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A Proposed Model for a Web-Based Academic Advising System

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ABSTRACT

Student advising is an important and time-consuming effort in academic life. Academic advising has been implemented in order to fill the gap between student and the academic routine, by moving advising, complaining, evaluating, suggesting system from the traditional ways to an automated way. The researcher surveyed the existing literature; as utilized that many institutions have implemented computerized solutions in order to enhance their overall advising experience. In this paper the researcher innovates an automated mechanism for academic advising in the university system. The paper presents an overview of the development and implementation of a new model of e-Academic Advising System as a web-based application. The proposed model attempts to develop a model that the staff and advisor can access to follow-up the student complaints and suggestions. Also, the students who registered can through complain, evaluate & suggest in any subject. Finally, the head of the department can receive a KPIs reports to follow-up his department. Therefore, a need for a system that could detect student's problems and provide them with suitable feedback is raised. The aim of this paper is to implement a system which facilitates and assists academic advisors in their efforts to providing quality, accurate and consistent advising services to their students; also, to explore the design and implementation of a computerized tool to facilitate this process. This paper discussed the required methodologies used in the development of the Academic Advising System, it has been shown that Academic Advising is a Process more than a Final Product or system, a technical vision for Academic Advising System has been provided. The e-Academic Advising web-based developed and implemented by "Ruby on Rails" as a Web framework which runs via the Ruby programming language and "PostgreSQL" as a Database Engine.

Keywords - **Academic Advising System, Complaint System, Evaluating System, Suggesting System**.

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I. INTRODUCTION

Academic advising has been touted as a key to student success and retention. Today's academic advising delivery models vary considerably and little is known about the efficiency and effectiveness of these models.

Nowadays, with the growing importance of the credit-based learning in current educational environment, strong academic advising system is an essential ingredient of learner success, supporting personalized advices aimed at effective and efficient learning. [30]

Academic advising is an important activity of an academic institution. It guides the students to explore potential careers, academic disciplines and opportunities in the college environment. An accurate and full featured advising system can be an effective tool to both students and faculty advisors. The dynamic nature of academic programs, especially in regards to changes in the general education and other degree requirements, poses a continuous challenge to faculty advisors to remain up-to-date. [27]

Academic advising plays an important role in creating a friendly and relevant educational environment for college students. At the same time, advising can be a complex and time consuming process for academic advisors especially with the dynamic nature of the degree programs and degree requirements within educational institutions. Despite these challenges, academic advisors always try to do their best to offer accurate, up-to-date and consistent advising information to their students. [27]

Therefore, the educational systems, surely they need to advance even faster than your run of the mill- ordinary system. Since it affects a large percentage of individuals from a very young age. Such a polished system would be a great step for this domain therefore, as it acts as a matrix between its many branches and helps bring the information and educational societies together.

II. LITERATURE REVIEW

Out of the previous related work done concerning customer complaint, the most recent research was: Afify *et al*. (2011) [1] tries to improve the relationship between Citizens and the Social Solidarity by presenting a new model of e-Complaint web service based on SOA. The Proposed model aims to develop a Service-Oriented framework for e-Complaint Web-based that targets the charity lifecycle. The cycle starts with distribution of different services that are provided through charity. Those services are applied for different people based on their needs. Due to different obstacles those services may not be

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applied in appropriate way. Therefore, a need for a system that could detect Citizen's problems and provide them with suitable feedback is raised. Also, the researcher describes the Complaint Management System oriented by Web-application which will be used by Citizens in order to make complaints about their dissatisfaction on provided services. This system will be able to handle complaints by recording and giving feedback for each raised complaint. Results of the study can be a good reference to find out users' needs from e-complaint and the handling process of this complaint in the body of any organization.

The researcher found out that the most appropriate to the research topic, as follows: There are many studies which focused on proposing students advising systems, all of them concentrate on undergraduate student; it has the ability to provide advice for postgraduate students commensurate with their thesis scope.

Henderson *et al.* (2015) [2] presents an intelligent web-based application that provides a reliable, user-friendly interface for the handling of general advisory cases in special degree programs offered by the Faculty of Science and Technology (FST) at the University of the West Indies (UWI), St. Augustine campus. In addition to providing information on handling basic student issues, the system's core features include course advising, as well as information of graduation status and oral exam qualifications. The researchers produce an overview of the solution, with special attention being paid to the inference system exposed via its RESTful Java Web Server (JWS).

Laghari *et al.* (2015) [3] devises a Student Course Planning Software (SCPS) package. The software is developed by using the Python computer programming language. The software system guide students in selecting the most appropriate six courses suitable to register in the next semester. The outcome of the course selection is stored in a file to help students with the university registration system.

Daramola *et al.* (2014) [4] presents the design and implementation of an intelligent Course Advisory Expert System (CAES) that uses a combination of rule based reasoning (RBR) and case based reasoning (CBR) to recommend courses that a student should register in a specific semester, by making recommendation based on the student's academic history. The evaluation of CAES yielded satisfactory performance in terms of credibility of its recommendations and usability.

Shatnawi *et al.* (2014) [5] proposes a smart system that uses association rule mining to help both students and advisors in selecting and prioritizing courses. The system helps students to improve their performance by suggesting courses that meet their current needs and at the same time improve their academic performance. The system uses association rule mining to find associations between courses that have been registered by students in many previous semesters. The system successfully generates a list of association rules that guide a particular student to select courses registered by similar students.

Laghari (2014) [6] devises an Automated Course Advising System (ACAS) to guide students in selecting appropriate courses suitable to online registration. ACAS software is developed by using JAVA computer programming language. The outcome of the course selection is stored (semester wise) to show a complete typical plan.

Engin *et al.* (2014) [7] reports and discusses the development of two educational expert systems at a private international university. The first expert system is a course advising system which recommends courses to undergraduate students. The second system suggests scholarships to undergraduate students based on their eligibility. Both systems have been implemented and tested using Oracle Policy Automation (OPA) software.

Lightfoot (2014) [8] describes a knowledge management tool to mitigate the problem of increasingly complex program offerings by universities combined with on-line educational opportunities by creating an intuitive, web-based interface to help students navigate directly to the Internet advising materials that are most applicable.

Hingorani *et al.* (2014) [9] describes an Advisement System designed to mitigate the issues of an *out-of-the-box* implementation at a southeastern university to help improve retention and graduation; attempts to closely involve faculty with student advisement through a web-based advisement system. The system has worked remarkably well with high-level of satisfaction reported both by the students and the faculty.

Al-Nory (2012) [10] creates a spreadsheet-based Decision Support Tool for Academic Advising. To better utilize technology in the advising process and to automate repetitive tasks in advising students. The researcher created the tool using VBA scripts and Microsoft Excel, the system automates some repetitive tasks in the advising process by performing functions such as GPA calculation. It should be noted however, that system operation requires two excel documents to be provided by the department; the first being a four-year schedule of the study program and the other being a translation of the student transcript, since the system is not integrated in any way with the SIS.

Al-Ghamdi *et al.* (2012) [11] proposes and develops an expert system for advising postgraduate students instead of the traditional way in advising by the department's advisors. This system aims to assist postgraduate students of Computer Science (CS) major in King Abdulaziz University (KAU) to select the suitable courses during their postgraduate program. The proposed system enables the students to select and get a plan to each semester without needing to consult advisors. Moreover, it takes into account courses prerequisites and department's requirements.

Nwelih *et al.* (2012) [12] presents the analysis of the existing system in Nigerian Universities in the three geo-political regions, namely: South-South, South-East and South-West in order to find out their strength, weaknesses and the area of need. Results are presented, based on the findings. Finally, the researchers present the Academic Advising Decision Support System (AADSS) Architecture design structures for scrutiny.

Ishak *et al.* (2012) [13] aims to discover the main key area requirements for web-based academic advising system. The researchers use a combination of approaches.

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A literature survey is conducted to investigate the current issues and common element of developing the web-based academic advising system. Finally, a random survey is conducted among students and lecturers to gain their perspectives on academic advising. The research resulted in the proposed conceptual framework of web-based academic advising information system.

Feghali *et al.* (2011) [14] attempts to solve a technology-based "last mile" problem by developing and evaluating a web-based decision support tool (the Online Advisor) that helps advisors and students make better use of an already present university student information system.

Al Ahmar (2011) [15] develops a prototype student advising expert system that assists the students of Information Systems (IS) major in selecting their courses for each semester towards the academic degree. The system can also be used by academic advisors in their academic planning for students. The expert system is capable of advising students using prescriptive advising model and developmental advising model. The system is supported with an object-oriented database and provides a friendly graphical user interface.

Hwang *et al.* (2011) [16] proposes an innovative approach, and the knowledge base development of an expert system by analyzing the online problem-solving behaviors of the teachers. Consequently, the expert system works as an instructor to assist the students in improving their web-based problem-solving ability. To demonstrate the innovative approach, two experts are asked to evaluate the performance of the expert system. Experimental results show that, the novel approach is able to provide accurate and constructive suggestions to students in improving their problem-solving ability.

Aslam *et al.* (2011) [17] presents the design and development of a proposed rule based Decision Support System that will help students in selecting the best suitable faculty/major decision while taking admission in Gomal University, Dera Ismail Khan, Pakistan. The basic idea of the researchers' approach is to design a model for testing and measuring the student capabilities like intelligence, understanding, comprehension, mathematical concepts plus his/her past academic record plus his/her intelligence level, and applying the module results to a rule-based decision support system to determine the compatibility of those capabilities with the available faculties/majors in Gomal University. The result is shown as a list of suggested faculties/majors with the student capabilities and abilities.

Nambiar *et al.* (2010) [18] develops an expert system using JESS that allows students to seek quick responses to their queries regarding their plan of study and progress in the program. This expert system separates the rules from the execution thus enabling users to customize or extend the system by changing or updating the XML file that stores the rules.

Deorah *et al.* (2010) [19] proposes an expert system-SAES which aims to provide intelligent advice to the student as to which major he/she should opt. SAES acquires knowledge of academic performances as well as explicit and implicit interests of the candidate. Knowledge representation in SAES is done by the use of a combination of case based and rule based reasoning. SAES draws inferences on the basis of acquired knowledge and also takes into account the degree of dilemma faced by the candidate and the time he/she takes to decide the interest areas. SAES then recommends the most suitable majors for each candidate, which are further classified as strong, mild and weak on the basis of calculated relative probabilities of success. At the end, analyzing results of the test conducted on a working prototype of SAES.

Albalooshi *et al.* (2010) [20] presents a web-based multidisciplinary advising system that can be utilized by students, advisors, course timetable planners, and heads of departments. Students are given informative advice through web-based services to help them make best decisions towards a successful degree of their choice. Services, such as registering for courses to stay on the right degree path; a dependency graph showing their progress in their degree plan; a GPA simulator to help students on probation determine the grades they must obtain in the newly registered semester; information about their graduation requirements; their expected graduation semester; and other services. Advisors and heads of departments are able to see students' progress towards their graduation and are able to generate a variety of useful statistics, charts, and reports. Timetable planners are given statistics on courses and their sections' requirements for the coming semester.

Albalooshi *et al.* (2010) [21] presents an online advising system that can be utilized by students, advisors, and course timetable planners. Students are given informative advice on which courses to register for in the next semester and are informed of their remaining graduation requirements; advisors are able to see students' progress towards their graduation requirements; and timetable planners are given statistics on courses and sections requirements for the coming semester.

McMahan (2010) [22] develops a project that was to design and implement an automatic dialog system for augmenting university student advising. The automatic dialog system focused on prescriptive advising rather than developmental advising to further narrow the domain to scheduling and registration matters. The phrases and advising information have been encoded using Artificial Intelligence Markup Language (AIML) and the dialog system has been implemented in the programming language Python.

Martínez-Argüelles *et al.* (2010) [23] describes the online academic advising system in a virtual university. The researchers describe the background of this system and its main elements: the advisor's functions, the types of advisors (incorporation, beginning and continuation), the available tools for advisors, and the organization of the advisorial activity both from the internal and the student's point of view.

Cline *et al.* (2010) [24] developed a web-based concept map construction and rule-based evaluation system called the Concept Mapping Tool (CMT) that is

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being deployed at the university level. After students use the drawing facility of CMT to construct individual concept maps for a particular topic that was presented in a course, they can then use the rule-based evaluation system to grade their concept maps against a criterion concept map created by the course instructor. Students are given immediate feedback on how to improve their concept maps, and they can use CMT iteratively to improve their understanding of the topic at hand. The rule-based evaluation or grading system is modeled in part on a manual system for the consistent scoring of concept maps.

Werghi et al. (2009) [25] presents a Decision Support System (DSS) for student advising. The system aims to provide students with an automated program planning and scheduling service that best fits their profiles while meeting academic requirements. After the literature survey and description of the system's architecture, the paper describes the new paradigm that models student advising as a search problem, whereby the search space is represented by a decision tree that embeds virtually all the instances of a student academic plan. The researchers approach has several advantages over previous rule-based advising systems. The system implicitly implements, via the decision tree, many academic rules; it allows a systematic and exhaustive browse of the different student plan instances; and it permits a methodological assessment and measurement of the appropriateness of a given student academic plan.

Fong *et al.* (2009) [26] presents a hybrid model of neural network and decision tree classifier that serves as the core design for a university admission recommender system. The system was tested with live data from sources of Macau secondary school students. In addition to the high prediction accuracy rate, flexibility is an advantage such that the system can predict suitable universities that match the students' profiles and the suitable approaches through which the students should enter. The recommender can be generalized into making different kinds of predictions based on the students' histories.

Binh et al. (2008) [28] introduces an intelligent academic advising system approach that focuses on integrating technology-enhanced learning methodologies into a pedagogy-driven and service-oriented architecture based on semantic technology. Specifically, a knowledge-based framework is conceptually introduced, assisting learners in identifying and assessing academic alternatives for their life goals as well as making meaningful educational plans that are effectively compatible with those goals. In the proposed framework, the learning data warehouse plays a key part with information about learners' behaviour and navigation so that intelligent algorithms can be applied and patterns can be obtained as the basis for course advising. Moreover, a data integration prototype is studied and developed as a resource discovery tool to map, convert and harvest advising related information from structured and semi-structured learning repositories. Thus, the described framework emphasizes its application within an open adaptive credit-based learning, providing abilities for accessing and managing, in an integrated manner, the adaptive interaction, adaptive course delivery as well as adaptive content discovery and assembly.

Lin *et al.* (2008) [29] presents an approach to tackle a dynamic and complex individualized study planning and scheduling problem utilizing multi-agent system approach and ontology-driven methodology. To support the approach a web-based multiple intelligent agents' system called eAdvisor is developed and tested by users. The researcher describes the various types of agents used in e-Advisor, the development of the ontologies and their applicability, system implementation issues and a preference-driven planning algorithm used by the agents. Empirical results show that the architecture and algorithm are effective.

III. PROPOSED MODEL STRUCTURE

The proposed model is a web-based academic advising system. The concept of academic advising is situations in which an institutional representative gives insight or direction to a college student about an academic matter.

The researcher proposed an academic advising system that include the process of complaint, evaluate and suggest. It has a multiple view for student, admin, advisor, staff and head of department. Each user of the academic advising system has a privilege that were provided by the admin that lead them to views in order to perform the task that required by the system. Each view helps user to deliver tasks with easy interface and real-time functions.

Below the researcher will describe, illustrate and explain the main processes and modules of the system then how each user will interact in the system according to his/her roles in the overall cycle of the e-Academic Advising System:

A. Complaint process

Where a student submits complains about his/her educational intuition. Then it goes to the advisor through the system and the advisor adds the complaint follow-up until its status becomes solved. If the complaint stays unsolved and the due date for that complaint ends the system takes it and assign it to a staff and notify the head of department through reports. The advisor has the ability to assign the complaint to the staff so the staff deals with the complaint without any delay.

B. Evaluate process

Where a student submits an evaluation about any subjects that he/she attend in his education intuition. The evaluation sheet (form) is created by the admin. When the student adds his/her evaluation the system sends it to the head of department in the form of reports.

C. Suggestion process

Where a student adds suggestion about any subjects that he/she attend in his education intuition the suggestions submitted by the student are viewed by the advisor and the head of department and both have the ability to respond to it.

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IV. SYSTEM ANALYSIS

The development of the proposed model is not only depending on how the system works. It also depends on the working flow process that being identified and need to be implemented and followed. The proposed handling model is a method, platform or web-application to ensure that the complaint, evaluation and suggestion processes are addressed and handled properly.

Illustrating the components of the academic advising system using Unified Modeling Language (UML) and Data Flow Diagram (DFD) to describe its users, processes and the relations between the system components that gives the overall behavior of the system, as follows:

A. Starting with Use Case Diagram

The Use-Case Model captures the requirements of a system. It describes a sequence of actions that provide unit of interaction between a user (human or machine) and the system.

A Use- Case Diagram shows the interaction between the system and entities external to the system. These external entities are referred to as Actors. Actors represent roles, which may include human users, external hardware or other systems. This interaction is a single unit of meaningful work, such as Create Account or View Account Details. Each Use Case describes the functionality to be built in the proposed system, which can include another Use Case's functionality or extend another Use Case with its own behavior.

B. Use Case Roles

The researcher here described the system with six-actors divided into two types first the main users on the proposed system and second the services available. Both types interact within the system's boundary, as shown in figure 1.

TABLE 1. ROLES FOR ACTORS IN THE PROPOSED MODEL.

Actors	*Description*
Admin	Create system users, manage users, add new subjects, add subjects to students, assign subjects to employees and create subject's survey.
Student	View subjects, view FAQs in knowledgebase, create complaint, view/add/update/edit complaint follow-up, answer survey questions and add subject suggestions.
Advisor	View assigned subjects, view/add/update/edit complaint follow-up, assign complaints to staff, view FAQs in knowledgebase and view /response to student suggestions.
Staff	View assigned subjects, view/add/update/edit complaint follow-up, assign Complaints to other staff, view/add FAQs in knowledgebase and add canned Responses.
Head of Department	View system reports, view system activity, view survey report, view all complaints, view/modify FAQs in knowledgebase and add canned Response.
Academic Advising System	Generate system reports, set complaint due date and assign overdue complaints to staff.

C. Scenario Overview

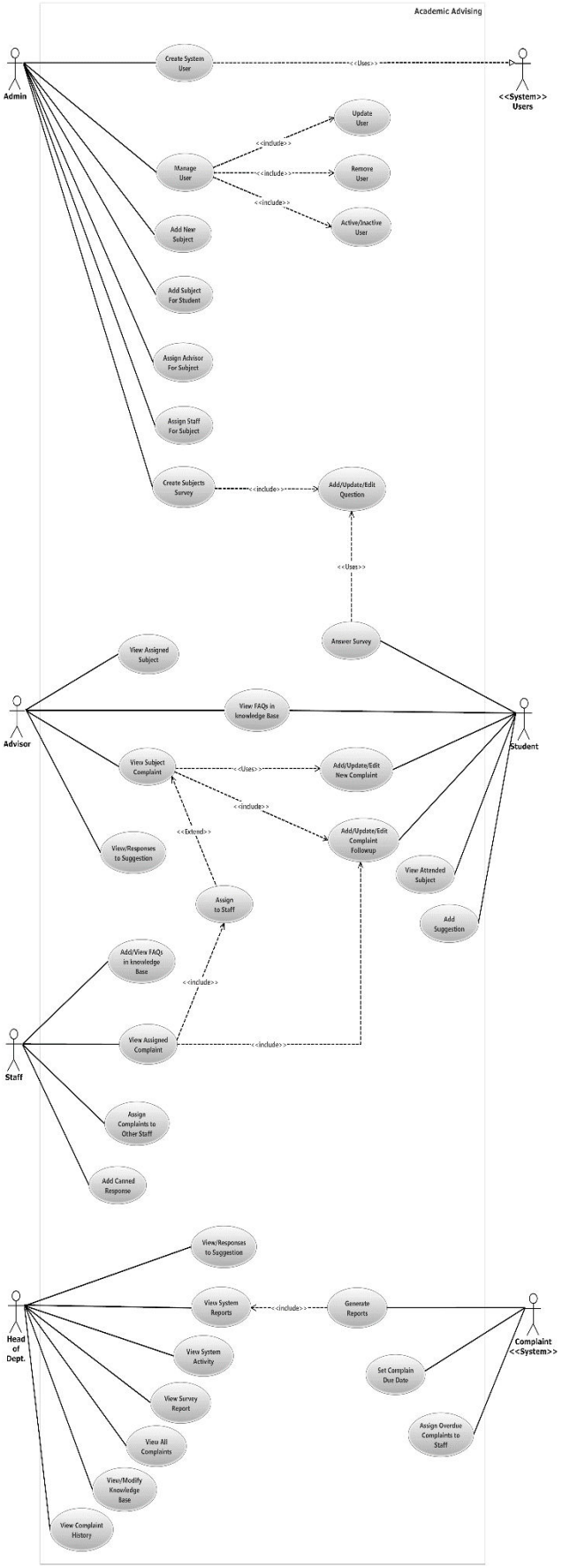

Figure 1. Proposed Use Case Diagram.

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D. Activity Diagram

The researcher used this diagram to display the sequence of activities and to show the workflow from a start point to the end point detailing the many decision paths that exist in the progression of events contained in the activity. Activity diagrams describe the main processes of a system showing its initiator, other participants and end point.

The researcher here illustrates the system activities through three main processes complain, evaluate and suggestions. The following diagrams describe these processes:

1) Complain Process

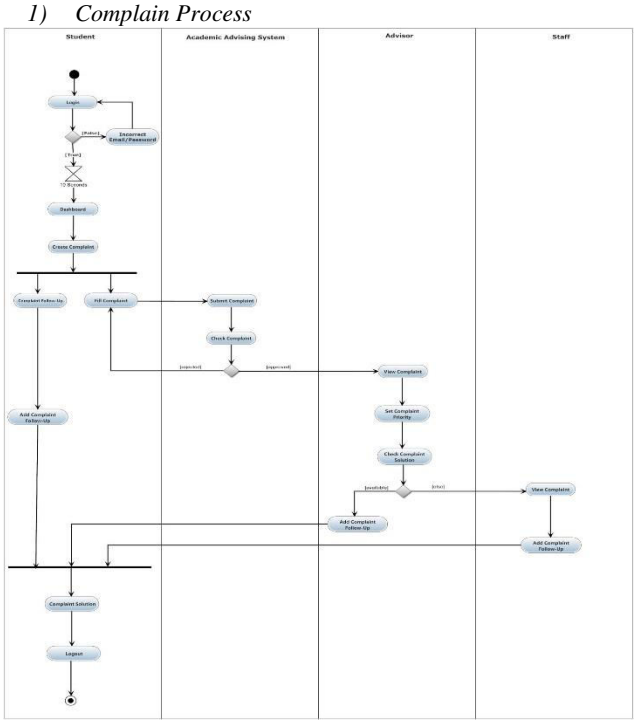

Figure 2. Complain Activity Diagram of the Academic Advising System.

2) Evaluation Process

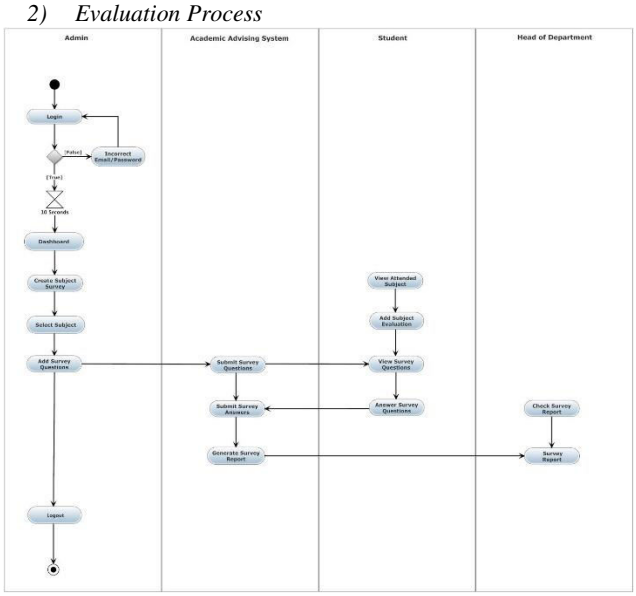

Figure 3. Evaluation Activity Diagram of the Academic Advising System.

3) Suggestions Process

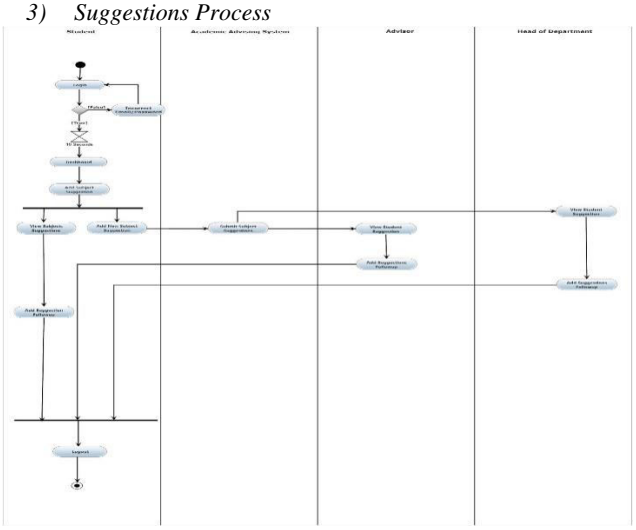

Figure 4. Suggestion Activity Diagram of the Academic Advising System

E. Sequence Diagram

For more understanding, the researcher summarizes the flow of the major functions of the system using the sequence diagram to show how objects interact in a given situation and how processes operate one with another and in which order. The major functions of this system need to answer the following questions as: Which type of users deal with it? Who manage the system users and assign roles? Who make the complaint? Who deal with each complaint and according to which criteria? Who solve the complaint? Who follows up each complaint?

An important characteristic of a sequence diagram is that time passes from top to bottom: the interaction starts near the top of the diagram and ends at the bottom. A popular use for them is to document the dynamics in an object-oriented system. For each key collaboration, diagrams that created show how objects interact in various representative scenarios for that collaboration. The following are the users of our system and its diagrams:

1) First User: Student

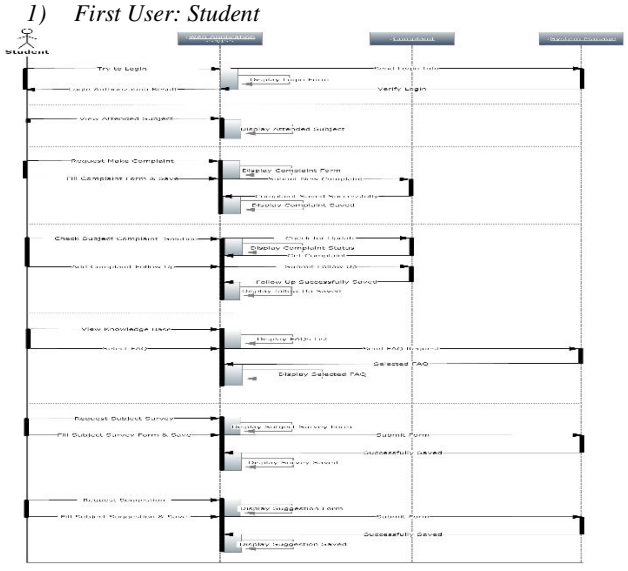

Figure 5. Student Sequence Diagram of the Academic Advising System.

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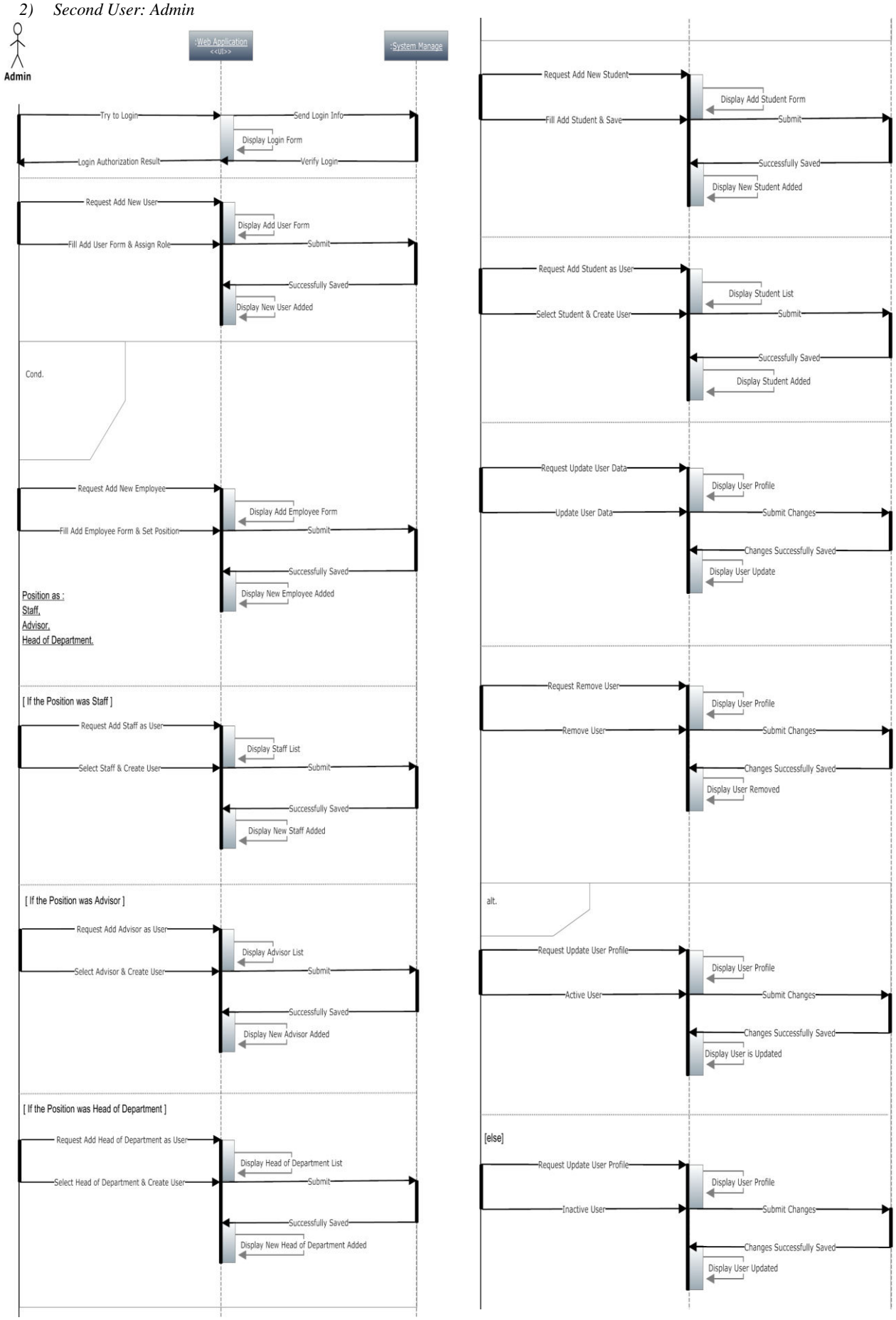
2) Second User: Admin



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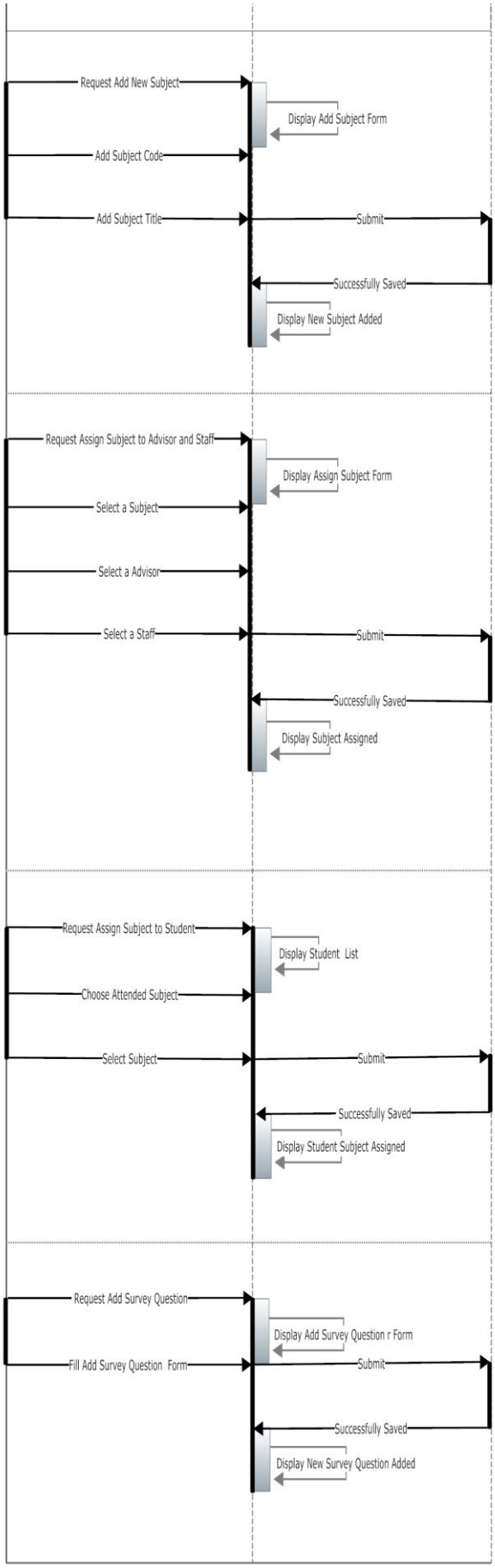

Figure 6. Admin Sequence Diagram of the Academic Advising System.

3) Third User: Advisor

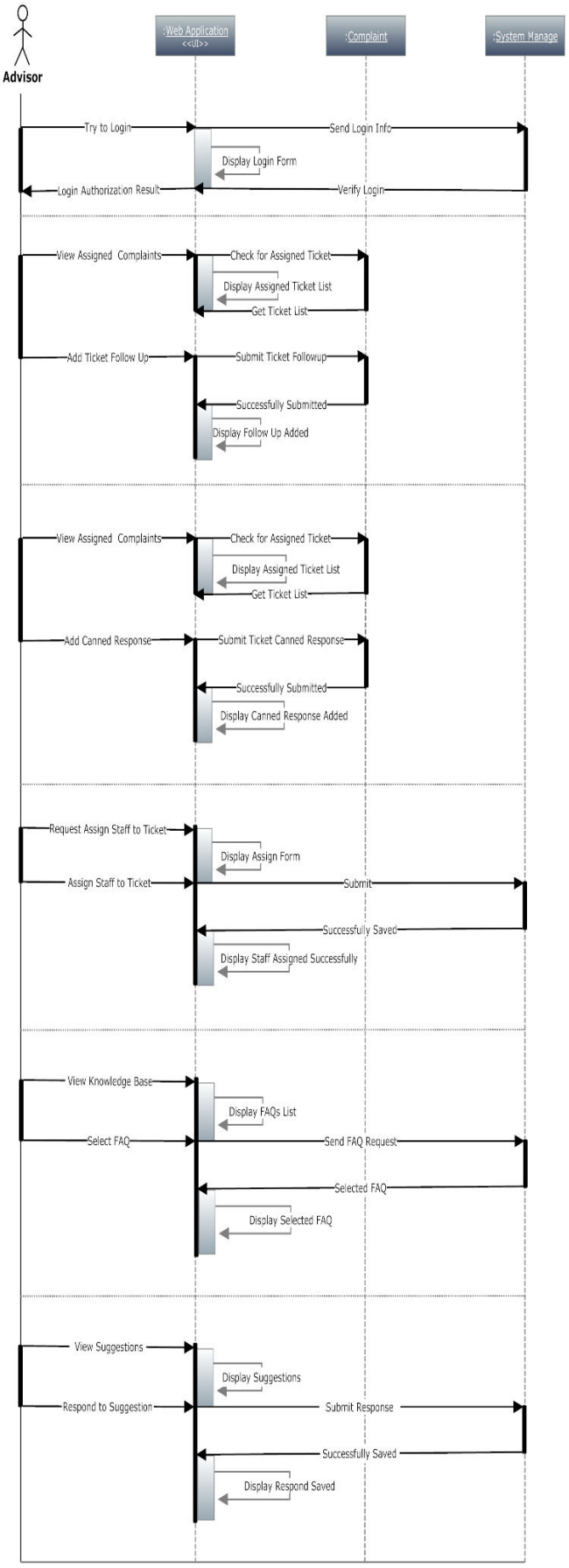

Figure 7. Advisor Sequence Diagram of the Academic Advising System.

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4) Fourth User: Staff

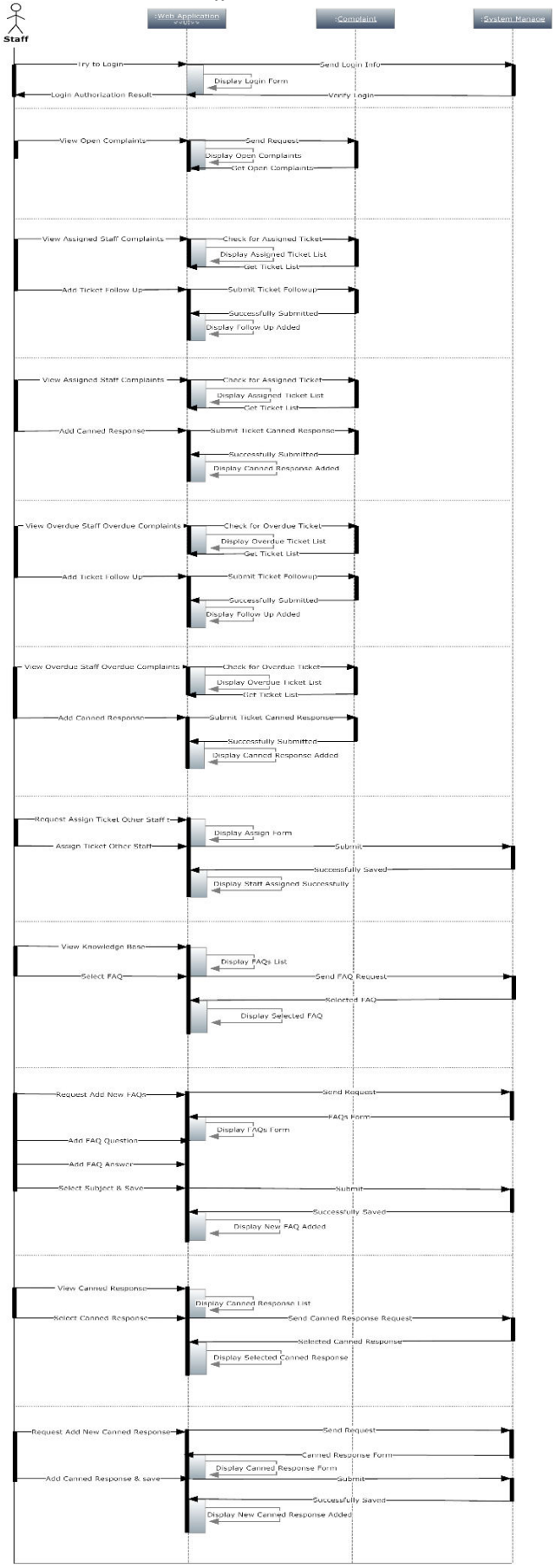

Figure 8. Staff Sequence Diagram of the Academic Advising System.

5) Fifth User: Head of Department

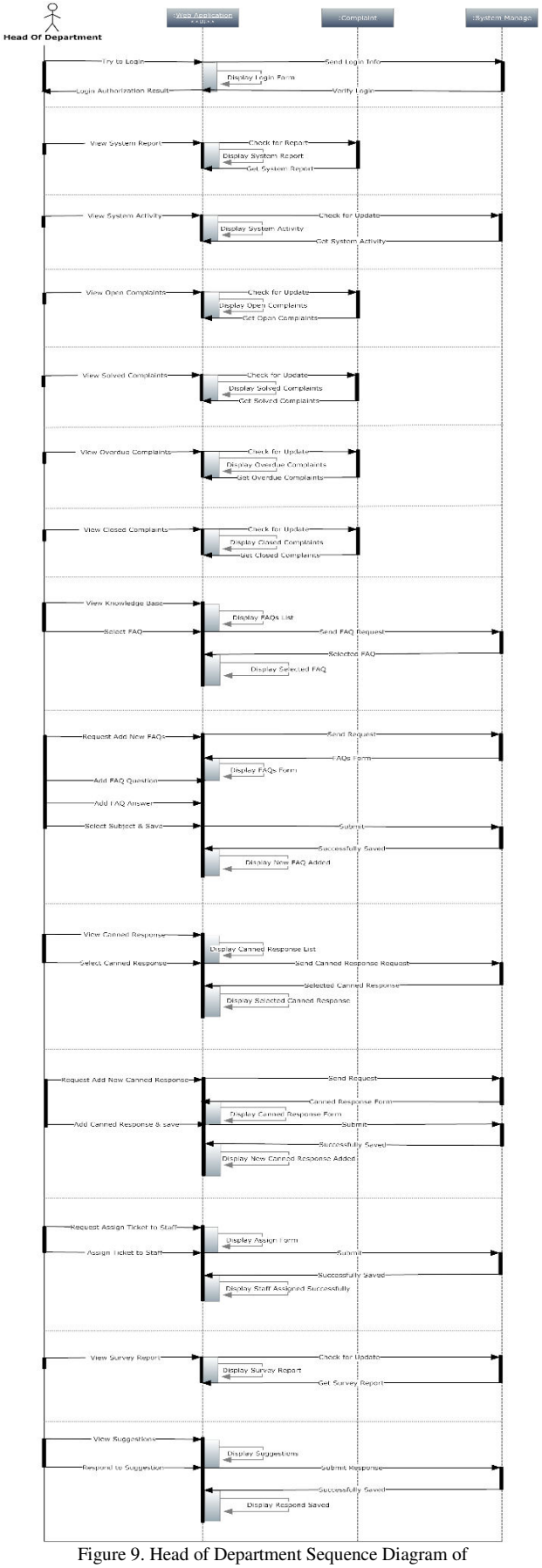

Figure 9. Head of Department Sequence Diagram of the Academic Advising System.

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F. Data Flow Diagram

A data flow diagram (DFD) is a graphical representation of the "flow" of data through an information system. A data flow diagram can also be used for the visualization of data processing (structured design). It is common practice for a designer to draw a context-level DFD first which shows the interaction between the system and outside entities. This context-level DFD is then "exploded" to show more detail of the system being modeled. The Following is the context level of our project:

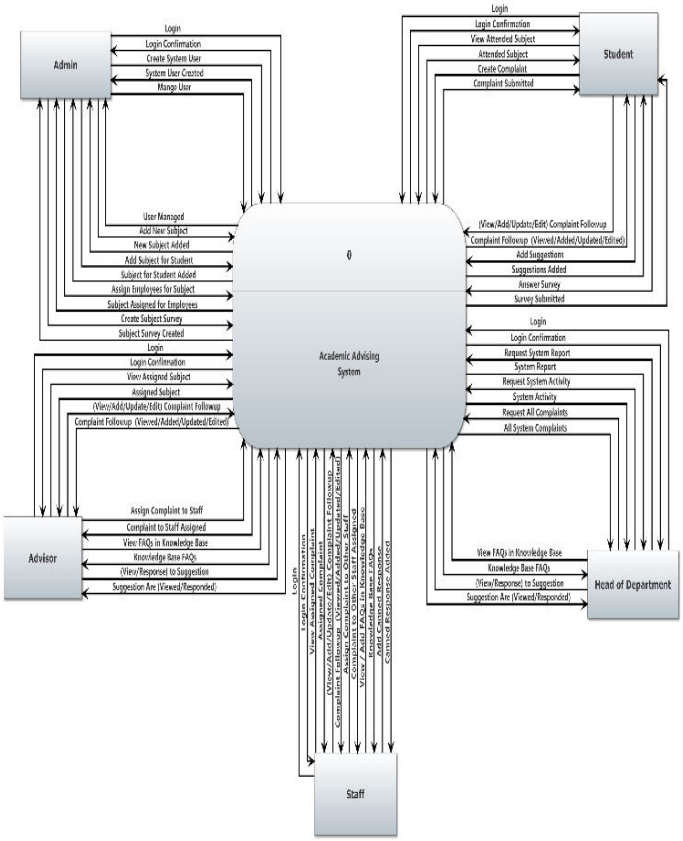

Figure 10. The DFD Context Level Diagram of the Academic Advising System.

A DFD diagram on a lower level "explodes" a process on the level immediately above, providing more detail. The DFD on the second level from the top in the hierarchy is the Level-0 diagram. Each process of the Level-0 diagram is numbered from left to right and then down. In order to prevent a DFD from becoming cluttered, the general rule is to keep the number of processes to seven or less. This rule applies not only to the Level-0 diagram but to DFDs on the lower levels as well.

1) Admin Level-0 Diagram

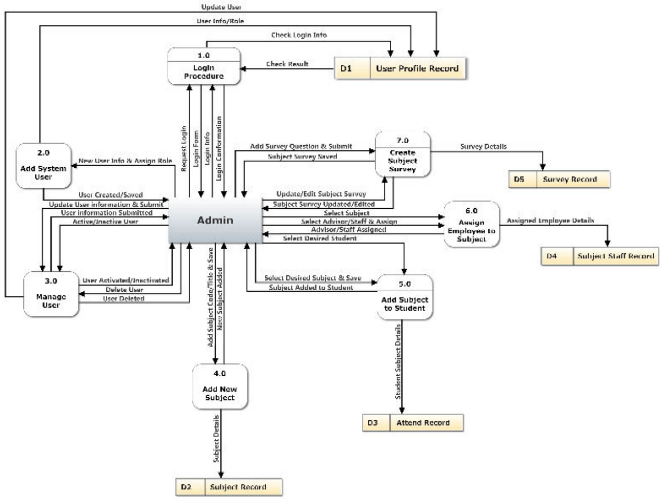

Figure 11. Admin Level-0 Diagram for the Proposed Academic Advising System.

2) Student Level-0 Diagram

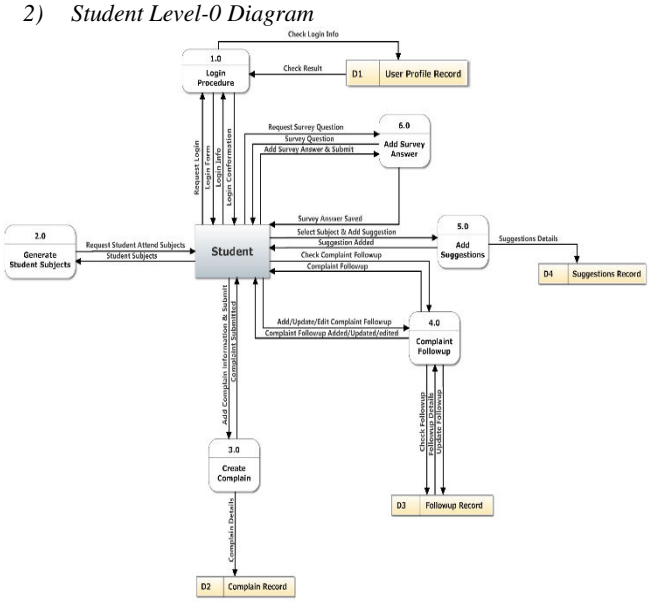

Figure 12. Student Level-0 Diagram for the Proposed Academic Advising System.

3) Advisor Level-0 Diagram

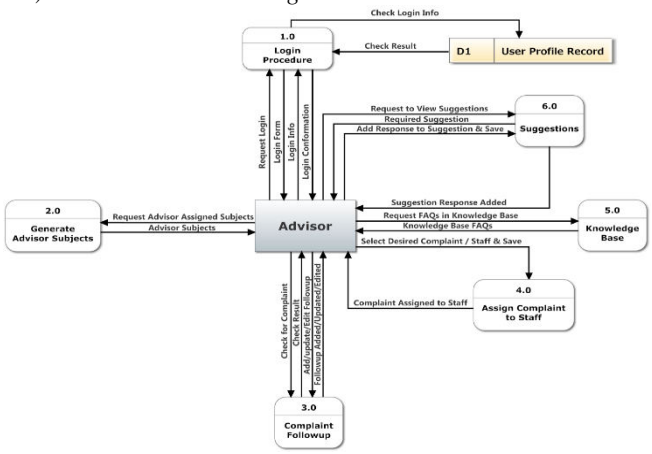

Figure 13. Advisor Level-0 Diagram for the Proposed Academic Advising System.

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4) Staff Level-0 Diagram

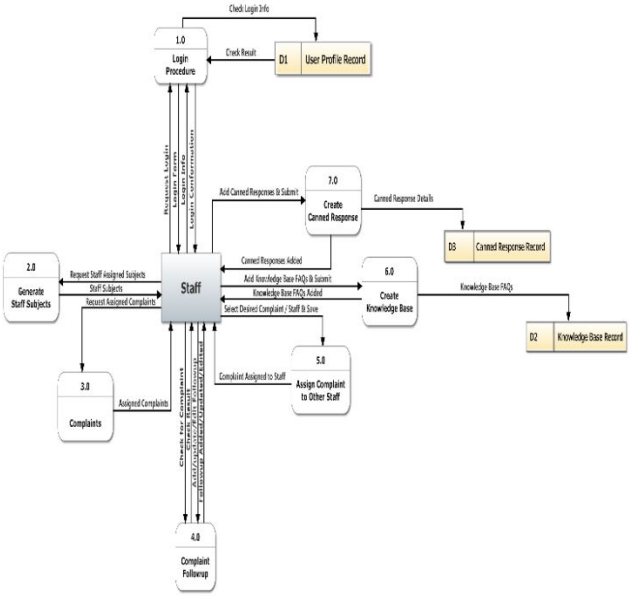

Figure 14. Staff Level-0 Diagram for the Proposed Academic Advising System.

5) Head of Department Level-0 Diagram

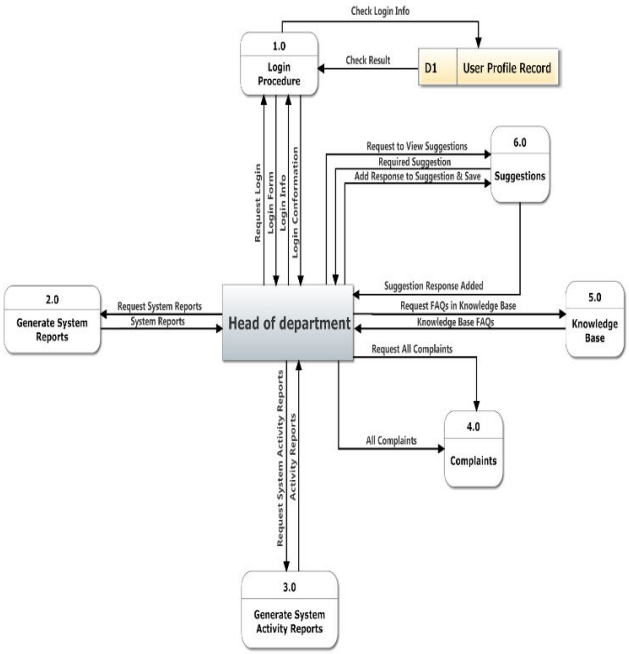

Figure 15. Head od Dept. Level-0 Diagram for the Proposed Academic Advising System.

V. SYSTEM DESIGN

System design is the process of defining the elements of a system such as the architecture, modules and components, the different interfaces of those components and the data that goes through that system. It is meant to satisfy specific needs and requirements of a business or organization through the engineering of a coherent and well-running system.

1) System Architecture

- To-BE Academic Advising System:

The researcher divided the proposed model into 3-tiers that consist of the following, as shown in the below table:

TABLE 2. PROPOSED MODEL TIERS.

Tiers	*Description*
Storage - tier	It contains data about system users and complaints
Business - tier	It consists of the core of the system (complaint handling system)
Presentation - tier	It consists of web-based user interface

The following figure illustrates a proposed layered academic advising system architecture that consists of three tiers each tier serves a certain task. The proposed system could be generally applicable for any web-based e-academic advising system.

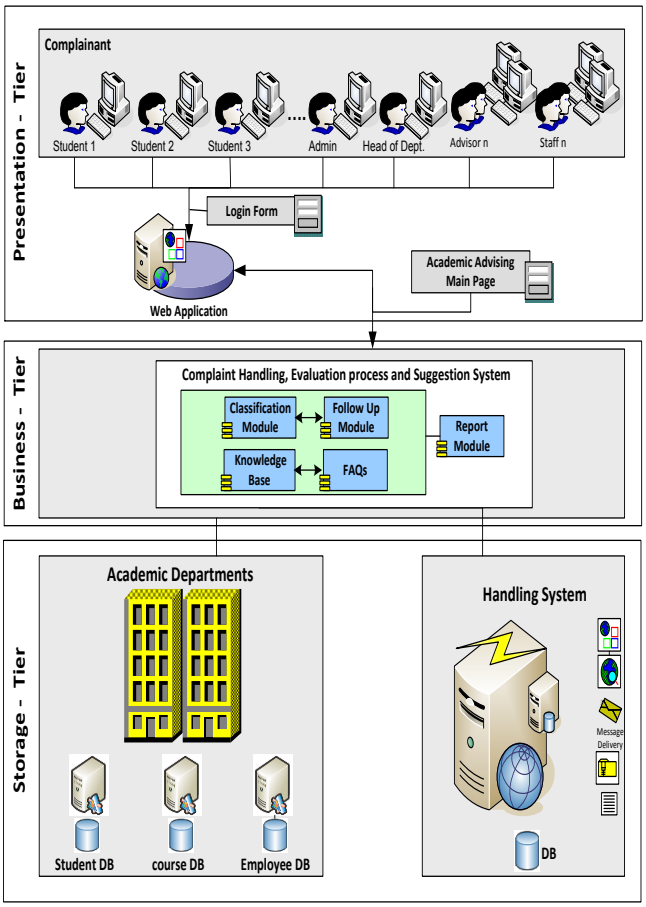

Figure 16. Academic Advising Architecture.

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2) Class Diagram

A class diagram is an illustration of the relationships and source code dependencies among classes in the Unified Modeling Language (UML). In this context, a class defines the methods and variables in an object, which is a specific entity in a program or the unit of code representing that entity.

Class diagrams are useful in all forms of object-oriented programming (OOP). The proposed class diagram describes the systems' structure through showing systems' classes, attributes of classes and relations between classes as shown in figure 17.

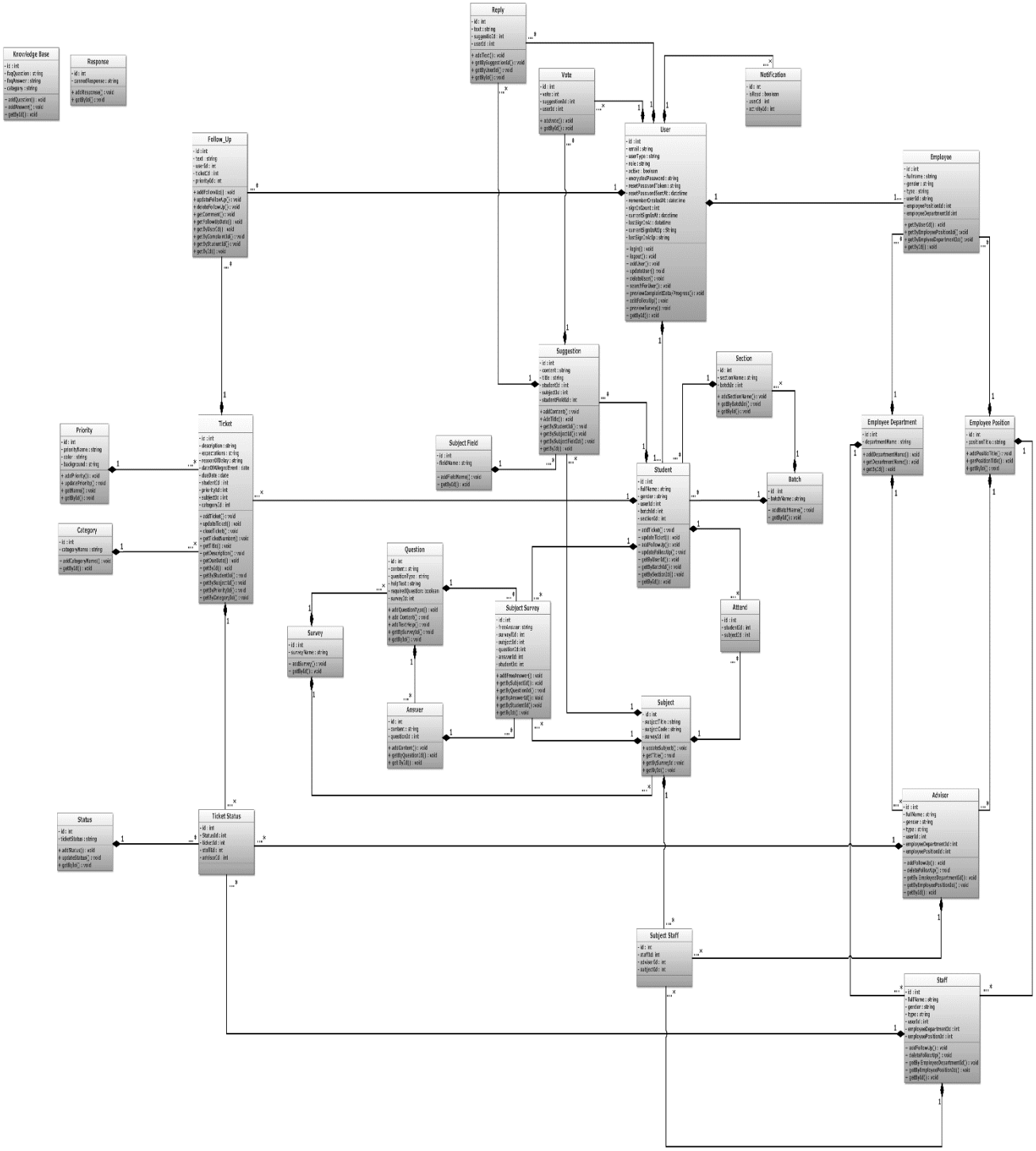

Figure 17. Class Diagram for the Proposed Academic Advising System.

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VI. SYSTEM IMPLEMENTATION

After explaining the proposed system analysis and the proposed system design, the next step is the proposed implementation of the system.

Academic Advising system is used to manage courses and student's complaint, evaluation and suggestion. The following is an overview of some of the functionality within Academic Advising There is a need for five modules to implement the system's cycle.

1) The Proposed Modules

- First, "Student" who want to fill a complaint or survey about one of the enrolled courses or make a suggestion.
- Second module related to the "Advisor" who have some courses assigned to him/her and also to follow-up the complained courses.
- Third module related to the "Staff" who receives the unsolved complaints to work on it.
- Fourth module related to the "Head of Department" who view the overview reports and take decisions for improvements.
- Fifth module related to the "Admin" who manage the system users and courses.

2) The Prototype Implementation Technologies

- Ruby: as a main programming language.
- Ruby on Rails: as a Web framework which runs via the Ruby programming language.
- PostgreSQL 9.3.4: as a Database Engine.
- HTML/HTML5: Hypertext Mark-up Language used to create web page.
- CSS/SASS
- JavaScript/JQuery: The application will be capable of running on standard internet web browsers. The interface for the system will provide a view for head of department, academic support employee, advisor, student and administrative capabilities for the web application administrator.

3) Sample of the Main Forms in the Application

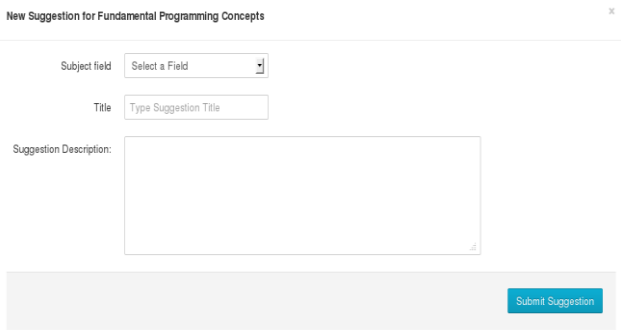

Figure 18. Sample of a New Suggestion Form.

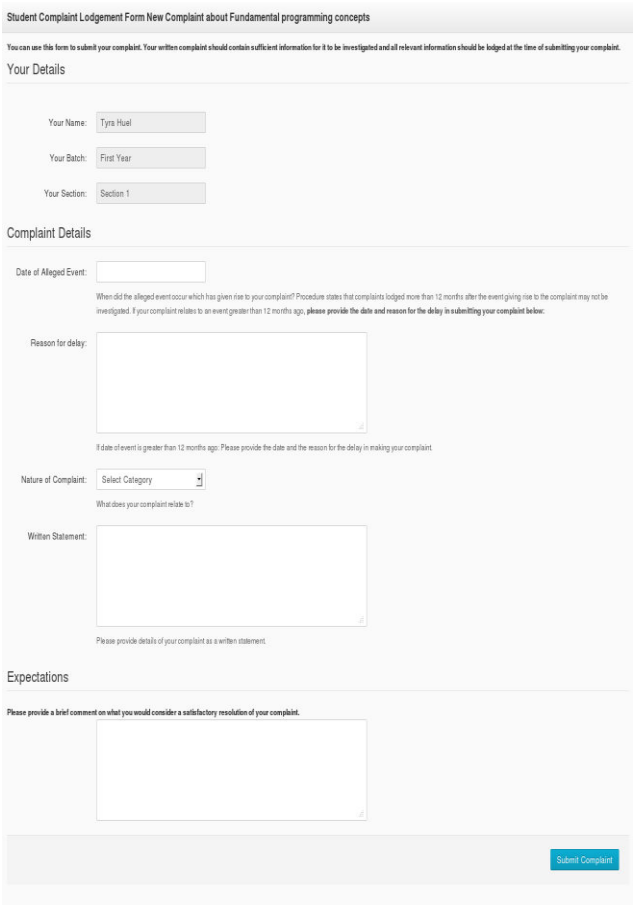

Figure 19. Sample of Student Complaint Form.

Figure 20. Sample of Student Evaluation Form.

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4) KPIs in the Proposed Application

In this section the researcher will explore the most important reports in the proposed web-based Academic Advising System application.

Figure 21 shows the complaints by status for specific period of time for example here it's from Mar 31,2014 to April 30,2014 and when hovering the mouse on the report it shows the number of open, in progress, pending, solved and closed complaint are processed in that period of time.

Figure 21. Complaints by Status Report.

Figure 22 shows the complaints by priority for specific period of time for example here it's from Mar 31, 2014 to April 30, 2014 and when hovering the mouse on the report it shows the number of High, normal and low priority is the complaint.

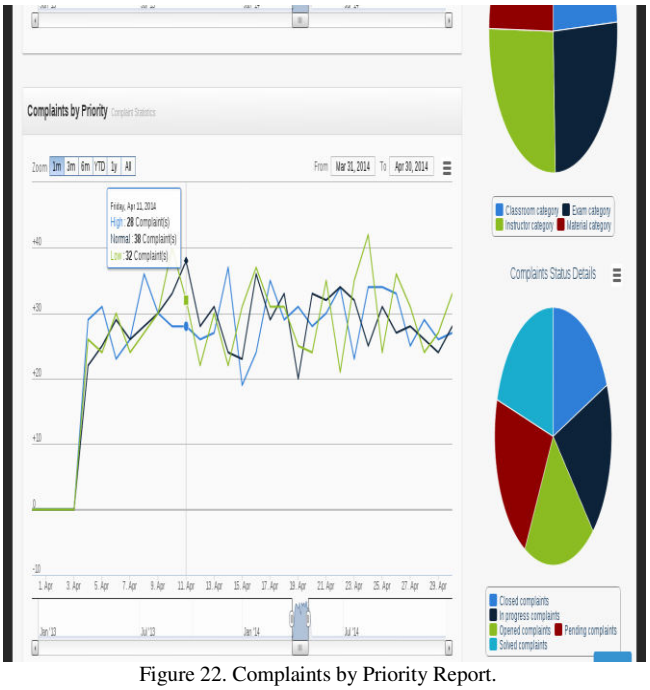

Figure 22. Complaints by Priority Report.

Figure 23 shows the complaints per subject. Every subject has its section as shown and its name under it and three columns above its name. Every column shows number of complaints and its priority.

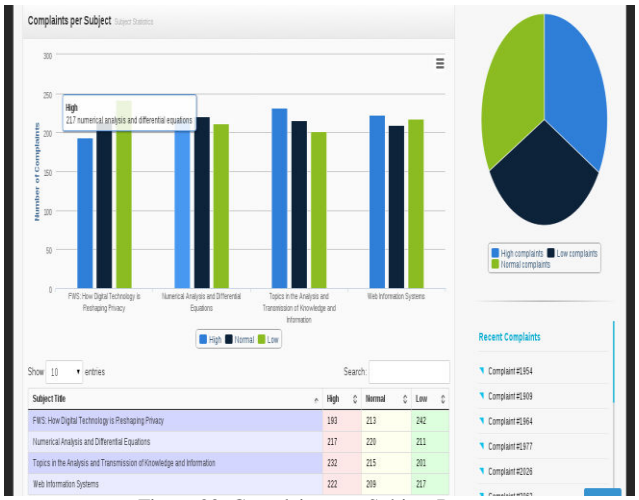

Figure 23. Complaints per Subject Report.

Figure 24 shows the complaints per staff and per advisor. It shows the staff /advisor name, total complaints and complaint status wither its opened, in progress, pending, closed and solved.

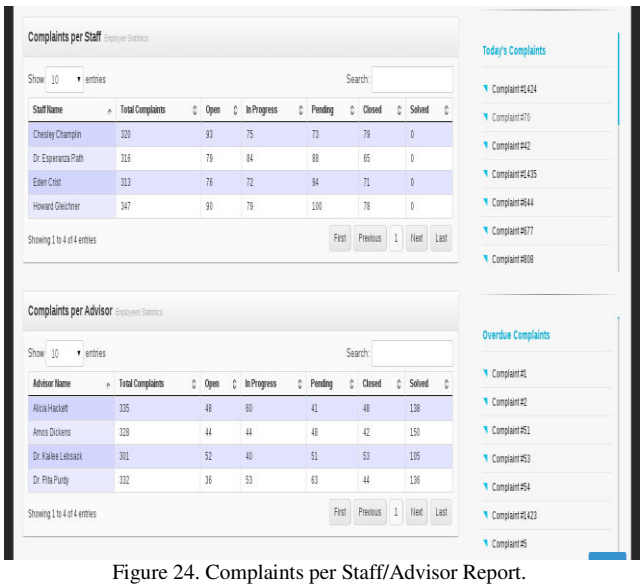

Figure 24. Complaints per Staff/Advisor Report.

Figure 25 shows the current day of complaints and overdue complaints of that day. The today complaints show the complaints that had been applied that day. The overdue complaints show the complaint that hadn't been solved and its due date expired.

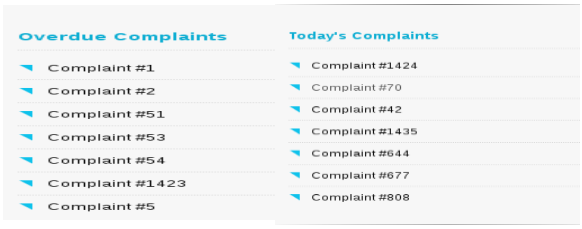

Figure 25. Overdue Complaints & Today Complaint Reports.

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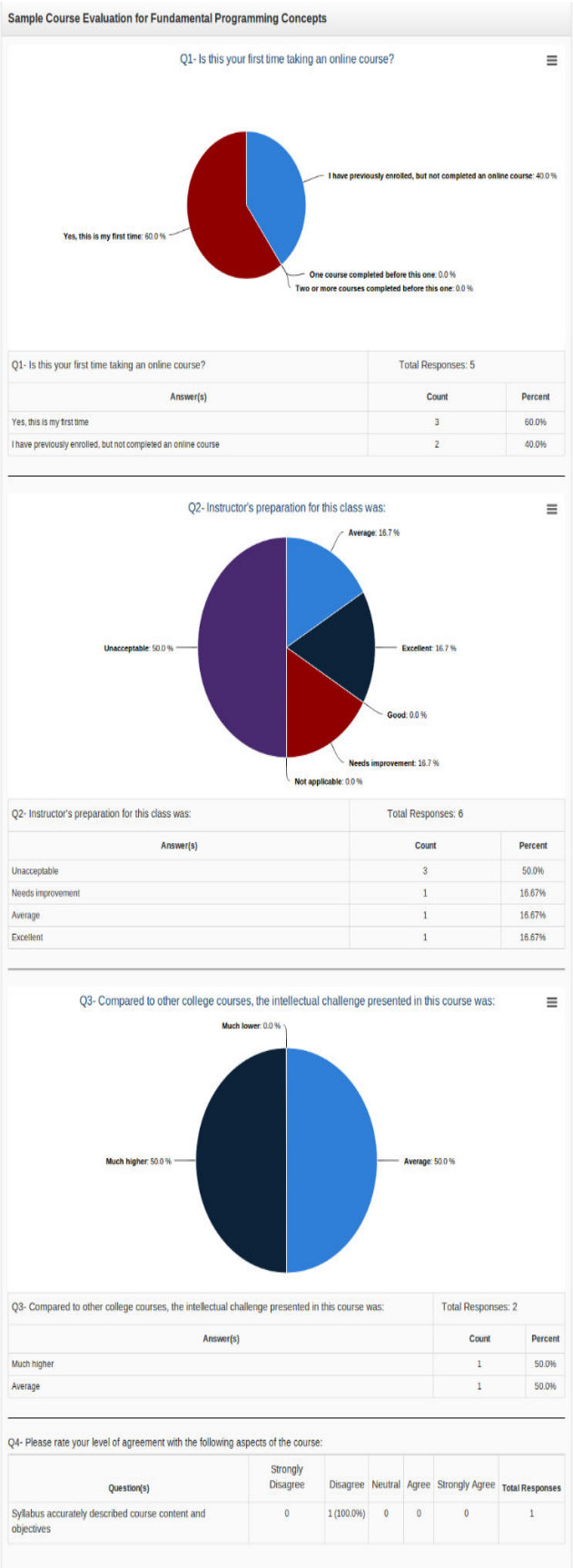

Figure 26. Sample of Course Evaluation Report.

VII. CONCLUSION

The researcher has highlighted how the proposed system works, who are the main users and how they can deal with the system. This proposal presents an overview of the development and implementation of the Academic Advising System as a web-based application. The results obtained from the implementation are encouraging and promising for the development or more complex systems in the future as the Complaints Management is a complex and critical problem. Complaints and compliments are valuable source of information that organizations can use to improve program delivery and service. As regulatory and market pressures continue to mount upon companies, industry leaders will need to develop effective solutions or face the high costs inherent in failed technology implementations and weak customer relationships.

Research shows that when higher-education students have access to informed advising services, enrollment rates and graduation rates improve. However, access to advisors is not always accessible due to difficulties with traditional methods of communication, such as phone and e-mail. Students who may be desperately in need of advising services are instead met with a difficult obstacle: the inability to access an advisor's available schedule.

Student academic advising is an essential task in educational institutions. Traditionally a university student plans the courses semester-by-semester towards a degree through lengthy meetings with the human academic advisor. Advising meetings are usually held during the beginning of each academic semester. Since student advising is a time-consuming effort, there is a need for computerization of some parts of the advising process. Utilizing a computerized advising system, students can save the software consultation results and can then meet with the human advisor for further consultation (if there is still a need for the traditional face-to-face meeting). This hopefully will save valuable time for academic advisors and for students.

Student advising is an important and time-consuming effort in academic life. Academic advising has been implemented in order to fill the gap between student and the academic routine, by moving advising, complaining, evaluating system from the traditional ways to an automated way through letting the student use his personal computer or any other device (a Smartphone or Tablet for example) to make the processes fast and easy as possible.

The advising process is long-term and iterative due to the continuous change of the environment it operates within. Such changes include the addition and removal of courses from programs as well as modification of prerequisite rules. It also has timely limitations, as advisors cannot lend advice for future semesters since it is difficult to predict which courses a student will pass, if any during the course of any semester. As a result, student advising should be made available, at minimum, once per semester to ensure that students are guided based on the latest versions of their transcript and the rules that govern their study programs.

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Upon proper authentication, students are able to view their own grades for a specified semester, unofficial transcript, advising history and degree audit which shows a student's progress toward a degree. Similarly, advisors can select a particular advisee from a list and view their progress, conduct advising information and record notes to themselves and other advisors or to the students. Special attention has been given to managing the privacy of the advising history and advisor comments.

The goals of academic advising are to enhance the undergraduate experience by making students aware of the diverse options for courses and other educational experiences available to them and to facilitate graduation in a timely manner.

This system will be able to handle complaints by recording and giving feedback for each raised complaint. The advantage behind this model is the simple method for handling the student's complaints about what dissatisfies them. Results of the study can be a good reference to find out users' needs from e-complaint and the handling process of this complaint in the body of any organization. It could be implemented in any university to monitor and lead students according to their complaints, evaluations, and suggestions on courses.

The presented model for the Academic Advising System will have the ability to minimize students' dissatisfaction and on the other hand it can encourage students to participate in controlling the quality of the educational service provided. The results obtained from the implementation are encouraging and promising for the development or more complex systems in the future as the Complaints Management is a complex and critical problem.

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