ONLINE QUESTIONNAIRE DATA ANALYSIS SYSTEM

(OQDAS)

ABDULRAZZAQ QASEM ALI

Universiti Utara Malaysia
2012

KOLEJ SASTERA DAN SAINS
(College of Arts and Sciences)
Universiti Utara Malaysia

PERAKUAN KERJA KERTAS PROJEK
(Certificate of Project Paper)

Saya, yang bertandatangan, memperakukan bahawa
(I, the undersigned, certifies that)

ABDULRAZZAQ QASEM ALI
(806397)

calon untuk Ijazah
(candidate for the degree of) **MSc. (Information Technology)**

telah mengemukakan kertas projek yang bertajuk
(has presented his/her project of the following title)

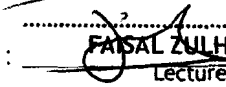**ONLINE QUESTIONNAIRE DATA ANALYSIS SYSTEM**

seperti yang tercatat di muka surat tajuk dan kulit kertas projek
(as it appears on the title page and front cover of project)

bahawa kertas projek tersebut boleh diterima dari segi bentuk serta kandungan dan meliputi bidang ilmu dengan memuaskan.
(that this project is in acceptable form and content, and that a satisfactory knowledge of the field is covered by the project).

Nama Penyelia Utama:
(Main Supervisor) : **MR. ADIB M. MONZER HABBAL**

Tandatangan
(Signature) :
ADIB M. MONZER HABBAL
Penyelia ~~~~
Pusat Pengajian Pengkomputeran Tarikh (Date) : 29/11/2012
UUM College of Arts and Sciences
Universiti Utara Malaysia

Nama Penyelia Kedua:
(Co-Supervisor) : **MR. FAISAL ZULHUMADI**

Tandatangan
(Signature) :
FAISAL ZULHUMADI Tarikh (Date) : 29/11/2012
Lecturer
UUM College of Business
Universiti Utara Malaysia

Nama Penilai
(Name of Evaluator) : **MISS. ANIZA MOHAMED DIN**

Tandatangan
(Signature) : _____ Tarikh (Date) : 29/11/2012

PERMISSION OF USE

In presenting this thesis as a partial fulfillment of the requirements for a postgraduate degree from Universiti Utara Malaysia, I agree that the university library may make it freely available for inspection. I further agree that permission for copying this thesis in any manner, in whole or in part, for scholarly purpose may be granted by my supervisor(s) or, in their absence by the Dean of the Graduate School. It is understood that any copying or publication or use of this thesis or parts thereof for financial gain shall not be allowed without my written permission. It is also understood that due recognition shall be given to me and to Universiti Utara Malaysia for any scholarly use which may be made of any material from my thesis. Request for permission to copy or to make other use of materials in this thesis, in whole or in part, should be addressed to

Dean of Awang Hag Salleh Graduate School College of Art and Sciences

University Utara Malaysia

06010 UUM Sintok

Kedah Darul Aman

I

ABSTRACT

The aim of this project is to develop an Online Questionnaire Data Analysis System (OQDAS) for researchers in University Utara Malaysia. This system enables research questionnaires to be deployed via a web page and provide a great source of information to all UUM researchers. By developing this project, it helps the researcher to perform survey easily, cost-effectively, and time shortly. In addition, analytical results reported in PDF file automatically. As well, a prototyping as a part of the traditional SDLC approach will be chosen as a guide to develop OQDAS.

ACKNOWLEDGEMENT

TABLE OF CONTENT

LIST OF TABLES

LIST OF FIGURES

CHAPTER ONE
INTRODUCTION

1.1. INTRODUCTION

Educational institutions and universities employ scientific research as one of the means and tools to access data, information, knowledge and theories that are used to explain and understand social phenomena. Researchers have considered two approaches in gathering information for the purposes of research and study: Quantitative Approach and Qualitative Approach (McBurney & White, 2009).

As reported by Roztocki and Lahri (2003), a questionnaire is the most widely used quantitative research method. Survey questionnaires consist of a set of questions that are related to each other in ways that help to achieve research's goal. Paper based questionnaire has always had the disadvantages such as the number of potential participants is limited, questionnaire distribution is slower and much more.

According to Singh, Taneja, and Mangalaraj (2009), online questionnaire is becoming a great replacement to traditional paper and mail-based questionnaires to collect data for questionnaire research. Online questionnaires are used to compensate for serious inherited disadvantages of traditional formats, where the Web provides an opportunity to compensate for the deficiency of slow distribution, return time and other disadvantages of traditional format (Pargas, Witte, Brand, Hochrine, & Staton, 2003).

Aside from the variety of aspects, Data analysis is a process in which collected data is organized so that meaningful information can be discovered from it. Organizing data is the fundamental process of understanding what the data is about and what the data does or does not. People can analyze the data in different ways, and manipulating data during the analysis stage is not easy at all, as it may lead to certain conclusions. For this reason, it is essential to be careful when analyzing the data, and to think deeply about the data and the outputs which were extracted.

Owing to the highly complex computations in data analysis methods, it sounds unfeasible for people to analyze survey data without computer software. Because of that, some companies have already developed software tools, such as Excel, SPSS, SATA, AMOS, SAS and so on, that help the researchers in analyzing data by performing high computational complexity of data analysis methods. It has become important for researchers to learn how to use these analysis software tools (Yian-Shu Chu, Shian-Shyong Tseng, Jui-Feng Weng, Huan-Yu Lin, Nien-Chu Wang, Liao, A.Y.H., &AJun-Ming Su, 2010).

Nauck, Spott, and Azvine (2004) noticed that all researchers are not experts in using data analysis tools. In the same way, not all car drivers are capable of repairing his car or not all computer users know the CPU function and how it works. Researchers are not interested in how the data analysis tools apply calculations or mathematical theories on their data, but they are interested in what they will produce.

In this project, we have developed an Online Questionnaire Data analysis platform that automates the data collection and data analysis process to minimize effort, time consumption and learning curve for researchers on how to use the data analysis software.

1.1. PROBLEM STATEMENT

Online questionnaires are used to overcome serious inherited disadvantages of traditional formats. Online surveys' users still need to export the collected data from the online questionnaire systems and import them into the data analysis tool because the online questionnaire systems provide the users with the ability to collect data from participants but they do not provide the features of reporting the analysis results automatically (Singh, Taneja, & Mangalaraj, 2009).

Moreover, data analysis tools are still data analysis methods that require analysis experts, where learning how to use the data analysis software tools is very time-consuming for the researchers (Yian-Shu Chu, 2010). In addition, a major drawback of most known data analysis tools such as (SPSS) is that when dealing with huge datasets, SPSS becomes slow, and difficult to use (Musterman, 2007).

2

Furthermore, online questionnaire systems and data analysis tools are working on different platforms. The researcher needs to export the collected data and import these data into any data analysis tools. In this case, researcher needs to be careful when entering the data to the analysis tool. Researcher has to consider the data type, data value, data measure and many more during data entry. If the researchers forget to consider these criteria, the analysis results will not be accurate.

1.2. RESEARCH QUESTION

    a) How to develop an online system that performs survey easily, cost-effective, time shortly and auto documented?

    b) How to evaluate this online system and validate its reported results?

1.3. RESEARCH OBJECTIVE

The main objective of this research is to develop an Online Questionnaire Data Analysis System (OQDAS) for UUM researchers. To achieve this main objective, this research has to carry out the following sub-objectives:

    a) To design an Online Questionnaire Data Analysis System (OQDAS) for UUM researchers to enhance the process of survey data collection and data analysis.

    b) To evaluate Online Questionnaire Data Analysis System (OQDAS) during and after the development.

1.4. RESEARCH SCOPE

The OQDAS main target is UUM researchers and research centers at least for the mean time. This system could be applied on Center for Testing, Measurement and Appraisal (CeTMA- UUM) or Research and Innovation Management Centre (RIMC-UUM). These centers aim to coordinate the research activities of the university and measure the degree of satisfaction perceived by UUM lecturers and students for various kinds of services provided by UUM.

3

OQDAS is attached into a database system which holds the information of admin, survey's questions, survey's answers, user's response and all related data. This database system provides an easy communication medium between researchers and participants.

OQDAS has three types of users: OQDAS administrator, researcher, and participant. Administrator gives the privileges to researchers. The researchers manage the survey and can browse the dynamical and statistical reports that OQDAS provides. The last type of user just answers and submits the survey. All types of users cannot perform their function without having valid username and password.

The proposed system mainly focuses on the following features:

- Online data collection: allows the researcher to create surveys, and collect the survey data.
- Survey time control: allows the researcher to determine when the survey supposes to be active or when it supposes to be deactivated.
- Export function of collected data: allows the researcher to export the collected data of the survey and use any other desirable data analysis tool to analyze these data.
- Auto report generator: reports the analysis results in PDF file automatically.
- Buffering answers function: allows the participant to delay answering the survey and continue survey at a later time.

1.5. RESEARCH SIGNIFICANT

This system would play a significant and an important role in providing the researchers with one platform to design questionnaires, collect data, analyze data, and reporting results. OQDAS would eliminate research workloads that are more time-consuming and effort-increasing. In addition, OQDAS would reduce the time and effort of researchers in designing survey's questions and answers, distributing surveys to participants, and collecting responses. Besides that, OQDAS allows the researcher to have a hard copy version of the survey. Furthermore, the researchers will not need to export data from the online system and then import it to any data analysis tool to analyze questionnaire data, due to OQDAS provides the feature of allowing the generating reports for the analysis results, even though the feature of exporting data is provided for those who want to use other analysis tools.

4

1.6. SUMMARY

Online Questionnaire Data Analysis System (OQDAS) is a web based system developed to UUM researchers and research centers. OQDAS provides one platform for collecting and analyzing the data. Unlike the traditional paper based survey, this system minimizes effort and time consumption. Moreover, the OQDAS provides auto report generator for the survey data analysis.

1.7. REPORT STRUCTURE

This report consists of the following chapters:

- *Chapter 1* presents the introduction of the project, where the problem statement, research questions, research objectives, project scope, and research significant are introduced in this chapter.

- *Chapter 2* presents the overview of web applications and related work of this project.

- *Chapter 3* describes the methodology that has been chosen as a guide to develop OQDAS.

- *Chapter 4* summarizes the analysis and design steps taken in order to come out with required system.

- *Chapter 5* discusses the evaluation and testing processes that have been performed during and after the system development.

- *Chapter 6* discusses the project outputs, the limitations and constraints of this project. At the end of this chapter, recommendations on system implementation will be given.

CHAPTER TWO

LITERATURE REVIEW

2.1.INTRODUCTION

Basically, this chapter consistes of four parts. The first part would be a general overview of web-based applications. The second part would introduce the online survey application and their advantages over paper based applications. The third and fourth sections would cover some related works which have been done in the area of online questionnaires and data analysis tools.

2.2. WEB-BASED TECHNOLOGY

2.2.1. Preview of the Internet

As a reference from Zhang (2010), the internet is interconnected computer network system which uses Standard Protocol Suite (TCP/IP) to help more than millions of users around the world. It is huge cyber that consist of millions of public, private, academic, government, and business networks that connected together by broad terminations of electronic and optical network array. The internet carries a huge array of data and services especially the interlinked hypertext documents on the World Wide Web (WWW) and the schema which support electronic mail.

Kling (1994) defined in his book the World Wide Web as "a distributed information system which is based on a hypertext model and are used as the principle navigational tool for accessing the resources of the internet".

2.2.2. Web-Based Application

Kossiakoff, Sweet, Seymour, and Biemer (2011) stated that, in the software engineering field, web application, which knew as web-apps, are applications that are accessed through a web browser over an internal network such as the internet or external network such as an intranet. Moreover, it is a kind of computer software application that is implemented using

6

code via browser supported language such as javascript, HTML, Java and relayed on a common web browser that provide the execution of the application.

Gal and Mylopoulos (2003) approved that web based applications technology are increasing rapidly and demonstrated tow points; end user's perspective as the main goal and developing web enabled software with the main aim of providing less client side.

2.2.3. Web-Based Application Classes

Murugesanugn and Ginige (2005), defined web based applications as classified into six classes. Table 2.1 shows their functionality. The classification concept assists developers to understand and identify web based applications requirements and the developments as well.

Table 2.1: Web Application Classes

Class	Example(s)
Online Communities/ Marketplaces	Discussion groups.
Workflow Oriented	Supply chain management.
Transactional	Online systems.
Informational	Online newspapers and online books.
Collaborative work environment	Distributed systems.
Interactive	Online forms and online games.

2.3. ONLINE SURVEYS AND THEIR ADVANTAGES

The survey online technology is new and still in development phase. In past years, conducting and creating an online survey requires more time and requiring experiences with web authoring programs, scripting program, and HTML code. Nowadays, online survey services and authoring software packages provide an easier and faster way (Wright, 2005).

The following explains some advantages of an online questionnaire:

- **Time Efficiency**: In one of their articles Roztocki, N., And Lahri (2003) concluded the response time for Web-Based Surveys are much shorter than traditional means of data collection. It has, for example, been noted that by the time the postal service

had finished delivering a mail survey, a large number of submissions had already been received through the Internet. Additionally, the digital format of the responses eliminates the time associated with the data entry.

- **Cost Benefits:** The software programming costs, site maintenance costs, and other costs associated with Web surveys are estimated to be lower than those incurred through traditional "paper-and-pencil" surveys. According to some authors, Web-Based Surveys can result in an estimated cost reduction of as much as one-third (Croteau, Dyer, & Miguel).

- **Quality of Responses and Human-Error Reduction:** Comparative study done by Downing and Clark (2007) showed that the responses to Web-Based Surveys show fewer missing entries and less completion than their traditional "paper-and pencil" counterparts. In addition, because the data were already in digital format, the possibility of human-error during data entry is eliminated.

- **Access to Larger Populations in Different Geographic Areas:** Web-Based Surveys have the potential to reach a high number of participants in the most remote geographic areas(Norman & Russell, 2006).

- **Reduce the effort of the participants:** the effort to handle the questionnaire is reduced for the participants. They have simply to follow the link to the web page and fill in the questionnaire. Thus, it is no longer necessary, to open a questionnaire from a mail, print it, and, most important, take the time to send it back(HAUNBERGER, 2011)

2.4. DATA ANALYSIS TOOLS

Data do not speak for themselves, rather they reveal some facts which can be processed and manipulated by the analyst under certain conditions in order to get valuable information which can be used in various ways. In addition, Data analysis would be the soul of the process that helps researchers to manage understanding facts, getting explanations, understanding the differences between a pattern and another, as well as making hypotheses. Data analysis is implemented in many fields some are the following, but not limited to, in politics, in business, in technology, and almost in all sorts of science (Musterman, 2007).

According to (Lewis-Beck, 1995) performing data analysis the outcomes of the study are represented in the form of measurable numerical results that can take the form of graphs and charts as well as many other forms. The produced result or result sets are usually represented in a simple format such as finding the number that describes certain value as a typical value this will to find the differences between numbers.

Furthermore, analysis results might be used, for instance, to find the maximum, minimum and average salaries of organization employees, a simple calculation of the average student marks, or doing some complex calculations such as finding the differences between employees' salaries from one department to another or from country to another(Weerahandi, 2003).

Fundamentally, the numerical answers provided by data analysis are very simple. Saying this, data analysis is not only about representing valuable and reusable numeric values, indeed, it utilizes them. Simply data analysis is all about the world around us asking endless number of questions about how things in our universe work(Taylor & Cihon, 1990).

The following sections will discuss the most known data analysis tools.

2.4.1. Microsoft Excel

The use of Excel in performing statistical analyses has dramatically increased over the years. In fact, it has been thought that more basic statistical calculations are performed using Excel than in all other statistical computer packages combined (McCullough & Wilson, 2002).

While it seems reasonable to expect that new versions of Excel include corrections to previously identified errors that has always not been the case with past upgrades. With the release of Excel 2003, it is only fair to assess its accuracy to determine if Microsoft has made sufficient strides in upgrading the accuracy of the program (Keeling & Pavur, 2004).

Knusel (2004) has indicated that several previously identified errors in Excel have finally been eliminated. For example, if the mean of the Poisson is 200, the probability of a Poisson random variable being less than 200 is displayed correctly in Excel 2003 but not in Excel 97, Excel 2000, or Excel XP.

2.4.2. Statistical Package for the Social Sciences (SPSS)

SPSS is the earliest statistical analysis software in the world. The statistical analysis process includes descriptive statistics, general linear model, correlation analysis and regression analysis, log-linear regression model etc. The analysis results clearly, intuitive. SPSS can directly read EXCEL and DBF data files, and drawing various graphics according to the data. Now SPSS is used in natural science, technology science, and social science for research (Wang, 2010).

SPSS uses window to display a variety of functions, such as data management and data analysis, and it uses a dialog box to display a variety of functions, which is clear, intuitive, easy to learn and use . As long as we grasp some of the windows operating skills and master some simple statistical analysis principles, this lovely software can service for educational researchers. Running this software of data, we can have mathematical results that are not only intuitive and clear but also supply beautiful charts. It is this powerful computing and graphics capabilities that can make all kinds of raw data describe what the researchers want to say , as result if will be of a good helper for ideological and political education (Gangshu, 2005).

2.5. RELATED WORK

There are many online questionnaires tools like KeySurvey, WebSurveyor WWW Survey Assistant, and Hosted Survey. A brief description of these tools has also been mentioned below.

2.5.1. KeySurvey

KeySurvey is a web based program that it is easy-to-use and delivers the features researchers may need to conduct sophisticated and multi-language surveys by designing and distributing survey, then collecting data from respondents.

Macer, T. (2009), concluded that analysis and reporting side of Keysurvey is a bit of a disappointment after all the capabilities in KeySurvey. It is not easy to create simple reports showing charts and frequencies. It could include a broad range of statistics. This

might be sufficient for some users, but the reporting formats and the use of tools will be difficult for some. Then, they will build an alternative report to fill their requirements.

2.5.2. WebSurveyor

In his article, King (King) stated that Websurveyor is a web-based survey software designed to easily create customize surveys, polls, or questionnaires. It generates the survey HTML, allow researchers to send surveys to a targeted group and interpret survey results in real-time.

Survey results are collected at the host server and are available for real-time analysis. WebSurveyor makes good use of graphs for displaying results, and its reporting capabilities include cluster reports, which can show sub reports based on how a question was answered, but all types of provided reports are in the form of Graphs.

2.5.3. WWW Survey Assistant

This authoring tool is Web-accessible, and works on machines with Win95 or later. It has a Java-based editor and thus, can be run on any machine, including Solaris, OS/2, and Macs. All project files, however, are saved on their server. This tool also has different text options. In response to an email asking about skipping patterns, they replied that WWW Survey Assistant can do complex skip patterns, and also can randomize the questions (S-Ware, 1998).

2.5.4. Hosted Survey

Hostedsurvey is entirely web-based. It handles conditional branching where the answer to a single question can branch to a series of questions; and, it can randomize the questions. Another feature of this tool is the ability to break up the questions into groups or sections.

2.6. SUMMARY

In this chapter, researcher has discussed the background of web applications followed by defining the online surveys and their advantages. Some data analysis tools have been described in this chapter.

11

Moreover, this chapter covered the features of some online surveys. Table 2.1 shows a comparison between two selected Online Survey system with our system.

Table 2.2: Comparison between OQDAS, KeySurvey, and WebSurveyor.

Features/ Models	OQDAS	KeySurvey	WebSurveyor
Online Data Collection	✔	✔	✔
Online Data Analysis	✔		
Auto Report Generator	✔	Limited	Limited
Survey Time Control	✔		✔
Unlimited surveys	✔	✔	✔
Support all Questions Types	Only 10 types	✔	
View survey before publish it	✔	✔	
Printable version	✔		
Export function of answers	✔	✔	✔
Buffering answers	✔		
Grouping Questions	✔	✔	
Skip patterns			✔

From Table 2.2 we conclude the features which most of online questionnaire systems provide are:

- Online data collection.
- Auto Report Generator.
- Survey Time Control.
- Unlimited surveys.

- Support common Questions Types.
- Export function of answers
- Buffering answers to continue survey at a later time
- Grouping questions
- Printable version.

Therefore, OQDAS covers all the basic features which are mostly shared between common online questionnaire systems. On top of these basic features, OQDAS would have the capability of allowing the researchers to generate reports in the form of PDF file automatically.

3.1. INTRODUCTION

The methodology that has been chosen to develop OQDAS is prototyping as a part of the traditional System Development Life Cycle (SDLC) approach. SDLC makes sure everything goes smoothly by having a clear documentation of development, structure and even coding (Kendall, 2008). In case there are problems once the system is adopted for public use, the documentation is provided as reference to perform proper maintenance for the system. Prototyping allows users to see and interact with a prototype and allowing them to provide better and more complete feedback and specifications (Sommerville, 2007).

This methodology allows us to create various parts of the system at a very early stage and get the feedback from user early in the development of the system and we would be able to make changes early in the system development lifecycle before we get deep in the project then small changes could require large efforts to implement. In this methodology, the web application project is generally broken into five phases as shown in Figure 3.1.
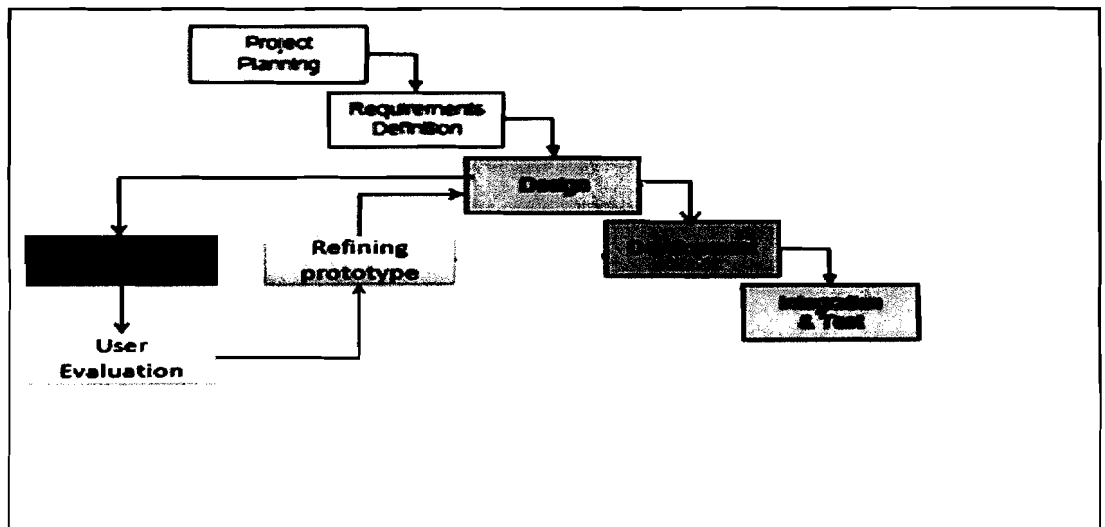
Figure 3.1: Prototyping as Part of SDLC

14

3.2. PROJECT PLANNING

This is considered one of the most important phases of the project, for the reason that this phase involves setting up all the guidelines and maps to work with during the project design and implementation, any small mistake in this phase could cause for the project to fail or have undesirable results (Schwalbe, 2005).

In this phase, it has been decided which approach to use during the system design, and what are the elements involved. JSP (Java server Pages) programming method was chosen to design and code the system. In addition, we set a timeline for project execution start and when is the expected delivery date and cost to be met during all phases (please see Appendix A).

3.3. REQUIREMENTS DEFINITION

The main approach used to gather information is Interviewed that help to get an in-depth understanding of users' requirements and people's roles (Fitzgerald & Ardra, 1981). This personal contact allowed us to respond adaptively to what is said. After getting done with the interviews to gather a clear picture of the system requirements and getting to understand what do users need to have in a system to provide a complete built system that provides them with ease of use. All these preparation steps are needed in order to come up with complete idea about what are the exact requirements, functions that the system are expected to do, and how efficient it would be to UUM researchers (please see Table 4.1) .

3.4. DESIGN

In this phase the system design functions and operations are described and graphed in detail, including screen layouts, input data, and the functions of the system which are related and which are not(Connnolly, T. & Begg, C., 2004). The output of this stage describes the system as a collection of pages or sub-systems. The design stage takes as its initial input the requirements identified in the approved requirements document. The diagrams that clarify which details are related to each other (please see section 4.3 System

15

Design), as well as the simple coding process to make sure the functions are in a logical order (Conallen, 2003). These design elements are intended to describe the system in sufficient detail so in the development stage it didn't create much trouble for the developer and everything was in place. In addition, the prototyping methodology is applied as a part of this phase to make sure everything is in place before getting to the core programming.

a. **Creating Prototype**

Prototypes for each requirement are created by creating some simple HTML page, adding some style to the html pages. While building the prototype we add the logo to the pages and add some background styles around the pages. In addition, hyperlinks are used to allow the users to navigate through system pages.

b. **User evaluation**

After creating the prototype, the new design is introduced to users to elicit preferences and suggestions for improvement (please see section 5.5 Acceptance Testing).

c. **Refining prototype**

After user evaluated the prototype, the prototype is refined by the developer, and re-evaluated by the user. This process iterated, before final OQDAS development.

Once improvements have been made, evaluate the new version of the system, or if the users are satisfied with prototypes, we moved to the next phase with some assurance that the system meets users' needs.

3.5. DEVELOPMENT

The completed design is now translated into program code. For the system development, Java servlet Page (JSP) was used in coding OQDAS. JSP is chosen because it is one of the familiar server - side scripting languages for creating dynamic interactive pages and it is considered fast, stable and more secure (Murach. & Steelman., 2004).

MySQL 5.0 is selected as the database management system; MySQL is more suitable into the situation in which many users try to access OQDAS at the same time (Vaswani, 2010). For the server side Apache tomcat 5.5.6 is used as a Web Application sever.

The outputs of the development stage include a fully functional set of software that satisfies the requirements and system elements previously designed, and the primary code entry points for all major system functions (please see Appendix H).

The following are the full functions that are provided by OQDAS:

a) **Login**

This function is initiated by all users (admin, researcher, and participant). This function would allow users with valid username/passwords to access the system. Figure 3.2 shows Login interface.

Figure 3.2: Login Interface.

b) **View Researchers**

This function is initiated by OQDAS's administrator. This function would allow administrator to view the researcher's list and their details. Figure 3.3 shows View Researchers interface.

Figure 3.3: View Researchers Interface.

17

c) Approve Researchers

This function is initiated by administrator for the purpose of controlling and monitoring researcher's account. Figure 3.4 shows Approve Researchers interface.

dddd	Disapproved	ff@gmail.com	**Approve Now**
zeq	Disapproved	s100032@yahoo.com	**Approve Now**
yyy	Approved	zeq20112011@gmail.com	**Disapprove Now**

Figure 3.4: Approve Researchers Interface.

d) Delete Researchers

This function is initiated by OQDAS's administrator. This function would allow the administrator to delete the researcher's account. Figure 3.5 shows Delete Researchers interface.

dddd	Disapproved	ff@gmail.com	**Delete Now**
zeq	Approved	s100032@yahoo.com	**Delete Now**
yyy	Approved	zeq20112011@gmail.com	**Delete Now**

Figure 3.5: Delete Researchers Interface.

e) Change DB settings

This function is initiated by OQDAS's administrator. It shows how the administrator can change the DB settings. Figure 3.6 shows Change DB Settings interface.

Figure 3.6: Change DB Settings Interface.

18

f) Change Admin's Email

This function is initiated by OQDAS's administrator. It shows how the administrator can change his/her email. Figure 3.7 shows the Change Admin Email interface.

Change admin email

Admin email

Email Password

| Save Changes |
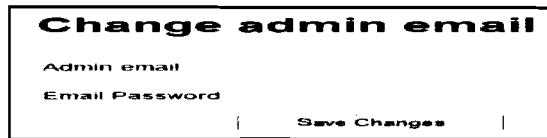
Figure 3.7: Change Admin Email Interface.

g) Change Admin's Password

This function is initiated by OQDAS's administrator. It shows how the administrator can update and reset his/her account's password. Figure 3.8 shows Change Admin Password interface.

Change Admin Password

Current Password

New Password

Confirm Password

| Save Changes |
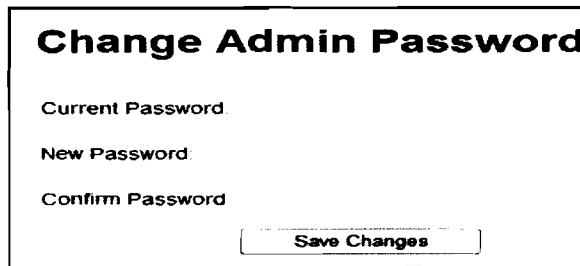
Figure 3.8: Change Admin Password Interface.

h) Create Account

This function is initiated by the researcher. It shows how the researcher can create an account. Figure 3.9 shows Signup interface.

Sign Up

Sign up it is free

Name

Age

Gender   Male

Address

Email

Password

Confirm

| Sign Up |

Figure 3.9: Signup Interface.

19

i) Create Survey

This function is initiated by the researcher. It shows how the researcher can create surveys. Figure 3.10 shows Create Survey interface.

Figure 3.10: Create Survey Interfaces.

j) View Survey

This function is initiated by the researcher. It shows how the researcher can view the survey. Figure 3.11 shows View Survey interface.

Figure 3.11: View Survey interfaces.

k) Activate Survey

This function is initiated by the researcher. It shows how the researcher can activate or deactivate survey. Figure 3.12 shows Activate Survey interface.

20

List Of Surveys:

List of all surveys created by you is given bellow A short detail of all surveys is also given here You can activate or deactivate survey by clicking on a action

next one	Status :Activated	2011-12-13 15:46:21.0	Deactivate Now
survey title	Status :Deactivated	2012-01-02 07:22:25.0	Activate Now

Figure 3.12: Activate Survey Interface.

l) Update Survey

This function is initiated by the researcher. It shows how the researcher can update survey. Figure 3.13 shows an Update Survey interface.

List Of Surveys:

List of all surveys created by you is given bellow A short detail of all surveys is also given here You can update and delete sections of this survey here

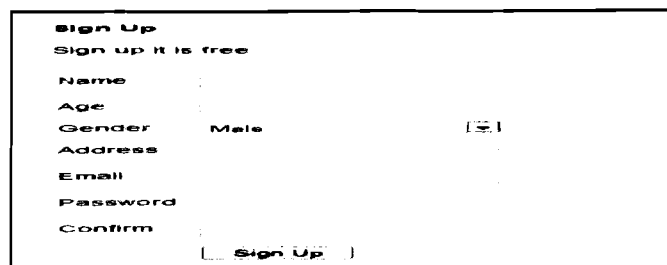|				
next one	Status :Activated	2011-12-13 15:46:21.0	Add Section	Update/Delete Sections
survey title	Status :Deactivated	2012-01-02 07:22:25.0	Add Section	Update/Delete Sections

Figure 3.13: Update Survey Interface

m) Delete Survey

This function is initiated by the researcher. It shows how the researcher can delete the survey. Figure 3.14 shows Delete Survey interface.

List Of Surveys:

List of all surveys created by you is given bellow A short detail of all surveys is also given here You can view full details of a survey by clicking View Now link

next one	Status :Activated	2011-12-13 15:46:21.0	Delete Now
survey title	Status :Deactivated	2012-01-02 07:22:25.0	Delete Now

Figure 3.14: Delete Survey Interface.

21

n) Send Invitation Email

This function is initiated by the researcher. It shows how the researcher can delete the survey. Figure 3.15 shows Invitation Email interface.
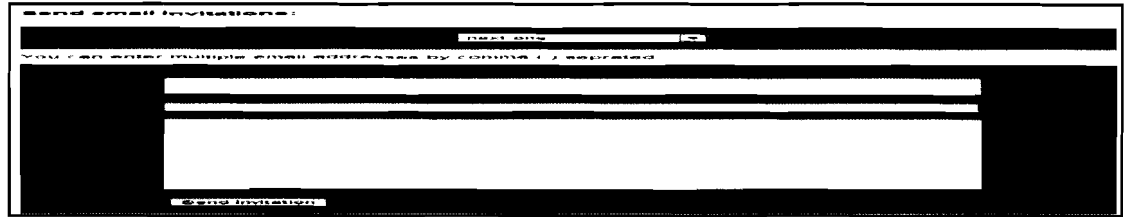
Figure 3.15: Invitation Email Interface.

o) Generate Report

This function is initiated by the researcher. It shows how the researcher can create statistical and graphical analysis report in PDF file. Figure 3.16 shows Generate Report interface.
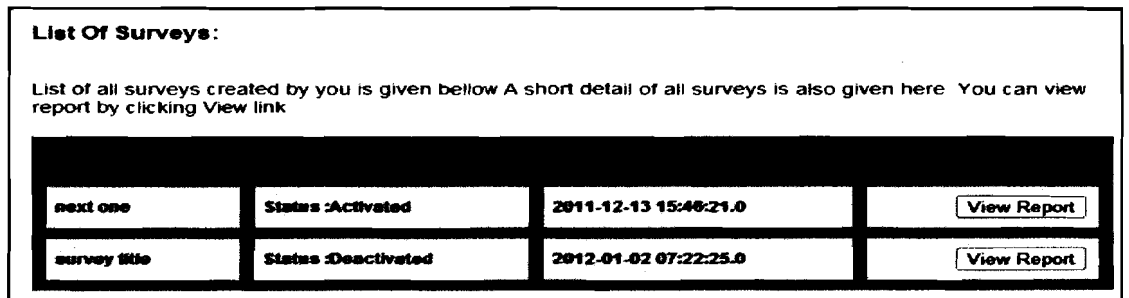
Figure 3.16: Generate Report Interface.

p) Expert Answers

This function is initiated by the researcher. It shows how the researcher can export the survey's answers in text file. Figure 3.17 shows the Export Answers interface.
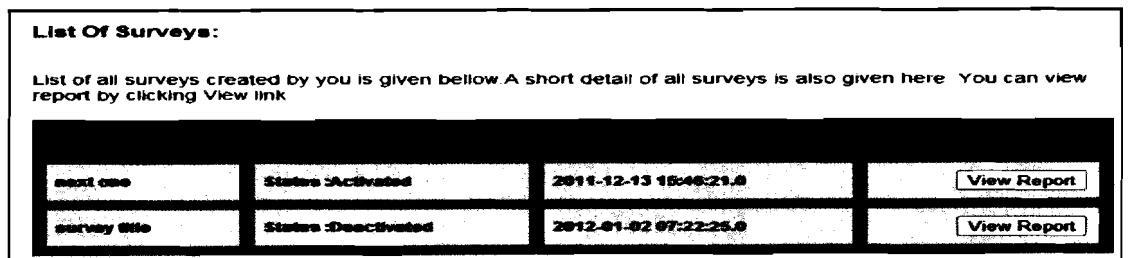
Figure 3.17: Export Answers Interface.

22

q) Print Survey

This function is initiated by the researcher. It shows how the researcher can print the survey. Figure 3.18 shows Print Survey interface.
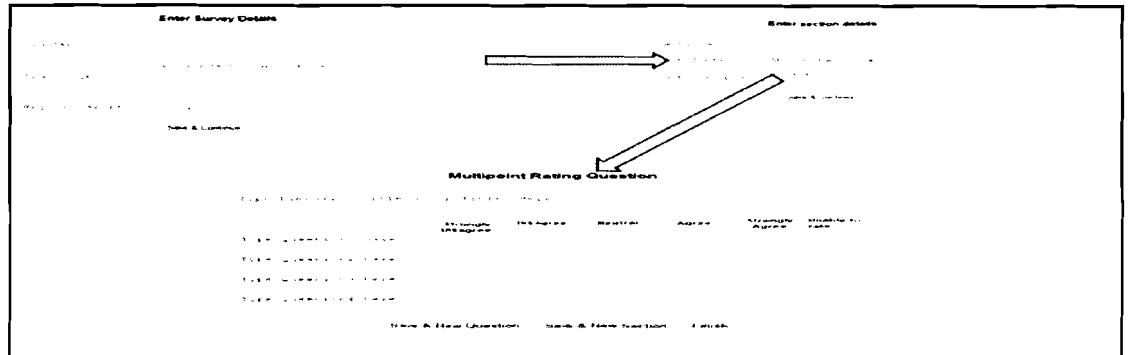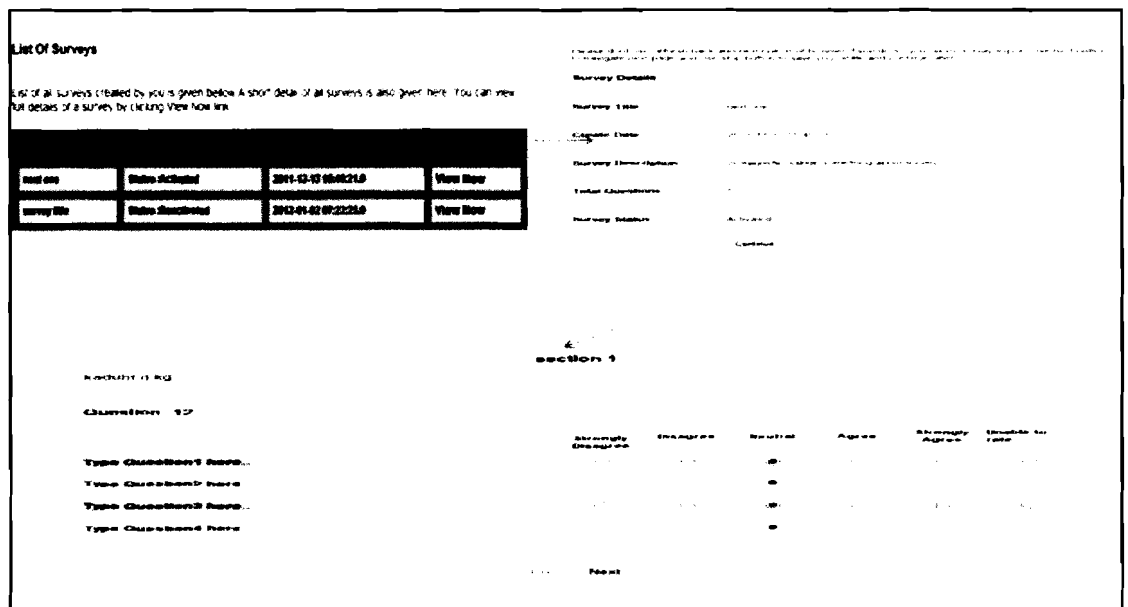

List Of Surveys:

List of all surveys created by you is given bellow A short detail of all surveys is also given here You can view full details of a survey by clicking View Now link

| next one | Status :Activated | 2011-12-13 15:46:21.0 | Print Survey |
| survey title | Status :Deactivated | 2012-01-02 07:22:25.0 | Print Survey |
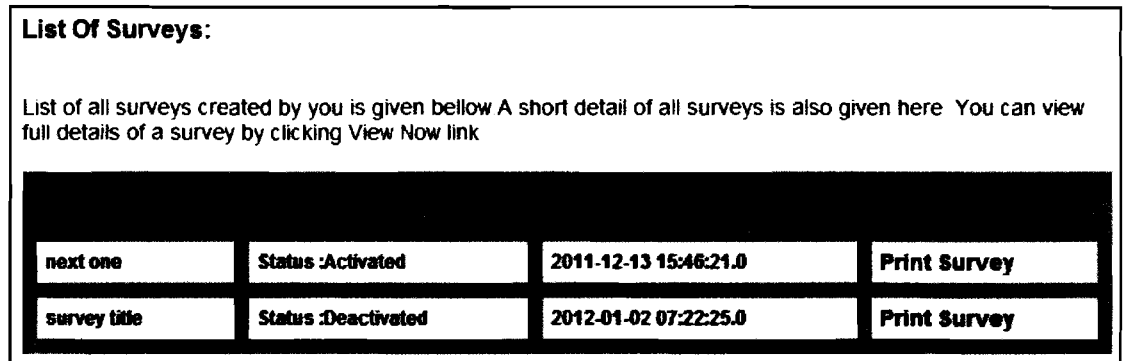
Figure 3.18: Print Survey Interface.

r) Change Password

This function is initiated by the researcher. It shows how the researcher can update and reset his/her account's password. Figure 3.19 shows Change Password interface.

Figure 3.19: Change Password Interface.

s) Take Survey

This function is initiated by survey's participants. This function would allow participants to answer and submit survey. Figure 3.20 shows Participant interfaces.

Survey is submitted successfully.Your account is expired now Thank you
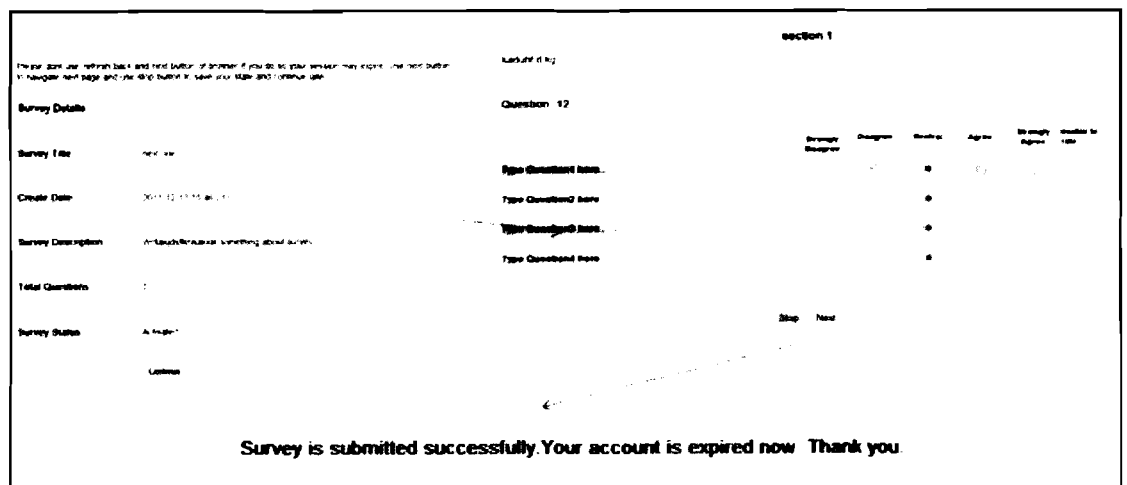
Figure 3.20: Participant Interface.

3.6. TESTING

Testing the system is done during almost every phase of the system development life cycle. This system is tested in several forms that would be described as follows:

- **Unit testing** is done to test each individual component and to validate that individual units of source code are working properly. This testing is usually done before presenting the system to the supervisor.

- **Integration testing** is done between unit and system testing to ensure that system has been linked properly. This testing is done two times during system development. First time before introducing the second version of the prototype to the users, the second time during the development phase.

- **Acceptance Testing** is performed by the end users and the modifications on OQDAS are applied based on testing results.

Evaluation and testing the system will be discussed in details in chapter 5.

3.7 SUMMARY

This chapter explained how the researcher combined the two methodologies of SDLC and prototyping in order to achieve the objective of the study with this unique combination.

In this methodology, the web application project is generally broken into five phases and the outcomes of these phases could be summarized in the following:

I.   **Project Planning.**
- Decide which approach to use during the system design.
- Identifying required tools
- Set a timeline for the project.

II. **Requirements Definition**
- The researcher has conducted a series of informal interview with random selection of UUM researchers in which he learned the current procedures of data collection, data analysis and some other related requirements.
- Preparing List of Requirements

24

III. Design

- Approved requirements document.
- Clarified diagrams.
- System's Modules (as a collection of pages or sub-systems).
- Simple coding process.

IV. Development

- Completed OQDAS

V. Testing

- OQDAS meets all the requirements.
- All desired functions exist in the system and easy to be accessed.
- OQDAS is convenient to be operated by new user and its user friendly.

CHAPTER FOUR

ANALYSIS, DESIGN AND FINDINGS

4.1. INTRODUCTION

This chapter focuses on the steps taken in order to achieve the objectives of this study, starting with requirements gathering and analysis, system design, and finally producing the artifact.

4.2. REQUIREMENTS ANALYSIS

The researcher has conducted several interviews with a random selection of the UUM researchers. The researcher was able to collect information regarding data collection procedures, and some of the difficulties which PhD students experience during their research. Additionally, there were recommendations given by those researchers in which they addressed some features they are willing to be included in the system.

Mr. Al-Hasan Mohammed PhD candidate has highlighted that UUM does not have an online survey system. Students are not able to publish their questionnaires online, especially most of the PhD students are afraid of using an outhouse online questionnaire. Thus, the lack of such system causes lots of problems especially for postgraduate students who are using the survey as a data collection technique. Additionally, he pointed out the some problems of using paper based questionnaire such as slow survey distribution and slow return time.

Moving toward issues highlighted by Abdullah Kaid (DBA student), his most concern was the need to have a systematic solution to create different types of survey's questions. He said, even UUM Electronic Course Evaluation Assessment (E-CEVAS) provides one type of questions for the most of the survey questions. Mr. Kaid has used online surveys

before but he faced the problem of extracting the participants' answers where he can input these answers to data analysis tools and produce some reports.

Coming to Mr. Hamid Mahmoud concerns, the most important issue which PhD students in their research are that they waste their time editing survey's questions, publishing the survey, waiting for responses, and then they need to learn and study the features of the analysis tools which are usually complicated .

All of interviewed researchers agreed on the most common data analysis types and statistical reports that are most required by the researchers (please see section 4.2.3 Data Analysis Types). At the end of the interview with each one of them, they hoped to have an online Questionnaire Data Analysis system which provides them one platform for both data collection and data analysis.

4.2.1. Functional Requirements

Listed below are the functional requirements of the system. In the priority column, the following abbreviations are used:

- M – mandatory requirements (something the system must do)
- D – desirable requirements (something the system preferably should do)
- O – optional requirements (something the system may do)

Table 4.1: List of Functional Requirements

No.	Requirement ID	Requirement Description	Priority
	OQDAS_01	**Login**	
1.	OQDAS_01_01	The user logs into the system by keying-in user name and password.	M
2.	OQDAS_01_02	The system verifies the user name and password if wrong shows message that rennet user name and password.	D
3.	OQDAS_01_03	If the user is a researcher and his/her account	D

		request has not been accepted by the admin, system will display message declare that.	
4.	OQDAS_01_04	If the user is a participant and he/she already answered the survey, the system will display an expiry message declare that.	D
	OQDAS_02	**View Researchers**	
5.	OQDAS_02_01	Administrator can view researcher's details.	M
	OQDAS_03	**Approve/Disapprove Researchers**	
6.	OQDAS_03_01	Administrator can approve researcher request.	M
7.	OQDAS_03_02	Administrator can disapprove researcher request.	M
	OQDAS_04	**Delete Researchers**	
8.	OQDAS_04_01	Administrator can delete researcher.	M
	OQDAS_05	**Change DB settings**	
9.	OQDAS_05_01	Administrator can change DB settings.	M
	OQDAS_06	**Change Administrator's Email**	
10.	OQDAS_06_01	Administrator can change his/her email.	M
	OQDAS_07	**Change Administrator's Password**	
11.	OQDAS_07_01	Administrator can change his/her password.	M
	OQDAS_08	**Create an account**	
12.	OQDAS_08_01	Researcher can create an account by sending filling the form and sending it to the admin.	M
	OQDAS_09	**Create Survey**	

13.	OQDAS_09_01	Researcher can create surveys.	M
14.	OQDAS_09_02	Researcher can create survey with more than one section.	O
15.	OQDAS_09_03	Researcher can create survey's sections with more than one question.	O
	OQDAS_10	**View Survey**	
16.	OQDAS_10_01	Researcher can view the survey.	M
	OQDAS_11	**Activate Survey**	
17.	OQDAS_11_01	Researcher can activate survey.	M
18.	OQDAS_11_02	Researcher can deactivate survey.	M
	OQDAS_12	**Update Survey**	
19.	OQDAS_12_01	Researcher can add sections for specific surveys.	O
20.	OQDAS_12_02	Researcher can delete the survey's section.	O
21.	OQDAS_12_03	Researcher can add to specific survey's section.	O
22.	OQDAS_12_04	Researcher can delete survey's question.	O
	OQDAS_13	**Delete Survey**	
23.	OQDAS_13_01	Researcher can delete the survey.	M
	OQDAS_14	**Send Invitation Emails**	
24.	OQDAS_14_01	Researcher can send invitation emails to list of respondents.	M
25.	OQDAS_14_02	System will display a message if the researcher forgot to enter emails to email's field, or email's subject to subject's field.	D

	OQDAS_15	Generate Report	
26.	OQDAS_15_01	Researcher can create statistical and graphical analysis report in pdf file.	M
	OQDAS_16	Export Answers	
27.	OQDAS_16_01	Researcher can export respondents' answers for each survey in text file.	M
	OQDAS_17	Print Survey	
28.	OQDAS_17_01	Researcher can print the survey.	M
	OQDAS_18	Change Password	
29.	OQDAS_18_01	Researcher can change his/her password.	M
	OQDAS_19	Take Surveys	
30.	OQDAS_19_01	Participant can take and submit the survey.	M
31.	OQDAS_19_02	Participant can buffer answers to continue survey at a later time.	O
32	OQDAS_19_03	System displays an error message if the participant enters invalid values for some types of questions.	M

4.2.2. QUESTIONS TYPES

Please, refer to Appendix B.

4.2.3. DATA ANALYSIS TYPES

The following points discuss the most common data analysis types agreed by the interviewed researchers.

4.2.3.1. Frequency Analysis

Frequency analysis will be shown in table and graph.

4.2.3.1.1. Frequency Table

Table 4.2 shows the expected frequency table which would be produced by OQDAS.

Table 4.2: Expected Frequency Table Produced By OQDAS.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Below 25 years old	75	75	75	75
	26-35 years old	12	12	12	87
	36-45 years old	9	9	9	96
	Over 45 years old	4	4	4	100
	Total	100	100	100	

4.2.3.1.2. Frequency Distribution Graph

Figure 4.1 shows the expected frequency distribution graph which would be produced by OQDAS.
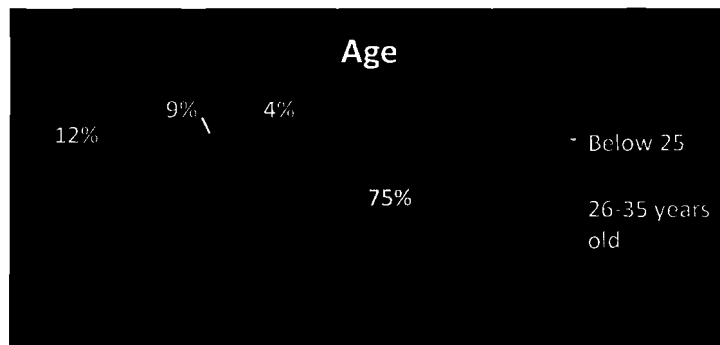

Figure 4.1: Expected Frequency Distribution Graph Produced by OQDAS.

Table 4.2 and figure 4.1 represent the frequency of the age of respondents. Result shows a majority of the respondents are under 25 years old which are 75.0% or 75 respondents. The range of age between 26-35 years old achieves 12.0% or 12 respondents respectively. The

31

frequency of above 45 years old achieves the lowest rate of 4.0% or 4 respondents respectively.

4.2.3.2. Descriptive Statistics

Table 4.3 shows the expected description statistics table for specific dimension which would be produced by OQDAS.

Table 4.3: Expected Description Statistics Table Which Would Be Produced by OQDAS

	N	Mean	Std. Deviation	Variance
Always provides information exactly with their promotion	100	3.47	.731	.534
Provides accurate promotion information and service as they promised	100	3.40	.752	.566
Keep all information updated and records accurately	100	3.39	.737	.543
Information and the services are highly dependable	100	3.32	.803	.644
Always offer service on time	100	3.26	.676	.457
Valid N (listwise)	100			

Table 4.3 shows that the statement "'always offer service on time' has the lowest mean of 3.26. However, the statement 'always provides information exactly with their promotion' has the highest mean of 3.47.

4.2.3.3. Correlation Analysis

Correlation analysis looks at the relationship between two variables. Pearson correlation is used to measure the degree of association between two continuous variables. Kendall's tau-b and Spearman are used to measure the degree of association between two categorical variables

Because of time limitation, correlation analysis would not be covered by OQDAS for the mean time.

4.2.3.4. Regression Analysis

Regression analysis involves identifying the relationship between a dependent variable and one or more independent variables. It is called linear regression when the dependent variable and independent variables are both continuous and linearly related. In addtion, It is called logistic regression when both independent and dependent variables are nonlinearly related and the dependent variable is categorical.

Because of time limitation, regression analysis would not be covered by OQDAS for the mean time.

4.3. SYSTEM DESIGN

In this stage, Star UML tool was used to design the use case diagram, sequence diagrams and collaboration diagrams. Screen layouts of the system were also described.

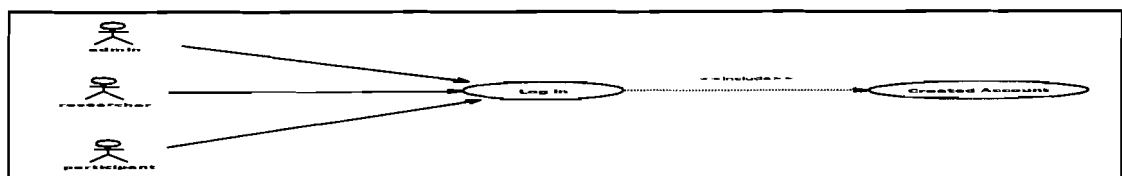### 4.3.1. Use Case Specification

4.3.1.1 Login [OQDAS_01]

Figure 4.2: Log in Use Case.

33

4.3.1.1.1 Description

This use case is initiated by all users (admin, researcher, and participant). This use case would allow users with valid username/passwords to access the system.

4.3.1.1.2 Characteristic of Activation

Event driven (on user's demand).

4.3.1.1.3 Pre-Condition (S)

User must have an account in the system.

4.3.1.1.4 Description

a. Normal Flow [OQDAS_01_01]:

1. This use case begins when user keys invalid username and password.

2. Users press "Login" button.

3. System would check whether the username/password is valid ones.

4. If username/password is correct, the system would proceed to the next interface. For invalid username/password [E-1].

5. If the user is the researcher and his/her account request is approved, the system would proceed to the next interface. For disapproved account [E-2].

5. If the user is participant and his/her account is not expired yet, the system would proceed to the next interface. For expired account [E-3].

b. Exception Flows.

E-1: Invalid Username/password [OQDAS_01_02]:

1. System will display an error message, if the username or password is incorrect.

E-2: Disapproved Account [OQDAS_01_03]:

1. If the user is a researcher and his/her account request has not been accepted by the admin, system will display message declare that.

34

E-3: Expired Account [OQDAS_01_04]:

1. If the user is a participant and he/she already answered the survey, the system will display an expiry message declare that.

4.3.1.1.5 Post-Condition

User is logged into the system and ready to use it.

4.3.1.1.6 Rule (S)

Not Applicable.

4.3.1.1.7 Constraint (S)

The username / password must be alphanumeric data type.
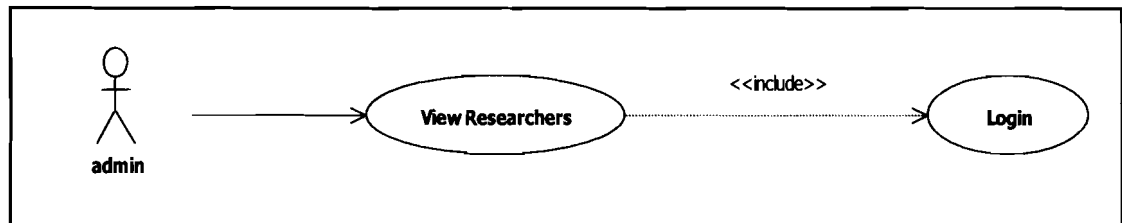
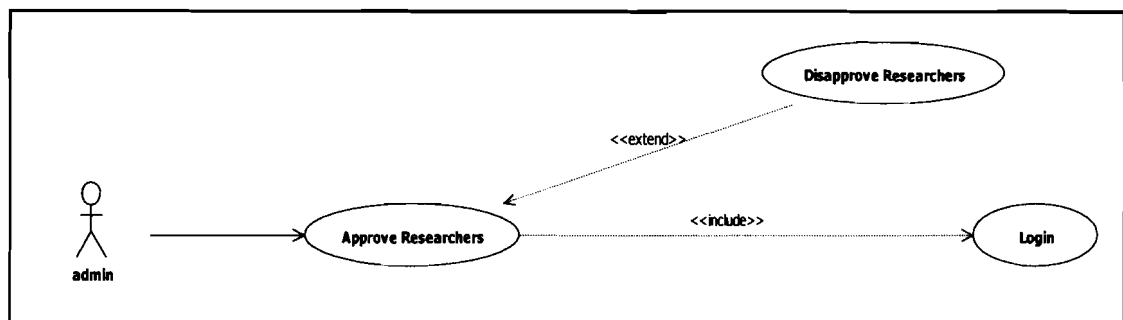### 4.3.1.2 View Researchers [OQDAS_02]

Figure 4.3: View Researcher Use Case.

4.3.1.2.1 Description

This use case is initiated by OQDAS's administrator. This use case would allow administrator to view the researcher's list and their details.

4.3.1.2.2 Characteristic of Activation

Event driven (on administrator's demand).

4.3.1.2.3 Pre-Condition (S)

Admin has to be logged-in successfully in order to view researchers.

4.3.1.2.4 Description

    a. Normal Flow [OQDAS_02_01]:

    1. This use case begins when admin goes to "View Researchers" page.

2. System displays a list of researchers and their details.

4.3.1.2.5 Post-Condition

Administrator must be able to view and see the researchers' list and their details successfully.

4.3.1.2.6 Rule (S)

Not Applicable.

4.3.1.2.7 Constraint (S)

Not Applicable

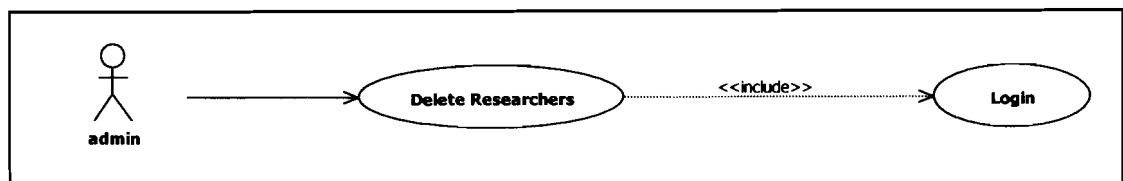### 4.3.1.3 Approve Researchers [OQDAS_03]

Figure 4.4: Approve Researcher Use Case.

4.3.1.3.1 Description

This use case is initiated by OQDAS's administrator. This use case would allow administrator to approve the researcher's request of creating an account.

4.3.1.3.2 Characteristic of Activation

Event driven (on administrator's demand).

4.3.1.3.3 Pre-Condition (S)

Admin has to be logged-in successfully in order to approve the researcher's request.

4.3.1.3.4 Description

a. Normal Flow [OQDAS_03_01]:

1. This use case begins when admin goes to "Approve Researchers" page.

2. System displays a list of researchers and their details.

3. There are "Approve" buttons beside those who are not approved yet. To disapprove the researcher's request [A-1].

4. Admin clicks on "Approve" button.

b. Extension Flows (Alternative):

A-1: Disapproved Researcher [OQDAS_03_02]:

1. Admin can disapprove the researcher's request by pressing "Disapprove" button.

4.3.1.3.5 Post-Condition

Administrator must be able to able to approve or disapprove researcher's request successfully.

4.3.1.3.6 Rule (S)

Not Applicable.

4.3.1.3.7 Constraint (S)

Not Applicable

4.3.1.4 Delete Researchers [OQDAS_04]

Figure 4.5: Delete Researcher Use Case.

4.3.1.4.1 Description

This use case is initiated by OQDAS's administrator. This use case would allow the administrator to delete the researcher's account.

4.3.1.4.2 Characteristic of Activation

Event driven (on administrator's demand).

4.3.1.4.3 Pre-Condition (S)

Admin has to be logged-in successfully in order to delete researcher delete.

4.3.1.4.4 Description

a. Normal Flow [OQDAS_03_01]:

1. This use case begins when admin goes to "Delete Researchers" page.

2. System displays a list of researchers and their details.

3. There are "Delete" buttons beside each researcher.

4. Admin clicks on "Delete" button.

4.3.1.4.5 Post-Condition

Administrator must be able to able to delete the researcher's account successfully.

4.3.1.4.6 Rule (S)

Not Applicable.

4.3.1.4.7 Constraint (S)

Not Applicable

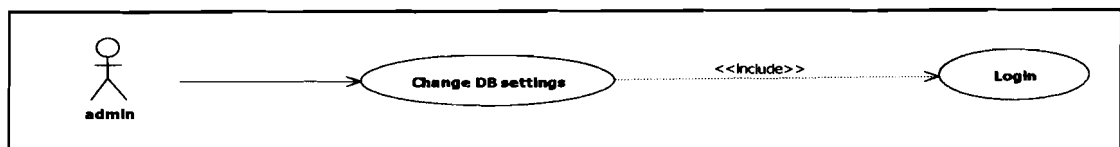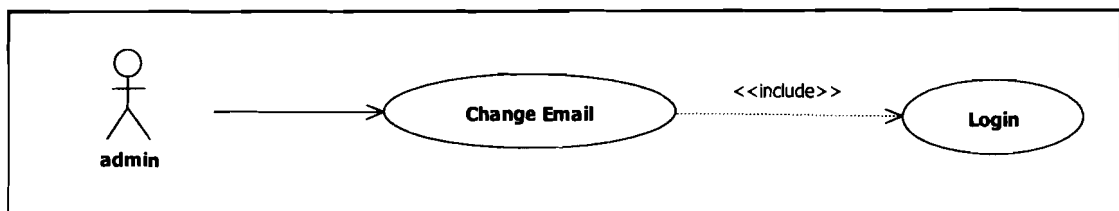### 4.3.1.5 Change DB settings [OQDAS_05]

Figure 4.6: Change DB Settings Use Case.

4.3.1.5.1 Description

This use case is initiated by OQDAS's administrator. It shows how the administrator can change the DB settings.

4.3.1.5.2 Characteristic of Activation

Event driven (on administrator's demand).

4.3.1.5.3 Pre-Condition (S)

Admin has to be logged-in successfully in order to change DB settings.

4.3.1.5.4 Description

a. Normal Flow [OQDAS_05_01]:

1. This use case begins when Admin goes to "Change DB Settings" page.

2. Admin sets new username in the new password field, and new password in the new password field

3. Admin presses "Save" button.

4.3.1.5.5 Post-Condition

DB's password should be updated successfully.

4.3.1.5.6 Rule (S)

Not Applicable.

4.3.1.5.7 Constraint (S)

The DB's password must be a numeric data type.

4.3.1.6 Change Admin's Email [OQDAS_06]

4.3.1.6.1 Description

This use case is initiated by OQDAS's administrator. It shows how the administrator can change his/her email.

4.3.1.6.2 Characteristic of Activation

Event driven (on administrator's demand).

4.3.1.6.3 Pre-Condition (S)

Admin has to be logged-in successfully in order to change the email.

4.3.1.6.4 Description

a. Normal Flow [OQDAS_06_01]:

1. This use case begins when Admin goes to "Change admin Email" page.

2. Admin enters new email in the new email field.

3. Admin presses "Save" button.

4.3.1.6.5 Post-Condition

Admin's email should be updated successfully.

4.3.1.6.6 Rule (S)

Not Applicable.

4.3.1.6.7 Constraint (S)

Not Applicable.

4.3.1.7 Change Admin's Password [OQDAS_07]

Figure 4.8: Change Password Use Case.

40

4.3.1.7.1 Description

This use case is initiated by OQDAS's administrator. It shows how the administrator can update and reset his/her account's password.

4.3.1.7.2 Characteristic of Activation

Event driven (on administrator's demand).

4.3.1.7.3 Pre-Condition (S)

Admin has to be logged-in successfully in order to update his/her account's password.

4.3.1.7.4 Description

a. Normal Flow [OQDAS_02_01]:

1. This use case begins when Admin goes to change password page.

2. Admin enters the current password, new password and reenter the new password, and then click [Save] button.

4.3.1.7.5 Post-Condition

The administrator's password should be changed successfully.

4.3.1.7.6 Rule (S)

Not Applicable.

4.3.1.7.7 Constraint (S)

Password must be alphanumeric data type.
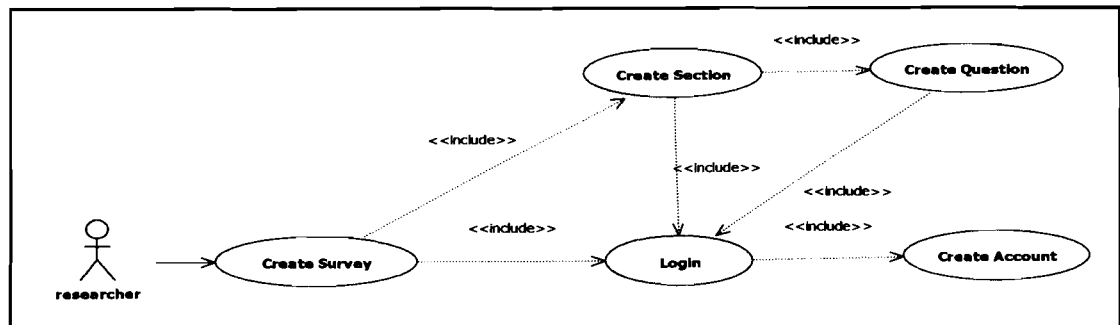
4.3.1.8 Create Account [OQDAS_08]
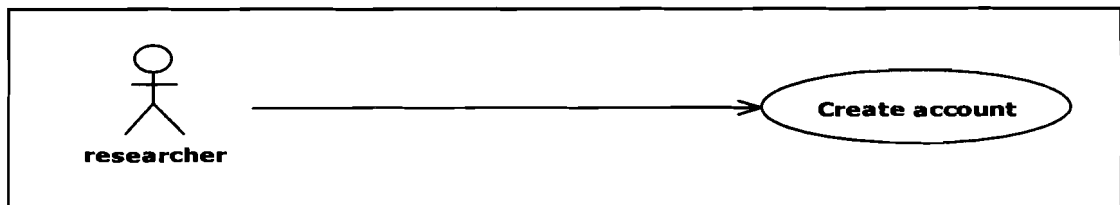
Figure 4.9: Create Account Use Case.

41

4.3.1.8.1 Description

This use case is initiated by a researcher. It shows how the researcher can create an account.

4.3.1.8.2 Characteristic of Activation

Event driven (on researcher's demand).

4.3.1.8.3 Pre-Condition (S)

Not Applicable.

4.3.1.8.4 Description

a. Normal Flow [OQDAS_08_01]:

1. This use case begins when researcher fills up the Sign Up form.

2. Researcher clicks "Sign Up" button.

4.3.1.8.5 Post-Condition

Sign up form must be sent to OQDAS admin successfully.

4.3.1.8.6 Rule (S)

Not Applicable.

4.3.1.8.7 Constraint (S)

Not Applicable.

4.3.1.9 Create Survey [OQDAS_09]

Figure 4.10: Create Survey Use Case.

4.3.1.9.1 Description

This use case is initiated by a researcher. It shows how the researcher can create survey.

4.3.1.9.2 Characteristic of Activation

Event driven (on researcher's demand).

4.3.1.9.3 Pre-Condition (S)

Researcher has to be logged-in successfully in order to create survey.

4.3.1.9.4 Description

a. **Normal Flow [OQDAS_09_01]:**

1. Researcher clicks on create survey link on the left menu

2. Researcher will see a form. Enter here survey details.

3. Researcher click on "Save & Continue" button. Researcher will see a new Section Form.

4. Researcher enters Section title and description and selects question types from the drop down menu. And click on "save &Continue" Button.

5. And then researcher will see the selected question type form. Researcher create here question.

6. There are 3 Buttons here to submit questions:

(i) Finish-Question will be saved and survey creation will be finished.

(ii) Save&New Section-Question will be saved and new Section form will be displayed. For more than one section [A-1].

(iii) Save&New Question-Question will be saved and a new form of similar type question displayed. For more than one question [A-2].

b. **Extension Flows (Alternative):**

A-1: More Than One Section [OQDAS_09_02]:

1. Researcher can add sections by clicking "Save&New Section" button.

A-2: More Than One Question [OQDAS_09_03]:

1. Researcher can add similar type of question by clicking "Save&New Question" button.

4.3.1.9.5 Post-Condition

Survey must be created successfully and the researcher is able to view it.

4.3.1.9.6 Rule (S)

Not Applicable.

4.3.1.9.7 Constraint (S)

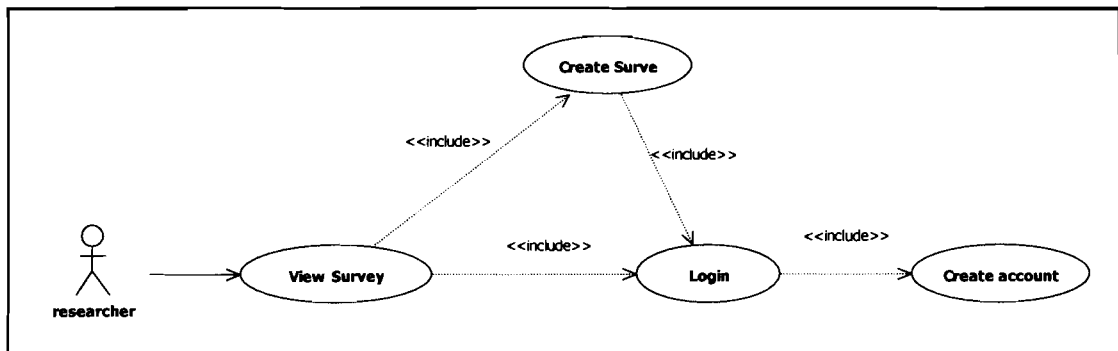Not Applicable.
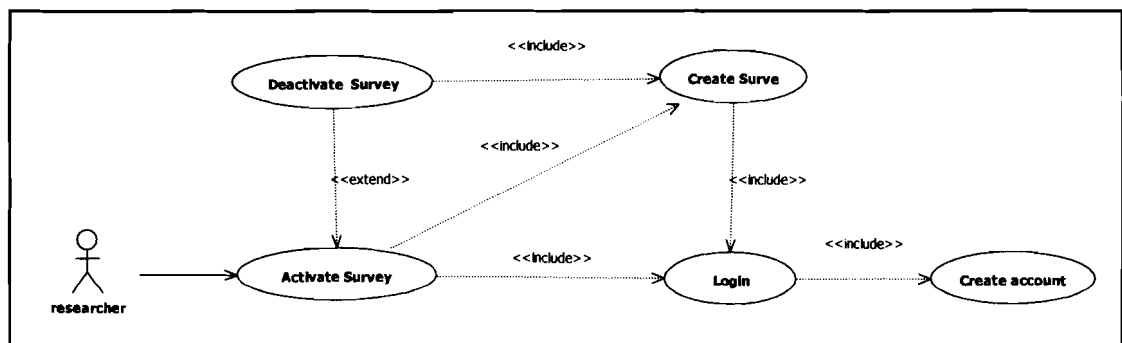
4.3.1.10 View Survey [OQDAS_10]

Figure 4.11: View Survey Use Case.

4.3.1.10.1 Description

This use case is initiated by a researcher. It shows how the researcher can view the survey.

4.3.1.10.2 Characteristic of Activation

Event driven (on researcher's demand).

4.3.1.10.3 Pre-Condition (S)

- Researcher has to be logged-in successfully in order to create survey.
- Survey must be created.

4.3.1.10.4 Description

    a. Normal Flow [OQDAS_10_01]:

1. Researcher clicks on view survey link on left menu

2. Researcher will see a list of available surveys.

3. Researcher click on "View" button which is beside the desirable survey to be viewed.

4.3.1.10.5 Post-Condition

Researcher can view the survey successfully.

4.3.1.10.6 Rule (S)

Not Applicable.

4.3.1.10.7 Constraint (S)

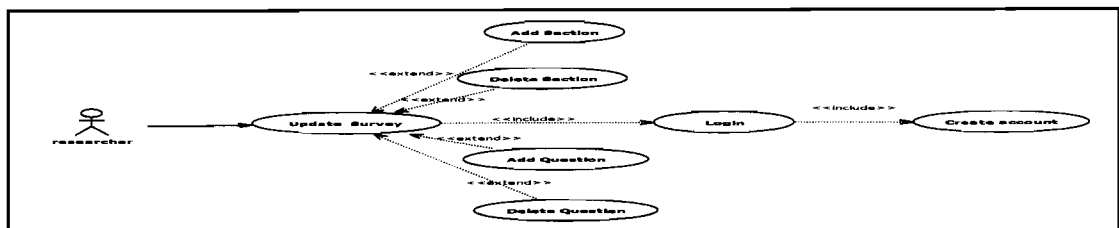Not Applicable.

4.3.1.11 Activate Survey [OQDAS_11]

Figure 4.12: Activate Survey Use Case.

4.3.1.11.1 Description

This use case is initiated by a researcher. It shows how the researcher can activate survey.

4.3.1.11.2 Characteristic of Activation

Event driven (on researcher's demand).

4.3.1.11.3 Pre-Condition (S)

- Researcher has to be logged-in successfully in order to create survey.
- Survey must be created.

4.3.1.11.4 Description

a. Normal Flow [OQDAS_11_01]:

1. Researcher clicks on activate survey link on the left menu

2. Researcher will see a list of available surveys.

3. Researcher click on "Activate" button which is beside the desirable survey to be activated. To deactivate survey [A-1]

b. Extension Flows (Alternative):

A-1: Deactivate Survey [OQDAS_11_02]:

1. Researcher can deactivate survey by clicking "Deactivate" button which is beside the desirable survey to be deactivated.

4.3.1.11.5 Post-Condition

Researcher must be able to activate or deactivate the survey successfully.

4.3.1.11.6 Rule (S)

Not Applicable.

4.3.1.11.7 Constraint (S)

Not Applicable.

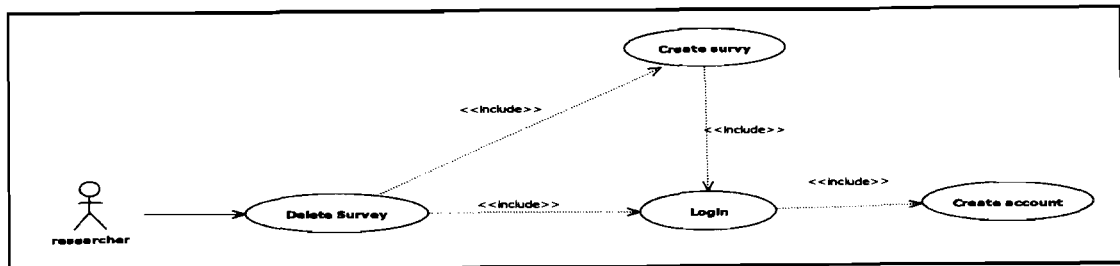### 4.3.1.12 Update Survey [OQDAS_12]

Figure 4.13: Update Survey Use Case.

4.3.1.12.1 Description

This use case is initiated by a researcher. It shows how the researcher can update survey.

4.3.1.12.2 Characteristic of Activation

Event driven (on researcher's demand).

4.3.1.12.3 Pre-Condition (S)

- Researcher has to be logged-in successfully in order to create survey.
- Survey must be created.

4.3.1.12.4 Description

a. **Normal Flow [OQDAS_12_01]:**

1. Researcher clicks on update survey link on the left menu

2. Researcher will see a list of available surveys.

3. There are 2 Buttons here for each survey:

> (i) Add Section-researcher will be to add a section to survey by entering a section title and description and selects question types from the drop down menu. And click on "save &Continue" Button. And then researcher will see the selected question type form. Researcher create here question. And the researcher click "Save & New Question" button," Save & New Section" button, or "Finish" button.

> (ii) Update/Delete Sections-by clicking on this button, the system will display the list of survey's sections and three buttons for each section as following Delete Section [A-1], Add Question [A-2], and Delete Question [A-3].

b. **Extension Flows (Alternative):**

A-1: Delete Section [OQDAS_12_02]:

> 1. Researcher can delete the survey's section by clicking "Delete Section" button which is beside the desirable section to be deleted.

47

A-2: Add Question [OQDAS_12_03]:

1. Researcher can add questions to specific survey's section by clicking "Add Question" button which is beside the selected survey.

2. Then the researcher will see question form.

3. Researcher creates here question and click "Save & New Question" button or "Finish" button.

A-3: Delete Question [OQDAS_12_04]:

1. Researcher can delete question from specific survey's section by clicking "Delete Question" button which is beside the selected survey.

2. Then the researcher will see a list of questions of that section.

3. Researcher clicks on the "Delete" button which is beside the desirable question to be deleted.

4.3.1.12.5 Post-Condition

Researcher must be able to add survey's sections, delete survey's section, add a question, or delete question successfully.

4.3.1.12.6 Rule (S)

Not Applicable.

4.3.1.12.7 Constraint (S)

Not Applicable.

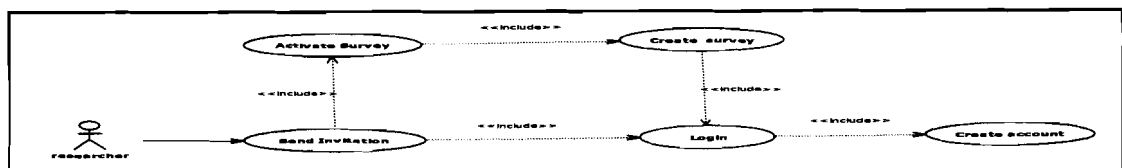### 4.3.1.13 Delete Survey [OQDAS_13]

Figure 4.14: Delete Survey Use Case.

4.3.1.13.1 Description

This use case is initiated by a researcher. It shows how the researcher can delete the survey.

4.3.1.13.2 Characteristic of Activation

Event driven (on researcher's demand).

4.3.1.13.3 Pre-Condition (S)

- Researcher has to be logged-in successfully in order to create survey.
- Survey must be created.

4.3.1.13.4 Description

a. **Normal Flow [OQDAS_13_01]:**

1. Researcher clicks on delete survey link on left menu

2. Researcher will see a list of available surveys.

3. Researcher clicks on "Delete" button which is beside the desirable survey to be deleted.

4.3.1.13.5 Post-Condition

Survey must be deleted successfully.

4.3.1.13.6 Rule (S)

Not Applicable.

4.3.1.13.7 Constraint (S)

Not Applicable.

### 4.3.1.14 Send Invitation Email [OQDAS_14]

Figure 4.15: Send Invitation Use Case.

49

4.3.1.14.1 Description

This use case is initiated by a researcher. It shows how the researcher can delete the survey.

4.3.1.14.2 Characteristic of Activation

Event driven (on researcher's demand).

4.3.1.14.3 Pre-Condition (S)

- Researcher has to be logged-in successfully in order to create survey.
- Survey must be created.
- Survey must be activated.

4.3.1.14.4 Description

a. Normal Flow [OQDAS_14_01]:

1. Researcher clicks on send invitation link on the left menu

2. Researcher will see a form. The researcher selects survey from the drop down menu.

3. Researcher enters the list of emails to e-mail's field and invitation's subject to subject's field. Researcher forgot to enter emails or subject [E-1].

4. Researcher can enter the body of the invitation's mail and click "Send" button.

b. Exception Flows.

E-1: missing mails or Subject [OQDAS_14_02]:

1. System will display an error message, if the e-mail's field or subject's field is entered.

4.3.1.14.5 Post-Condition

Invitation must be sent successfully.

4.3.1.14.6 Rule (S)

Not Applicable.

4.3.1.14.7 Constraint (S)

Not Applicable.

4.3.1.15 Generate Report [OQDAS_15]

Figure 4.16: Generate Report Use Case.

4.3.1.15.1 Description

This use case is initiated by a researcher. It shows how the researcher can create statistical and graphical analysis report in PDF file.

4.3.1.15.2 Characteristic of Activation

Event driven (on researcher's demand).

4.3.1.15.3 Pre-Condition (S)

- Researcher has to be logged-in successfully in order to create survey.
- Survey must be created.

4.3.1.15.4 Description

a. Normal Flow [OQDAS_15_01]:

1. Researcher clicks on generate report link on left menu

2. Researcher will see a list of available surveys.

3. Researcher clicks on "View report" button which is beside the desirable survey to export its participants' answers.

4.3.1.15.5 Post-Condition

Statistical and graphical analysis report in PDF file must be created successfully.

4.3.1.15.6 Rule (S)

Not Applicable.

4.3.1.15.7 Constraint (S)

Not Applicable.

4.3.1.16 Export Answers [OQDAS_16]
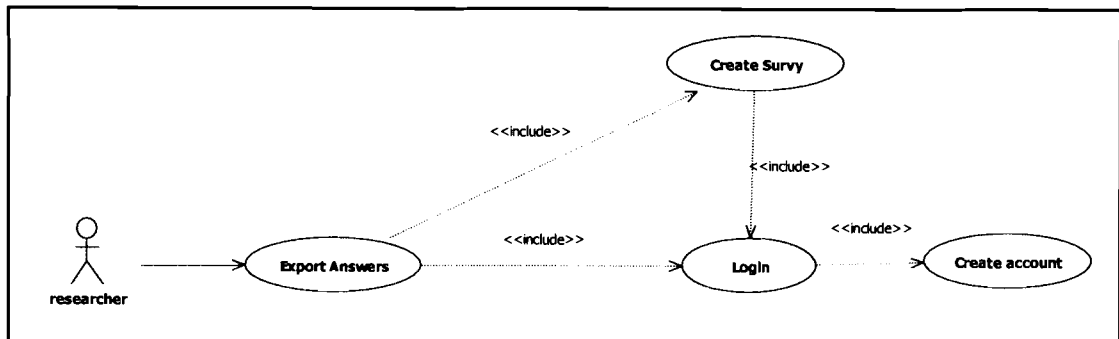
Figure 4.17: Export Answers Use Case.

4.3.1.16.1 Description

This use case is initiated by a researcher. It shows how the researcher can export the survey's answers in text file.

4.3.1.16.2 Characteristic of Activation

Event driven (on researcher's demand).

4.3.1.16.3 Pre-Condition (S)

- Researcher has to be logged-in successfully in order to create survey.
- Survey must be created.

4.3.1.16.4 Description

a. Normal Flow [OQDAS_16_01]:

1. Researcher clicks on export survey's answers link on the left menu

2. Researcher will see a list of available surveys.

3. Researcher clicks on "Export" button which is beside the desirable survey to export its participants' answers.

4.3.1.16.5 Post-Condition

Survey answers must be exported in text file successfully.

4.3.1.16.6 Rule (S)

Not Applicable.

4.3.1.16.7 Constraint (S)

Not Applicable.

4.3.1.17 Print Survey [OQDAS_17]
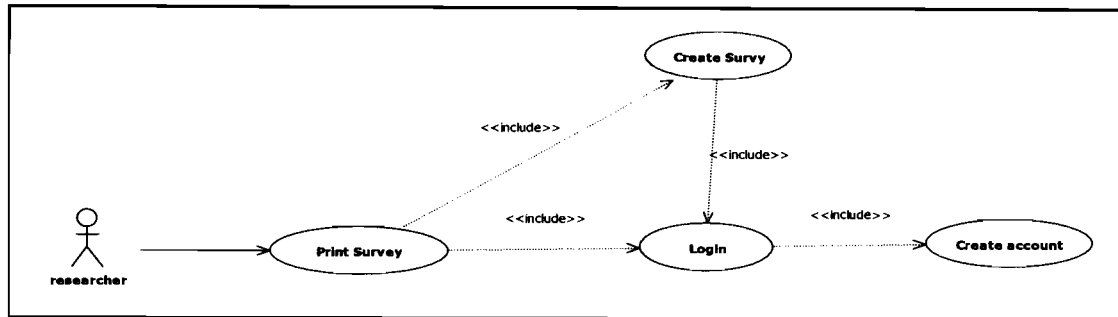
Figure 4.18: Print Survey Use Case.

4.3.1.17.1 Description

This use case is initiated by a researcher. It shows how the researcher can print the survey.

4.3.1.17.2 Characteristic of Activation

Event driven (on researcher's demand).

4.3.1.17.3 Pre-Condition (S)

- Researcher has to be logged-in successfully in order to create survey.
- Survey must be created.

4.3.1.17.4 Description

a. **Normal Flow [OQDAS_17_01]:**

1. Researcher clicks on print survey link on the left menu

2. Researcher will see a list of available surveys.

3. Researcher click on "Print Survey" button which is beside the desirable survey to be printed.

4.3.1.17.5 Post-Condition

Survey must be printed successfully.

53

4.3.1.17.6 Rule (S)

Not Applicable.

4.3.1.17.7 Constraint (S)

Not Applicable.

4.3.1.18 Change Password [OQDAS_18]

Figure 4.19: Change Password Use Case.

4.3.1.18.1 Description

This use case is initiated by the researcher. It shows how the researcher can update and reset his/her account's password.

4.3.1.18.2 Characteristic of Activation

Event driven (on researcher's demand).

4.3.1.18.3 Pre-Condition (S)

Researcher has to be logged-in successfully in order to update his/her account's password.

4.3.1.18.4 Description

    a. **Normal Flow [OQDAS_02_01]:**

1. This use case begins when researcher goes to change password page.

2. Researcher enters the current password, new password and reenter the new password, and then click "Save" button.

4.3.1.18.5 Post-Condition

The researcher's password should be changed successfully.

4.3.1.18.6 Rule (S)

Not Applicable.

54

4.3.1.18.7 Constraint (S)

Password must be alphanumeric data type.

4.3.1.19 Take Survey [OQDAS_19]
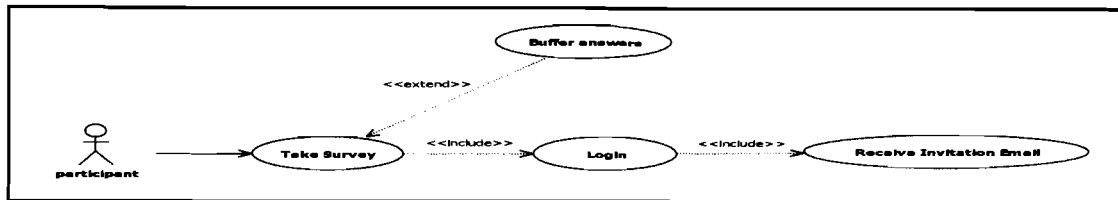
Figure 4.20: Take Survey Use Case.

4.3.1.19.1 Description

This use case is initiated by survey's participants. This use case would allow participants to answer and submit survey.

4.3.1.19.2 Characteristic of Activation

Event driven (participant's demand).

4.3.1.19.3 Pre-Condition (S)

Participant has to be logged-in successfully in order to answer and submit the survey.

4.3.1.19.4 Description

a. Normal Flow [OQDAS_19_01]:

1. This use case begins when participant logs into his account.

2. System will display survey's questions per section.

3. Participant answers the survey. Participant can buffer answers to continue survey at a later time [A-1].

4. System displays an error message if the participant enters invalid values for some types of questions [E-1].

4. Participant press "Submit" button.

55

b. Extension Flows (Alternative):

A-1: Buffers answers [OQDAS_19_02]:

1. Participant can buffer answers to continue survey at a later time by pressing "Stop" button.

c. Exception Flows.

E-1: Invalid Values [OQDAS_19_03]:

1. System displays an error message if the participant enters invalid values for some types of questions.

4.3.1.19.5 Post-Condition

Survey must be answered and submitted successfully. And the participant must be able to buffer answers to continue survey at a later time.

4.3.1.19.6 Rule (S)

Not Applicable.

4.3.1.19.7 Constraint (S)

Not Applicable.

4.3.2. SEQUENCE DIAGRAMS

Please, refer to Appendix C.

4.3.3. COLLABORATION DIAGRAMS

Please, refer to Appendix D.

4.3.4. SNAPSHOTS

Please, refer to Appendix F.

4.4. SUMMARY

This chapter summarizes the analysis and design steps taken in order to come out required system. At this chapter, the findings of these steps helped us finalize the development of OQDAS.

CHAPTER FIVE

EVALUATION AND TESTING

5.1. INTRODUCTION

This chapter discusses the evaluation and testing of the OQDAS which has been produced during and after the system development. The chapter would highlight the evaluation and testing techniques which we have chosen in order to evaluate the outcomes of the study in our hands.

5.2. EVALUATION TECHNIQUES

As a matter of fact there are varieties of testing and evaluation techniques which could be implemented in order to guarantee the delivery of a product which is close to perfection. In this project, Unit, Integration and Acceptance test have been conducted to ensure that:

- OQDAS meets all the requirements.
- All desired functions exist in the system and easy to be accessed.
- Statistical report results are accurate.
- OQDAS is convenient to be operated by new user and its user friendly.

5.3. UNIT TESTING

The objective of this test is to ensure that each element of the application meets the requirements of the users as outline in the list of requirements table (Table 4.1). Basically, we have created 19 Unit Tests and all the unit tests were mapped with the list of requirements to ensure that the entire requirement has been met and it conforms to the specifications and design. Besides that, the unit tests are created based on testing activities.

5.3.1. Unit Tests Procedures

Details regarding the testing activities are described in the table 5.1.

Table 5.1: Unit Test Activities

No.	Unit Test ID	Unit Test	Descriptions	Expected Result
1.	OQDAS_UT_01	Login	Key-in valid user name and password.	User's Home Page
			Key-in invalid user name and password.	Error Message "Invalid Login Info"
			Researcher account's request is not accepted by user yet.	Error Message "Waiting for approvement"
			Participant is already taken the survey.	Info Message "your Account is expired"
2.	OQDAS_UT_02	View Researcher	Click View Researcher Link.	View List of researchers.
3.	OQDAS_UT_03	Approve Researcher	Click "Approve" Researcher Link.	View List of researchers with clickable status button.
			Click "Approve" button.	Researcher's status is updated as approve and save into DB.
			Click "Disapprove" button.	Researcher's status is updated as disapprove and save into DB.
4.	OQDAS_UT_04	Delete Researchers	Click Delete Researcher Link.	View List of researchers with clickable status button.
			Click "Delete" button.	Researcher is deleted from the list and DB.

5.	OQDAS_UT_ 05	Change DB settings	Click Change DB settings Link.	Displays DB settings form.
			Fill the required field and click "Save" button.	DB settings are changed.
6.	OQDAS_UT_ 06	Change Admin's Email	Click Change Admin's Email Link.	Displays field of admin's email.
			Fill the required field and click "Save" button.	Administrator's email is changed.
7.	OQDAS_UT_ 07	Change Admin's Password	Click Change Admin's Password Link.	Displays field of admin's password.
			Fill the required field and click "Save" button.	Administrator's password is changed.
8.	OQDAS_UT_ 08	Create account	Fill the required field and click "Sign Up" button.	Researcher's info is sent to the admin and researcher's status is disapproved by default.
9.	OQDAS_UT_ 09	Create Survey	Click Create Survey Link.	Display Survey Form.
			Fill the survey's details and click "Save& Continue" button.	Survey's details are save and section's form is displayed.

			Enter section title and description, and select question's type. Then click "Save& Continue" button.	Section's details are saved and display selected question's Type Form.
			create question and click "Finish" button.	Save question and display confirmation message.
10.	OQDAS_UT_ 10	View Survey	Click View Survey Link.	Display List of Surveys.
			Select survey from the list and click "View" button.	Display survey details.
			Click "Next" button.	Display section and its questions.
			Click "Finish"	Display confirmation message.
11.	OQDAS_UT_ 11	Activate Survey	Click Activate Survey Link.	Display list of surveys with clickable status button.
			Select survey from the list and click "Activate" button.	Survey's status is updated as activated and saves into DB.
			Select survey from the list and click "Deactivate" button.	Survey's status is updated as deactivated and saves into DB.
12.	OQDAS_UT_ 12	Update Survey	Click Update Survey Link.	Display List of survey.

			Select survey from the list and click "Add Section"	Display section form.
			Enter section title and description, and select question's type. Then click "Save& Continue" button.	Section's details are saved and display selected question's Type Form.
			Create question and click "Finish" button.	Save question and display confirmation message.
13.	OQDAS_UT_ 13	Delete Survey	Click Delete Survey Link.	Display list of surveys with clickable Delete button.
			Select survey from the list and click "Delete" button.	Survey is deleted from the list and DB.
14.	OQDAS_UT_ 14	Send Invitation Emails.	Click Send Invitation Email Link.	Display Invitation Form.
			Enter required info and click "Send Invitation" button.	Save the participant's info and display confirmation message.
15.	OQDAS_UT_ 15	Generate Report	Click Generate Report Link.	Display List of Surveys.
			Select survey from the list and click "View Report" button.	Display survey's report in pdf file.
16	OQDAS_UT_ 16	Export Answers	Click Export Answers Link.	Display List of Surveys.

			Select survey from the list and click "View Survey's answers" button.	Display survey's answers in txt file.
17	OQDAS_UT_ 17	Print Survey	Click Print Survey Link.	Display List of Surveys.
			Select survey from the list and click "Print Survey" button.	Display survey's content and the process in pdf file.
18.	OQDAS_UT_ 18	Change Password	Click Change Password Link.	Displays field of password.
			Fill the required field and click "Save" button.	Password is changed.
19.	OQDAS_UT_ 19	Take Survey	Answers the questions and click "Next" button.	Save the answers and display new section's questions.
			Enter invalid values.	Display Error Message.
			Click "Stop" button.	Participant logout automatically and he/she can resume answering the survey at later time.
			Click "Submit" button.	Answers is saved, system logout the user automatically, and his account for this survey is expired.

5.3.2. Unit Test Report

After the testing process that was carried out during the development for each function, we make the correction in the database as well as data type coding , and the following table summarizes the results of the informal unit test. Test summary for Initialize OQDAS are as described in Table 5.2.

Table5.2: Unit Test Summary

No.	Unit Test ID	Unit Test	Success
1.	OQDAS_UT_01	Login	v
2.	OQDAS_UT_02	View Researchers	v
3.	OQDAS_UT_03	Approve/Disapprove Researchers	v
4.	OQDAS_UT_04	Delete Researchers	v
5.	OQDAS_UT_05	Change DB settings	v
6.	OQDAS_UT_06	Change Administrator's Email	v
7.	OQDAS_UT_07	Change Administrator's Password	v
8.	OQDAS_UT_08	Create account	v
9.	OQDAS_UT_09	Create Survey	v
10.	OQDAS_UT_10	View Survey	v
11.	OQDAS_UT_11	Activate Survey	v
12.	OQDAS_UT_12	Update Survey	v
13.	OQDAS_UT_13	Delete Survey	v
14.	OQDAS_UT_14	Send Invitation Emails	v
15.	OQDAS_UT_15	Generate Report	v
16	OQDAS_UT_16	Export Answers	v
17	OQDAS_UT_17	Print Survey	v
18.	OQDAS_UT_18	Change Password	v
19.	OQDAS_UT_19	Take Survey	v

5.4. INTEGRATION TESTING

The objective of this test is to ensure that multiple parts of the system interact according to the system design. In another word, Integration testing is a logical extension of unit testing where two or more units that have already been tested are combined into a component and the interfaces between them are tested. Basically, there are two types of integration testing strategies:

- Big-bang testing: all unit tested components are combined and tested at the same time.
- Incremental testing: system modules are tested gradually, where there are three approaches under this strategy: top down, bottom up and sandwich approaches.

The top down approach was used in this project to ensure the interaction between OQDAS components.

Figures 5.1, 5.2, 5.3, 5.4, 5.5 and 5.6 show the components that are related to each other (these figures were built based on the user type and sequence of activities. The arrows are the order of integration.

5.4.1. Integration Tests Procedures

The following integration tests were carried for the purpose of conducting integration testing.

#### 5.4.1.1. Integration Tests of Create Account Function
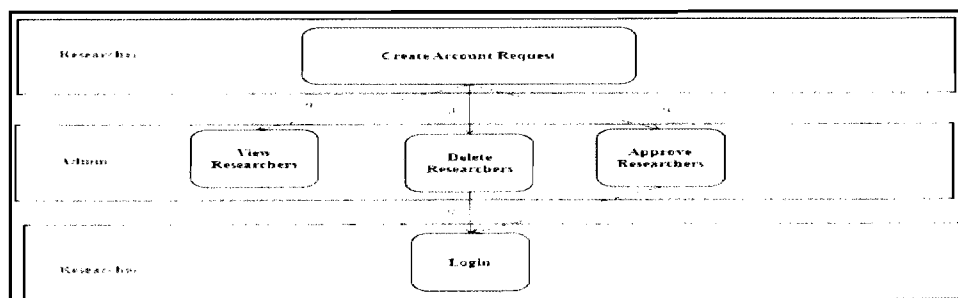
Figure 5.1: Integration Tests of Create Account Function

65

Table 5.3 shows the integration tests of Create Account Function.

Table 5.3: integration tests of Create Account Function

No.	Integration Test ID	Integration Test
1.	OQDAS_IT_ 01	Create Account → View Researcher
2.	OQDAS_IT_ 02	Create Account → Delete Researcher
3.	OQDAS_IT_ 03	Create Account → Approve Researcher
4.	OQDAS_IT_ 04	Create Account → Delete Researcher → Log in
5.	OQDAS_IT_ 05	Create Account → Approve/Disapprove → Researcher Log in

Details regarding the activities of integration test of create account function are described in the table 5.4.

Table 5.4: Activities of Integration Test of Create Account Function

No.	Integration Test ID	Descriptions	Expected Result
1.	OQDAS_IT_ 01	Follow the use case description in Section 4.3.1.8.4	Researcher's request must be listed in view researcher interface
2.	OQDAS_IT_ 02	Follow the use case description in Section 4.3.1.8.4	Researcher request must be listed in delete researcher interface.
3.	OQDAS_IT_ 03	Follow the use case description in Section 4.3.1.8.4	Researcher request must be listed in approve researcher interface.
4.	OQDAS_IT_ 04	Follow the use case description in Section 4.3.1.4.4	Researcher must not be able to access his/her account and all of his/her activites are deleted.
5.	OQDAS_IT_ 05	Follow the use case description in Section 4.3.1.3.4	a. Researcher must be able to access his/her new account.

			b. Researcher must not be able to access his/her account , but all of his/her activites are still there.

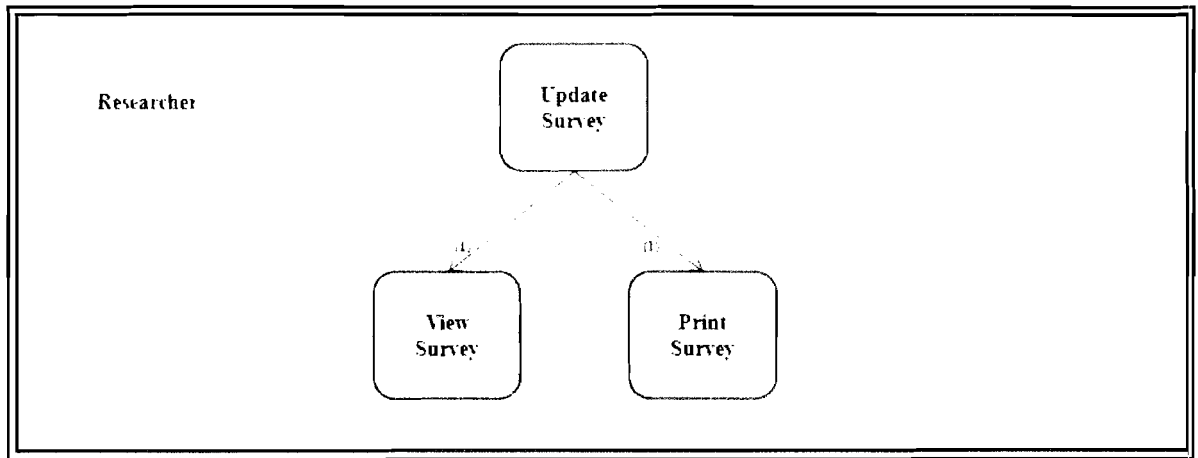### 5.4.1.2. Integration Tests of Create Survey Function
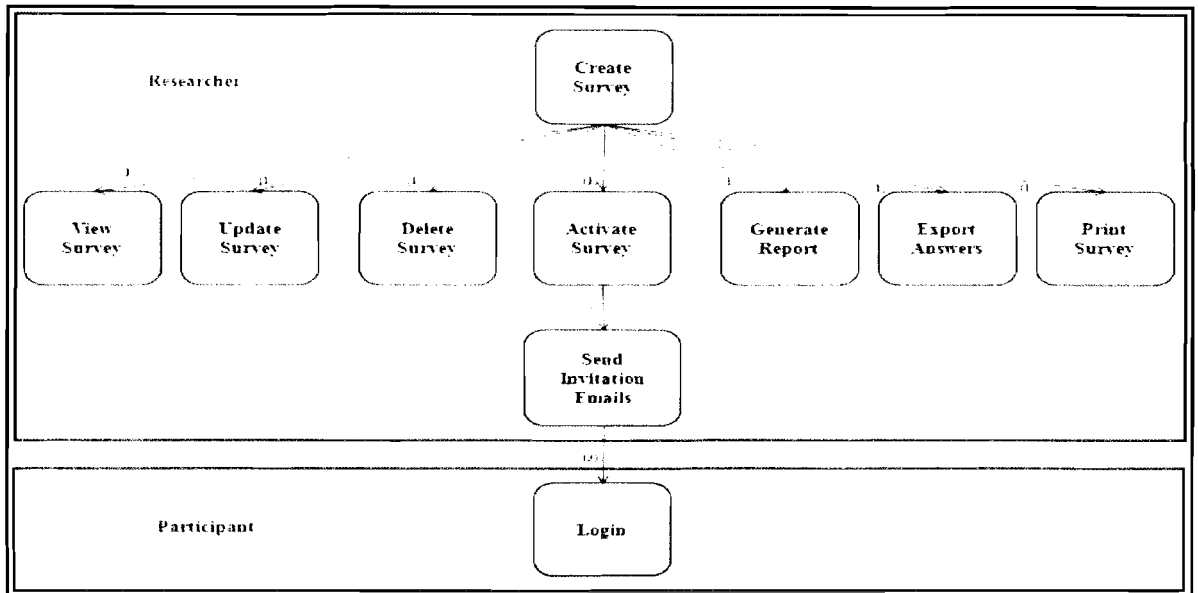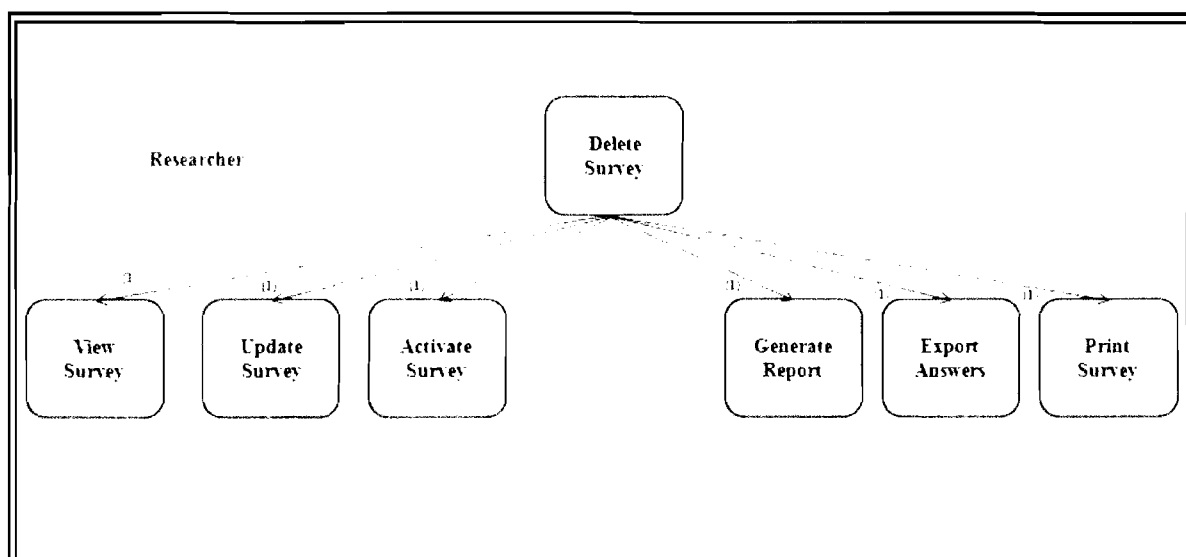

Figure 5.2: Integration Tests of Create Survey Function

Table 5.5 shows the integration tests of Create Survey Function.

Table 5.5: Integration Tests of Create Survey Function

No.	Integration Test ID	Integration Test
6.	OQDAS_IT_ 06	Create Survey → View Survey
7.	OQDAS_IT_ 07	Create Survey → Update Survey
8.	OQDAS_IT_ 08	Create Survey → Delete Survey
9.	OQDAS_IT_ 09	Create Survey → Activate/Deactivate Survey
10.	OQDAS_IT_ 10	Create Survey → Generate Report

11.	OQDAS_IT_ 11	Create Survey → Export Answers
12.	OQDAS_IT_ 12	Create Survey → Print Survey
13.	OQDAS_IT_ 13	Create Survey → Activate/Deactivate Survey → Send Invitation
14.	OQDAS_IT_ 14	Create Survey → Activate Survey → Send Invitation → Log in

Details regarding the activities of integration test of create survey function are described in the table 5.6.

Table 5.6: Activities of Integration Test of Create Survey Function

No.	Integration Test ID	Descriptions	Expected Result
6.	OQDAS_IT_ 06	Follow the use case description in Section 4.3.1.9.4	New survey must be added into a list in view survey interface.
7.	OQDAS_IT_ 07	Follow the use case description in Section 4.3.1.9.4	New survey must be added into a list in update survey interface.
8.	OQDAS_IT_ 08	Follow the use case description in Section 4.3.1.9.4	New survey must be added into a list in delete survey interface.
9.	OQDAS_IT_ 09	Follow the use case description in Section 4.3.1.9.4	New survey must be added into a list in activate survey interface.
10.	OQDAS_IT_ 10	Follow the use case description in Section 4.3.1.9.4	New survey must be added into a list in Generate Report interface.
11.	OQDAS_IT_ 11	Follow the use case description in Section 4.3.1.9.4	New survey must be added into a list in Export Answers interface.
12.	OQDAS_IT_ 12	Follow the use case description in Section 4.3.1.9.4	New survey must be added into a list in print survey interface.
13.	OQDAS_IT_ 13	Follow the use case description in	Partcipant receives an email

		Section 4.3.1.11.4	contain the username &password.
14.	OQDAS_IT_ 14	Follow the use case description in Section 4.3.1.14.4	Partcipant must be able to access the survey using the information in the invitation email.

5.4.1.3. Integration Tests of Take Survey Function
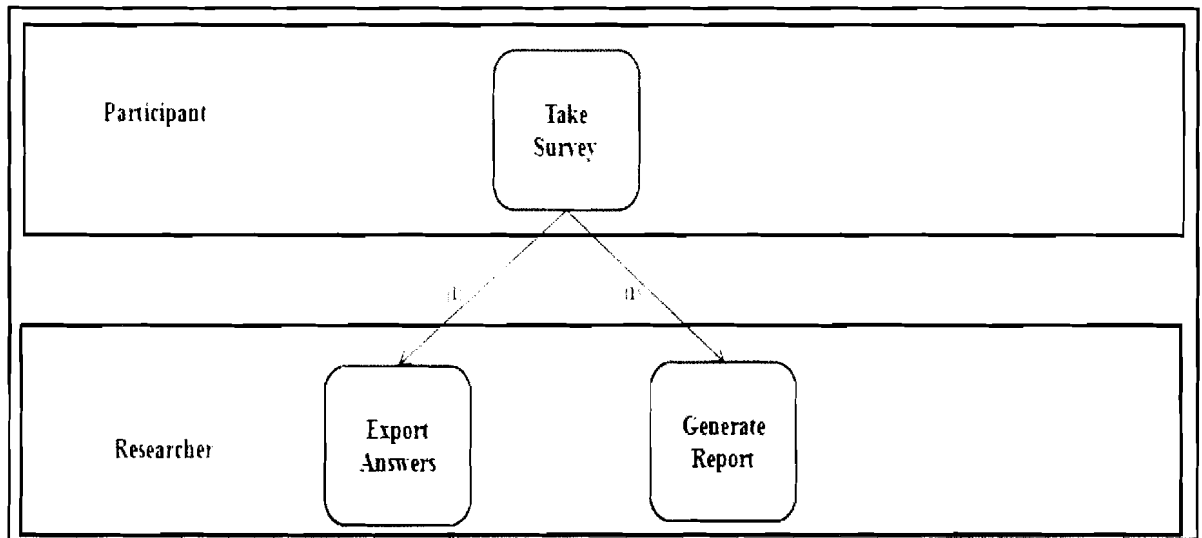
Figure 5.3: Integration Tests of Take Survey Function

Table 5.7 shows the integration tests of take survey function.

Table 5.7: Integration Tests of Take Survey Function

No.	Integration Test ID	Integration Test
15.	OQDAS_IT_ 15	Take Survey→ Export Answers
16.	OQDAS_IT_ 16	Take Survey→ Generate Report

Details regarding the activities of integration test of take survey function are described in Table 5.8.

No.	Integration Test ID	Descriptions	Expected Result
15.	OQDAS_IT_ 15	Follow the use case description in Section 4.3.1.19.4	Participants' answers can be exported via export answers function.
16.	OQDAS_IT_ 16	Follow the use case description in Section 4.3.1.19.4	Researcher can view statistical report based on the participant's answers.

Note: Statistical report results have been validated by using SPSS version 19

5.4.1.4. Integration Tests of Change Password Function
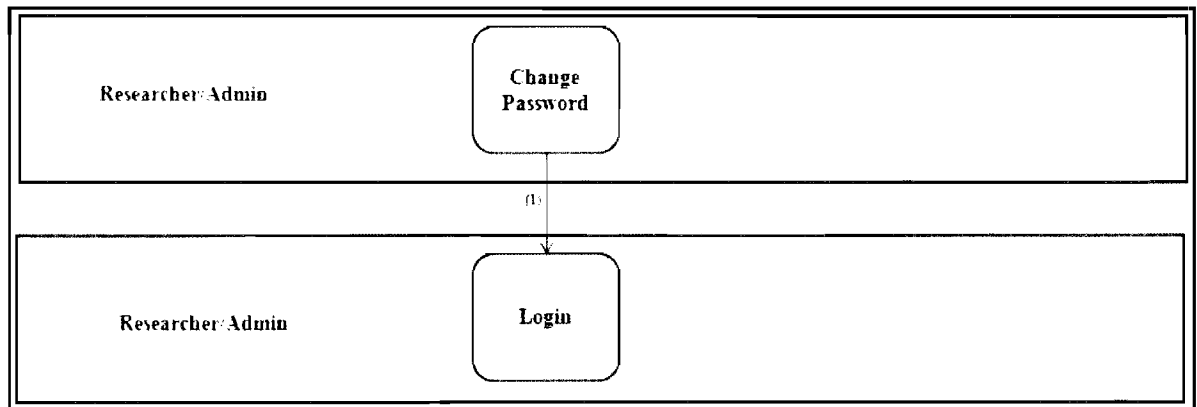
Figure 5.4: Integration Tests of Change Password Function

Table 5.9 shows the integration tests of change password Function.

Table 5.9: Integration Tests of Change Password Function

No.	Integration Test ID	Integration Test
17.	OQDAS_IT_ 17	Change Password → Log in

Details regarding the activities of integration test of change password function are described in Table 5.10.

No.	Integration Test ID	Descriptions	Expected Result
17.	OQDAS_IT_ 17	Follow the use case description in Section 4.3.1.18.4 & Section 4.3.1.7.4	Researcher or administrator must be able to access his/her account using the new password.

5.4.1.5. Integration Tests of Update Survey Function

Figure 5.5: Integration Tests of Update Survey Function

Table 5.11 shows the integration tests of update survey function.

Table 5.11: Integration Tests of Update Survey Function

No.	Integration Test ID	Integration Test
18.	OQDAS_IT_ 18	Update Survey →View Survey
19.	OQDAS_IT_ 19	Update Survey →Print Survey

Details regarding the activities of integration test of update survey function are described in Table 5.12.

No.	Integration Test ID	Descriptions	Expected Result
18.	OQDAS_IT_ 18	Follow the use case description in Section 4.3.1.12.4	The effects of new updates must be shown during viewing the survey.
19.	OQDAS_IT_ 19	Follow the use case description in Section 4.3.1.12.4	The printable survey must be the updated one.

5.4.1.6. Integration Tests of Delete Survey Function

Figure 5.6: Integration Tests of Delete Survey Function

Table 5.13 shows the integration tests of delete survey function.

Table 5.13: Integration Tests of Delete Survey Function

No.	Integration Test ID	Integration Test
20.	OQDAS_IT_ 20	Delete Survey➔ View Survey
21.	OQDAS_IT_ 21	Delete Survey➔ Update Survey

22.	OQDAS_IT_ 22	Delete Survey→ Activate Survey
23.	OQDAS_IT_ 23	Delete Survey→ Generate Report
24.	OQDAS_IT_ 24	Delete Survey→ Export Answers
25.	OQDAS_IT_ 25	Delete Survey→ Print Survey

Details regarding the activities of integration test of delete survey function are described in Table 5.14.

Table 5.14: Activities Of Integration Test of Delete Survey Function

No.	Integration Test ID	Descriptions	Expected Result
20.	OQDAS_IT_ 20	Follow the use case description in Section 4.3.1.13.4	Survey must be deleted from the list in view survey interface.
21.	OQDAS_IT_ 21	Follow the use case description in Section 4.3.1.13.4	Survey must be deleted from the list in update survey interface.
22.	OQDAS_IT_ 22	Follow the use case description in Section 4.3.1.13.4	Survey must be deleted from the list inactivate survey interface.
23.	OQDAS_IT_ 23	Follow the use case description in Section 4.3.1.13.4	Survey must be deleted from the list in Generate Report interface.
24.	OQDAS_IT_ 24	Follow the use case description in Section 4.3.1.13.4	Survey must be deleted from the list in Export Answers interface.
25.	OQDAS_IT_ 25	Follow the use case description in Section 4.3.1.13.4	Survey must be deleted from the list in Export Answers interface.

5.4.2. Integration Test Report

Integration Test summary for OQDAS is as described in Table 5.15

Table 5.15: Integration Test Summary

No.	Integration Test ID	Integration Test	Success
1.	OQDAS_IT_ 01	Create Account → View Researcher	v
2.	OQDAS_IT_ 02	Create Account → Delete Researcher	v
3.	OQDAS_IT_ 03	Create Account → Approve Researcher	v
4.	OQDAS_IT_ 04	Create Account → Delete Researcher→ Login	v
5.	OQDAS_IT_ 05	Create Account → Approve/Disapprove Researcher→ Log in	v
6.	OQDAS_IT_ 06	Create Survey → View Survey	v
7.	OQDAS_IT_ 07	Create Survey → Update Survey	v
8.	OQDAS_IT_ 08	Create Survey → Delete Survey	v
9.	OQDAS_IT_ 09	Create Survey → Activate/Deactivate Survey	v
10.	OQDAS_IT_ 10	Create Survey → Generate Report	v
11.	OQDAS_IT_ 11	Create Survey → Export Answers	v
12.	OQDAS_IT_ 12	Create Survey → Print Survey	v
13.	OQDAS_IT_ 13	Create Survey → Activate/Deactivate Survey → Send Invitation	v
14.	OQDAS_IT_ 14	Create Survey → Activate Survey → Send Invitation → Log in	v
15.	OQDAS_IT_ 15	Take Survey → Export Answers	v
16.	OQDAS_IT_ 16	Take Survey → Generate Report	v
17.	OQDAS_IT_ 17	Change Password → Log in	v
18.	OQDAS_IT_ 18	Update Survey → View Survey	v
19.	OQDAS_IT_ 19	Update Survey → Print Survey	v
20.	OQDAS_IT_ 20	Delete Survey → View Survey	v
21.	OQDAS_IT_ 21	Delete Survey → Update Survey	v
22.	OQDAS_IT_ 22	Delete Survey → Activate Survey	v

23.	OQDAS_IT_23	Delete Survey → Generate Report	v
24.	OQDAS_IT_24	Delete Survey → Export Answers	v
25.	OQDAS_IT_25	Delete Survey → Print Survey	v

5.5. ACCEPTANCE TESTING

Acceptance Testing is a functional testing of the scenario given by the client to the developers during the design and development phases. This type of testing is carried out in order to check the functionality of the system whether it could do the functions which it has been developed for. Another reason to conduct functional testing is to verify what the user could do with the system and what could not be done. It also checks the validity of each feature whether it is working in a proper way or not.

The advantage of this type of software testing is the possibility of conducting it during the design and development phases of the system as well. Thus it was a perfect technique which suits the methodology which has been adopted in order to deliver this project.

Functional testing of the system was conducted two times as shown in Table 5.16 in which the first testing was after creating the prototype and before completing the system while the second testing was after completing the system.

The developed system has three types of users; Admin, researcher, and participant. Therefore each test is divided into three parts according to the user type.

Test 1 was conducted by 1 tester for admin part, and 4 testers for researcher and participant parts (aforementioned selected researchers in section 4.2). Test 2 was conducted once the system was completed and similarly to Test 1, each user has been tested.

Table 5.16 details the 1st and 2nd Tests including testing tasks and results of 1st and 2nd tests. The following abbreviations are used:

- A – Indicates Admin user type.
- B – Indicates Researcher user type.
- C – Indicates Participant user type.
- P – Indicates Pass result.
- F – Indicates Fail result.

- NA– Not Applicable.

Table 5.16: Functional Testing

Event	Function	1st Test			2nd Test			Results	
		A 1	B 4	C 4	A 1	B 4	C 4	1st Test	2nd Test
Insert	Create Account, Create Survey, and Save Participant's info of Invitation Email & Submit Survey.	NA	P	F	NA	P	P	Duplicate entry	Fixed
Select	Login, View Researchers, View Survey, Generate Report, Export Answers& Print Survey.	P	F	P	P	P	P	Wrong report results	Fixed
Update	Approve/Disapprove Researchers, Change Email, Activate/Deactivate Survey, Update Survey &Change Password.	F	P	NA	P	P	NA	Approve/Dis approve Researcher	Fixed
Delete	Delete Researchers & Delete Survey.	P	P	NA	P	P	NA		Pass
Links	Direct and redirected links	P	P	F	P	P	P	Auto Logout Page Link	Fixed
Buttons	Submit Stop, Back, & Add buttons.	P	P	F	P	P	P	nonfunction al Stop button	Fixed

5.6. SUMMARY

This chapter highlighted the evaluation and testing technique which has been implemented in order to evaluate the system. Unit test, Integration test and Acceptance test were technique chosen in order to validate the functionality of the system features referring to the requirements.Table 5.17 shows the outputs for each testing type.

Table 5.17: Testing Types & Testing Deliverable

Testing Type	Performed by	Deliverables
Unit Testing	Developer	OQDAS ready for integration testing.
Integration Testing	Developer	OQDAS can be tested as one component.
Acceptance Testing	User	OQDAS satisfies user's requirements

CHAPTER SIX
CONCLUSION

6.1. INTRODUCTION

This chapter provides brief summarization of the project. It explains the way this project has been conducted as well as the limitations and constraints faced the research while working on this project as well as some recommendations which the research would like to address for future work in this area.

6.2. CONCLUSION OF THE STUDY

Online Questionnaire Data Analysis System (OQDAS) is a Web Based Application (WBA) developed to researchers and research centers in UUM. The aim of OQDAS is to improve the process of survey data collection and data analysis. Unlike traditional survey format, OQDAS would be developed for researchers in order to minimize effort, time consumption and learning curve for researcher on how to use the data analysis software. Moreover, OQDAS would provide one platform to design questionnaires, collect data, analyze data, and reporting results. The adopt methodologies in order to achieve the objective of this project was combination of Prototyping and System Development Life Cycle (SDLC) which made a perfect combination and delivered the expected outcome OQDAS within the estimated time.

The system mainly focuses on the following features:
- Online data collection: allows the researcher to create survey, and collect the survey's data.
- Auto report generator: analysis results would be reported in PDF file automatically.
- Survey Time control: determine when it supposes to start and finish the survey.

- Export function of collected data: allow the researcher to export the collected data of survey and use any other desirable data analysis tool to analyze these data.
- Buffering answers function: allow the respondent to stop answering the survey and continue survey at a later time.

6.3. LIMITATIONS AND CONSTRAINTS

As commonly known, there is no perfect study therefore it was obvious that there would be some difficulties and problem. Some of the problems raised during conducting this study could be summarized into the following:

6.3.1. Time Factor

The research and the development as well as the testing were all done by the researcher in a period of four months which was a tough job to be completed in the way it is supposed to be. However, almost all the basic functions are included and generally the system is re-engineer-able easily whenever changes are required.

6.3.2. Researchers Response

The expectations of the research students were very high and way too different at the same time which caused the researcher face a real challenge in order to find solutions which would satisfy all users' requirements.

6.4. RECOMMENDATION(S) AND FUTURE WORKS

This study was done in a developing environment with Local Server and it is highly recommended to be tested in user environment with servers that could handle huge transactions. Additionally, we hope this project is adopted by the university and enhanced more in order to benefit the UUM researchers and research centers as well.

7. REFERENCES

Conallen, J. (2003*). Building Web Applications with UML*, (2nd ed.), Addison Wesley.

Connnolly, T. & Begg, C. (2004). Database Solutions: A step By Step Guid to Building Database (2nd ed.). United States of America: Addison Wesley.

Croteau, A., Dyer, L., & Miguel, M. Employee Reactions to Paper and Electronic Surveys: An Experimental Comparison. *Professional Communication, IEEE Transactions on, 53*(3), 249-259.

Fitzgerald J. & Ardra F. (1981), Fundamentals of System Analysis, United States of America: FitzGerald.

Downing, J. R., & Clark, R. S. (2007). Using Electronic Surveys in Organizational/Employee Communication Research: A Study at GE's Global Research Center. *Professional Communication, IEEE Transactions on, 50*(3), 249-262.

Gal, A., & Mylopoulos, J. Toward Web-based application management systems. *Knowledge and Data Engineering, IEEE Transactions on, 13*(4), 683-702.

Gangshu. (2005).*Ideological and Political Education Statistics Research Methodology*, People's Publishing House.

Haunberger, S. (2011). Explaining Unit Nonresponse in Online Panel Surveys: An Application of the Extended Theory of Planned Behavior1. *Journal of Applied Social Psychology, 41*(12), 2999-3025.

Keeling, K. B., & Pavur, R. J. (2004, 5-8 Dec. 2004). *Numerical accuracy issues in using Excel for simulation studies.* Paper presented at the Simulation Conference, 2004. Proceedings of the 2004 Winter Simulation Conference, 2004. Proceedings of the 2004 Winter VO- 2.

Kendall, K. E. (2008). *Systems analysis and design* (7th ed.). Upper Saddle River: Pearson/Prentice Hall.

King, N. (2005). *WebSurveyor*. Retrieved 25-09-2011, 2011, from http://www.pcmag.com/article2/0,2817,1753489,00.asp#fbid=yv5UkeHwjN-

Kling, A. (1994). *The economic consequences of the World Wide Web.* Paper presented at the second World Wide Web Conference: Mosaic and the Web, Geneva, Switzerland

Knusel, L. 2004. *On the accuracy of statistical distributions in Microsoft Excel 2003.* Computational Statistics and Data Analysis: To Appear.

Kossiakoff, A., Sweet, W. N., Seymour, S. J., & Biemer, S. M. (2011). Software Systems Engineering. In *Systems Engineering Principles and Practice* (pp. 355-407): John Wiley & Sons, Inc.

Lewis-Beck, M. S. (1995). *Data analysis: an introduction*: Sage Publications.

Li, Y., & Cao, W. (29, 29-30 Oct. 2010). *Application of SPSS in the ideological and political education.* Paper presented at the Artificial Intelligence and Education (ICAIE), 2010 International Conference on Artificial Intelligence and Education (ICAIE), 2010 International Conference on VO -.

Macer, T. (2009). *Software reviews from meaning Key Survey reviewed.* Retrieved 09-26-2011, 2011, from http://www.meaning.uk.com/software-reviews/2009-reviews/key-survey/

McBurney, D. H., & White, T. L. (2009). *Research Methods*: Cengage Learning.

McCullough, B. D. and B. Wilson. 2002. *on the accuracy of statistical procedures in Microsoft Excel 2000 and Excel XP.* Computational Statistics and Data Analysis 40: 713-721.

Murach., J., & Steelman., A. (2004). *Murach's Java Servlets and JSP* (2nd ed.). States of America: Mike Murach & Associates, Inc.

Musterman, J. (2007, November 17, 2007). *Market analysis of SPSS.* Retrieved 22-09-2011, 2011, from http://www.helium.com/items/703271-market-analysis-of-spss

Murugesan, S. and Ginige, A. (2005), *Web engineering: introduction and perspectives, Web-Engineering: Principles and Techniques*, Hershey: Idea Group Publishing.

Nauck, D.D., Spott, M., & Azvine, B.. (2004, 28-30 March 2004). *Fuzzy methods for automated intelligent data analysis.* Fuzzy Systems, 2004. Proceedings. 2004 IEEE International Conference on Fuzzy Systems.

Norman, A. T., & Russell, C. A. (2006). The Pass-Along Effect: Investigating Word-of-Mouth Effects on Online Survey Procedures. *Journal of Computer-Mediated Communication, 11*(4), 1085-1103.

Pargas, R. P., Witte, J. C., Brand, L., Hochrine, C., & Staton, M. (2003, 28-30 April 2003). *OnQ: an authoring tool for dynamic online surveys.* Paper presented at the Information Technology: Coding and Computing [Computers and Communications], 2003.

Proceedings. ITCC 2003. International Conference on Information Technology: Coding and Computing [Computers and Communications], 2003. Proceedings. ITCC 2003.

Roztocki, N., & Lahri, N. A. (2003, 6-9 Jan. 2003). *Is the applicability of Web-based surveys for academic research limited to the field of information technology?* Paper presented at the System Sciences, 2003. Proceedings of the 36th Annual Hawaii International Conference on System Sciences, 2003. Proceedings of the 36th Annual Hawaii .

Schwalbe, K., (2005). Information technology project management. (4th ed.). New York: Thomson

S.E. Smith. (June 11, 2009). *What is Data Analysis?* Retrieved 22-10-2011, 2011, from http://www.wisegeek.com/what-is-data-analysis.htm

Singh, A., Taneja, A., & Mangalaraj, G. (2009). *Creating online surveys: some wisdom from the trenches tutorial. Professional Communication, IEEE Transactions on*, *52*(2), 197-212.

Sommerville, I. (2007). *Software engineering* (8th ed ed.). Harlow: Addison-Wesley.

Taylor, J. K., & Cihon, C. (1990). *Statistical techniques for data analysis*: Chapman & Hall/CRC.

Wang, X. (26, 26-28 July 2011). *The application of SPSS in empirical research of housing hedonic price.* Paper presented at the Multimedia Technology (ICMT), 2011 International Conference on Multimedia Technology (ICMT), 2011 International Conference on VO -.

Weerahandi, S. (2003). *Exact statistical methods for data analysis*: Springer.

Wright, K. B. (2005). Researching Internet-Based Populations: Advantages and Disadvantages of Online Survey Research, Online Questionnaire Authoring Software Packages, and Web Survey Services. *Journal of Computer-Mediated Communication, 10*(3), 00.

Yian-Shu Chu, Shian-Shyong Tseng,Jui-Feng Weng,Huan-Yu Lin,Nien-Chu Wang,Liao, A.Y.H., &AJun-Ming Su. (2010, 18-20 Nov. 2010). *Adaptively Learning and Assessing SPSS Operating Skills Using Online SPSS Simulator.* Technologies and Applications of Artificial Intelligence (TAAI), 2010 International Conference.

Zhang, S., Li, Y., & Li, T. (17, 17-19 Nov. 2010). *A study on the application of Internet symbols under the context of Chinese culture in the product design.* Paper presented at the Computer-Aided Industrial Design & Conceptual Design (CAIDCD), 2010 IEEE 11th International Conference on Computer-Aided Industrial Design & Conceptual Design (CAIDCD), 2010 IEEE 11th International Conference on VO - 2.

8. APPENDICES

8.1. APPENDIX A: GANTT CHART

①	Project Phases	September			October					November				December				January		
		05/09	12/09	19/09	26/09	03/10	10/10	17/10	24/10	31/10	07/11	14/11	21/11	28/11	05/12	12/12	19/12	26/12	02/01	09/01	16/01
1 ✓	Project Planning				■■■ 100%																
2 ✓	Requirements Definition					■ 100%															
3 ✓	Design							■■ 100%													
4 ▣	Development									■■■■■■■■■■ 90%											
5 ✓	Testing									■■■■■■■■■■■ 100%											

84
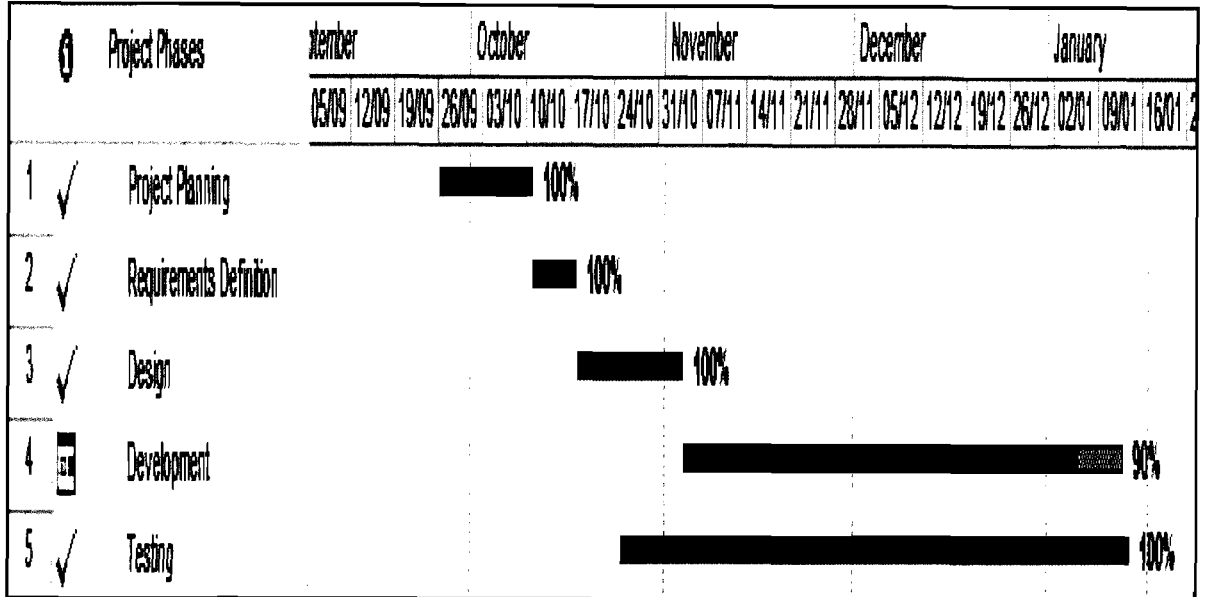
8.2. APPENDIX B: QUESTION TYPES

Multi-Point Rating Question

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Unable to Rate
When I do a good job, I receive the praise and recognition I deserve	○	○	○	○	○	○
I receive useful and constructive feedback from my manager	○	○	○	○	○	○
I am given adequate feedback about my performance	○	○	○	○	○	○
My manager plays an active role in my professional development and advancement	○	○	○	○	○	○

Semantic Differential Question

	Never		Sometimes			Always		
	1	2	3	4	5	6	7	N/A
I am always treated fairly by my manager	○	○	○	○	○	○	○	○
My manager always treats me with respect	○	○	○	○	○	○	○	○
My manager values my talents and the contribution I make	○	○	○	○	○	○	○	○
This organization respects its employees	○	○	○	○	○	○	○	○

Multiple Choice Question

6. **What is your favorite color?**
   (select only one)

   ○ Red
   ○ Green
   ○ Blue
   ○ Yellow
   ○ Purple
   ○ Other

Drop Down Question

1. **What is your favorite color?**

   | Select ▼ |

   Select
   Red
   Blue
   Green
   None of these

   [Continue]
   [Stop]

Ranked Choice Question

1 What are your favorite sports? Please rank your preferences below.	

[3 ▼] Football

[5 ▼] Baseball

[4 ▼] Basketball

[1 ▼] Golf

[▼] WWF Wrestling

Grouped Number Question

What percent of your sales come from the following?
Enter only whole numbers. No decimal point or percent sign

Mail Order [   ] %

Phone Order [   ] %

Walk-In [   ] %

Other [   ] %

Numeric Values

What percent of your sales come from the following?
Enter only whole numbers. No decimal point or percent sign.

Mail Order [   ] %

Phone Order [   ] %

Walk-In [   ] %

Other [   ] %

Short Answer Question

[   ]

8.3. APPENDIX C: SEQUENCE DIAGARMS

Use Case: Login [OQDAS_01]

a. Normal Flow [OQDAS_01_01]
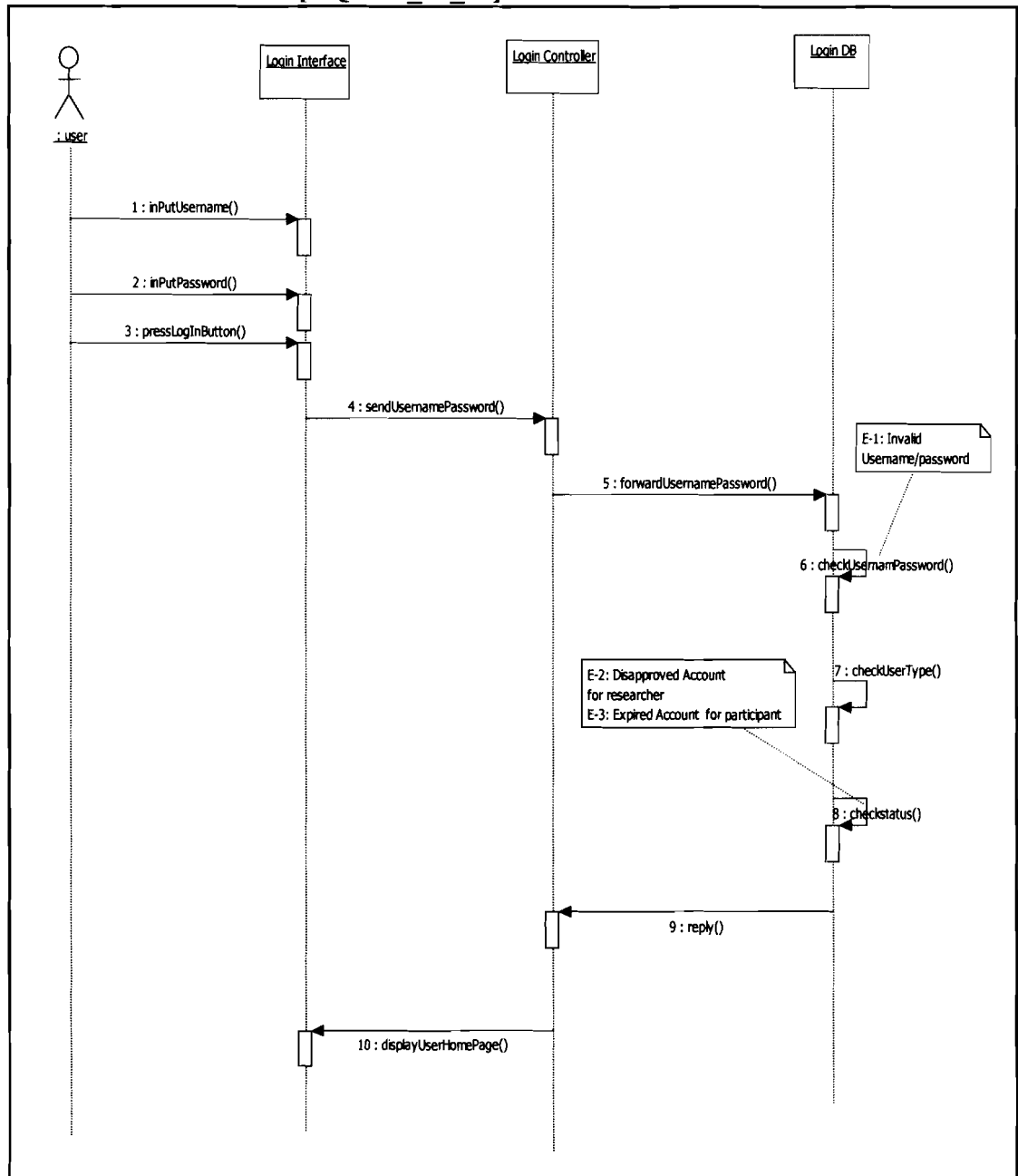
b. Exception Flows.
E-1: Invalid Username/password [OQDAS_01_02]
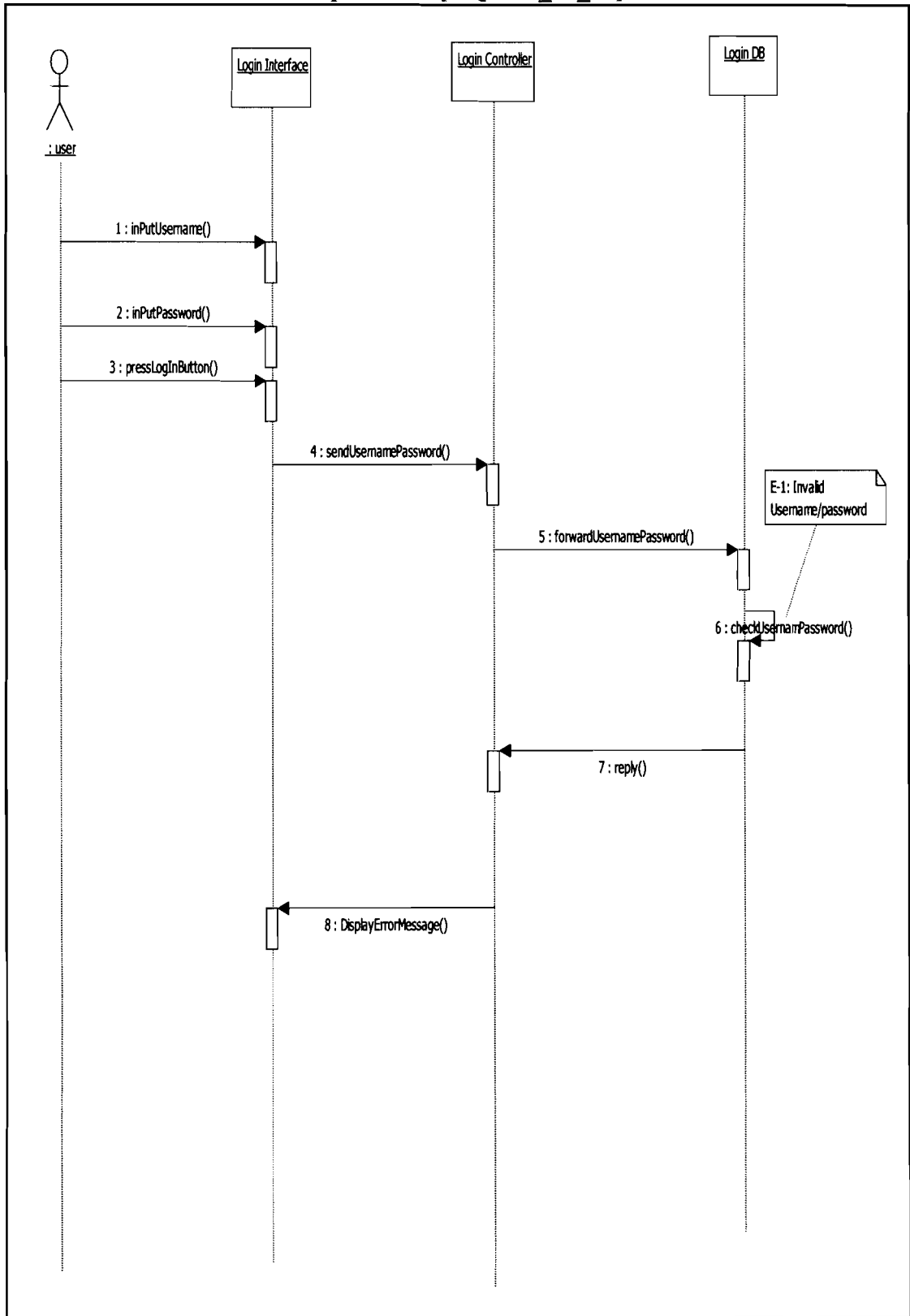
E-2: Disapproved Account [OQDAS_01_03]

E-3: Expired Account [OQDAS_01_04]

Sequence diagram with lifelines: : user, Login Interface, Login Controller, Login DB

1 : inPutUsername()
2 : inPutPassword()
3 : pressLogInButton()
4 : sendUsernamePassword()
5 : forwardUsernamePassword()
6 : checkUsernamPassword()
7 : checkUserType()
8 : checkstatus()
9 : reply()
10 : displayInfoMessage()
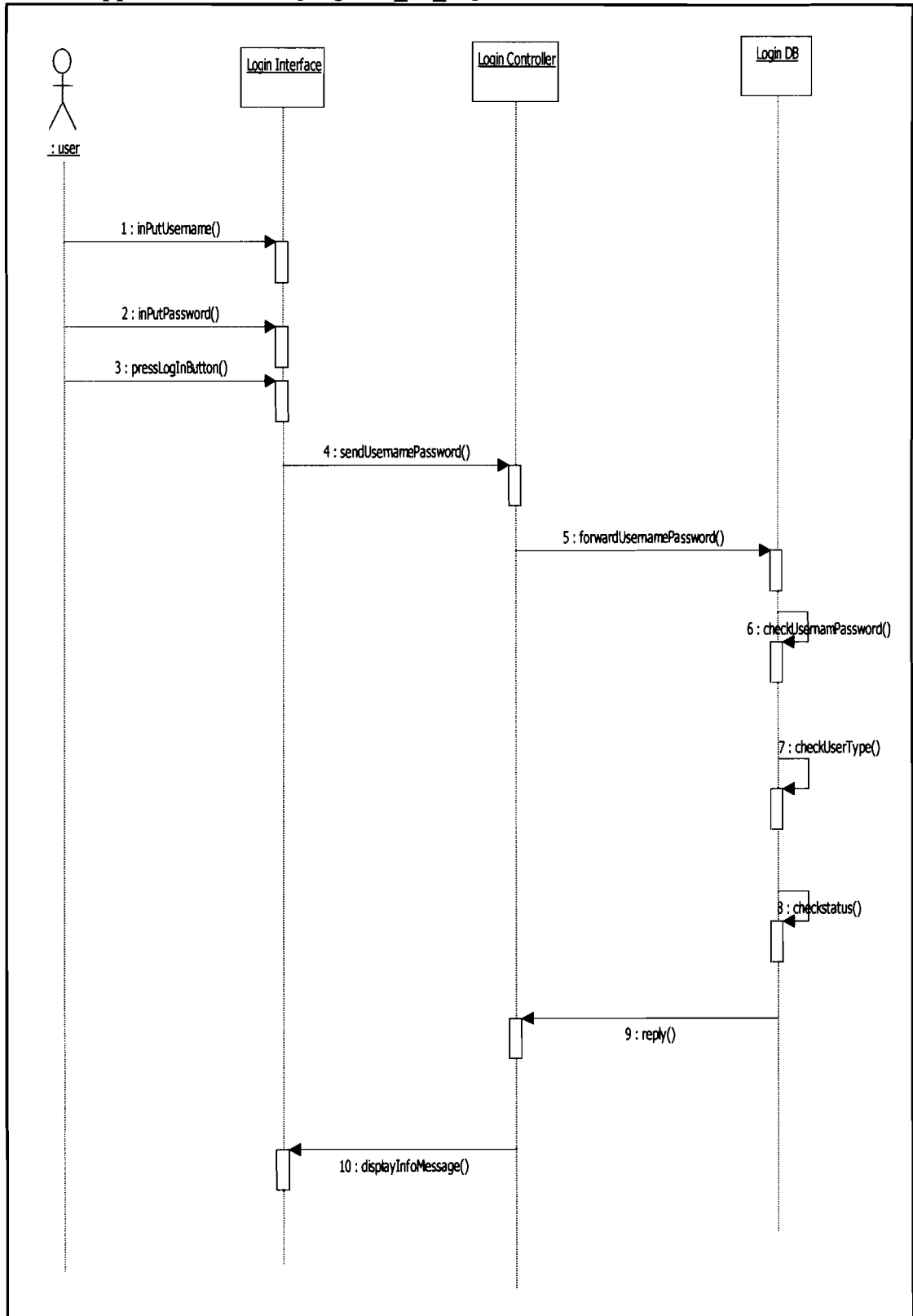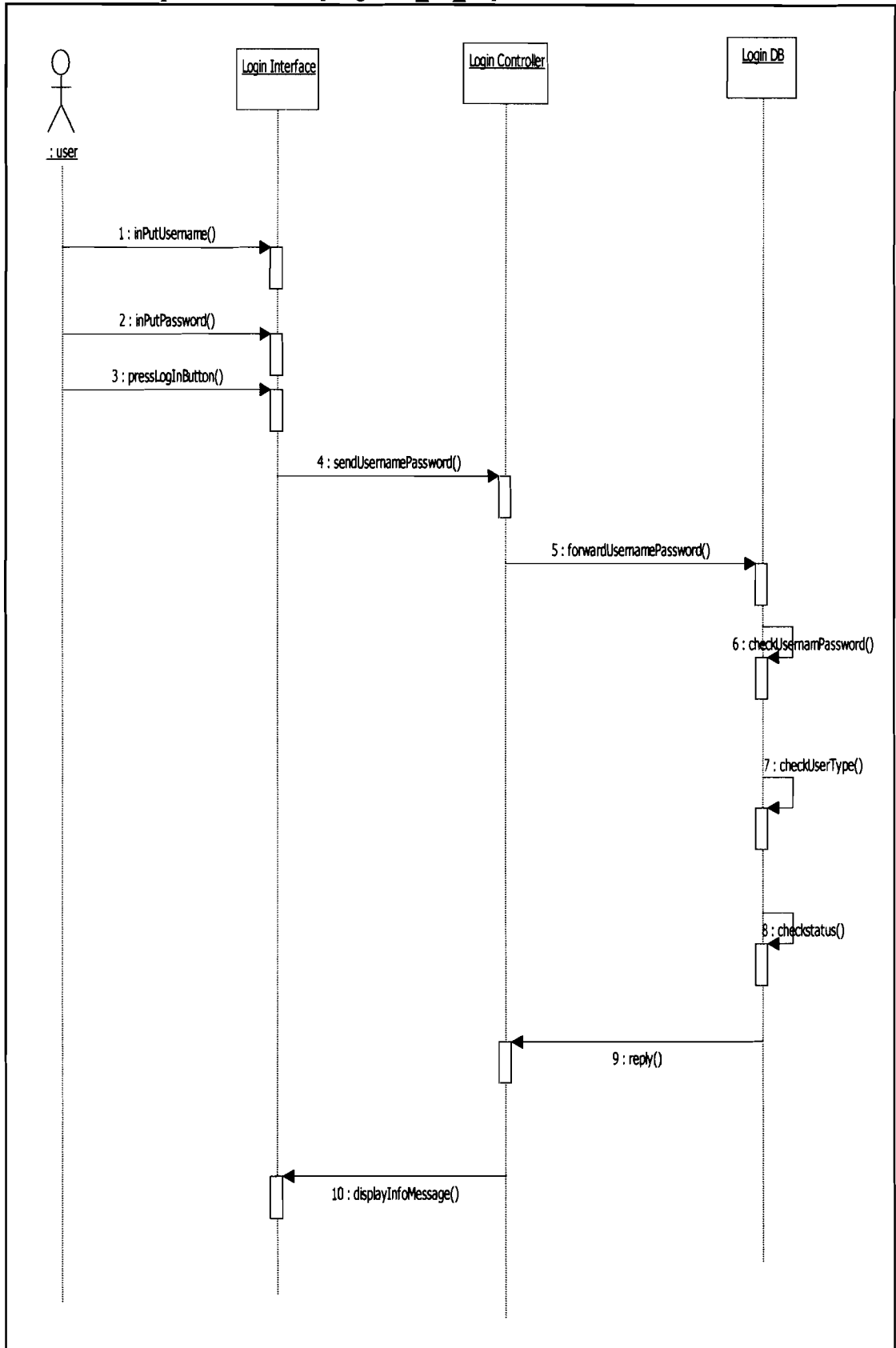
Use Case: View Researchers [OQDAS_02]

a. Normal Flow [OQDAS_02_01]
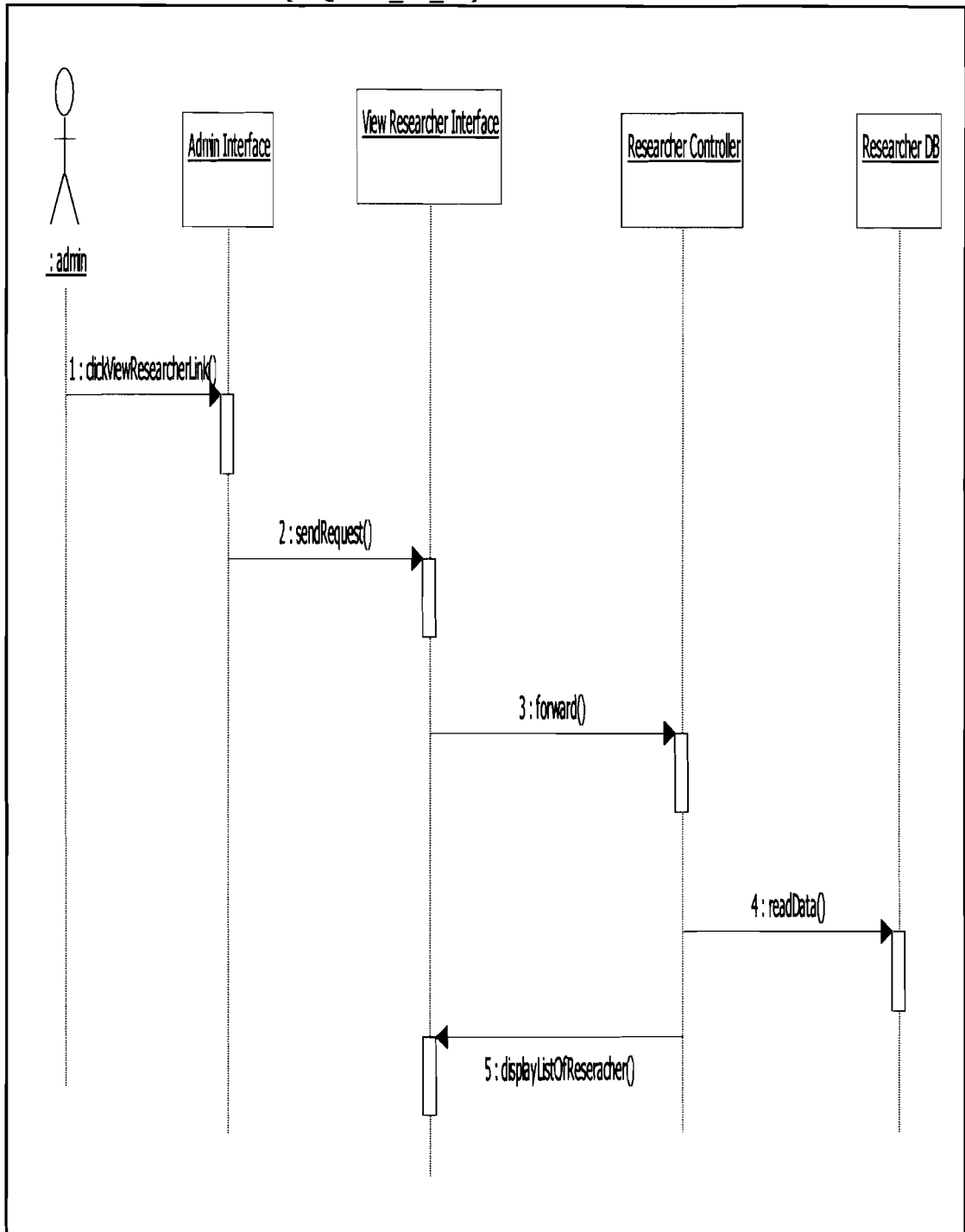
Use Case: Approve Researchers [OQDAS_03]

Normal Flow [OQDAS_03_01]
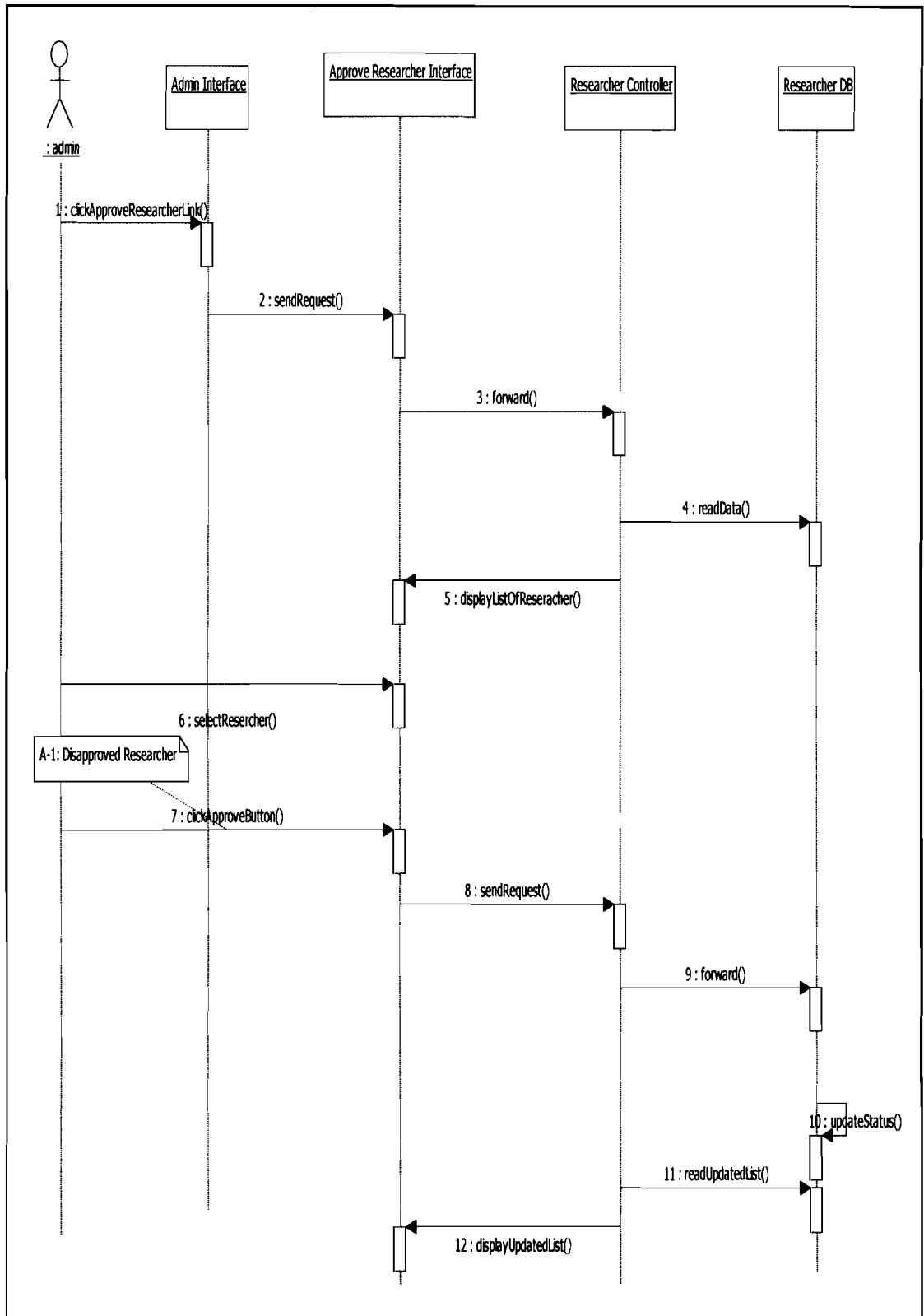
b. Extension Flows (Alternative):
A-1: Disapproved Researcher [OQDAS_03_02]
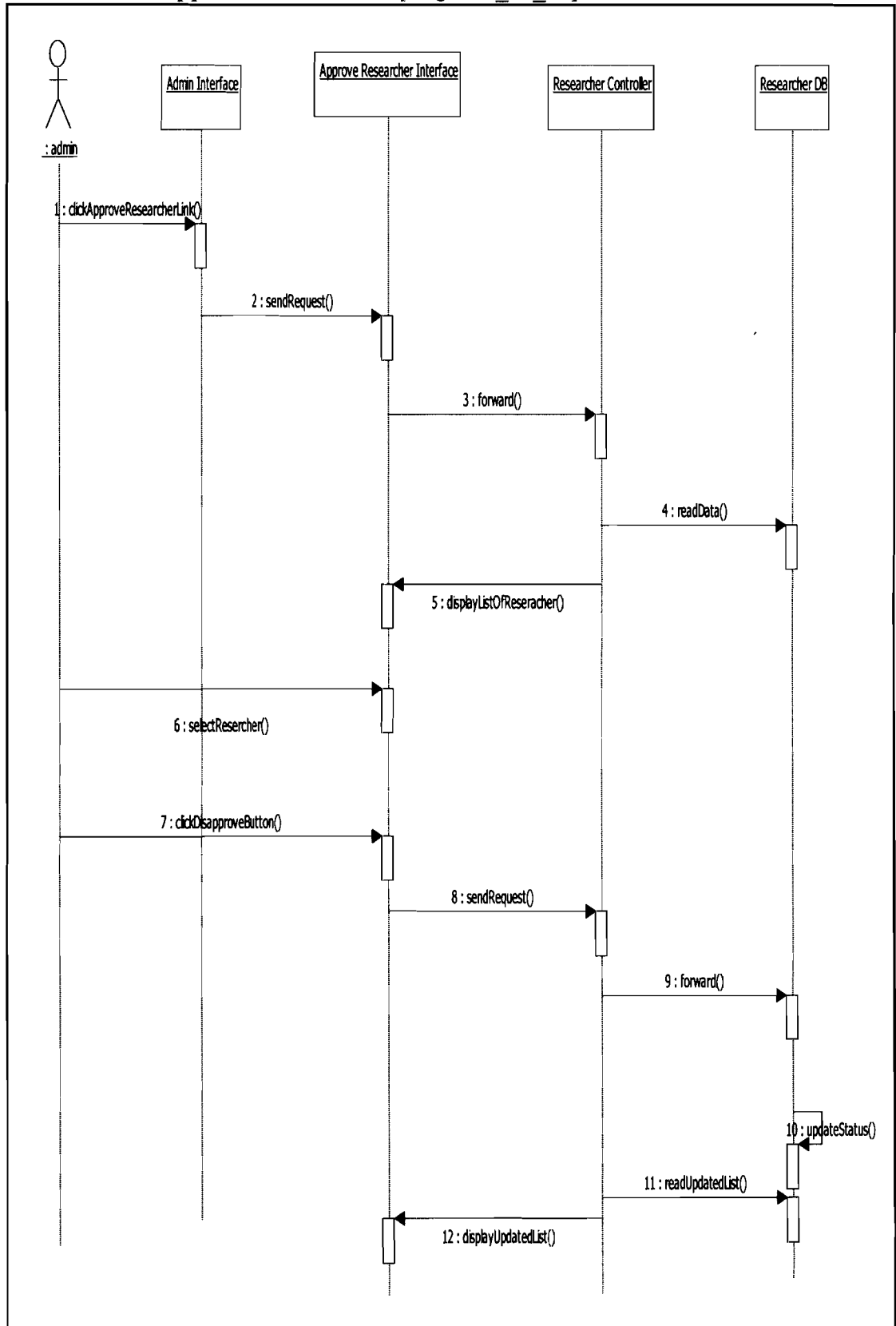
Use Case: Delete Researchers [OQDAS_04]

Normal Flow [OQDAS_03_01]
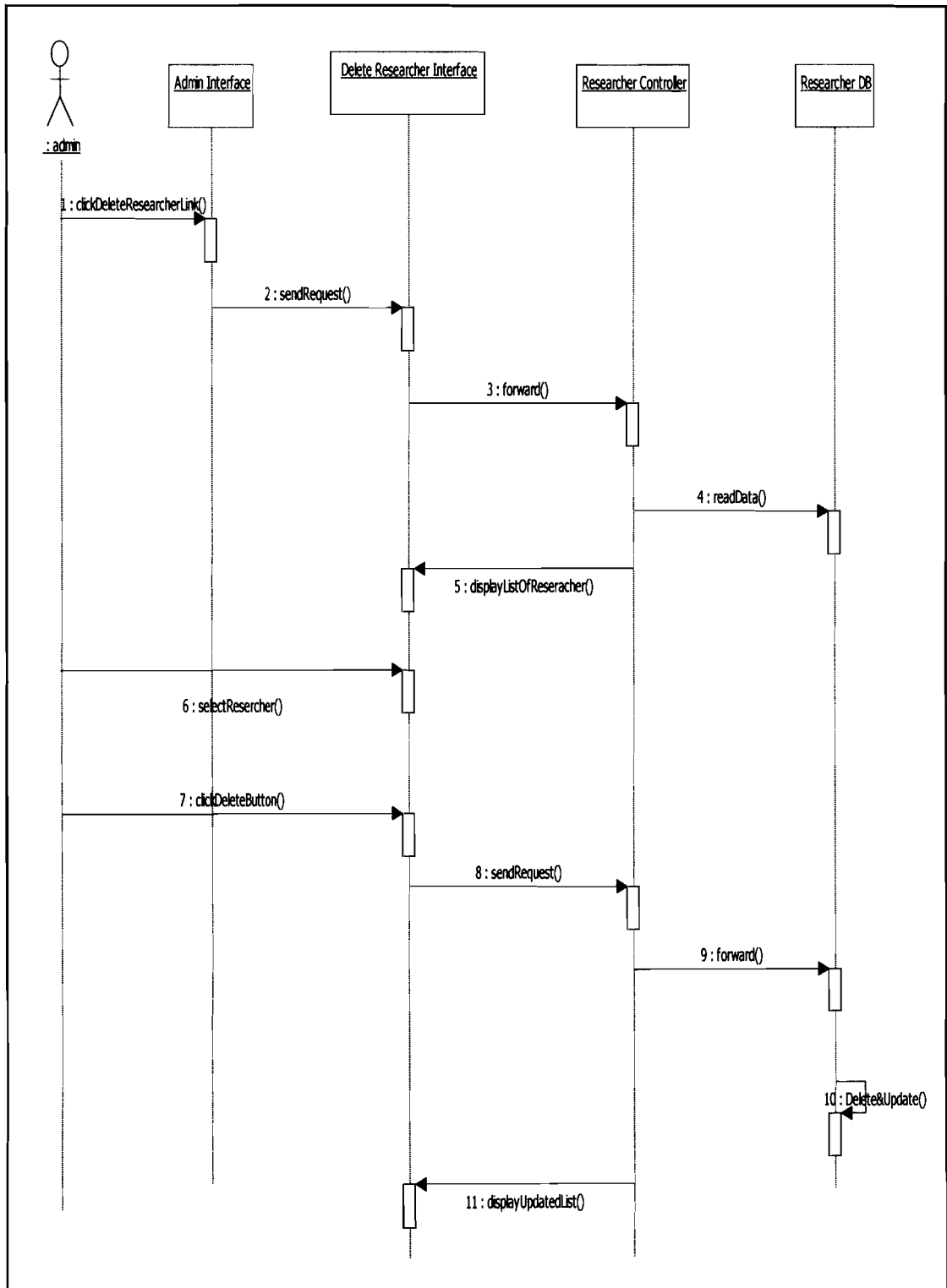
Use Case: Change DB settings [OQDAS_05]

    a. Normal Flow [OQDAS_05_01]
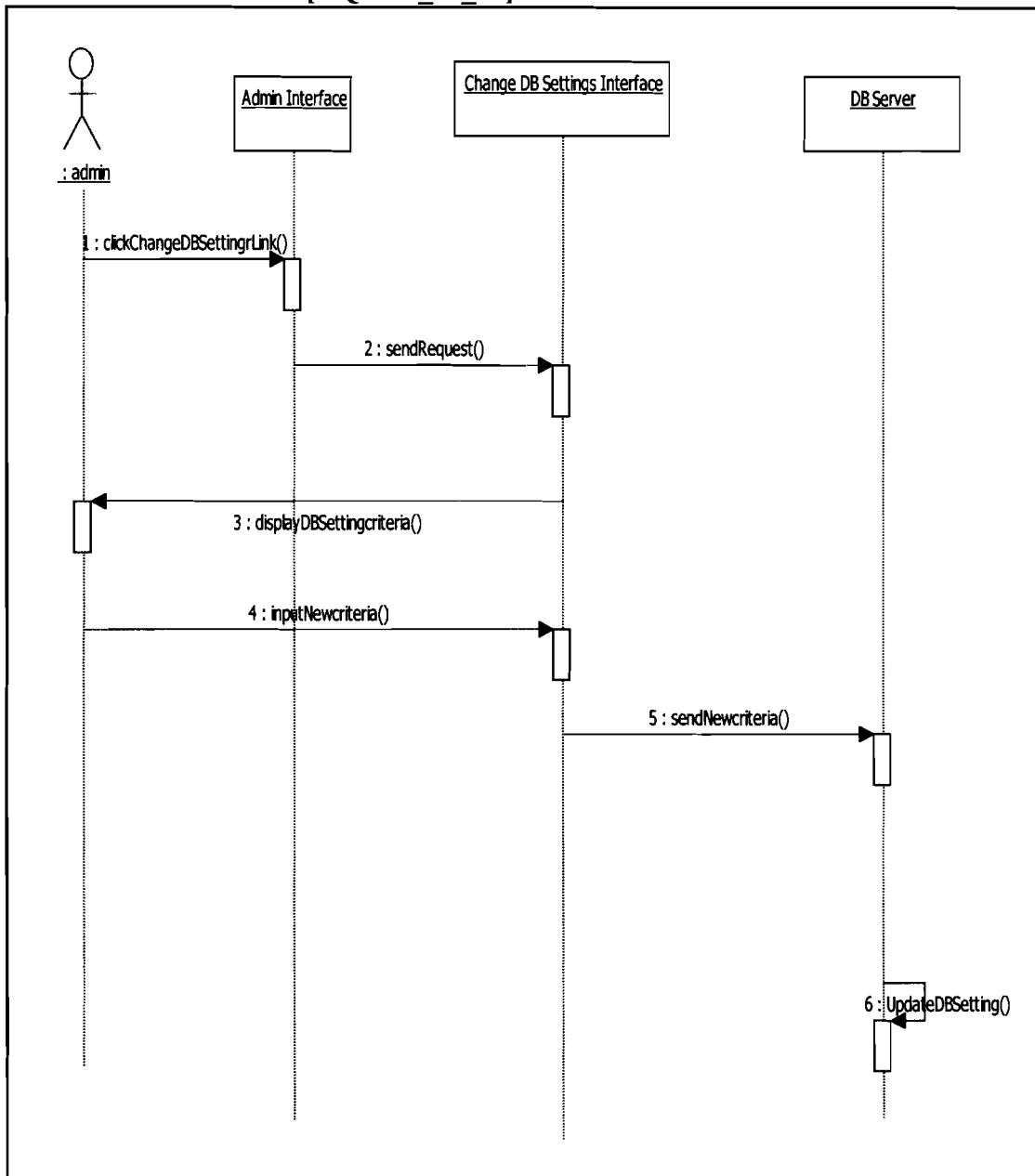
Use Case: Change Admin's Email [OQDAS_06]

Normal Flow [OQDAS_06_01]
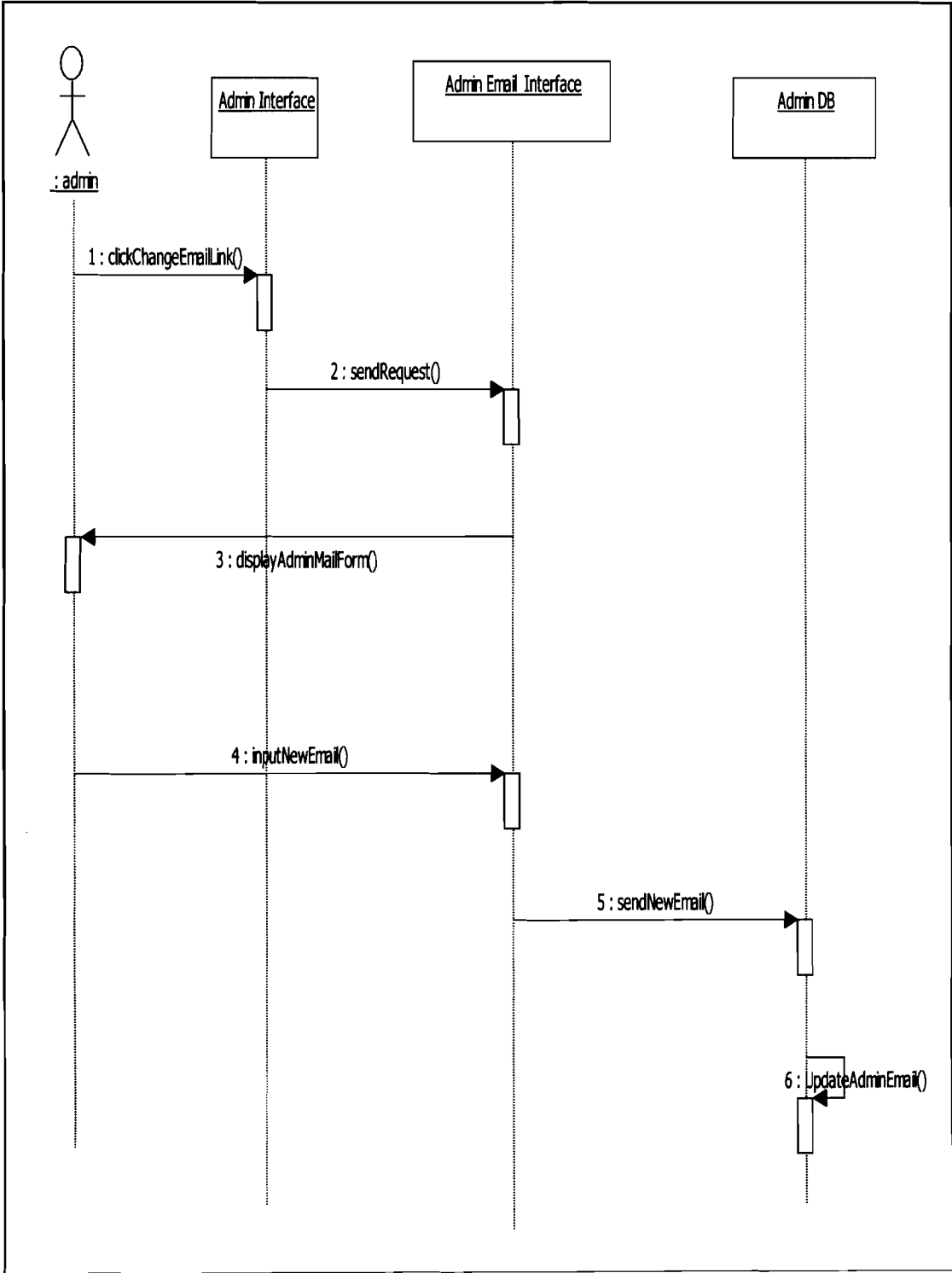
Use Case: Change Admin's Password [OQDAS_07]

a. Normal Flow [OQDAS_02_01]

: admin   Admin Interface   Change Password Interface   Admin DB

1 : clickChangePasswordLink()

2 : sendRequest()

3 : displayAdminPasswordIField()

4 : inputNewPassword()

5 : sendNewPassword()

6 : UpdateAdminPassword()
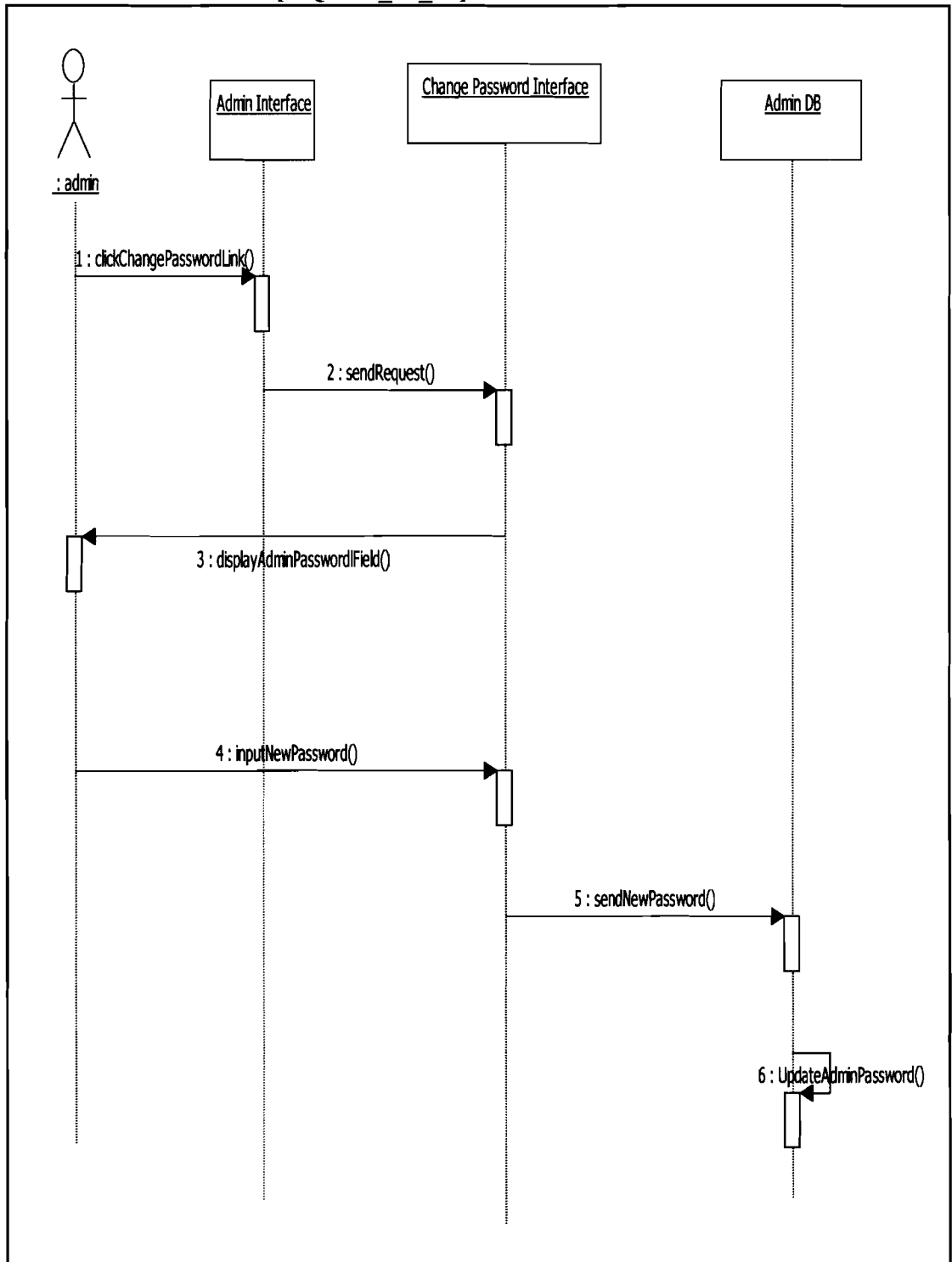
Use Case: Create Account [OQDAS_08]

Normal Flow [OQDAS_08_01]
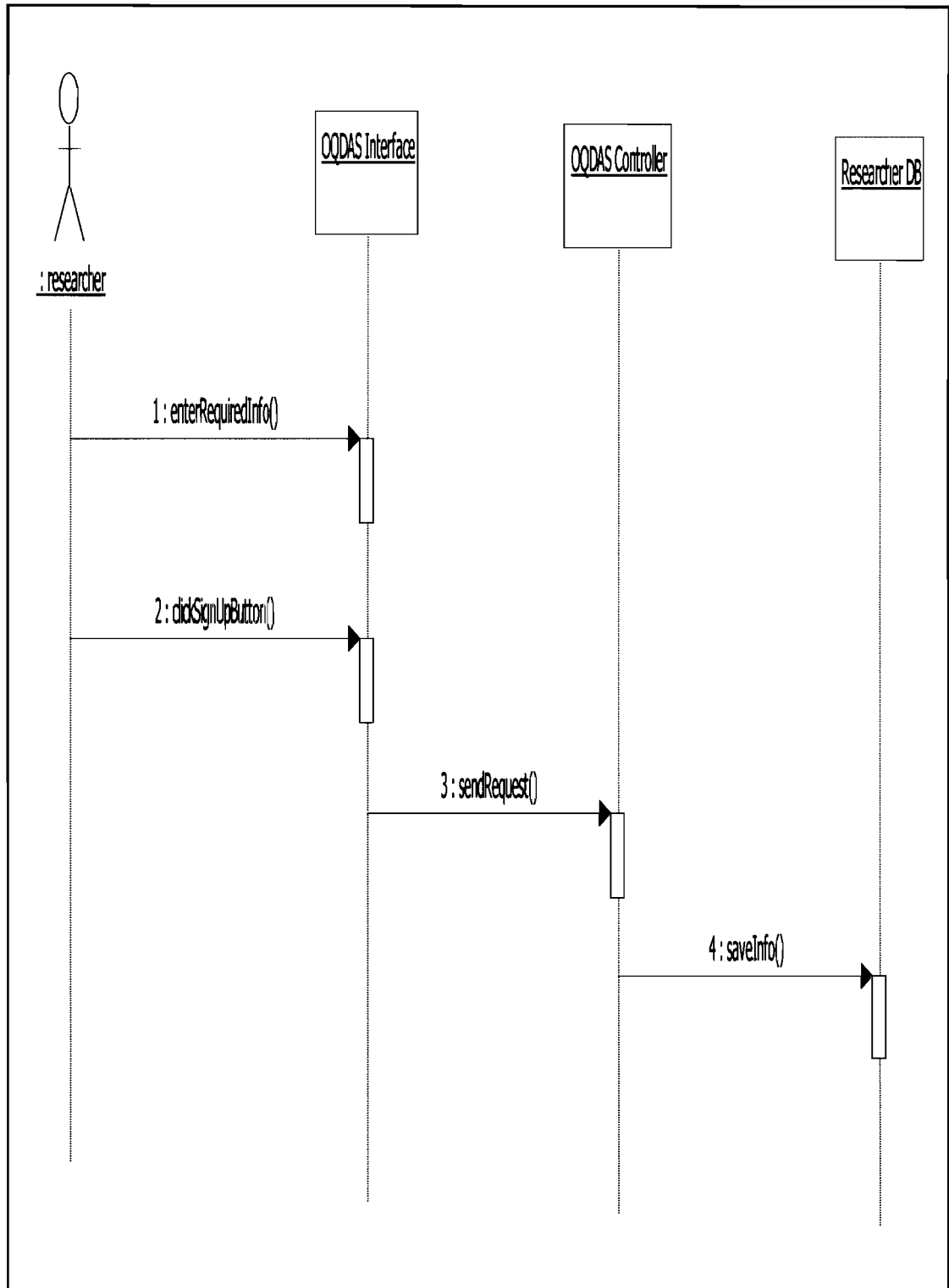
Use Case: Create Survey [OQDAS_09]

Normal Flow [OQDAS_09_01]
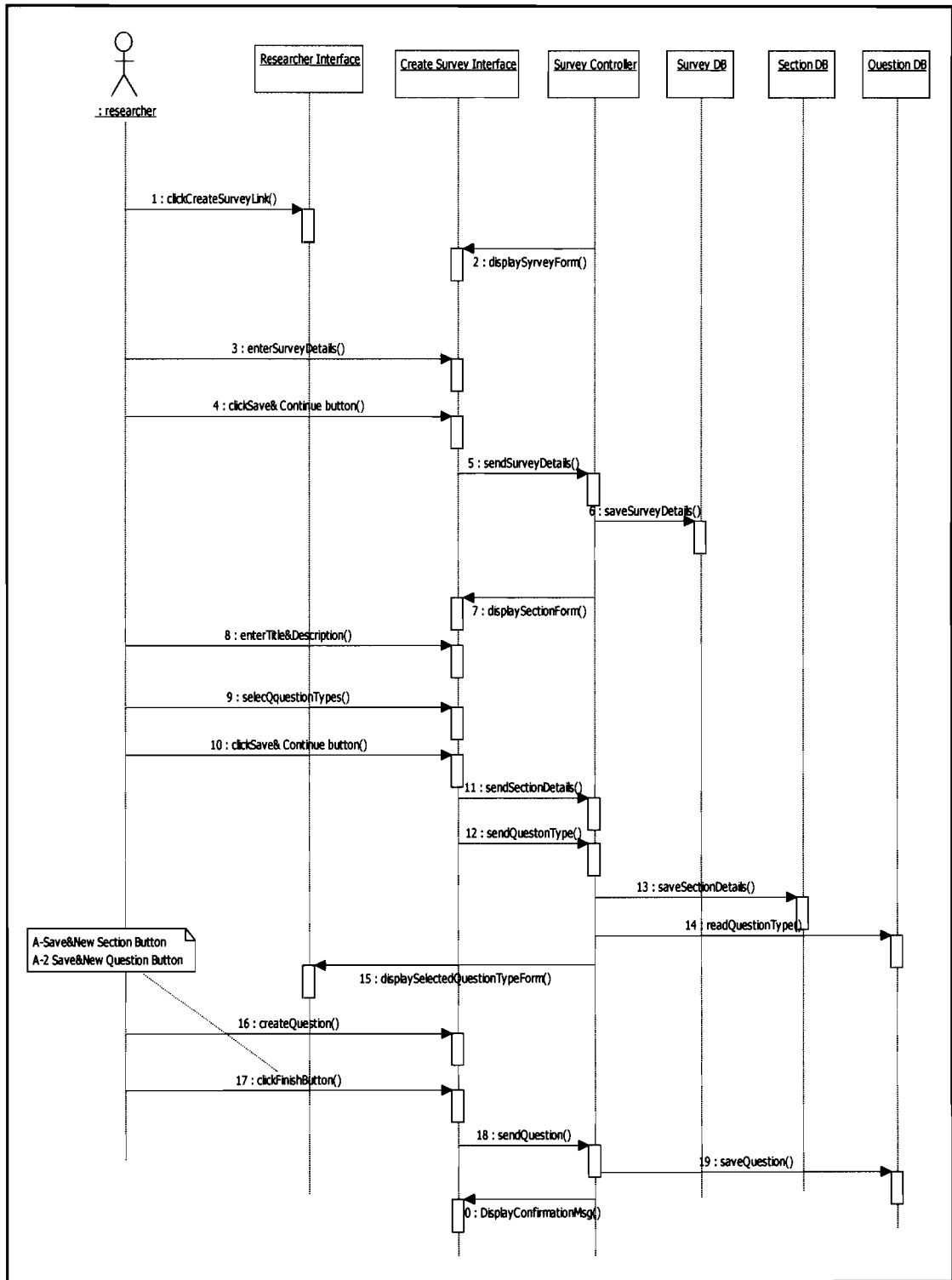
b. Extension Flows (Alternative)
A-1: More Than One Section [OQDAS_09_02]
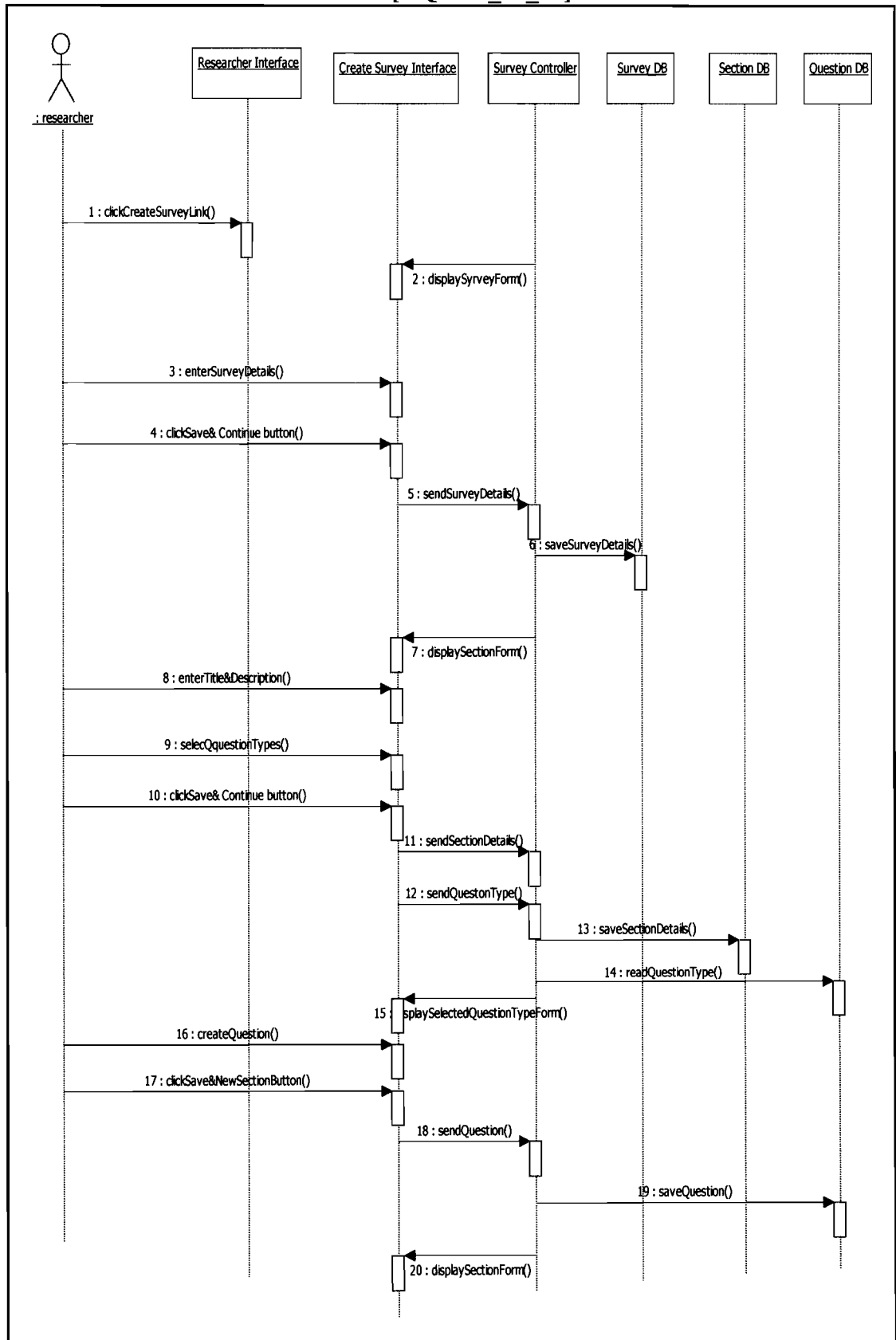
A-2: More Than One Question [OQDAS_09_03]
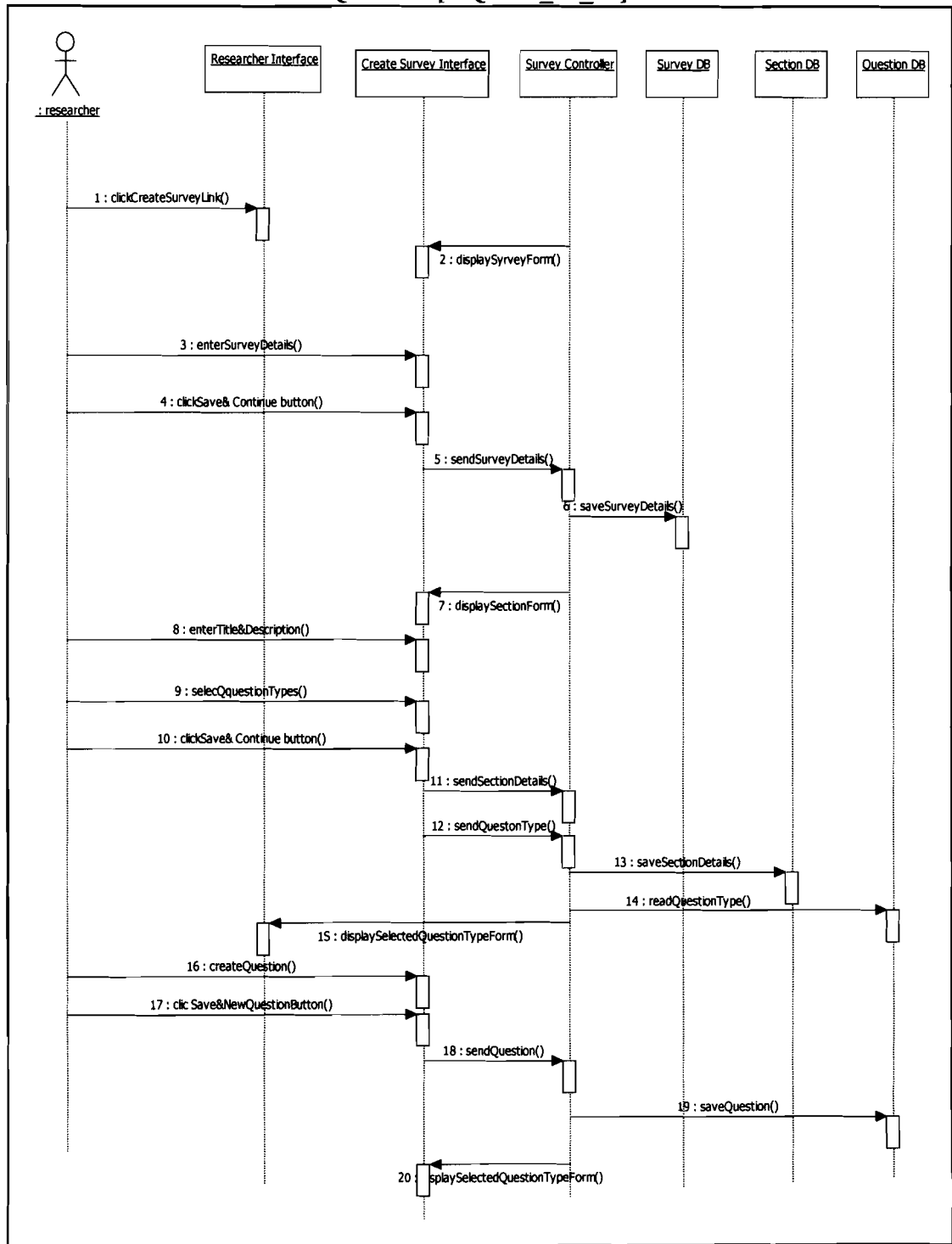
Use Case: View Survey [OQDAS_10]

Normal Flow [OQDAS_10_01]
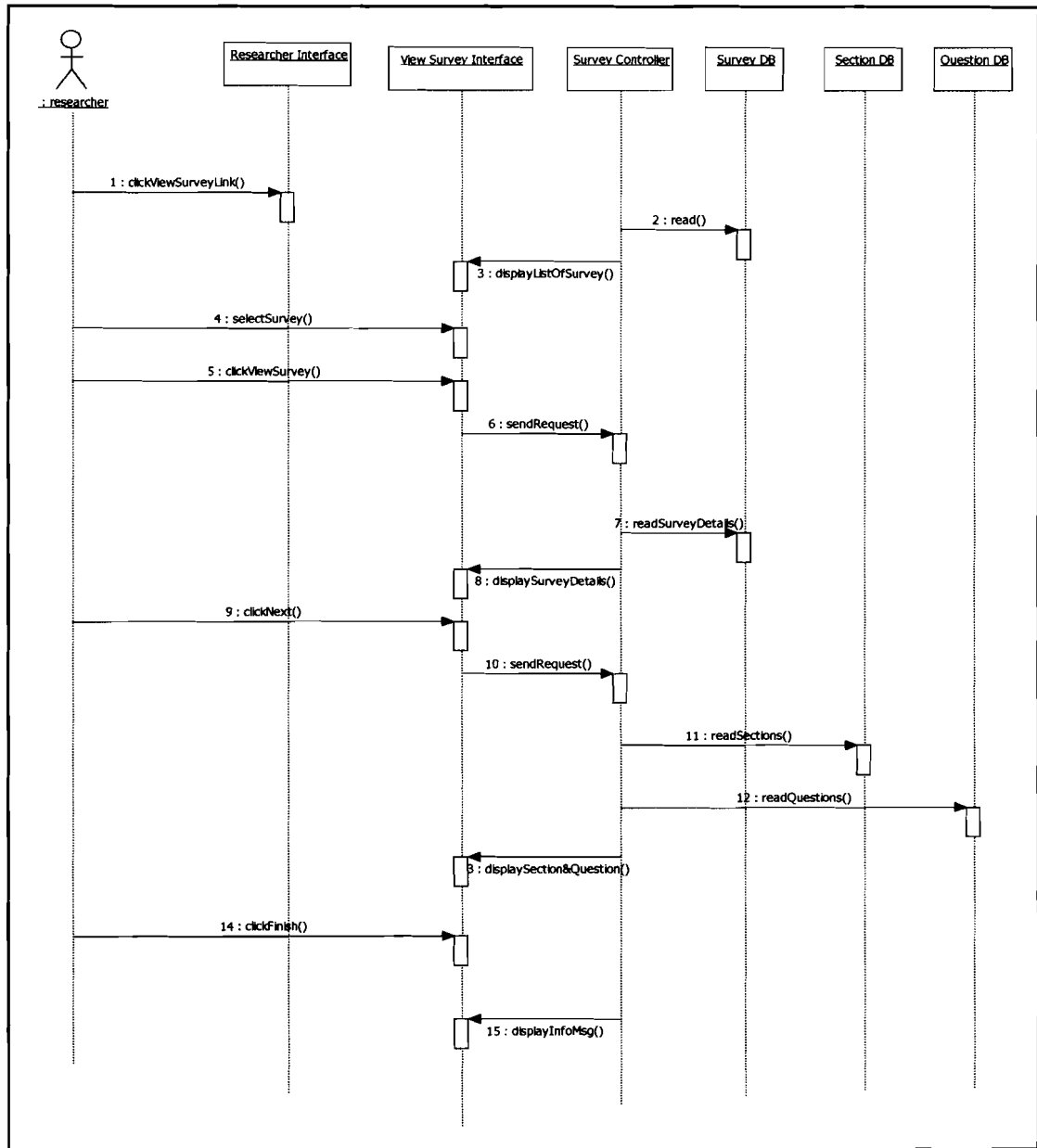
Use Case: Activate Survey [OQDAS_11]

Normal Flow [OQDAS_11_01]
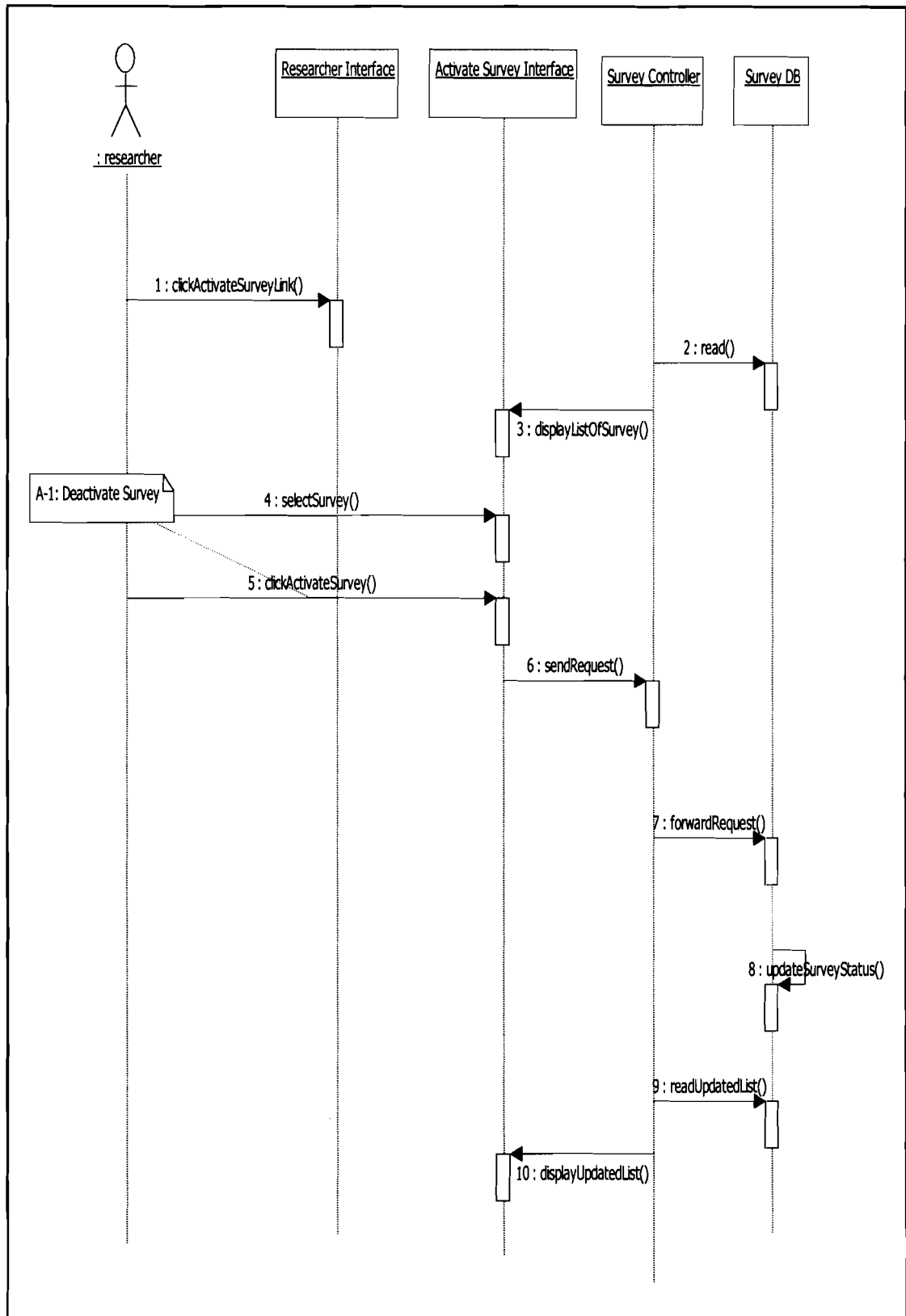
b. Extension Flows (Alternative)
A-1:   Deactivate   Survey   [OQDAS_11_02]
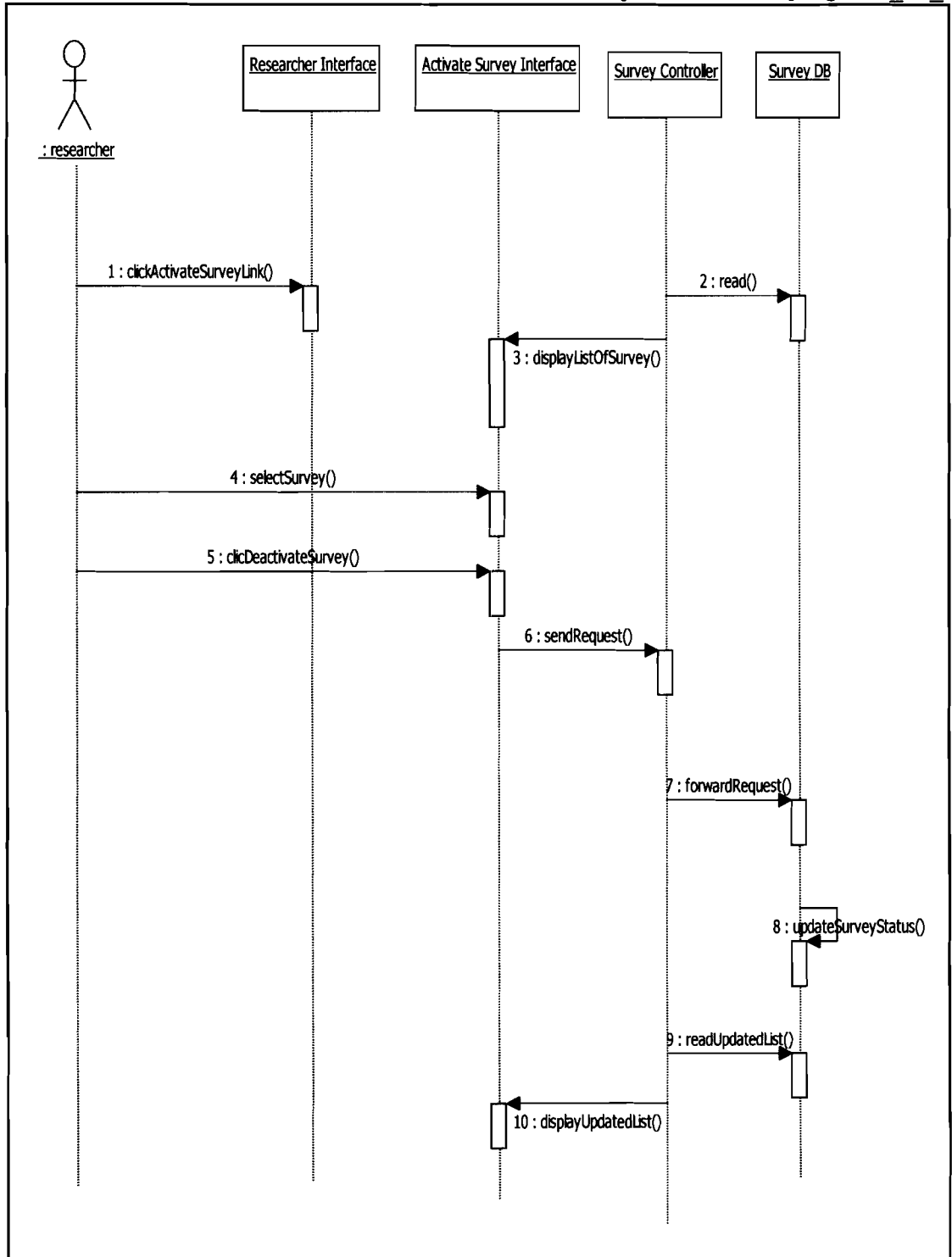
Use Case: Update Survey [OQDAS_12]

Normal Flow [OQDAS_12_01]
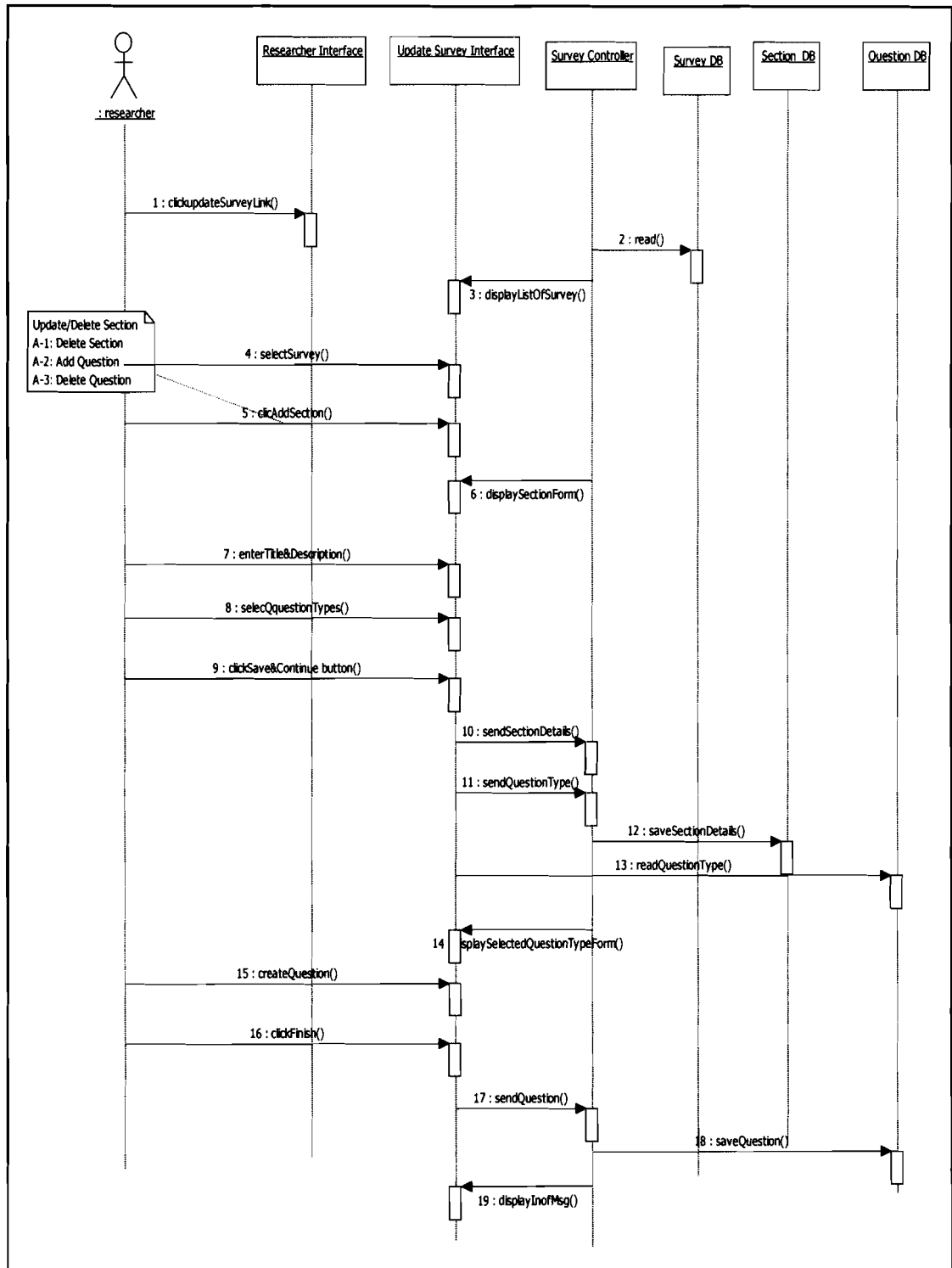
b. Extension Flows (Alternative)

A-1: Delete Section [OQDAS_12_02]
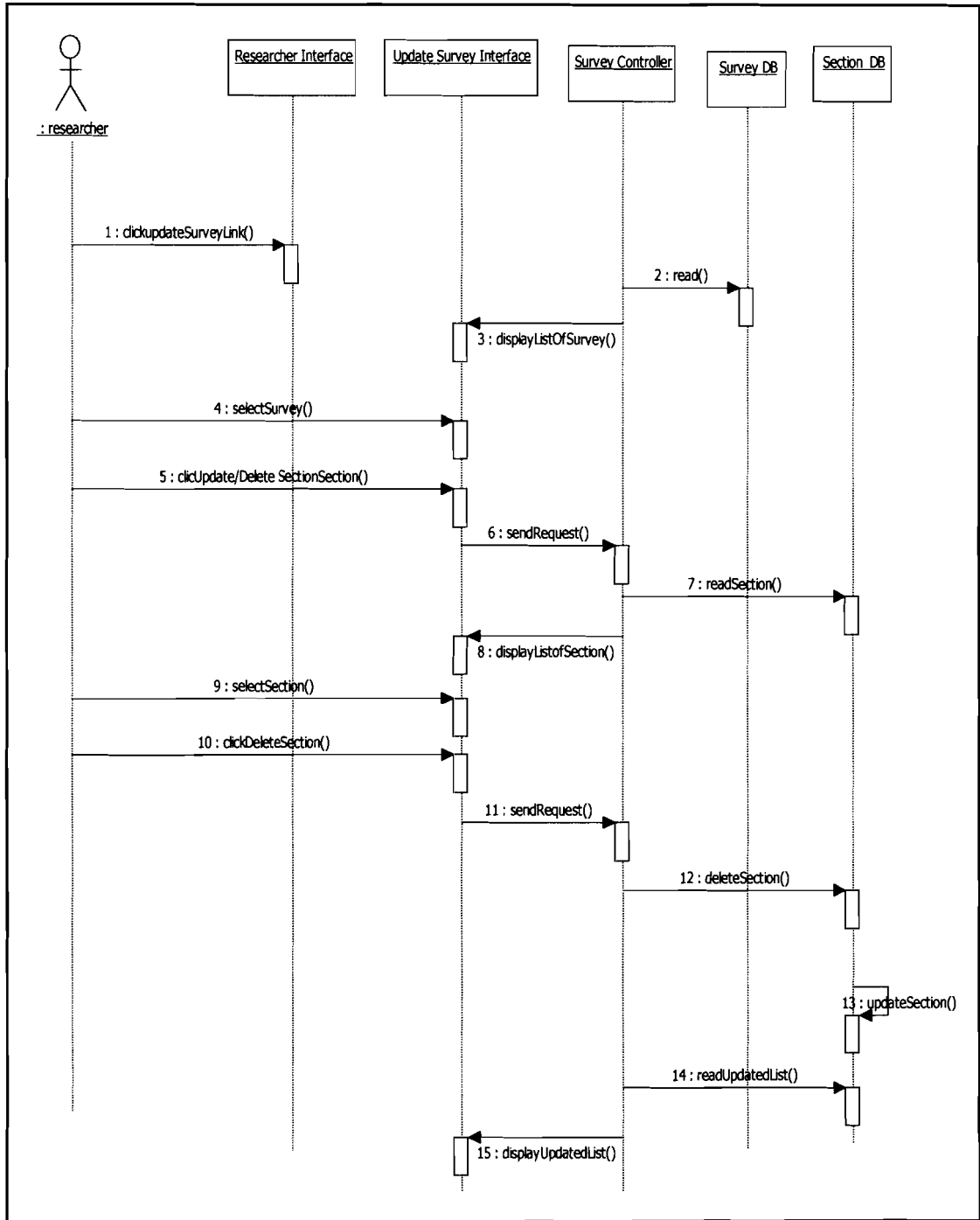
A-2: Add Question [OQDAS_12_03]
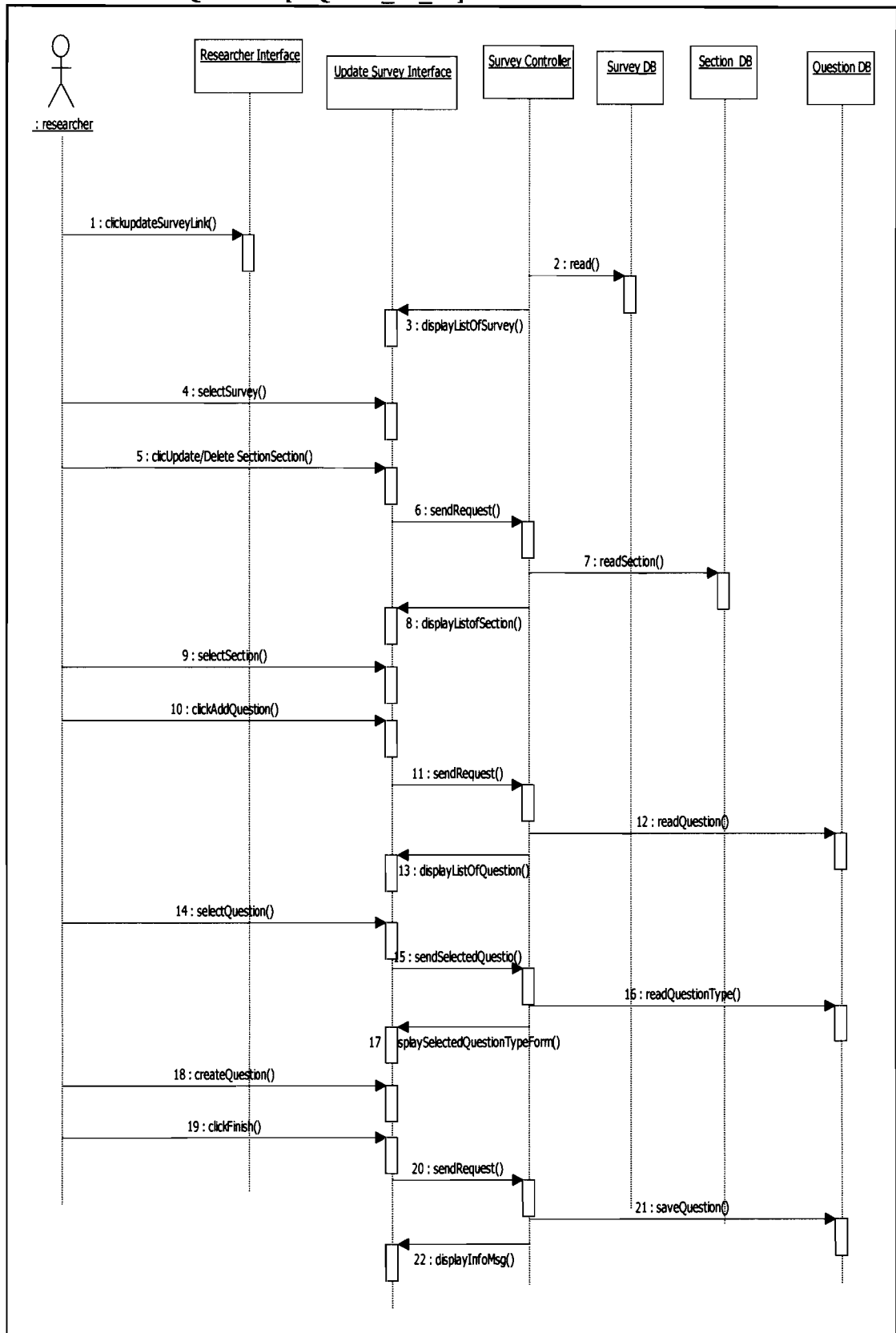
A-3: Delete Question [OQDAS_12_04]
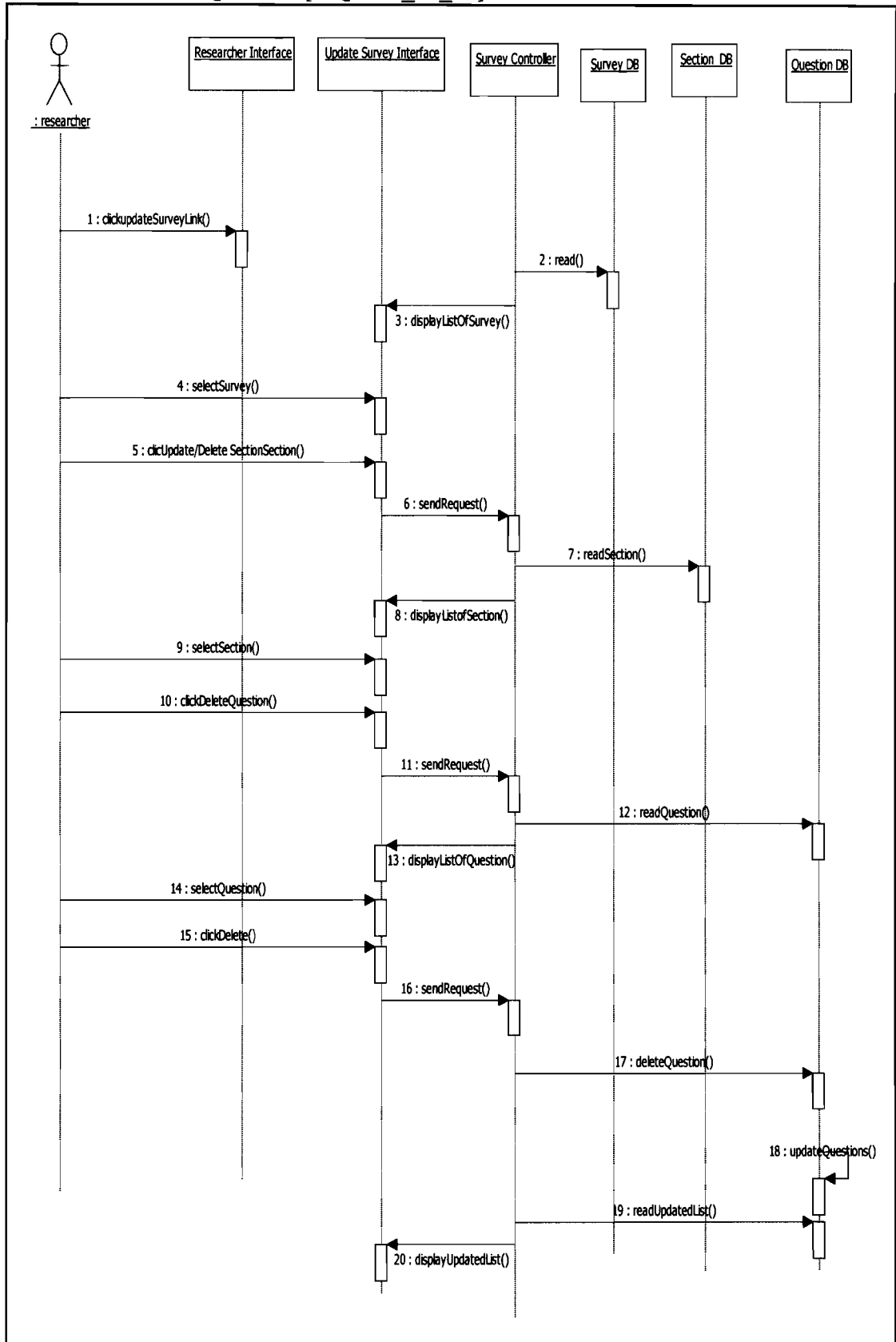
Use Case: Delete Survey [OQDAS_13]

    a. Normal Flow [OQDAS_13_01]
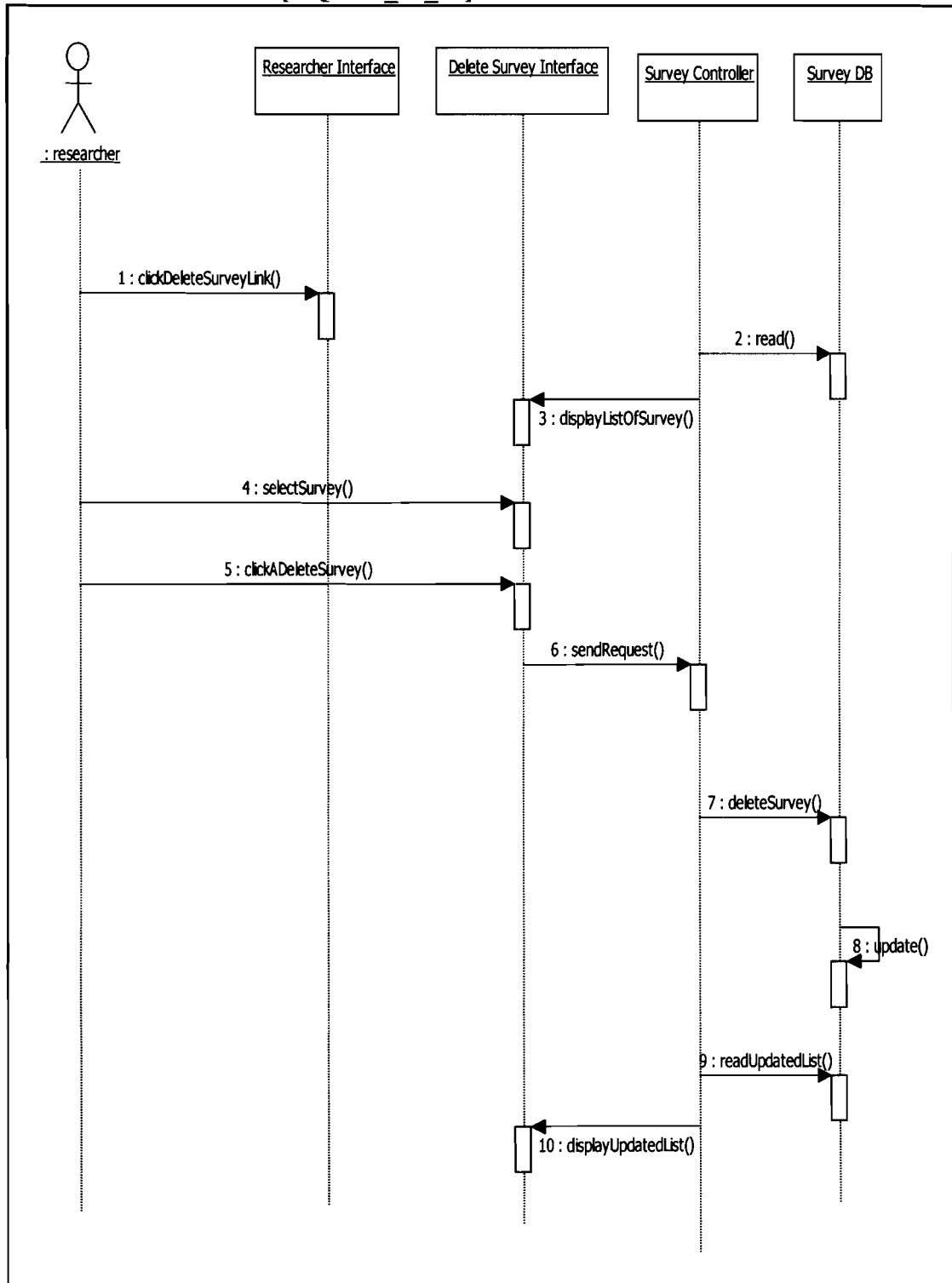
Use Case: Send Invitation Email [OQDAS_14]

Normal Flow [OQDAS_14_01]

b. Exception Flows.
E-1: missing mails or Subject [OQDAS_14_02]

: researcher

Researcher Interface

Invitation Interface

Participant Controller

Participant DB

1 : clicSendInvitation Link()

2 : displayInvitationForm()

3 : enterRequiredInfo()

4 : clickSendInvitation()

5 : sendRequest()

6 : displayErrorMsg()

7 : updateSurveyStatus()

8 : readUpdatedList()

9 : displayUpdatedList()
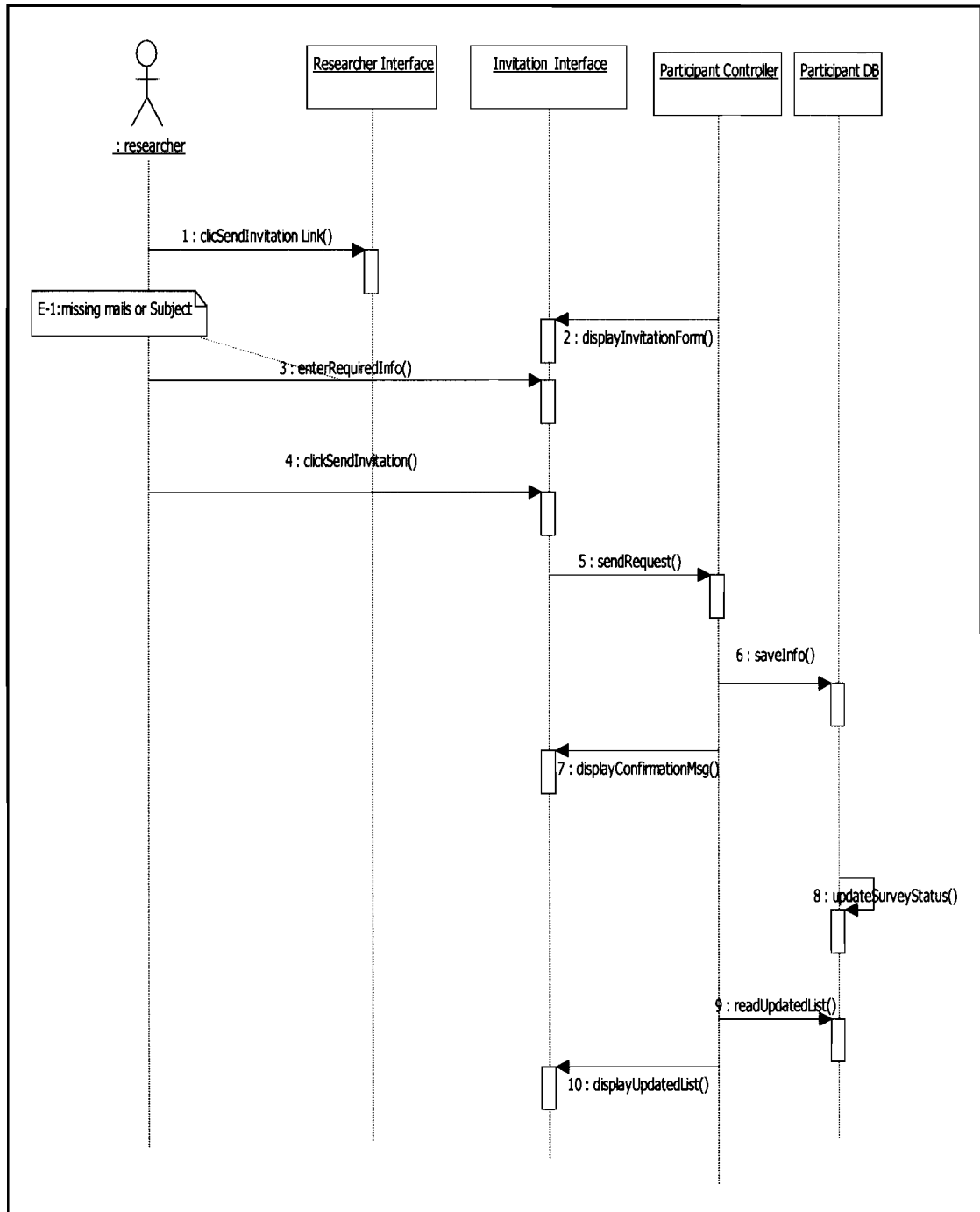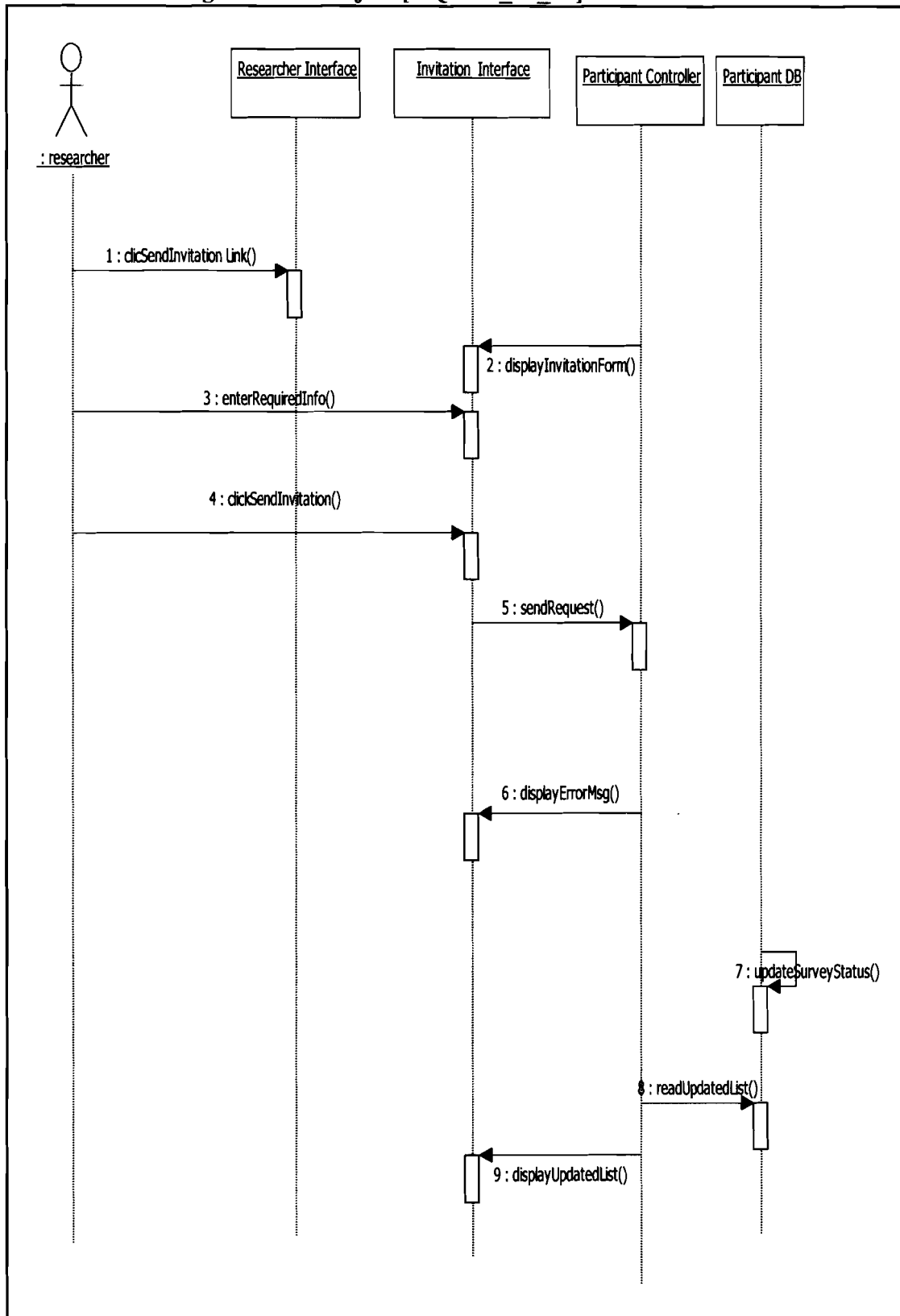
Use Case: Generate Report [OQDAS_15]

a. Normal Flow [OQDAS_15_01]
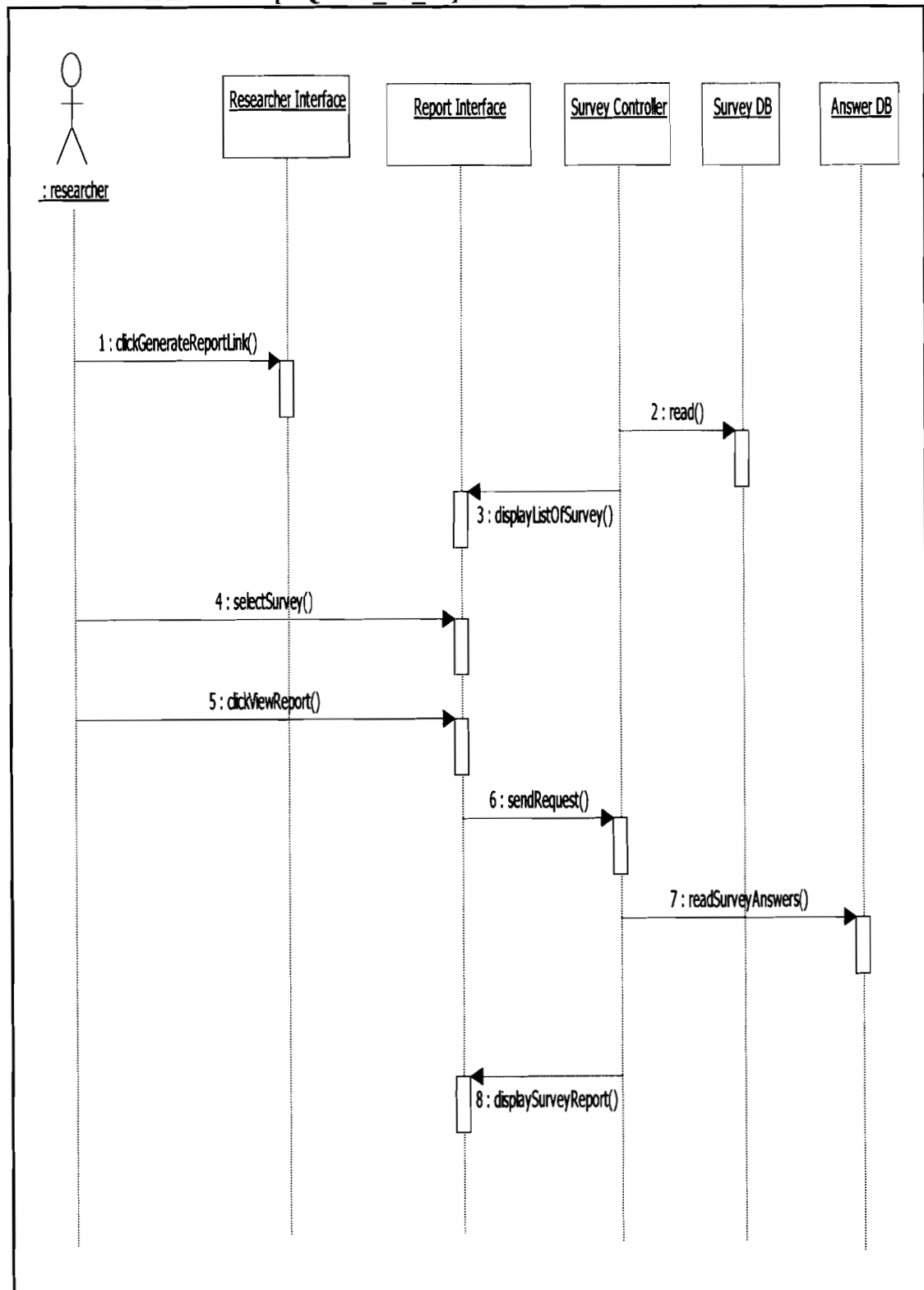
Use Case: Export Answers [OQDAS_16]

a. Normal Flow [OQDAS_16_01]
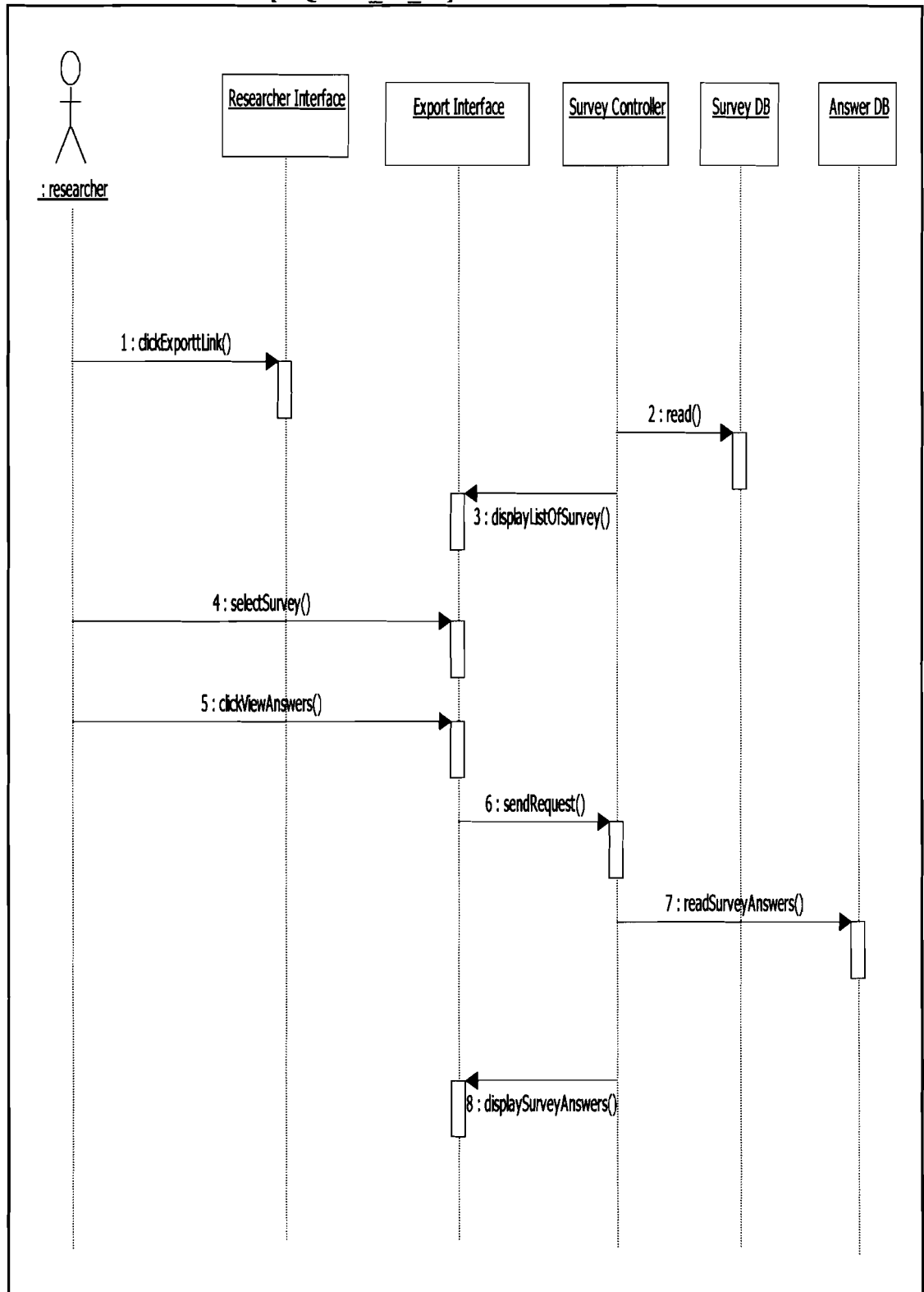
Use Case: Print Survey [OQDAS_17]

a. Normal Flow [OQDAS_17_01]
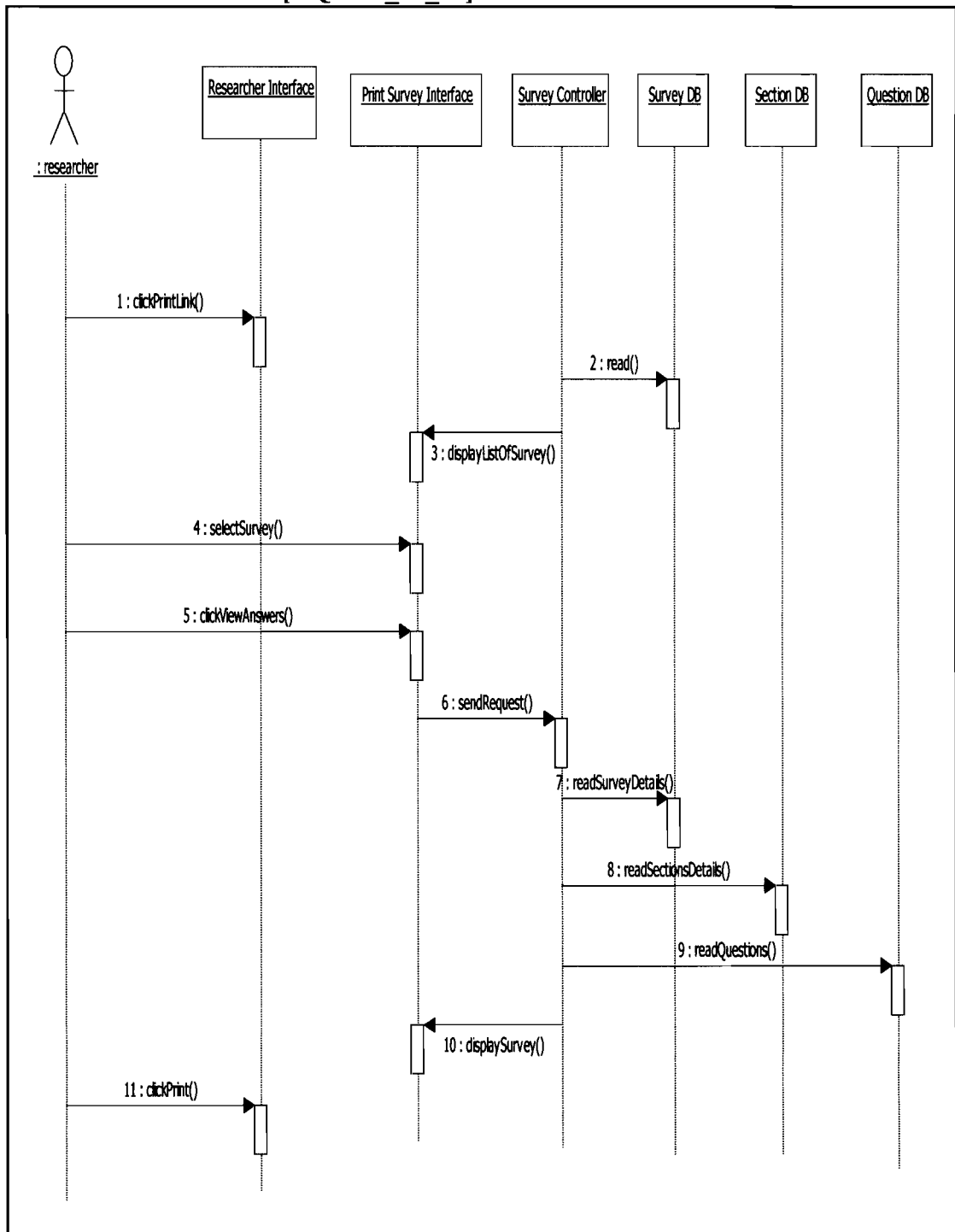
Use Case: Change Password [OQDAS_18]

a. Normal Flow [OQDAS_02_01]
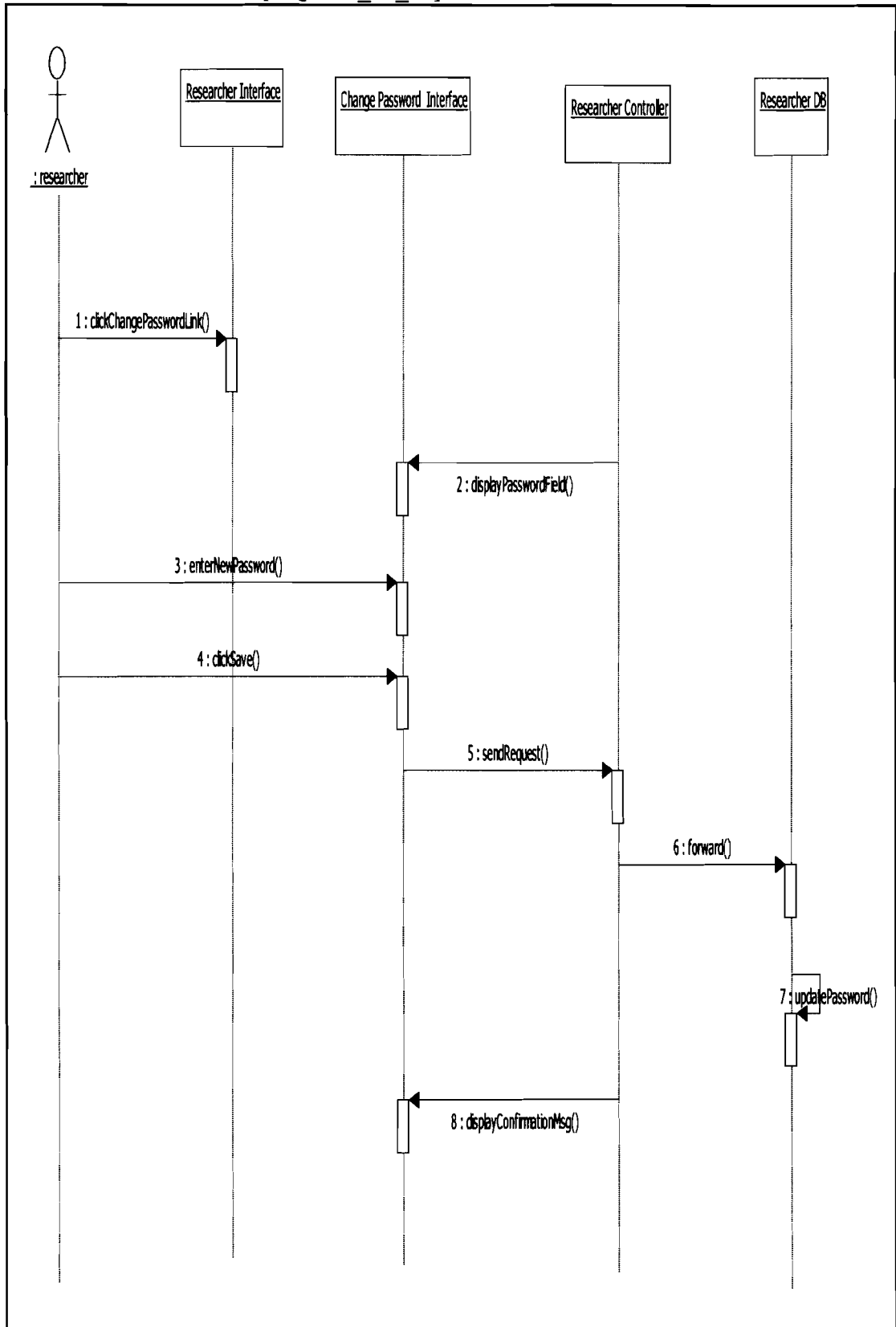
Use Case: Take Survey [OQDAS_19]

Normal Flow [OQDAS_19_01]
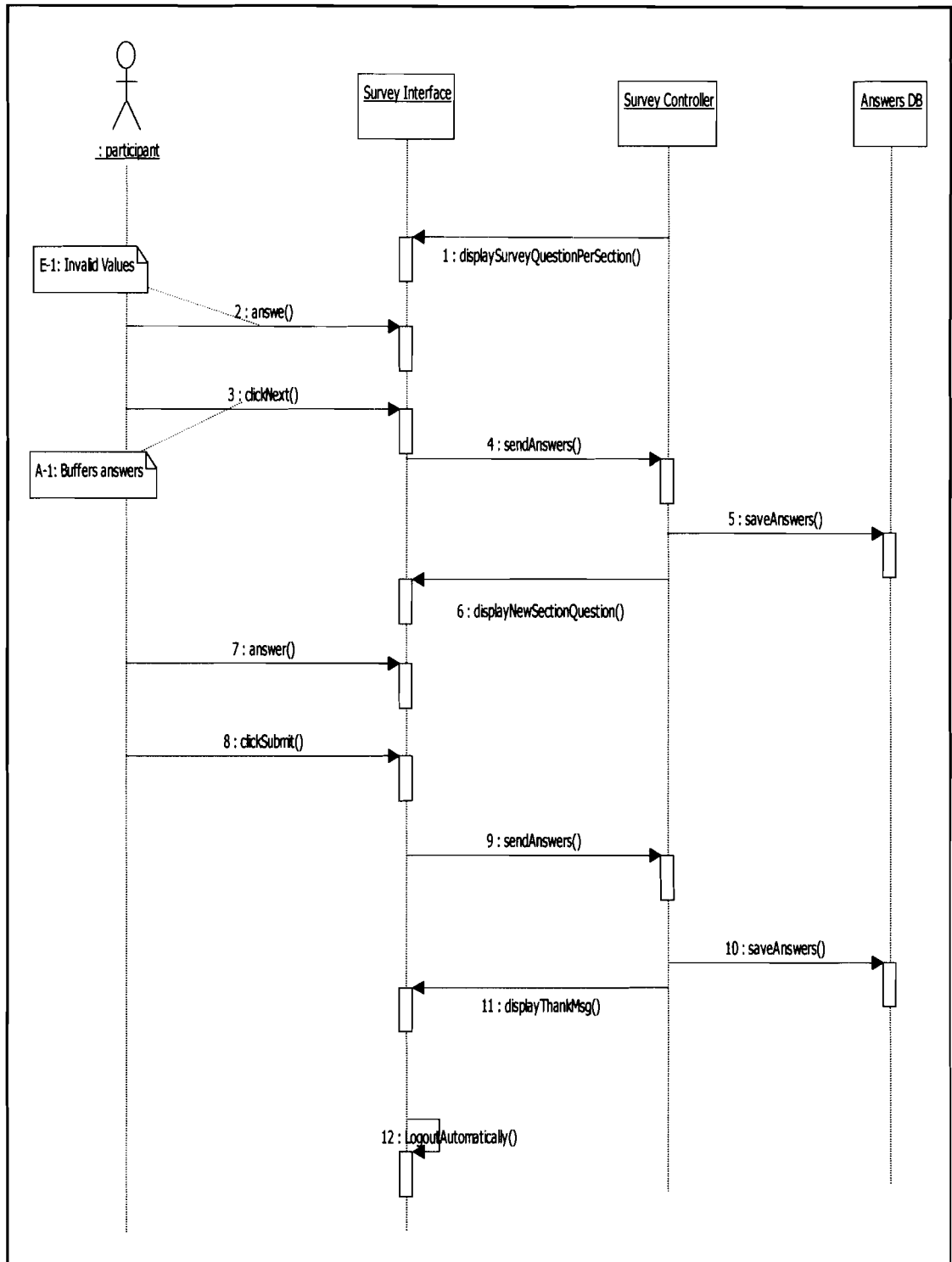
b. Extension Flows (Alternative):
A-1: Buffers answers [OQDAS_19_02]

c. Exception Flows.

117
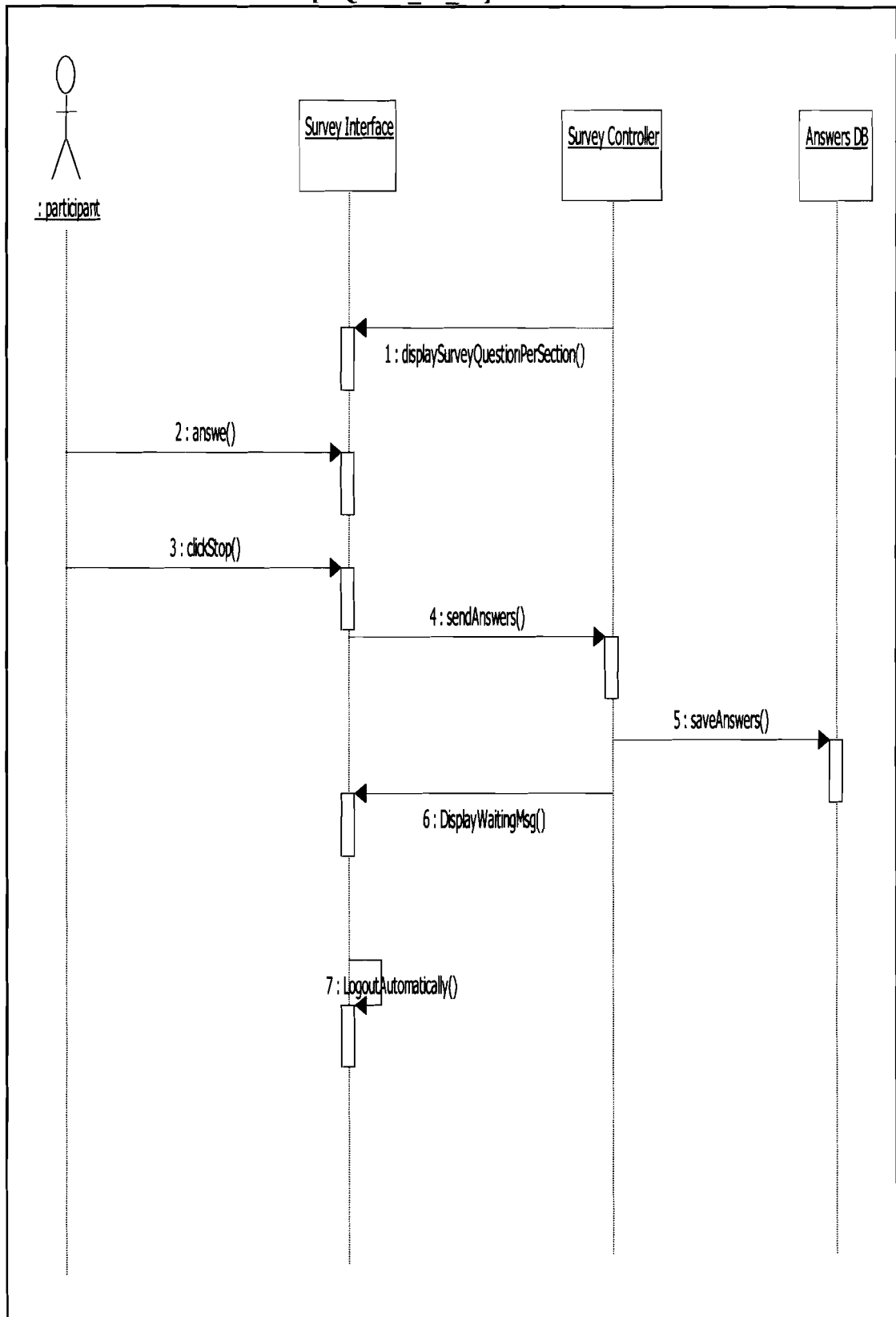
E-1: Invalid Values [OQDAS_19_03]
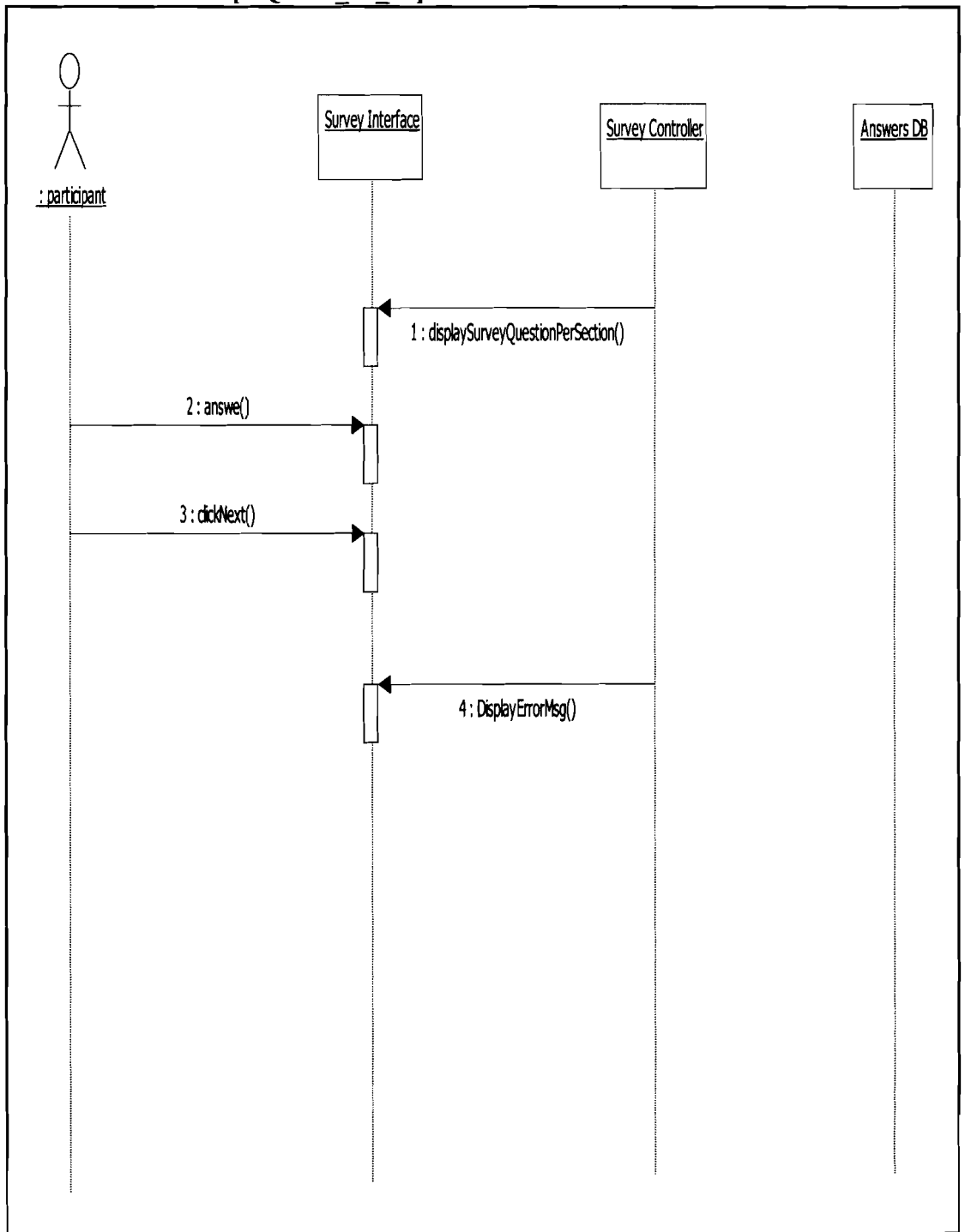
8.4. APPENDIX D: COLLABORATION DIAGRAM

Use Case: Login [OQDAS_01]
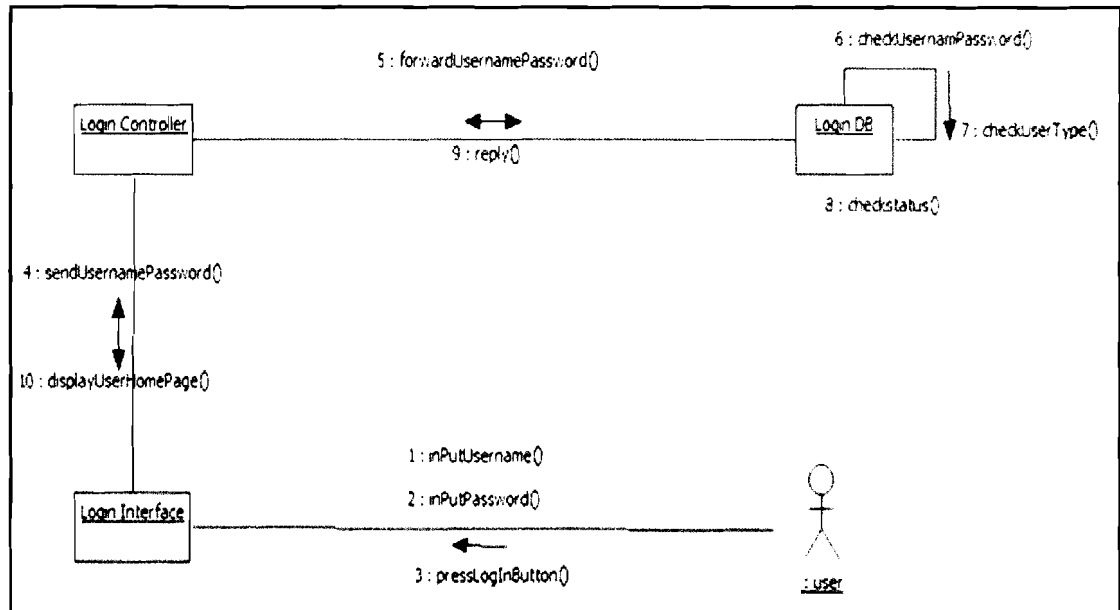
Use Case: View Researchers [OQDAS_02]
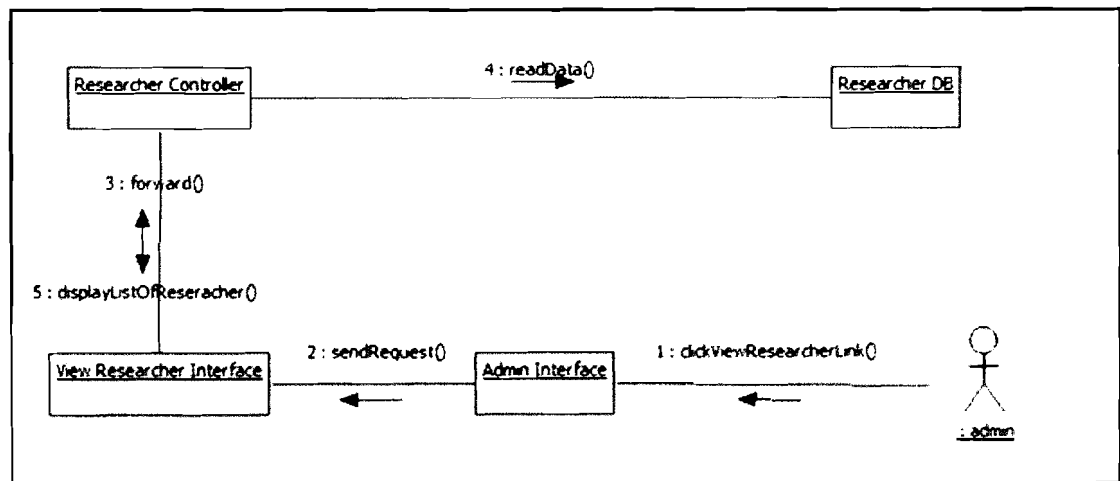
Use Case: Delete Researchers [OQDAS_04]
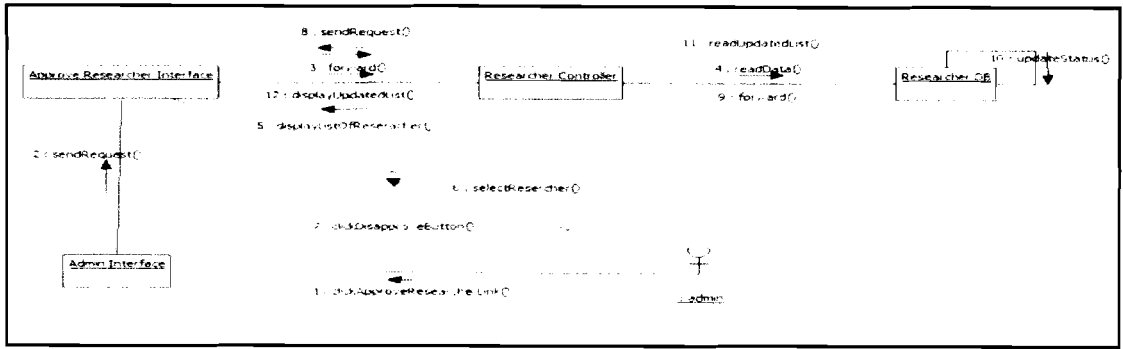
Use Case: Change DB settings [OQDAS_05]

Use Case: Change Admin's Email [OQDAS_06]

120
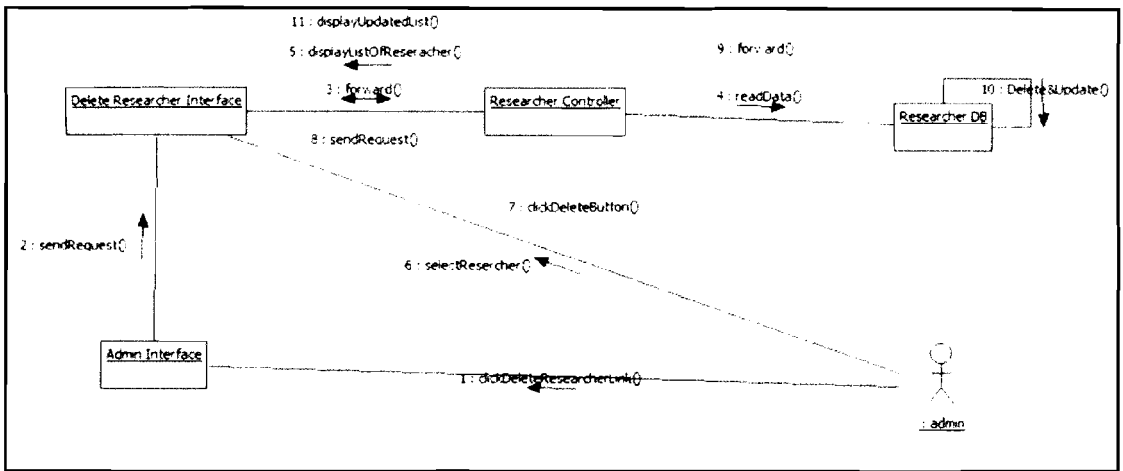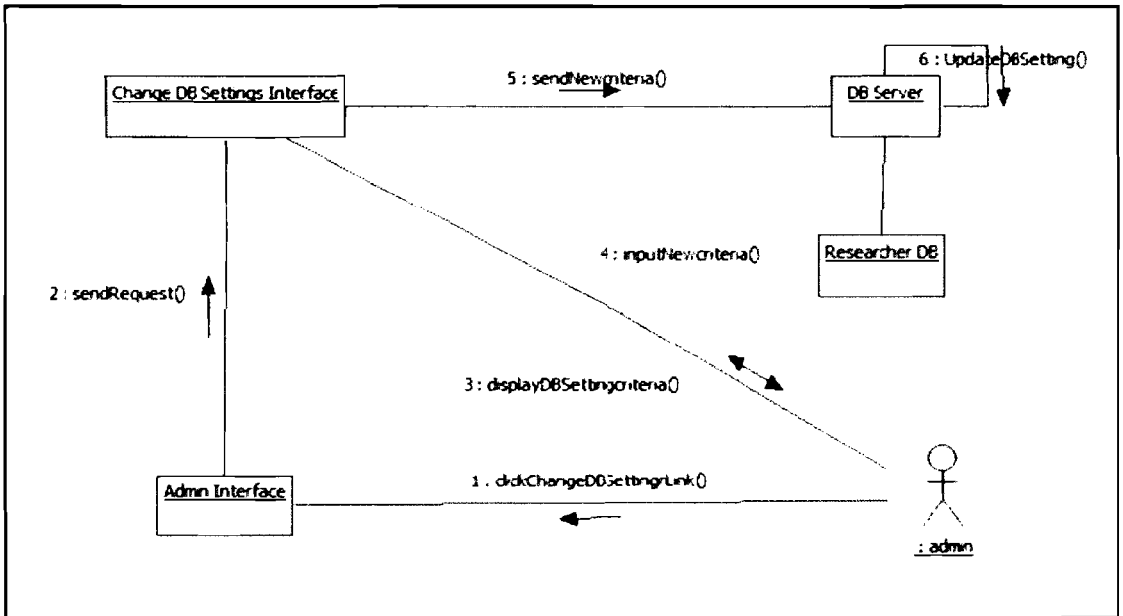
Use Case: Change Admin's Password [OQDAS_07]
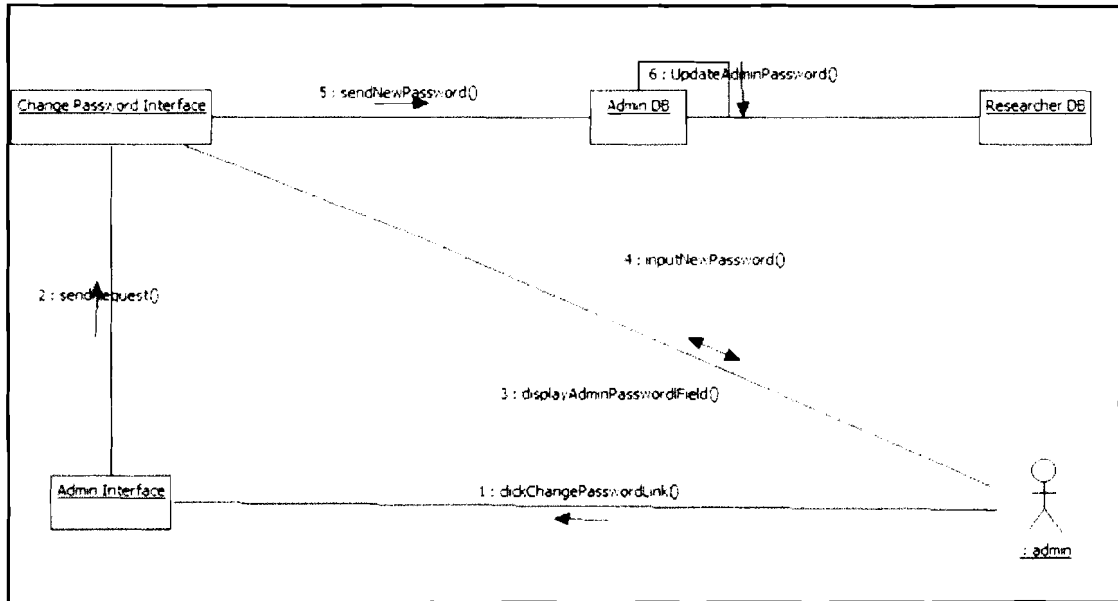
Use Case: Create Account [OQDAS_08]
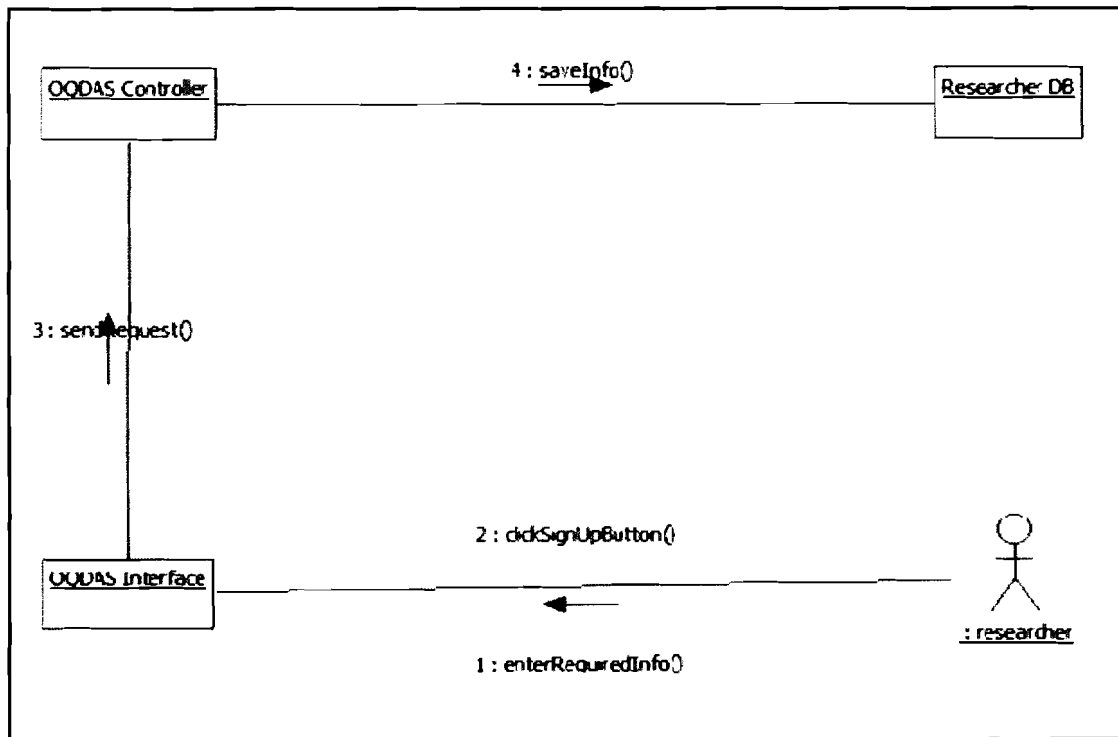
Use Case: Create Survey [OQDAS_09]

Use Case: View Survey [OQDAS_10]

122
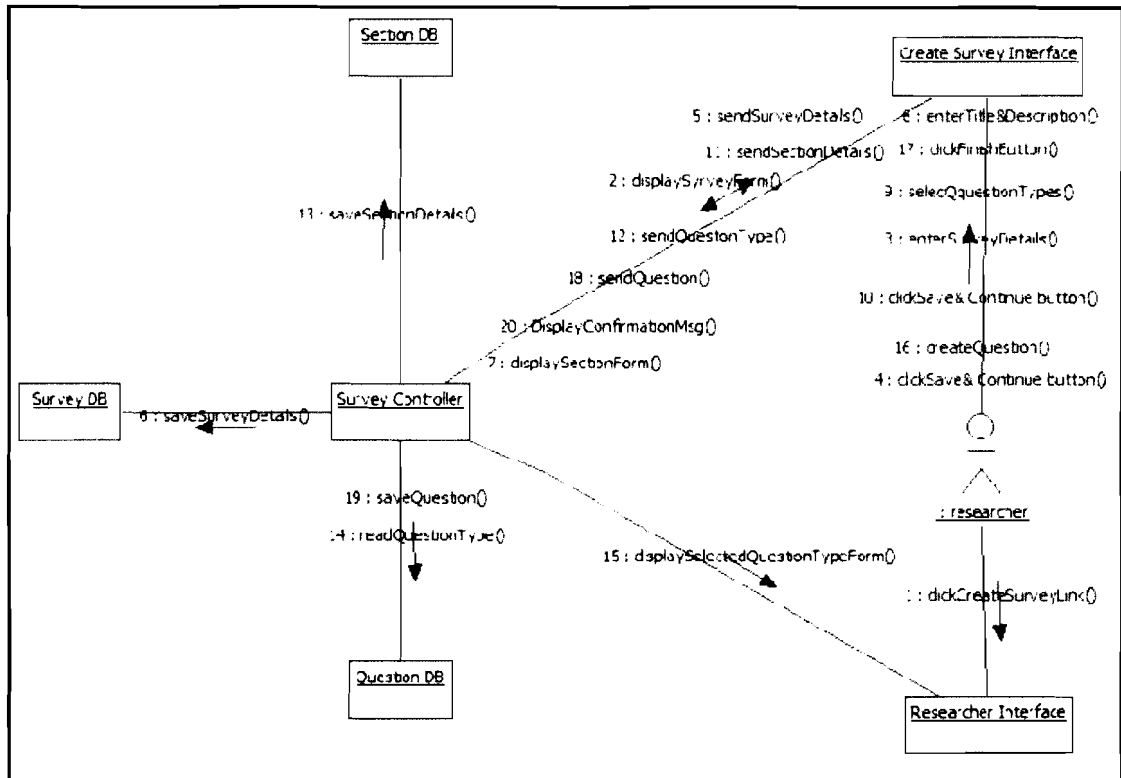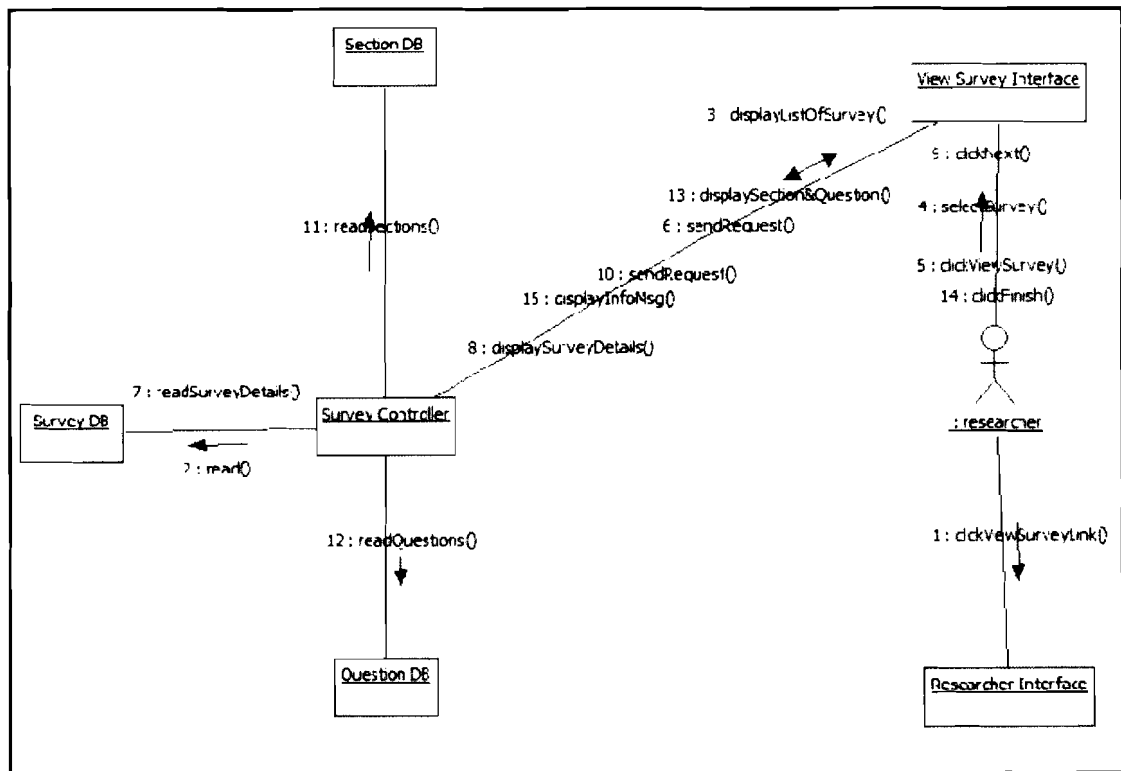
Use Case: Activate Survey [OQDAS_11]

Use Case: Update Survey [OQDAS_12]

123
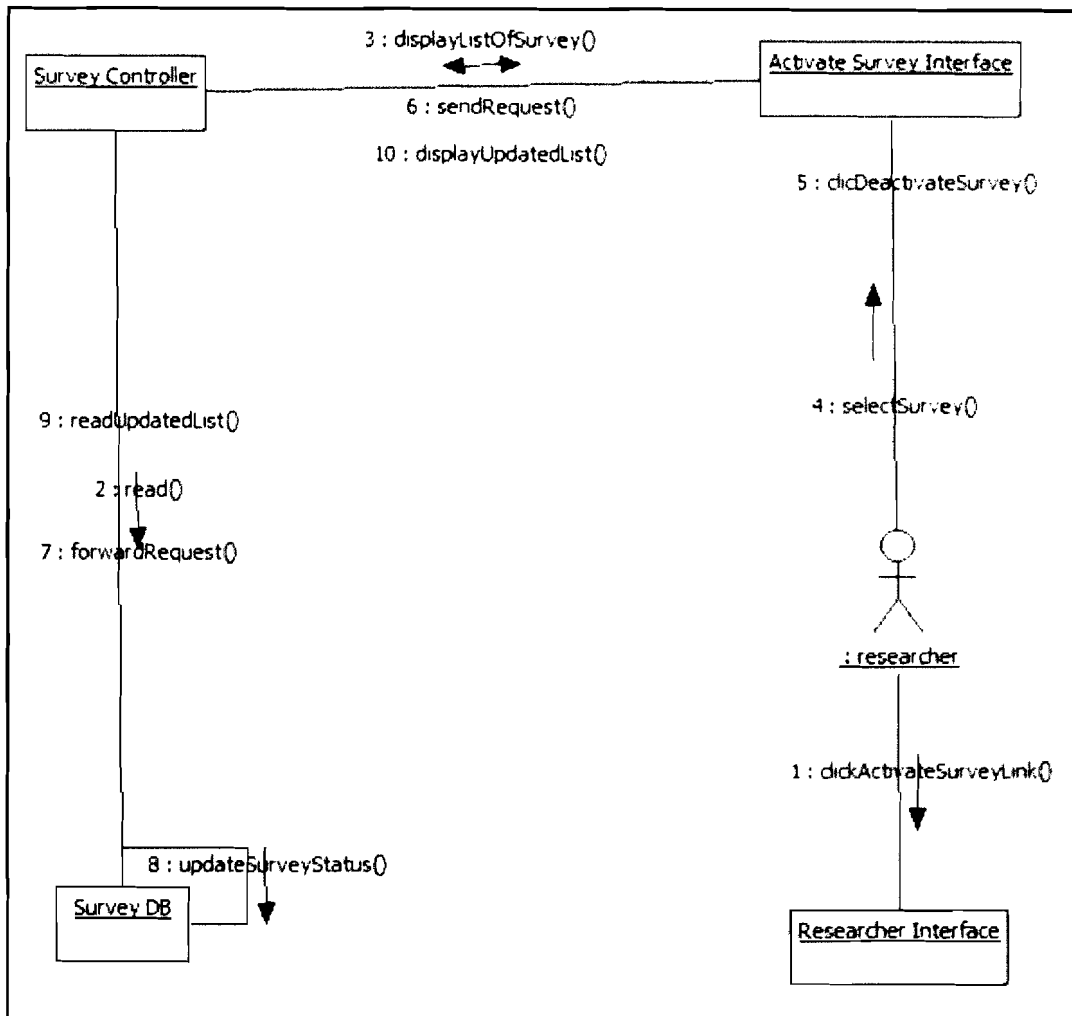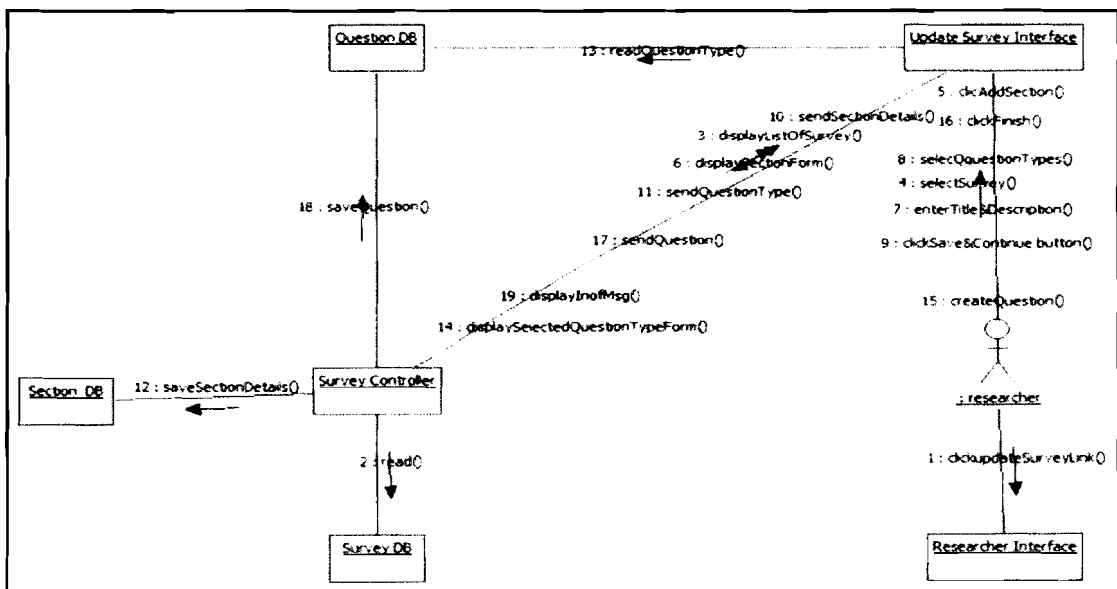
Use Case: Delete Survey [OQDAS_13]
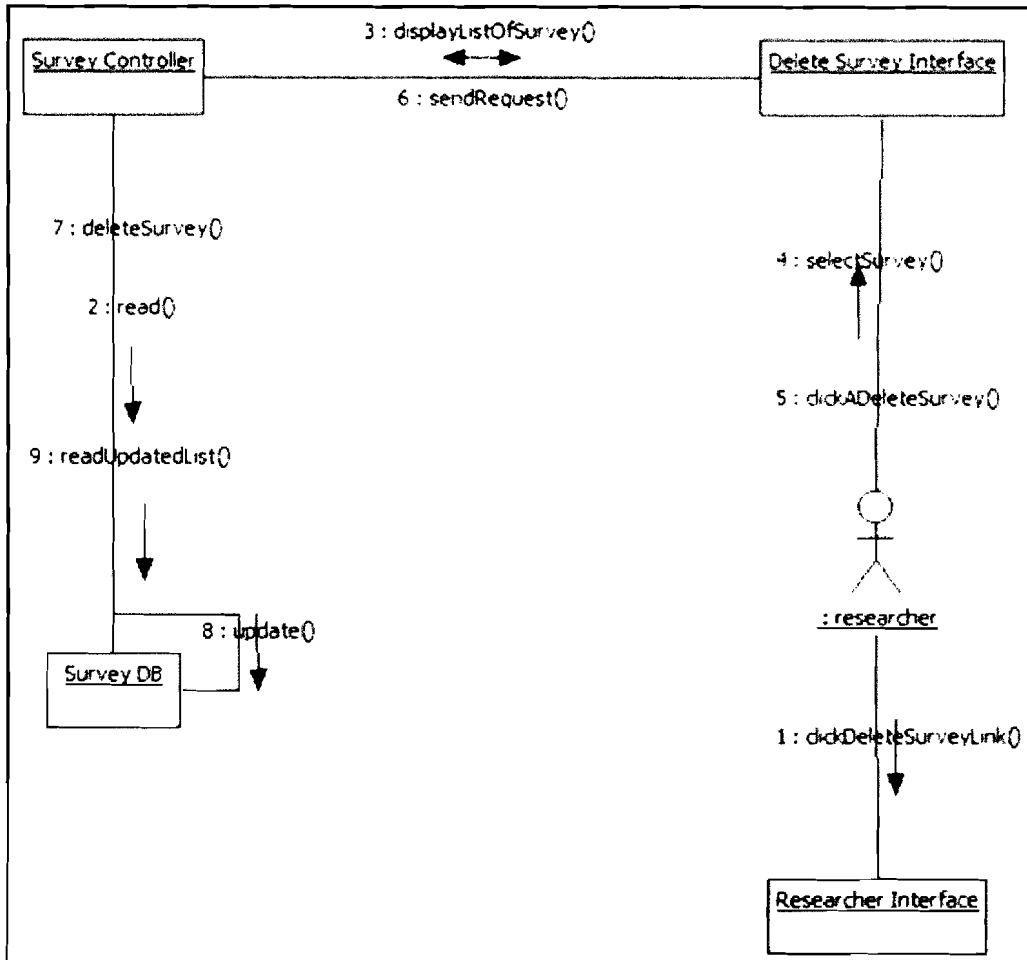
Use Case: Send Invitation Email [OQDAS_14]
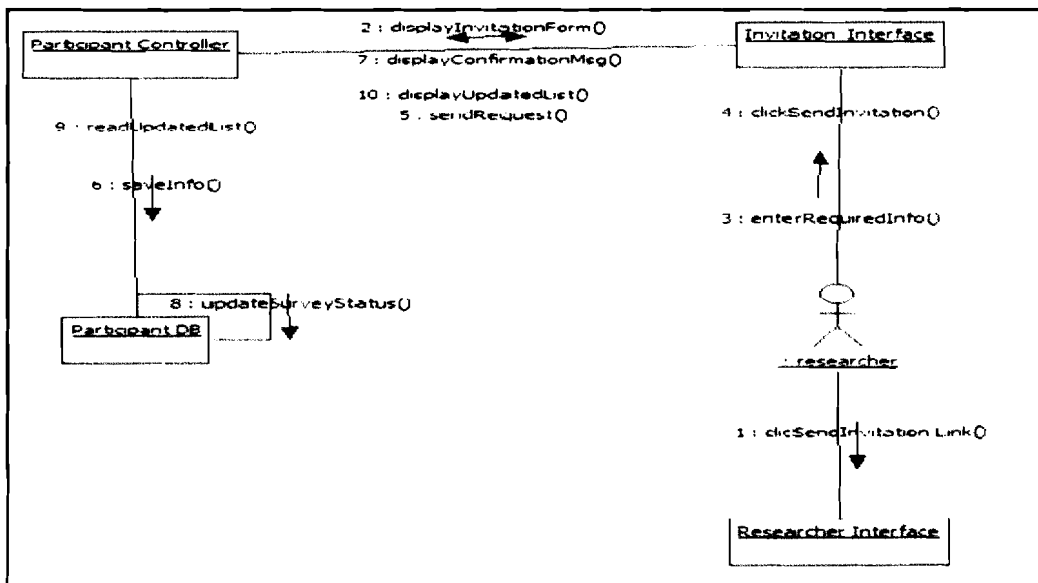
Use Case: Generate Report [OQDAS_15]

Use Case: Export Answers [OQDAS_16]

125
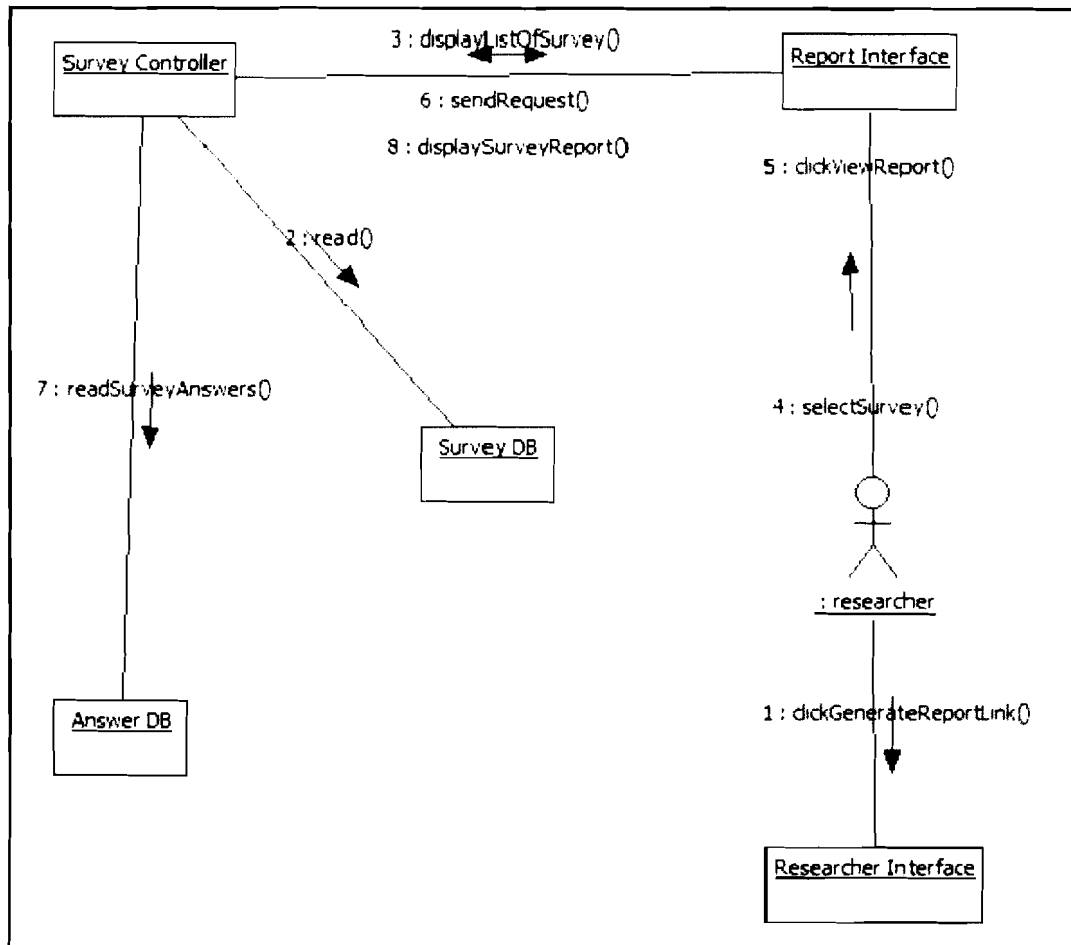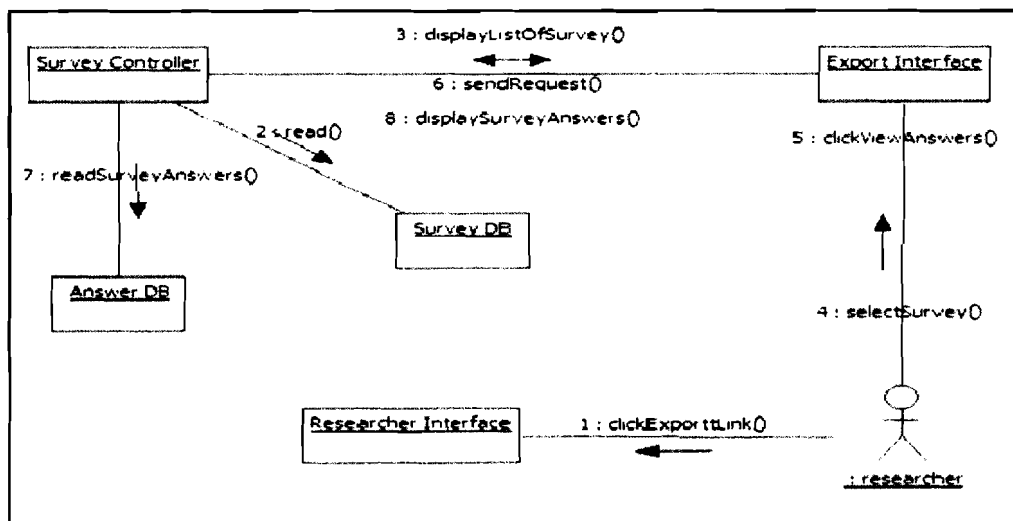
Use Case: Print Survey [OQDAS_17]

Use Case: Change Password [OQDAS_18]

126
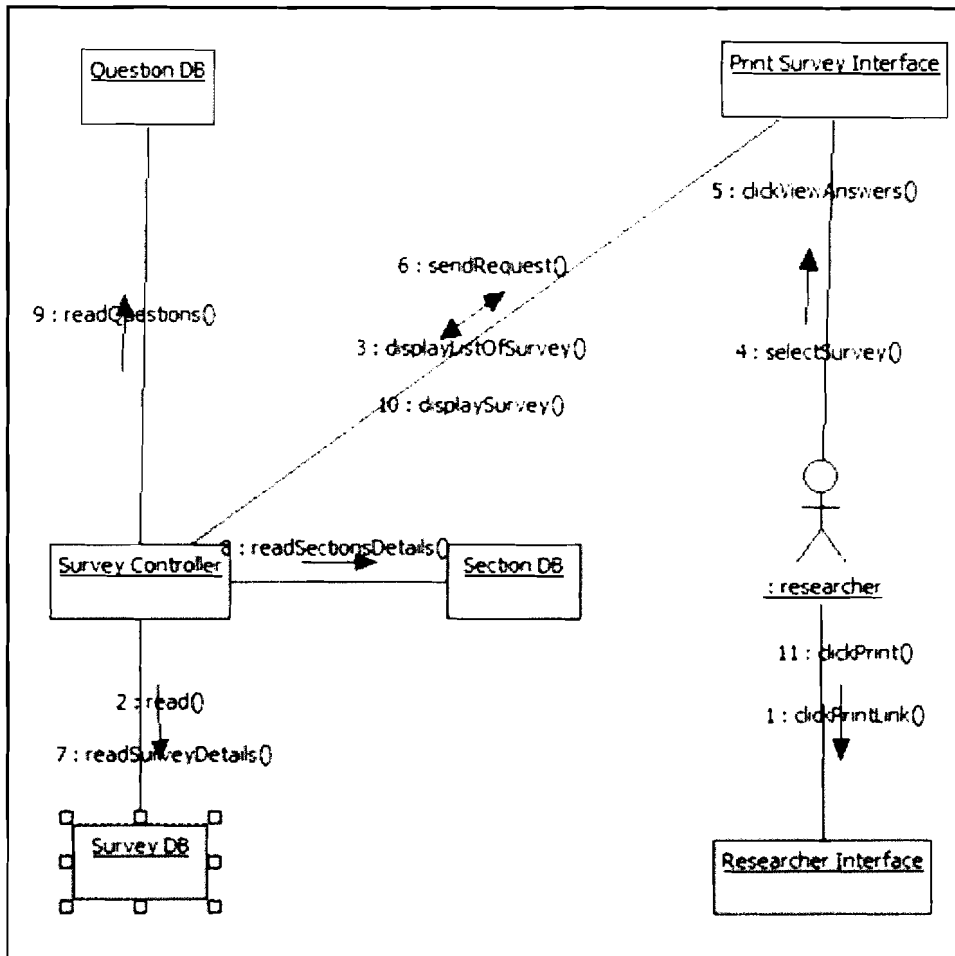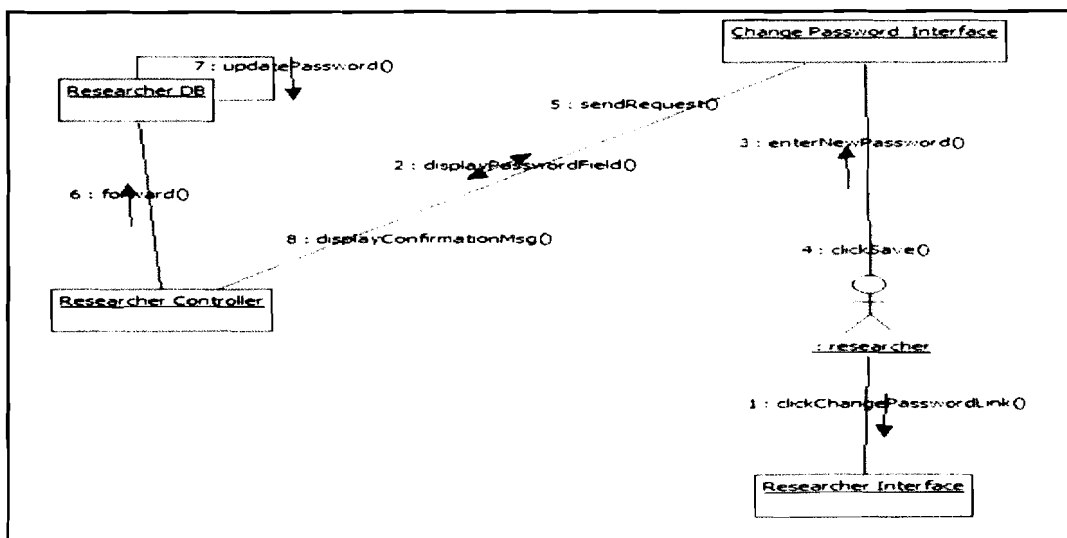
Use Case: Take Survey [OQDAS_19]
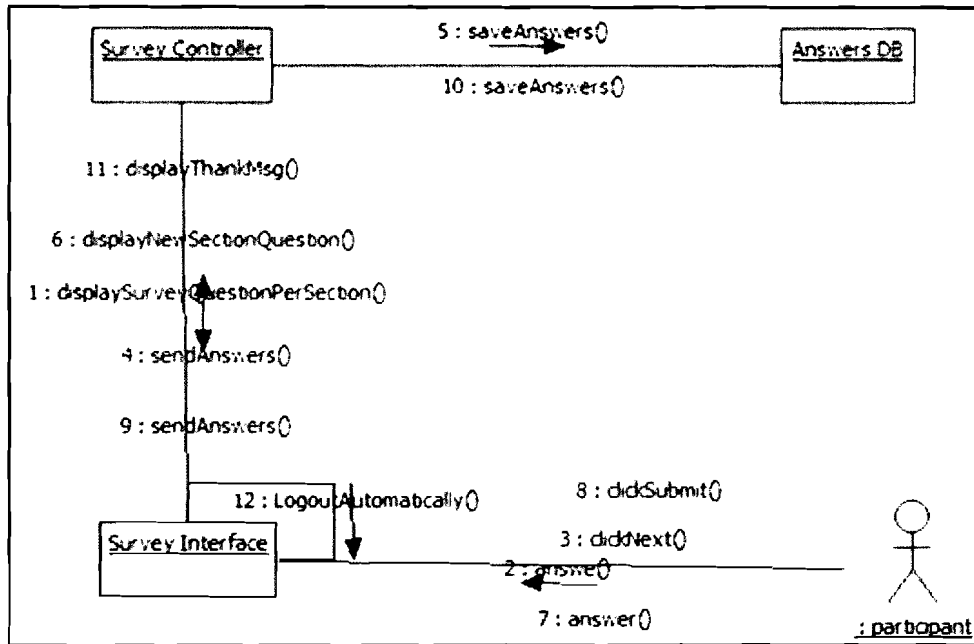
8.5. APPENDIX E: INSTALLATION GUIDELINES

Install Apache Tomcat

Apache Tomcat Setup

Choose Components

Choose which features of Apache Tomcat you want to install.

Check the components you want to install and uncheck the components you don't want to install. Click Next to continue.

Select the type of install: `Normal ▼`

Or, select the optional components you wish to install:

- ⊞ ☑ Tomcat
  - ☑ Start Menu Items
  - ☑ Documentation
  - ☐ Examples
  - ☐ Webapps

Description

Space required: 10.3MB

`< Back` `Next >` `Cancel`

Apache Tomcat Setup

Choose Install Location

Choose the folder in which to install Apache Tomcat.

Setup will install Apache Tomcat in the following folder. To install in a different folder, click Browse and select another folder. Click Next to continue.

Destination Folder

`C:\Tomcat 5.5` `Browse...`

Space required: 10.3MB
Space available: 18.5GB

`< Back` `Next >` `Cancel`

- Set the port number as 9000.

130

Apache Tomcat Setup

Installing

Please wait while Apache Tomcat is being installed.

Output folder: C:\Tomcat 5.5\webapps

[Show details]

Apache Tomcat Setup

Completing the Apache Tomcat Setup Wizard

Apache Tomcat has been installed on your computer.

Click Finish to close this wizard.

☑ Run Apache Tomcat

☐ Show Readme

[Finish] [Cancel]

Apache Service Manager

Service Manager is attempting to start the following service ...
Apache Tomcat

[Cancel] [Close]

- Copy from the cd [OQDAS] folder into C:\Tomcat 5.5\webapps
- Next step is to Install MySQL 5.0.45

Windows Installer

Preparing to install...

[Cancel]

MySQL Server 5.0 - Setup Wizard

Welcome to the Setup Wizard for MySQL Server 5.0

The Setup Wizard will install MySQL Server 5.0 release 5.0.45 on your computer. To continue, click Next.

WARNING: This program is protected by copyright law.

[Back]   [Next >]   [Cancel]

MySQL Server 5.0 - Setup Wizard

Setup Type
Choose the setup type that best suits your needs.

Please select a setup type.

○ **Typical**
Common program features will be installed. Recommended for general use.

⊙ **Complete**
All program features will be installed. (Requires the most disk space.)

○ **Custom**
Choose which program features you want installed and where they will be installed. Recommended for advanced users.

[< Back]   [Next >]   [Cancel]

132

MySQL Server 5.0 - Setup Wizard

Ready to Install the Program

The wizard is ready to begin installation.

If you want to review or change any of your installation settings, click Back. Click Cancel to exit the wizard.

Current Settings:

Setup Type:

Complete

Destination Folder:

C:\Program Files\MySQL\MySQL Server 5.0\

[< Back] [Install] [Cancel]

MySQL Server 5.0 - Setup Wizard

Installing MySQL Server 5.0

The program features you selected are being installed.

Please wait while the Setup Wizard installs MySQL Server 5.0. This may take several minutes.

Status:

[■■■]

[Cancel]

MySQL Enterprise

A MySQL Enterprise subscription is the most comprehensive offering of MySQL database software, services and support to ensure your business achieves the highest levels of reliability, security and uptime.

An Enterprise Subscription includes:

1. The MySQL Enterprise Server - The most reliable, secure, and up version of the worlds most popular open source database.

2. The MySQL Monitoring and Advisory Service database assistant.

3. MySQL Production Support - Technical you need it, along with service packs.

For more information click [More...] or visit www.mysql.com/enterprise

[More ...] [Next >]

133

The MySQL Monitoring and Advisory Service

- Automated monitoring and notification of all your MySQL servers.

- Over 70 database best practice rules ensure uptime and fast performance.

- Expert advice on how to fix problems and improve MySQL performance.

For more information click [More...] or visit www.mysql.com/enterprise

MySQL Server 5.0 - Setup Wizard
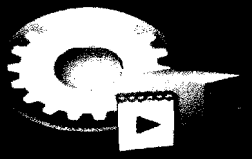
Wizard Completed

Setup has finished installing MySQL Server 5.0. Click Finish to exit the wizard.

☑ **Configure the MySQL Server now**
Use this option to generate an optimized MySQL config file, setup a Windows service running on a dedicated port and to set the password for the root account.

MySQL Server Instance Configuration Wizard

Welcome to the MySQL Server Instance Configuration Wizard 1.0.8

The Configuration Wizard will allow you to configure the MySQL Server 5.0 server instance. To Continue, click Next.

134

MySQL Server Instance Configuration Wizard

MySQL Server Instance Configuration

Configure the MySQL Server 5.0 server instance.

Please select a configuration type.

○ **Detailed Configuration**

Choose this configuration type to create the optimal server setup for this machine.

⊙ **Standard Configuration**

Use this only on machines that do not already have a MySQL server installation. This will use a general purpose configuration for the server that can be tuned manually.

[< Back] [Next >] [Cancel]

MySQL Server Instance Configuration Wizard

MySQL Server Instance Configuration

Configure the MySQL Server 5.0 server instance.

Please set the Windows options.

☑ **Install As Windows Service**

This is the recommended way to run the MySQL server on Windows.

Service Name: MySQL5   ▼

☑ Launch the MySQL Server automatically

☑ **Include Bin Directory in Windows PATH**

Check this option to include the directory containing the server / client executables in the Windows PATH variable so they can be called from the command line.

[< Back] [Next >] [Cancel]

Note: Please set password as [123].

MySQL Server Instance Configuration Wizard

MySQL Server Instance Configuration

Configure the MySQL Server 5.0 server instance.

Please set the security options.

☑ **Modify Security Settings**

New root password: [**********]   Enter the root password.

Confirm: [**********]   Retype the password.

☐ Enable root access from remote machines

☐ Create An Anonymous Account

This option will create an anonymous account on this server. Please note that this can lead to an insecure system.

[< Back] [Next >] [Cancel]

135

MySQL Server Instance Configuration Wizard

MySQL Server Instance Configuration

Configure the MySQL Server 5.0 server instance.

Ready to execute ...

- Prepare configuration
- Write configuration file
- Start service
- Apply security settings

Please press [Execute] to start the configuration.

[< Back] [Execute] [Cancel]

MySQL Server Instance Configuration Wizard

MySQL Server Instance Configuration

Configure the MySQL Server 5.0 server instance.

Processing configuration ...

- Prepare configuration
- Write configuration file   (C:\Program Files\MySQL\MySQL Server 5.0\my.ini)
- Start service
- Apply security settings

Configuration file created.
Windows service MySQL5 installed.
Service started successfully.
Security settings applied.

Press [Finish] to close the Wizard.

[Finish]

- Next step is to restore DB backup

136

8.6. APPENDIX F: USER MANUAL (SNAPSHOT)

Getting Started

Link to Admin Login Page: http://localhost:9999/survey2/view/admin/

Link to Researcher Login Page: http://localhost:9999/survey2

Link to Responder Login Page: http://localhost:9999/survey2/view/Responder/

Login/Sign Up

In case of invlaid user name or password

Administrator Home Page

Online Questionnaires
Data Analysis System

archers

Disapprove

searchers

DB Settings

Admin Email

Password

How to create a survey

It is very easy to create survey here Follow following steps

1 Click on create survey link on left menu
2 You will see a form Enter here survey details
3 Now click on Save & Continue button You will see a new Section Form
4 Eneter Section title and description and select question types from the
   drop down menu And click on save&Continue Button
5 Now you will see the selected question type form Create here question
6 There are 3 Buttons here to submit question

   (i) Save&New Question-Question will be saved and a new form for similar
   type question displayed
   (ii)Save&New Section-Question will be saved and new Section form will be displayed
   (iii)Finish-Question will be saved and survey creation will be finished And a message
   screen will be displayed You can view surveyby clicking on link on this screen

View Researchers

Online Questionnaires
Data Analysis System

List Of Researchers:

List of all researchers is given bellow

dddd	ll@gmail.com	Disapproved	300
zaq	e100032@yahoo.com	Disapproved	sro
yyy	zaq20112011@gmail.com	Approved	1

Approve/Disapprove Researcher

Before Approvment   After Approvment

Online Questionnaires **Data Analysis System**	**Online Questionnaires** **Data Analysis System**

Delete Researcher

Before   After

List Of Researchers:

List of all researchers is given below You can delete a researcher and everything related to him by clicking on coresponding actions

dddd	Disapproved	ti@gmail.com	Delete Now
zaq	Approved	s100032@yahoo.com	Delete Now
yyy	Approved	zaq20112011@gmail.com	Delete Now

List Of Researchers:

List of all researchers is given below You can delete a researcher and everything related to him by clicking on coresponding actions

zaq	Approved	s100032@yahoo.com	Delete Now
yyy	Approved	zaq20112011@gmail.com	Delete Now

Change Database Settings

esearchers

ve/Disapprove

Researchers

ge DB Settings

ge Admin Email

ge Password

Change Database Settings:

DB User Name:

DB Password:

DB Url:

Save Changes

Researcher Home Page

How to create a survey

It is very easy to create survey here Follow following steps

1. Click on create survey link on left menu
2. You will see a form.Enter here survey details
3. Now click on Save & Continue button. You will see a new Section Form
4. Enter Section title and description and select question types from the drop down menu.And click on save&Continue Button
5. Now you will see the selected question type form.Create here question
6. There are 3 Buttons here to submit question

(i) Save&New Question-Question will be saved and a new form for similar type question displayed
(ii)Save&New Section-Question will be saved and new Section form will be displayed.
(iii)Finish-Question will be saved and survey creation will be finished.And a message screen will be displayed You can view survey by clicking on link on this screen

Create survey

Enter Survey Details **Enter Section Details** **Enter Question Details**

Notes:Please refer Appendix XXX For more question types.

There are 3 Buttons here to submit question:

141

a) Save&New Question-Question will be saved and a new form for similar type question displayed.
b) Save&New Section-Question will be saved and new Section form will be displayed.
c) Finish-Question will be saved and survey creation will be finished.the follwoing message screen will be displayed. You can view survey by clicking on link on this screen.

```
           Survey is created successfully !

             Your survey is created successfully it is currently not activated
   It is recommended to view survey before activation  Click on view survey to view survey
```

View Survey

Enter Survey Details	Section 1	Section 2

The follwoing message screen will be displayed after viewing the survey.You can go to activate survey by clicking on link on this screen.

```
Survey view is completed.This survey is not activated yet.You can't send
invitations to responders until you activate the survey.To activate now Click Here
or to activate later please select Activate/Deactivate option on home screen and
after activation successfully click on Send invitation option.
```

Activate/Deactivate Survey

Before Activation   After Activation

List Of Surveys:				List Of Surveys:			
List of all surveys created by you is given below A short detail of all surveys is also given here You can activate or deactivate survey by clicking on a action				List of all surveys created by you is given below A short detail of all surveys is also given here You can activate or deactivate survey by clicking on a action			
next one	Status :Activated	2011-12-13 15:46:21.0	Deactivate Now	next one	Status :Activated	2011-12-13 15:46:21.0	Deactivate Now
survey title	Status :Deactivated	2012-01-02 07:22:25.0	Activate Now	survey title	Status :Activated	2012-01-17 12:35:0	Deactivate Now
Sample Questionnaire	Status :Deactivated	2012-01-17 12:37:09.0	Activate Now	Sample Questionnaire	Status :Deactivated	2012-01-17 12:37:09.0	Activate Now

Update Survey

Click Update/Delete Section   Click Delete Questions

List Of Surveys:					List of sections in selected survey:				
List of all surveys created by you is given below A short detail of all surveys is also given here You can update and delete sections of this survey here					List of all sections is given below You can update a section by clicking on corresponding actions				
next one	Status :Activated	2011-12-13 15:46:21.0	Add Section	Update/Delete Sections	Respondent Profile	MultipleChoice	Delete Section	Add Questions	Delete Questions
survey title	Status :Activated	2012-01-17 12:20:59.0	Add Section	Update/Delete Sections	Part 2	MultiPoint	Delete Section	Add Questions	Delete Questions
Sample Questionnaire	Status :Deactivated	2012-01-17 12:37:09.0	Add Section	Update/Delete Sections	Part 2	RankedChoice	Delete Section	Add Questions	Delete Questions
					Back To Update Survey List				

Note:Add Section and Add Questions are smiliar to the one in Create Survey.

The following interface are for deleting sections

Before deleting the section

After deleting the section

following interface are for deleting Questions

Before deleting the question

After deleting the question

Delete Survey

Before Deletion   **After Deletion**

List Of Surveys:			
List of all surveys created by you is given below A short detail of all surveys is also given here You can view full details of a survey by clicking View Now link			
next one	Status :Activated	2011-12-13 15:48:21.0	Delete Now
survey title	Status :Activated	2012-01-17 12:39:56.0	Delete Now
Sample Questionnaire	Status :Deactivated	2012-01-17 12:37:09.0	Delete Now

List Of Surveys:			
List of all surveys created by you is given below A short detail of all surveys is also given here You can view full details of a survey by clicking View Now link			
survey title	Status :Activated	2012-01-17 12:39:56.0	Delete Now
Sample Questionnaire	Status :Deactivated	2012-01-17 12:37:09.0	Delete Now

Send Invitation

If there is no active survey, there will not be any survey in the drop down menu.

Send email Invitations:

survey title
survey title

You can enter multiple email addresses by comma ( ) seprated

Send Invitation

If there is an active survey(s), the survey will be displayed in the drop down menu.

Send email Invitations:

survey title
survey title
Sample Questionnaire

You can enter multiple email addresses by comma ( ) seprated

Send Invitation

145

If the researcher forgot to eneter the email address or message subject, the following message will be displayed.

The page at localhost:8080 says: X	The page at localhost:8080 says: X
Enter email addresses by comma seprating	Enter a subject
OK	OK
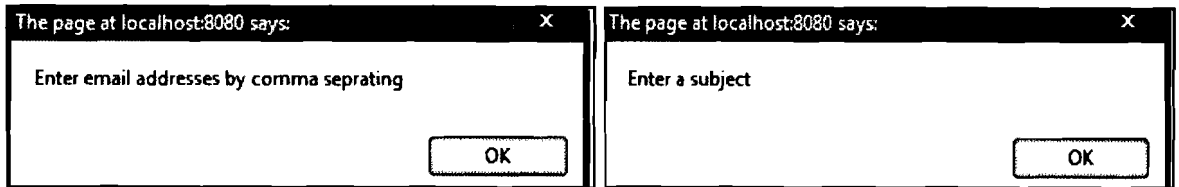
The following are the true process to send Invitation

Before Sending   **After Sending**

The responders will recieve invitation email contains the username and password that allow them to access the survey and answer it.

Generate Report

146

Print

Total 4 sheets of paper

Print | Cancel

Canon Inkjet iP1900 se ▼

All

Canon Inkjet iP1900 series - USB001

Option   Ink Details   Help

The printer is offline.
Check that the printer cable is connected and the printer power is on.

Document Name   Print - Insert title here
Owner   ZAQ
Printing Pages

Display Print Queue | Cancel Printing

Take Survey

| Survey Details | Section 1 | Section 2 |

Survey Details:

Survey Title: Sample Questionnare

Create Date: 2012-01-17 23 04 26 0

Survey Description: Sample Questionnare i trial   please answers the survey

Total Questions :   12

Survey Status: Activated

Continue

Question: Employment Status

Government

Semi-Government

• Private
   Student
   Self Employed

Question: Income Level

Less than RM1000

• RM3001-RM4000

RM1001-RM2000
More than RM4000
RM2001-RM3000

Stop | Next

Note: Participant canbuffer answers to continue survey at a later time by pressing "Stop" button.

The follwoing message screen will be displayed after submiting the survey answers.

Survey is submitted successfully.Your account is expired now. Thank you.