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Analyzing and Implementing a System For Reporting, Follow Up and Resolving of Complaints

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Abstract – *In every aspect of life either it is personal or professional we use internet. It makes life easier, and overcomes unsatisfactory and unacceptable services or issues on various fields. We can use online complaint management system which is considered as an essential part of quality services. Complaints and compliments are valuable sources of information that organizations can use it to improve program delivery and service. "A web system for reporting, follow-up and resolving of complaints" is a web application analyzed and developed for managing various complaints in any place such as universities, hospitals shopping centers, damaged roads, unwanted load Shedding or sewerage proble…. etc. This work aims to make complaints easier to be reported, coordinated, monitored, tracked and resolved, and to provide governments with effective tool to keep records of complaint data, to use them for identifying problem areas and to improve services. The proposed work was designed and implemented using the Unified Modeling Language (UML), Microsoft Access 2010 and Visual Studio-ASP.NET programming language.*

Key Words: Complaint Handling, Complaint Management System and Unified Modeling Language (UML).

1. INTRODUCTION

Today's development cycles for web-applications such as Portals and Marketplaces are short, and getting shorter with continuous improvements and enhancements as new requirements and features become apparent. Therefore, developing "Web Services" using the "Service-Oriented Architecture" paradigm is a widely accepted concept. On the other side, most of user's complaints are apparent when a system has inappropriate communication between the organizations, their employees and customers (Citizens). Poor communication can result in poor services or products being provided by the organization or Government. Whilst concentrating on the topic of complaint handling, organizations can achieve an efficient success factor by increasing their user satisfaction and their loyalty. Therefore each organization needs to develop its internal and external communication towards its staff and customers to achieve success. Although appropriate communication can reduce user dissatisfaction; it cannot eliminate complaint [1-3].

For a Social Solidarity, there is a need for a Complaint Management System in order to deal with complaints concerning their food quality or delivery service … etc. Every day Citizens complaint to staff of the service department because of feeling dissatisfied. No matter direct or indirect accusation to any staff, such as face to face complaint, telephone complaint, complaint letter, and message on the web, all the complaints should be accepted and properly cared for. The resolution of the complaint might be economic compensation, improving service and so on. Also it should weight this complaints i.e., weak complaint or strong complaint and take respective measures in order to prioritize handling of complaint. However, many investigations have been done on the topic of e-complaint system, only one researcher focused on using SOA in e-Complaints System to improve relation between Citizens and Government. The Researcher believes using SOA in e-Complaint Systems can bring more flexibility for complaint departments to change their complaint services [2].

The purpose of our project is solving issues on various fields. We face various kinds of problems in our day to day life. Sometime there is a damaged road, unwanted load Shedding or sewerage problem. We don't know where to complain or where to inform. We tried to build a system where anyone can give information or give complain about this type of problems. Anyone can complain to authority just through a simple web application. User can complain through registration or without registration. There will be phone number to identify the user or complainer. User will be notified after receiving the complaint via email. Authority will be notified about the problem. After taking the required action the complainer will be notified again through email or text on phone. By this application we are trying to solve some problems we face on daily life, hoping that it will help a lot of people.

The reset of the paper is organize as follow; related work will be described in section 2, methodology of the proposed work will be illustrated in section 3. Database Construction and Testing will be illustrated in section 4. Interface Design will be illustrated in section 5. Results will be discussed in section 6. Finally, the conclusion is presented in section 7.

2. Related work

In this section, we are going to recapitulate about some national and international complaint portals available.

LAPOR: LAPOR is an Indonesian complaint site. If someone have any kind of problem they are trying to solve by informing government and concerned authority via web platform, they can use LAPOR. LAPOR was launched in 2011. The meaning of "LAPOR" in English is report. The idea was, if there is a broken bridge near your home or if there are poor service in a hospital or if you want to make a copy of your lost national ID card, how you will access your authority? So they launched this website [4].

Grievance redress system Bangladesh: there is a website of Bangladesh government to complain. They named it Grievance redress system. Currently beta version of this website is running. It is maintained by a2i. If someone complains here they will notify the complainer through email and SMS. Definitely it is an appreciable project by a2i and Bangladesh government [5].

CPGRAMS: CPGRAMS stands for Centralized Public Grievance Redress and Monitoring System. It is a project of Indian government to reduce grievances on various fields. The service is open 24/7. This project is an attempt to centralized Grievance redress system. That means a simple platform where you can complain about anything [6]. Other complaint Management systems [7-9] developed.

The technological revolution influenced everything [10-28], even the methods of complaint management applications for the real world complaint management issues. Today, the use of Artificial Intelligence (AI) algorithms is expansive, particularly in providing solution to challenging problems including patterns recognition and retrieval of information [25, 29-45], image segmentation [10, 11, 21, 46-51], analysis of medical image [52-56], Learning Management System [57-82], nurse rostering problem [83], Healthcare Monitoring system [24, 84], as well as prediction of river flow [85-87]. Accordingly, utilizing the AI algorithms and web technology, countless scholars have created as well as implemented complaint Management systems to solve issues on various fields [88, 89].

3. Methodology

The process of system analysis aims to study an existing system to entirely design a new system. System analysis is performed to achieve mainly two aims namely:

- To understand the process or the system clearly. This will assist in the new system design.
- System analysis will help to identify the problems in the existing system; therefore this will help to know the inefficiency reasons.

The Unified Modeling Language (UML) is visualization for the system design, it represents graphical notations which help to describe and design software systems, principally software systems constructed utilizing the object-oriented style [90-94]. The UML was utilized mainly to design the proposed system. The Use-Case diagram and the Class diagram are addressed below.

3.1 Use Case Diagram

Use case diagrams are usually referred to as behavior diagrams used to describe a set of actions (use cases) that some system or systems (subject) should or can perform in collaboration with one or more external users of the system (actors). Each use case should provide some observable and valuable result to the actors or other stakeholders of the system [27, 28, 79, 93, 95, 96]. The Actors are external entities who represent roles. They could be external hardware, human users or other systems. In this case the actors are the Contributors, Committee Employees and Administrator. Figure 1 shows the use case diagram for the proposed system.

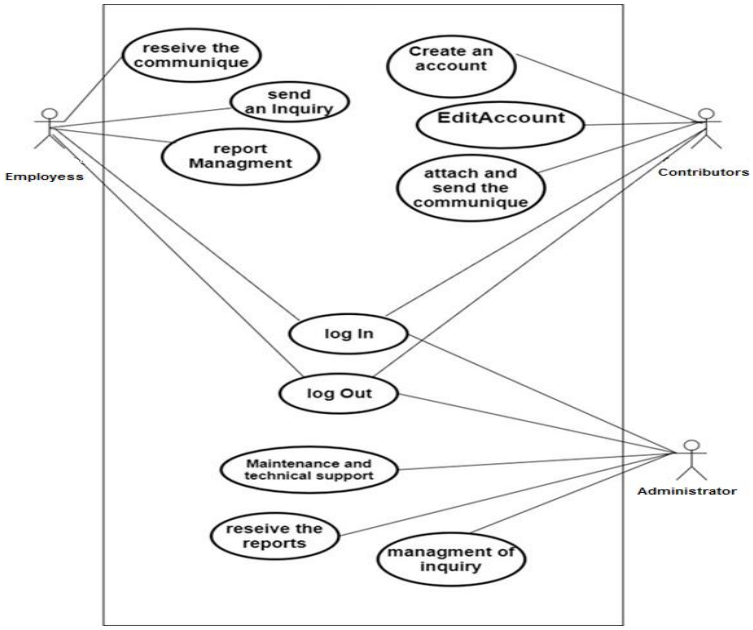

Figure -1: Use case diagram for the proposed system

3.2 Entity Relationship (ER) Diagram

An entity relationship diagram (ERD), also known as an entity relationship model, is a graphical representation of an information system that depicts the relationships among people, objects, places, concepts or events within that system [18, 19, 22, 23, 97]. An ERD is a data modeling technique that can help define business processes and be used as the foundation for a relational database. Figure 2 shows the ER diagram for the proposed system.

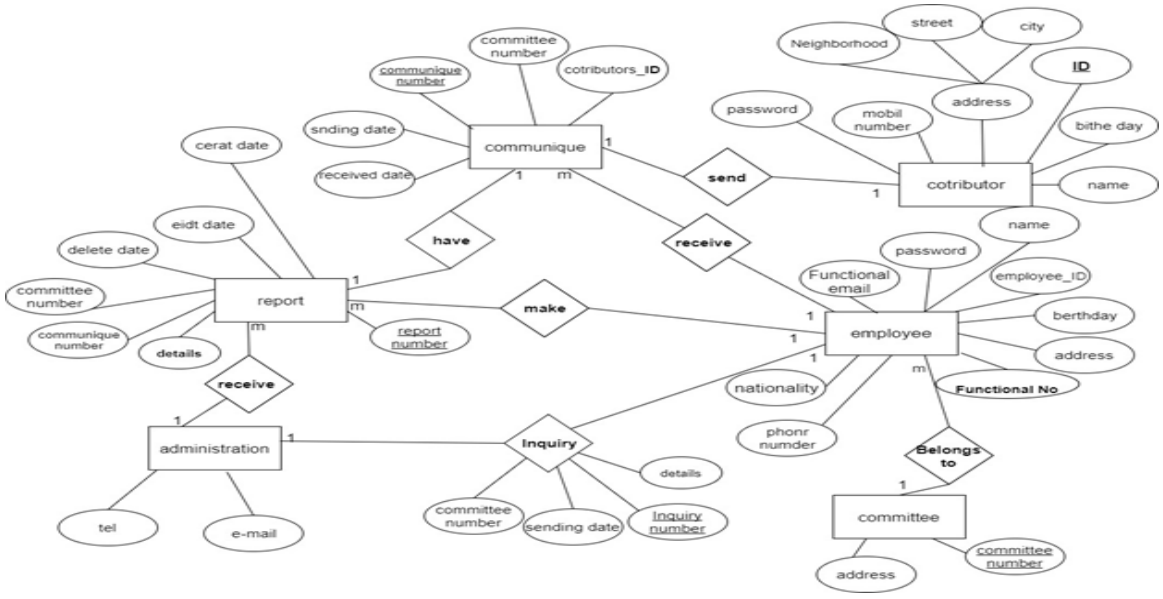

Figure -2: ER diagram for the proposed system

4. Database Testing and Construction

Database testing usually consists of a layered process, including the user interface (UI) layer, the business layer, the data access layer and the database itself. The UI layer deals with the interface design of the database, while the business layer includes databases supporting business strategies [98, 99]. Testing the database is important in order to find errors which might affect the system reliability, performance, consistency and security. It also assists to validate the system against the requirements

specified by the user. The proposed system used Microsoft Access 2010 to implement the database. Several tables have been created as following:

Table -1: Employees table

Employees table

ID	Fullname	Birthdate	National	Addreses	Email	Comn	Password	phoneNo	lgnaNo	empNo
1089071396	ahmad hssan	3/17/1990	saudi	dammam	ahmad11@gmail.com	☐	eml168776	562916697	1	1
1079532974	Ali majed	3/3/1991	saudi	dammam	aali_2008@gmail.com	☐	eml145664	542207159	1	2
1074895211	Moz Alkeer	4/10/1995	saudi	khobaar	moz_moz@hotmail.com	☐	eml293794	548421980	2	4
1089763654	noor ali	11/11/1995	saudi	khobaar	nonno44@hotmail.com	☐	eml239752	558893207	2	5

Table -2: Contributors table

Contributors table

id	Fullname	Addres	Email	Password	phoneNo	BirthDate
1069542806	علا محمد	مكة	oolaa2010_ola@hotmail.c	878do12	558907052	8/10/2001
1074370560	حبيب الناصر	الخبر	nsserhbeeb@gmail.com	ns123nb	875485259	10/19/1997
1078952458	ليلى العماني	الاحساء	loola_moon@gmail.com	123456	568685329	12/17/2000
1085432906	محمد فهد	جبيل	mohmfah@hotmail.com	mm1234	556722071	9/2/1998
1087060084	علي العلي	الدمام	alloy-12al@hotmail.com	123456	594229394	11/2/2000

Table -3: Queries table

Queries table

ID	title	contents	stati	email
10	البلاغ	مشكله عدم ظهور البلاغات الجديدة	جديد	rassedmang@gmail.c
11	استفسار عن التقارير	الرجاء توضيح طريقة التعديل على التقارير	جديد	rassedmang@gmail.c
13	log in	السلام عليكم يوجد مشكله لبعض الزملاء في تسجيل الدخول للنظام.	جديد	rassedmang@gmail.c
14	طباعة	سؤالي هو هل يجب طباعة التقرير ورقيا من يكفي نسخه الكترونية؟ و شكرا.	جديد	

5. Interface Design

The goal of user interface design is to make the user's interaction as simple and efficient as possible, in terms of accomplishing user goals. The programming language utilized in this work is Visual Studio-ASP.NET programming language. The programming language is chosen relying on the languages features which make them more suitable for this work. In the proposed system, the user starts with the registration in the system or; after that the system offers the user a form for login and the user has to enter the information required as shown figure 3. If the information is found correct by the system search in the database, it displays to the user the system homepage and allows the user to make use of the proposed system. However, if it's not valid, the user will be redirected to the login page, also the user can send complaint without registration. The figures 4, 5 and 6 below are examples of the implemented interfaces.

Figure -3: Login interface

Figure 4: Modify contributing data interface

Figure -5: Send communiqué interface

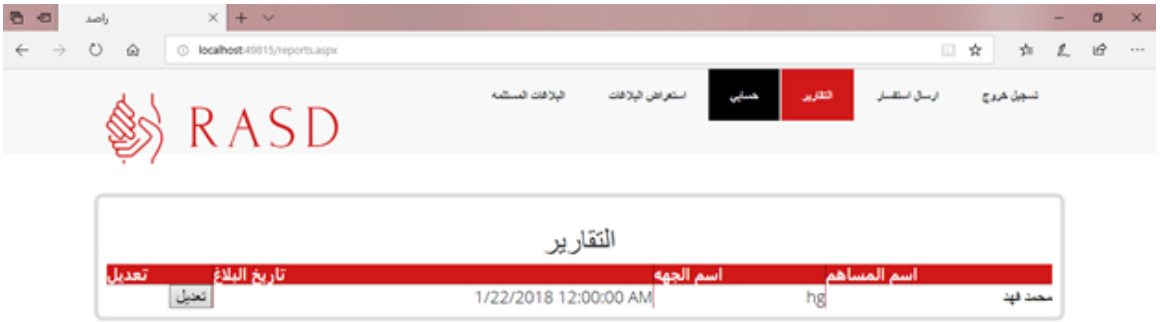

Figure -6: View reports

6. Discussion

This stage highlights the usability of the proposed system. During this stage, the system is evaluated while user satisfaction is ensured. Test was executed on the proposed system by running it on Mozilla Firefox and Internet Explorer using the local host server. For evaluation purpose, 25 students from College of Applied Studies and Community Service at Imam Abdurrahman Bin

Faisal University (IAU) were invited to use the prototype. The students were first briefed on the prototype's usage and the user interface. Then, the students tested the system, and answered the survey questionnaire consisting of 10 items formulated to gauge the level of user satisfaction. The usability of the proposed system was also determined. The result as well as the level of usability of the system according to the feedback provided by 25 students can be referred in table 4. As can be construed by the result, a significant amount of users agrees that system is practical, useful and fulfill the project's primary objective.

Table -4: Collected data results from the 25 students

	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
Strongly disagree										
Disagree										
Neutral	6	6	8	6	5	7	8	6	3	5
Agree	6	9	8	9	6	7	8	14	13	14
Strongly agree	13	10	9	10	14	11	9	5	9	6

7. Conclusion

The proposed system represents a web application which can be used as a platform to complain. User will upload photo of their Complaints and the details about the problem they face. This work designed and implemented a web system for reporting, follow-up and resolving of complaints" also, it is a web application analyzed and developed for managing various complaints in any place such as universities, hospitals shopping centers, damaged road, unwanted load Shedding or sewerage problem …. etc. This work aims to make complaints easier to be reported, coordinated, monitored, tracked and resolved, and to provide governments with effective tool to keep records of complaint data, to use them for identifying problem areas and to improve services. The proposed work was designed and implemented using the Unified Modeling Language (UML), Microsoft Access 2010 and Visual Studio-ASP.NET programming language.

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