great Quality of Life change
- Develop a framework to create micro-sites for the organization . to personally customize various components on the organization dashboard.

ACKNOWLEDGMENTS

To VIT pune , for providing resources to carry out research.

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