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Online Educational Search and Booking System

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Abstract

In the world of technology, we can effortlessly get data about schools, universities, training centers, and institutes services with help of websites through internet. The current methods of finding appropriated educational institutions and convenient online booking for educational courses don't satisfy all needs of the student and their parents' affairs.

So here we develop a system for the Online Educational search and booking system that is a database-backed Web service for the purposes of teaching and learning to allow quickly and easily searching and get data about educational institutional such as schools, universities and training centers. The system creates online communities of people and provides the appropriate tools for them to perform their roles, whether they are professors, teachers, parents, students, course administrators, or ".

To find your desired educational institution, select the level and geographical area. You may wish to refine your search by selecting Language of Instruction and gender. You will be presented with a map identifying the educational institution that is meeting your selection.

In these documents, we try to focus on how our system serves the educational process in Egypt at different levels, primary, preparatory, secondary, university and post-graduation through the provision of the booking service in the training centers in smart and automated way.

Declaration

We here declare that the project entitled "Online Educational Search and Booking System" submitted for all training centers, and educational institutional, which serve the student affairs in smart and automated way

	Name	Tasks	Signature
1	**Mohamed Fathi awad El Sayed El Badrawy**	**System (analysis & design) and Writing Documentation**	
2	**Mohamed Abd Elhaliem Ahmed Abd Elhaliem**	**System Implementation (design interfaces & writing code)**	
3	**Ahmed Sayed Mahmoud Badawi**	**System Implementation (design interfaces & writing code)**	
4	**Asaad Bushra Assad**	**Database Design & Implantation**	
5	**Mohamed Abdrabo Attia Elmeseny**	**System Data Collection & System Testing**	

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On the behalf of the Institute of Statistical Studies and Research, Cairo University, and on our own behalf, we would like to express our sincere gratitude to all those respectable Professors in capacity of Dr. Ahmed Hamza who guided us through the preparation of this project and for his continuous support, for his patience and motivation.

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Finally we thank our families for supporting us and helped us to reach so far and to have the tolerance to face difficulties and keep up.

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Definitions,Acronyms and abbreviations (Glossary)

UML	Unified Modeling Language
UAT	User Application Test
unregistered user	anonymous users without global effects (no recorded actions on system)
an educational institution	Such as school, faculty and university
an educational institution administrator	The person who is responsible for managing school , faculty or university
a training center	Training has specific goals of improving one's capability, capacity, productivity and performance.
a training center administrator	The person who is responsible for managing training center
parent	The person who is responsible for student's affairs
Joining Request	Request to enroll a pupil in a primary school

Chapter 1: Introduction

1.1 NTRODUCTION

Over the past decade, we have witnessed an ongoing information revolution brought about by the Internet. We have learned to harness the Internet for more efficient communication and ubiquitous information. These benefits have enabled us to bring many aspects of our lives online.

The system is database-backed Web service for the purposes of teaching and learning that consists of a main page that can be displayed by system users. Each system user has different pages or interface depending on the different functions that he/she can use the system for. The system includes a database system to store all relevant information and data and to produce various reports and queries.

This software can help us is to provide a set of new capabilities that enhances the traditional ways of how to find appropriated educational institution and convenient online booking. By applying the benefits of the internet to search and view that system helps professors, teachers, parents, students, course administrators, or educational institutional ownership.

The basic idea of the system is to introduce an automated tool for the course registration system that allows the student to manage the course registration from throw the operator users of the system and allows the supervisor to monitor and approve registrations at any time.

As a replacement for current systems that each one of them serves special educational level such as private or public schools universities. This system has an online menu through an easy navigated graphical interface which enables the user to select an individual educational institution with detailed information is available by clicking on the name of it. Any user can browse, search, and view spreadsheets with address, email and phone numbers for all educational institutions.

The overall goal of the project is to develop a scalable and high performance search engine that is considered as a guide for Parents and students, by making a wider range of services & information that readily accessible, so we have made finding an educational institution as easy as we can.

On other hand, system provides graphical interface which enables educational institution ownerships to upload and review their educational institutions and update their contacts and services on the system

1.2 Motivation

The motivation for designing this application came for some reasons. First, we want to design website application that has a wider range of services & information about educational institutions to overcome the problem of how to find appropriated educational institutions and convenient online booking for educational courses. And that helps many Parents and students in everywhere to select the level and geographical area before visiting it. Second, the system will become an important a public relation tool for private educational institution ownership and governmental institutions because it gives the opportunity to announce their educational services without any cost.

1.3 Problem Definition

We visit educational institutions and training centers regularly for make request for enrolling our students in a school or in a course. Also the drop-add process is extremely laborious and it creates unacceptable queues. Furthermore we search on internet to find appropriated educational institutions and convenient booking for educational courses. But there is no an internet system that allows the students in different level of education to find appropriated school and reserves a place for an incoming semester. The only advantage currently given by the existing system on internet is the process of browsing the schools' sites, but it does not provide an official registration. It only displays the possible name and address of educational institution.

Online Educational search and booking system aims to reduce the time and effort spent on finding appropriated educational institutions and convenient online booking for educational courses. It also aims to systemize the registration process in a primary school for new pupil so that the least amount of errors during the registration phases may occur. Thus the registration process may be with better quality and efficiency.

1.4 Background

When it comes to educational affairs of our sons and daughters, parents have different mindset, sometimes they don't want to miss their favorite educational institution so they like to enroll their children in best and nearest school to their homes.

The only advantage currently given by the internet is the process of browsing the schools' sites, but it does not provide an official registration. The current website does not allow the students to enroll through internet first before visiting the school.

The existing systems allow the students to browse sites of training centers to see the available courses but not provide on line booking before visiting the center

Hence, to solve this issue, what we propose is an "Online Educational search and booking system", originally designed to serve educational affairs of students.

Our system provides all available educational services for different levels of learning. It is considered as a guide for parents and their students

1.5 Related works:

Examples of websites that concerns with search rather than booking

Madaresegypt : **http://madaresegypt.com/ar**/Accessed 1/6/ 2018

portal.mohesr: **http://portal.mohesr.gov.eg/ar-eg/Pages/default.aspx**/Accessed 5/6/ 2018

emis: **http://emis.gov.eg**/Accessed 10/6/ 2018

1.6 Scope

The current systems allow the students in different level of education to browse and search for appropriated educational institution or a course without any availability to place request for school or a course. This document specifies the requirements to create a search engine site with availability to place request for school or a course. Three related concepts are encompassed by the general scope of the Online Educational search and booking system. The first pertains to provide different categories of search for any educational institutions or training centers, the second relates to a complementary electronic strategy for the searching process through handling student's request for booking a course or making join request for a school and the third surrounds the process of transferring said electronic requests to the training center administrator or educational institution administrator. The fourth Student affairs process management and data management; this includes the cancellation of booking or joining request.

1.7 Aims and Objectives

The goal of the system we are designing is to automatically all the necessary information to register students for educational institutions and convenient online booking. It will instantaneously refuse all the unfeasible requests, saving many ours of waiting and work to students, faculty, and staff. Furthermore, subject to agreement with the appropriate stakeholders, the system would provide many useful services such as:

- The first advantage will be measured by the clients. The registration for a course or a school is a process that takes a long time; it would take less time to conclude the registration process.
- Develop online booking system that provides students with convenient online booking, and priority seating
- An efficient and detailed description of the educational institutions and training centers
- The notification of the most overloaded class to the registrar.
- The possibility of creating a waiting list for the students who want to have booking for a course.
- A more efficient classification of the hierarchy according to which the students can register.
- System provides a more efficient and satisfactory schedule for the clients (students);
- It provides clear and precise statistical information (such as the students' interest and the most requested courses) that would probably be useful for future reference.
- It allows users to browse course schedules, view course sections, and times.
- The critical aim of our website is to book a course without physically being in training center and before going to it.
- For training center administrator, it would provide a better chance to add their training centers and courses as an advertisement to their institutions which would directly influence the working career, and reach to wider range of students.
- System provides practical advantages to the students and parents that will also be enormous. One of the major concerns is the geographical area of educational institution.

- For educational institution administrator, it would provide a better chance to add their educational institution on the system as an advertisement to their institutions, which would directly influence the scholastic career.

1.8 project Stockholders

Definition: a stockholder is any person who has an interest in an existing or proposed information system. Stockholders can be technical or non-technical workers. They may also internal or external workers.

1.8.1The administration of the System

The system administrator is a user with a higher functionality level than the regular user. This information system grants privileges for system administrators to create and manage users. An information system's sponsor and executive advocate usually responsible for funding the project of development, operating and maintaining the information system.

1.8.2 Students

- They are clients of the product.
- They need to know details about the registration in itself
- They do not need to know the technical parts of the system.
- They are directly involved in the system as one of the main stakeholders.
- The students may use the system to browse and search for educational institutions and courses.
- The students may use the system to book for courses.
- The students may use the system to make joining request for an educational institution.

1.8.3 Parents

- They are clients of the product.
- They need to know details about the registration in itself
- They do not need to know the technical parts of the system.
- They are directly involved in the system as one of the main stakeholders.
- The parents may use the system to browse and search for educational institutions and courses.
- The parents may use the system to book for courses.
- The parents may use the system to make joining request for an educational institution

1.8.4 Educational institution adminstrator

- They are clients of the product.
- They need to know details about the registration in itself
- They do not need to know the technical parts of the system.
- They are directly involved in the system as one of the main stakeholders.
- They may use the system for adding their educational institutions.
- They may use the system to follow up joining requests for their educational institutions.

1.8.5 Training center adminstraor

- They are clients of the product.
- They need to know details about the registration in itself
- They do not need to know the technical parts of the system.
- They are directly involved in the system as one of the main stakeholders.
- They may use the system for adding their training centers and courses.
- They may use the system to follow up booking requests for their courses.

1.8.6 Viewer

- They are clients of the product.
- They need to know details about the registration in itself.
- They do not need to know the technical parts of the system.
- They may use the system to browse and search for educational institutions and courses without registration.

1.9 DEVELOPMENT PHASES & METHODS

The development of the system was quite straight forward and followed the development phase's path below. Functionalities were made along the development. After every major step taken in the development the functionality was tested and re-evaluated.

1.9.1 The System Development Life Cycle

System development process: is a set of activities, methods, best practices, deliverables, and automated tools that stakeholders use to develop and maintain information systems and software.

1.9.2 System Development Process Overview

System initiation: the initial planning for a project to define initial business scope, goals, schedule, and budget.
System analysis: the study of a business problem domain to recommend improvements and specify the business requirements and priorities for the solution.
System design: the specification or construction of a technical, computer-based solution for the business requirements identified in a system analysis.
System implementation: the construction, installation, testing, and delivery of a system into production.

1.9.3 The system development life cycle is the Scrum Agile methodology

How Scrum Agile Work:

Agile development aims to reduce massive planning overhead in software projects to allow fast reactions to change e.g. in clients wishes. Incremental and iterative development are almost always part of an agile development strategy. There are several approaches to agile development (e.g. scrum).

Iterative and incremental development is key practices in Agile development methodologies. In Agile methodologies, the shorter development cycle, referred to as an iteration or sprint, is time-boxed (limited to a certain increment of time, such as two weeks). At the end of the iteration, working code is expected that can be demonstrated for a clients.

Table 1. 1:agile advantages and disadvantages

Model	advantages	disadvantages
Agile	Light methods suit small to medium size projects.	Difficult to scale up to large projects
	Iterative.	Needs experiences and skills
	Produces good team organization.	Programming pairs is costly.
	Emphasizes final product.	Test case construction is a difficult and specialized skill.
	Test based approach to requirements and quality assurance.	

Scrum is an agile process that allows us to focus on delivering the highest business value in the shortest time. It allows us to rapidly and repeatedly inspect actual working software (every two weeks to one month). The business owner sets the priorities. Our teams self-manage to determine the best way to deliver the highest priority features. Every two weeks to a month anyone can see real working software and decide to release it as is or continue to enhance for iteration.

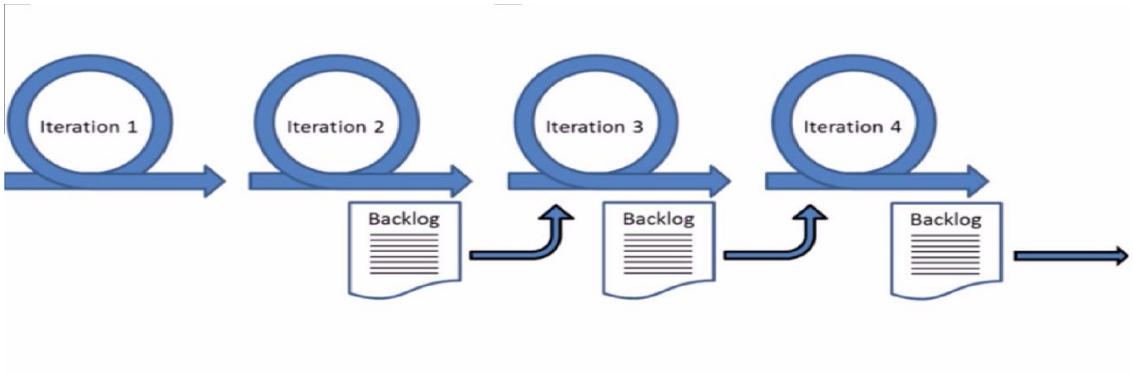


Figure 1 . 1: Iterative UAT[1]

By working iteratively, the project team goes through a cycle where they evaluate with each iteration, and determine what changes are needed to produce a satisfactory end product. Every iteration contains analysis, review, build, integration and test.
The purpose of working iteratively is to allow more flexibility for changes.

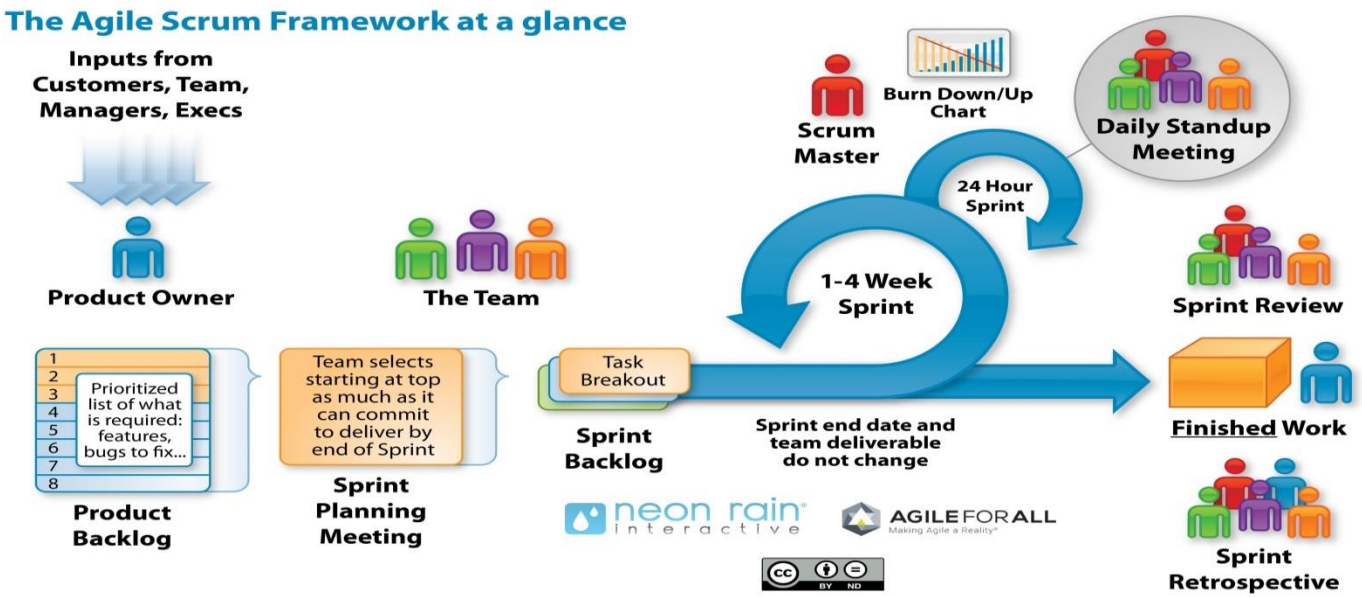


Figure 1 . 2: Agile scrum framework at a glance [2]

Agile Scrum is an iterative software development methodology specifically designed to build products faster. Agile Scrum uses short pre-defined development cycles (called sprints or cycles), with each cycle resulting in potentially shippable functionality delivered. Following the diagram above, an Agile product team consists of several types of people who work together on a ranked product backlog in order to create a finished, viable product. Agile team is consisting of developers, product owners, scrum masters, stakeholder.

Note : The Sprint Backlog is a subset of items pulled from the Product Backlog

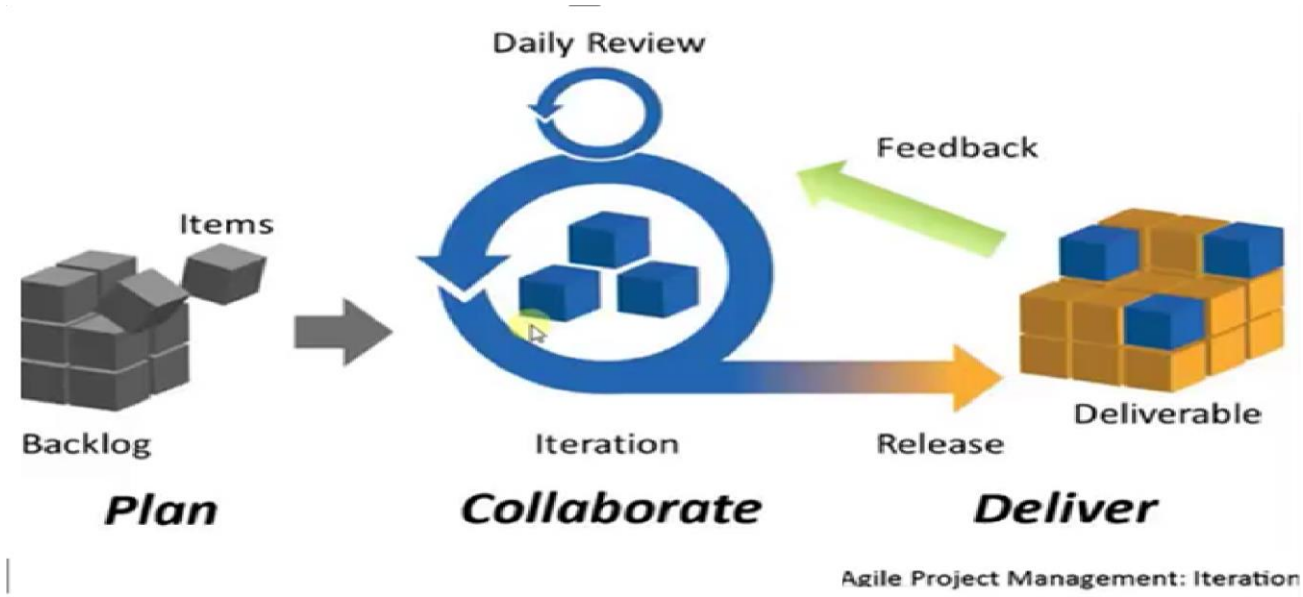


Figure 1 . 3: Sprint cycles and weekly Scrum meetings [3]

The “daily Scrum” is meant to be consistent – same place and time each day, preferably in the morning. Further, they are meant to be no longer than 15 minutes. The meeting is for the entire team, including the Scrum Master and product owner. It’s important that the meeting is more about status updates than problem solving, which should be solved with appropriate subgroups. Further, the status updates are not to inform the boss on whose behind, but to keep team members committed to one other. It’s also a way for the Scrum Master to learn about impediments that need addressing.

1.9.4 Software development diagrams:

Software development diagrams (use case diagram, domain model, sequence diagram and activity diagram) and Enhanced entity relationship diagram (EERD) database design to be developed using Visual Paradigm.

1.9.5 Development Tools

The tools that are used on a web development projects have a great affect to the projects development duration, degree of difficulty, debugging and, future development. When choosing tools to be used to develop the system the following things were considered:

- Size of the project
- Type of the project
- Recognizability of the tools

1.9.5.1 Database tool:

Data base solution to be implemented using **SQL WINDOWS SERVER 2014**

1.9.5.2 Programming Language Tool

1- **Coding:**
2- **Software solution and implementation are using.**

1- Pro ASP.NET MVC 5

3- C#.NET

4- Visual Studio 2015

Chapter 2: System Analysis

2.1 Requirements Analysis

The following section presents the complete set of functional and non-functional requirements identified for the subject Online Educational search and booking system. Functional requirements are listed first, according to their relationship to the overall system, parents, students, course administrator, and educational institutional administrator. The non-functional requirements that pertain to safety, security, the interface, human engineering, qualification, operation, maintenance and performance are subsequently presented. The functional requirements have been specified using a natural language description.

2.2 Functional Requirements Analysis

Table 2 . 1: functional Requirement

Identifier	Requirement	Priority
Req-1	The system shall enable an unregistered & registered user to browse on the system	5
Req-2	The system shall enable an unregistered user to search items on the system	5
Req-3	The system shall enable an unregistered user to view items on the system	5
Req-4	The system shall enable an educational institution administrator to making registration on the system	5
Req-5	The system shall enable an educational institution administrator to login to the system	4
Req-6	The system shall enable an Educational institution administrator to search on the system	4
Req-7	The system shall enable an Educational institution administrator to view items on the system	4
Req-8	The system shall enable an educational institution administrator to insert educational institution data on the system	3
Req-9	The system shall enable an educational institution administrator to update educational institution data on the system	3
Req-10	The system shall enable an educational institution administrator to confirm clients' joining requests for my educational institution on the system	3
Req-11	The system shall enable an educational institution administrator to reject clients' joining requests for my educational institution on the system	3
Req-12	The system shall enable an educational institution administrator to extracting reports about clients' requests for educational institution on the system	4
Req-13	The system shall enable training center administrator to making registration	4
Req-14	The system shall enable training center administrator to login to the system	4

Req-15	**The system shall enable training center administrator to search on the system**	**4**
Req-16	**The system shall enable training center administrator to view items on the system**	**3**
Req-17	**The system shall enable training center administrator to insert training center data on the system**	**3**
Req-18	**The system shall enable training center administrator to update training center data on the system**	**3**
Req-19	**The system shall enable training center administrator to insert training center's courses data on the system**	**3**
Req-20	**The system shall enable training center administrator to update training center's courses data on the system**	**5**
Req-21	**The system shall enable training center administrator to delete training center's courses data on the system**	**4**
Req-22	**The system shall enable training center administrator to confirm clients' bookings for courses on the system**	**3**
Req-23	**The system shall enable training center administrator to reject clients' bookings for courses on the system**	**3**
Req-24	**The system shall enable training center administrator to extract reports about clients' bookings for my educational institution on the system**	**3**
Req-25	**The system shall enable student to make registration on the system**	**3**
Req-26	**The system shall enable student to login to the system**	**3**
Req-27	**The system shall enable student to search on the system**	**3**
Req-28	**The system shall enable student to view items on the system**	**4**
Req-29	**The system shall enable student to place joining request for educational institution**	**3**
Req-30	**The system shall enable student to cancel joining request for educational institution**	**3**
Req-31	**The system shall enable student to review joining request for educational institution**	**3**
Req-32	**The system shall enable student to place bookings for course**	**5**
Req-33	**The system shall enable student to cancel bookings for course**	**3**
Req-34	**The system shall enable student to review bookings for course**	**3**
Req-35	**The system shall enable parent to make registration on the system**	**5**

Req-36	**The system shall enable parent to login to the system**	**5**
Req-37	**The system shall enable parent to search on the system**	**5**
Req-38	**The system shall enable parent to view items on the system**	**5**
Req-39	**The system shall enable parent to place request for educational institution**	**5**
Req-40	**The system shall enable parent to cancel request for educational institution**	**5**
Req-41	**The system shall enable parent t to review request for educational institution**	**5**
Req-42	**The system shall enable parent to place bookings for course**	**5**
Req-43	**The system shall enable parent to cancel bookings for course**	**5**
Req-44	**The system shall enable parent to review bookings for course**	**5**
Req-45	**The system shall enable admin to add user**	**5**
Req-46	**The system shall enable admin to delete user**	**5**
Req-47	**The system shall enable admin to lock user**	**5**
Req-48	**The system shall enable admin to unlock user**	**5**
Req-49	**The system shall enable admin to maintain the system user**	**5**
Req-50	**The system shall enable admin to update data**	**5**
Req-51	**The system shall enable admin to insert data**	**5**
Req-52	**The system shall enable admin to delete data**	**5**
Req-53	**The system shall enable admin to generate training centers report**	**5**
Req-54	**The system shall enable admin to generate educational institutions report**	**5**
Req-55	**The system shall enable admin to generate users report**	**5**
Req-56	**The system shall enable admin to generate courses report**	**5**

2.3 Non-Functional Requirements Analysis

This subsection presents the identified non-functional requirements for the subject Online Educational search and booking system. The subcategories of non-functional requirements given are safety, security, interface, human engineering, qualification, operational and maintenance.

Table 2 . 2 Non-Functional Requirements

Identifier	Priority	Requirement
Req-1	**2**	**System should be able to handle multiple users at a time using the application; performance also includes Speed, Efficiency, Throughput, and Capacity.**
Req-2	**2**	**The system must ensure that all the transferable data**
Req-3	**2**	**The system must be able to handle multiple transactions a time.**
Req-4	**2**	**The system must provide clients 24*7 hours online booking service.**
Req-5	**2**	**The system should support almost all the browsers (Internet Explorer, Safari, Chrome, and Firefox).**
Req-6	**2**	**Each user has his own user name and password to allow him using application in his authorized area.**
Req-7	**2**	**The system must be easy to use.**
Req-8	**2**	**The system supports tracing users' transactions on it.**
Req-9	**2**	**It is very easy to maintain the system.**

2.4 User story

A user story is a brief description of a piece of system functionality as viewed by user

Table 2 . 3 : User story

identifier	User story	size
ST-1	As an unregistered user I can browse on the system	2PT
ST-1	As an unregistered user I can search items on the system	2PT
ST-2	As an unregistered user I can view items on the system	2PT
ST-3	As an educational institution administrator I can making registration on the system	4PT
ST-4	As an educational institution administrator I can login to the system	4PT
ST-5	As an Educational institution administrator I can search on the system	4PT
ST-6	As an Educational institution administrator I can view items on the system	3PT
ST-7	As an educational institution administrator I can add my educational institution data on the system	3PT
ST-8	As an educational institution administrator I can update my educational institution data on the system	4PT
ST-9	As an educational institution administrator I can confirm clients' requests for my educational institution on the system	2PT
ST-10	As an educational institution administrator I can reject clients' requests for my educational institution on the system	2PT
ST-11	As an educational institution administrator I can extracting reports about clients' requests for my educational institution on the system	2PT
ST-12	As a training center administrator I can making registration	2PT
ST-13	As a training center administrator I can login to the system	4PT
ST-14	As a training center administrator I can search on the system	4PT
ST-15	As a training center administrator I can view items on the system	4PT
ST-16	As a training center administrator I can add my training center data on the system	3PT
ST-17	As a training center administrator I can update my training center data on the system	3PT
ST-18	As a training center administrator I can add my training center's courses data on the system	4PT

ST-19	As a training center administrator I can update my training center's courses data on the system	2PT
ST-20	As a training center administrator I can delete my training center's courses data on the system	2PT
ST-21	As a training center administrator I can confirm clients' bookings for courses on the system	2PT
ST-22	As a training center administrator I can reject clients' bookings for courses on the system	2PT
ST-23	As a training center administrator I can extracting reports about clients' bookings for my educational institution on the system	4PT
ST-24	As a student I can making registration on the system	4PT
ST-25	As a student I can login to the system	4PT
ST-26	As a student I can search on the system	3PT
ST-27	As a student I can view items on the system	3PT
ST-28	As a student I can place request for educational institution	4PT
ST-29	As a student I can cancel request for educational institution	2PT
ST-30	As a student I can review request for educational institution	2PT
ST-31	As a student I can place bookings for course	2PT
ST-32	As a student I can cancel bookings for course	2PT
ST-33	As a student I can review bookings for course	4PT
ST-34	As a parent I can making registration on the system	4PT
ST-35	As a parent I can login to the system	4PT
ST-36	As a parent I can search on the system	3PT
ST-37	As a parent I can view items on the system	3PT
ST-38	As a parent I can place request for educational institution	4PT
ST-39	As a parent I can cancel request for educational institution	2PT
ST-40	As a parent t I can review request for educational institution	2PT

ST-41	As a parent I can place bookings for course	2PT
ST-42	As a parent I can cancel bookings for course	2PT
ST-43	As a parent I can review bookings for course	4PT
ST-44	As admin I can add user	4PT
ST-45	As admin I can delete user	4PT
ST-46	As admin I can lock user	3PT
ST-47	As admin I can unlock user	3PT
ST-48	As admin I can maintain the system user	4PT
ST-49	As admin I can update data	2PT
ST-50	As admin I can add data	2PT
ST-51	As admin I can delete data	2PT
ST-52	As admin I can generate training centers report	2PT
ST-53	As admin I can generate educational institutions report	4PT
ST-54	As admin I can generate users report	4PT
ST-55	As admin I can generate courses report	4PT

2.5 Actor Description

It specifies a role played by a user

Table 2 . 4 : Actor Description

Actor	Actor Goal	Use Case Name
unregistered user	browse on the system	UC-1- browse
unregistered user	search items on the system	UC-2 - search
unregistered user	view items on the system	UC-3 view items
an educational institution administrator	browse on the system	UC-1- browse
an educational institution administrator	making registration on the system	UC- 4 registration
an educational institution administrator	login to the system	UC-5 login
an educational institution administrator	search on the system	UC-2 - search
an educational institution administrator	view items on the system	UC - 3 view items
an educational institution administrator	insert my educational institution data on the system	UC – 6 insert educational institution
an educational institution administrator	update my educational institution data on the system	UC - 7 update educational institution
an educational institution administrator	confirm clients's joining requests for educational institution on the system	UC - 8 confirm clients's joining requests
an educational institution administrator	reject clients' requests for educational institution on the system	UC - 9 reject clients' joining requests
an educational institution administrator	extracting reports about clients' requests for my educational institution on the system	UC - 10 generate reports

a training center administrator	browse on the system	UC-1- browse
a training center	making registration	UC- 4 registration
a training center	login to the system	UC-5 login
a training center	search on the system	UC-2 - search
a training center	view items on the system	UC - 3 view items
a training center	Insert training center data on the system	UC - 11 insert training center
a training center	update training center data on the system	UC - 12 update training center
a training center	insert training center's courses data on the system	UC - 13 insert training center's courses
a training center	Update training center's courses data on the system	UC - 14 update training center's courses
a training center	delete training center's courses data on the system	UC - 15 delete training center's courses
a training center	confirm clients' bookings for courses on the system	UC - 16 confirm clients' bookings
a training center	reject clients' bookings for courses on the system	UC - 17 reject clients' bookings
a training center	extracting reports about clients' bookings for courses on the system	UC - 10 generate reports
a student	browse on the system	UC-1- browse
a student	making registration on the system	UC- 4 registration
a student	login to the system	UC-5 login
a student	search on the system	UC-2 - search
a student	view items on the system	UC - 3 view items
a student	place joining request for educational institution	UC - 18 place joining request

a student	cancel joining request for educational institution	UC - 19 cancel joining request
a student	review joining request for educational institution	UC - 20 review joining request
a student	place bookings for course	UC - 21 place bookings for course
a student	cancel bookings for course	UC - 22 cancel bookings for course
a student	review bookings for course	UC - 23 review bookings for course
parent	browse on the system	UC-1- browse
parent	making registration on the system	UC- 4 registration
parent	login to the system	UC-5 login
parent	search on the system	UC-2 - search
parent	view items on the system	UC - 3 view items
parent	place request for educational institution	UC - 18 place joining request
parent	cancel request for educational institution	UC - 19 cancel joining request
parent	review request for educational institution	UC - 20 review joining request
parent	place bookings for course	UC - 21 place bookings for course
parent	cancel bookings for course	UC - 22 cancel bookings for course
parent	review bookings for course	UC - 23 review bookings for course
admin	add user	UC - 24 add user
admin	delete user	UC - 25 delete user
admin	lock user	UC – 26 lock user

admin	unlock user	UC - 27 unlock user
admin	maintain the system user	UC - 28 maintain the system
admin	update data	UC - 29 update data
admin	add data	UC - 30 add data
admin	delete data	UC - 31 delete data
admin	generate training centers report	UC - 10 generate reports
admin	generate educational institutions report	UC - 10 generate reports
admin	generate users report	UC - 10 generate reports
admin	generate courses report	UC - 10 generate reports

2.6 Work Back Log

A product backlog is a prioritized list of work for the development team that is derived from the roadmap and its requirements. The most important items are shown at the top of the product backlog so the team knows what to deliver first. The development team doesn't work through the backlog at the product owner's pace and the product owner isn't pushing work to the development team. Instead the development team pulls work from the product backlog as iteration (scrum).

Table 2 . 5: Work Back Log

Item	User story	Iteration No	Estimated work duration
1	ST-1	Iteration 1	(2day)2pt
2	ST-1	Iteration 1	(4day)4pt
3	ST-2	Iteration 1	(4day)4pt
4	ST-5	Iteration 2	(4day)4pt
5	ST-6	Iteration 2	(3day)3PT
6	ST-7	Iteration 2	(3day)3PT
7	ST-8	Iteration 2	(4day)4pt
8	ST-9	Iteration 2	(2day)2pt
9	ST-10	Iteration 2	(2day)2pt
10	ST-11	Iteration 2	(2day)2pt
11	ST-12	Iteration 3	(2day)2pt
12	ST-13	Iteration 3	(4day)4pt
13	ST-14	Iteration 3	(4day)4pt
14	ST-15	Iteration 3	(4day)4pt
15	ST-16	Iteration 3	(3day)3PT
16	ST-17	Iteration 3	(3day)3PT
17	ST-18	Iteration 3	(4day)4pt
18	ST-19	Iteration 3	(2day)2pt
19	ST-20	Iteration 3	(2day)2pt
20	ST-21	Iteration 3	(2day)2pt
21	ST-22	Iteration 3	(2day)2pt
22	ST-23	Iteration 3	(4day)4pt
23	ST-24	Iteration 4	(4day)4pt
24	ST-25	Iteration 4	(4day)4pt
25	ST-26	Iteration 4	(3day)3PT
26	ST-27	Iteration 4	(3day)3PT
27	ST-28	Iteration 4	(4day)4pt
28	ST-29	Iteration 4	(2day)2pt
29	ST-30	Iteration 4	(2day)2pt
30	ST-31	Iteration 4	(2day)2pt
31	ST-32	Iteration 4	(2day)2pt
32	ST-33	Iteration 4	(4day)4pt
33	ST-34	Iteration 5	(4day)4pt
34	ST-35	Iteration 5	(4day)4pt
35	ST-36	Iteration 5	(3day)3PT

Item	User story	Iteration No	Estimated work duration
1	ST-1	Iteration 1	(2day)2pt
2	ST-1	Iteration 1	(4day)4pt
3	ST-2	Iteration 1	(4day)4pt
4	ST-5	Iteration 2	(4day)4pt
5	ST-6	Iteration 2	(3day)3PT
6	ST-7	Iteration 2	(3day)3PT
7	ST-8	Iteration 2	(4day)4pt
8	ST-9	Iteration 2	(2day)2pt
9	ST-10	Iteration 2	(2day)2pt
10	ST-11	Iteration 2	(2day)2pt
11	ST-12	Iteration 3	(2day)2pt
12	ST-13	Iteration 3	(4day)4pt
13 36	ST-14 ST-37	Iteration 3 Iteration 5	(4day)4pt (3day)3PT
37	ST-38	Iteration 5	(4day)4pt
38	ST-39	Iteration 5	(2day)2pt
39	ST-40	Iteration 5	(2day)2pt
40	ST-41	Iteration 5	(2day)2pt
41	ST-42	Iteration 5	(2day)2pt
42	ST-43	Iteration 5	(4day)4pt
43	ST-44	Iteration 6	(4day)4pt
44	ST-45	Iteration 6	(4day)4pt
45	ST-46	Iteration 6	(3day)3PT
46	ST-47	Iteration 6	(3day)3PT
47	ST-48	Iteration 6	(4day)4pt
48	ST-49	Iteration 6	(2day)2pt
49	ST-50	Iteration 6	(2day)2pt
50	ST-51	Iteration 6	(2day)2pt
51	ST-52	Iteration 6	(2day)2pt
52	ST-53	Iteration 6	(4day)4pt
53	ST-54	Iteration 6	(4day)4pt
54	ST-55	Iteration 6	(4day)4pt
55	ST-56	Iteration 6	(3day)3PT

2.7 Total work

Total work size =
2+2+2+4+4+4+3+3+4+2+2+2+2+4+4+4+3+4+2+2+2+2+4+4+4+3+3+2+2+2+2+4+4+4+3+3+2+2+2+2+4+4+4+3+3+4+2+2+2+2+4+4+3 = 156 point

Project duration = path size / travel velocity = 156/1 = 156 day

Chapter 3: SYSTEM DESIGN

3.1 UML DESIGN

UML design is the shortest form of "Unified Modeling Language". The purpose of this modeling language is to visualize the design of the system.

1- Use Case Diagram. 2- Activity Diagram. 3- Sequence Diagram. 4- Class Diagram.

3.1.1 Use Case Diagram

"The functional model, represented in UML with use case diagrams, describes the Functionality of the system from the user's point of view."[1] Use Case modeling purpose is to present a graphical overview of the functionality provided by a system in terms of actors, their goals (represented as use cases), and any dependencies between those use cases. It is also called behavioral UML diagram. It shows how different functions needed by the actors how they are interacted.

3.1.1.2 Entire System Use Case of our new proposed system.

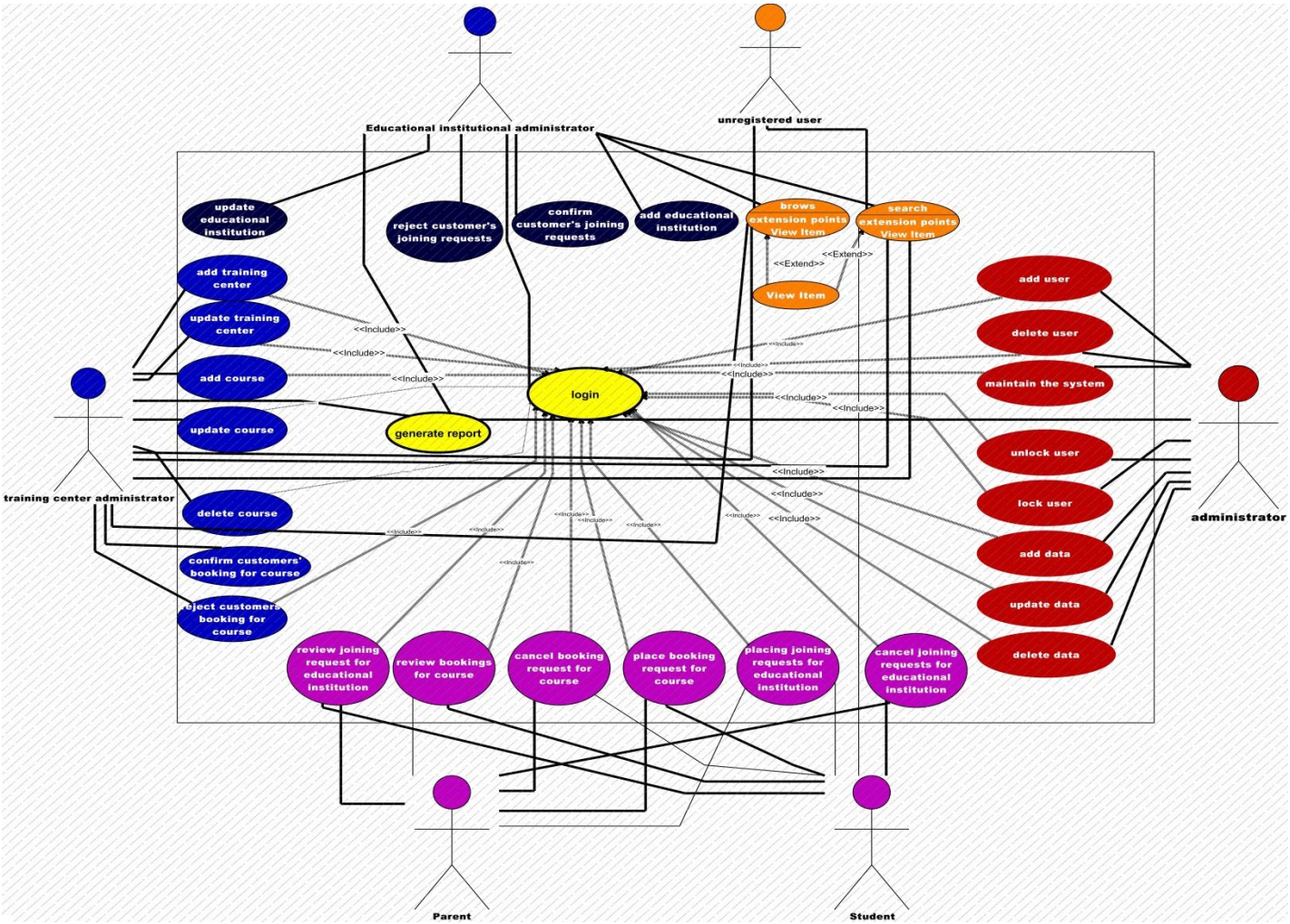


Figure 3 . 1:Entire Sym Use Case

3.1.1.3 Unregistered (Viewer) user Use Case

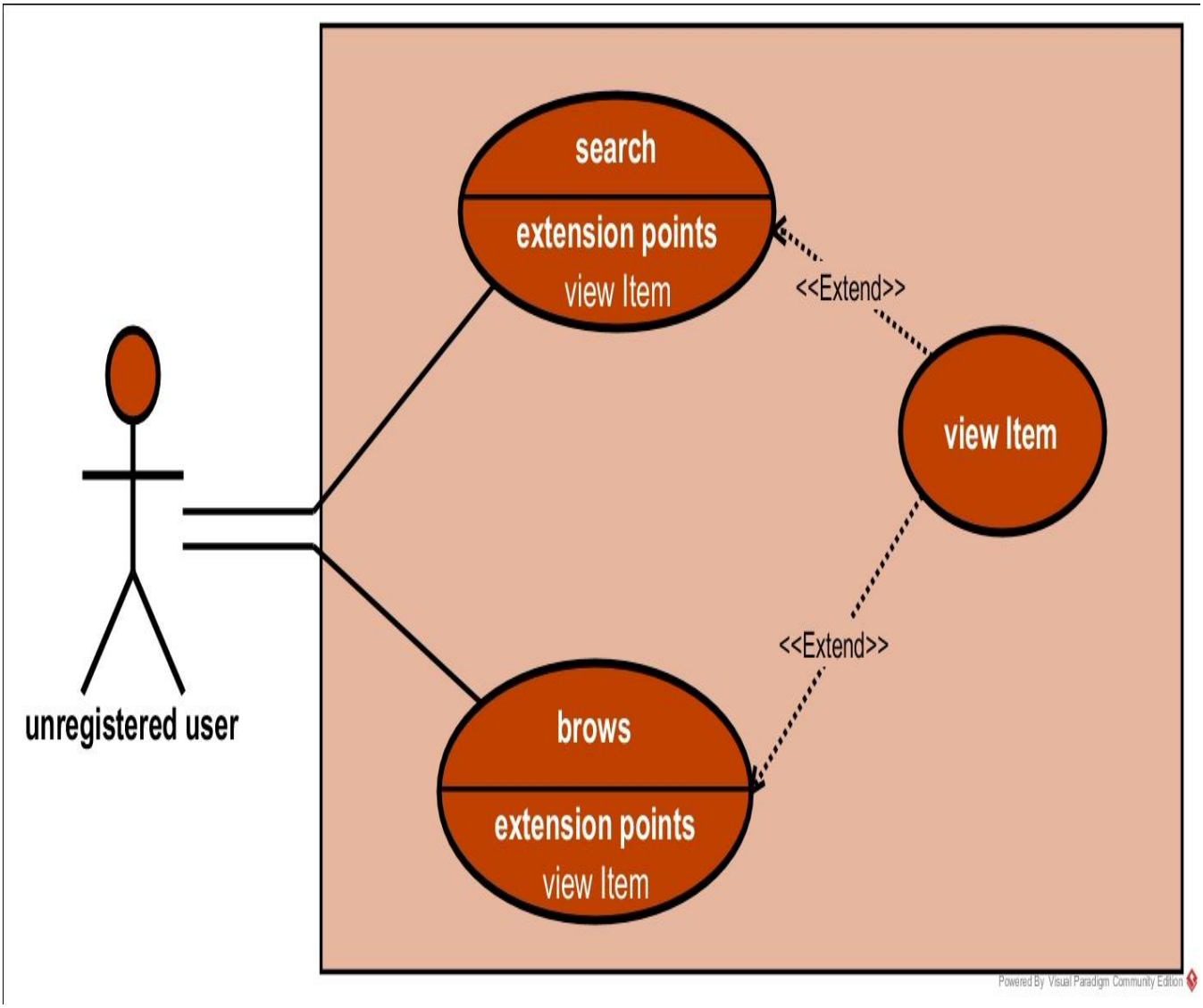


Figure 3 . 2 :Unregistered (Viewer) user Use Case

3.1.1.4 Training center & educational administrator Use Case

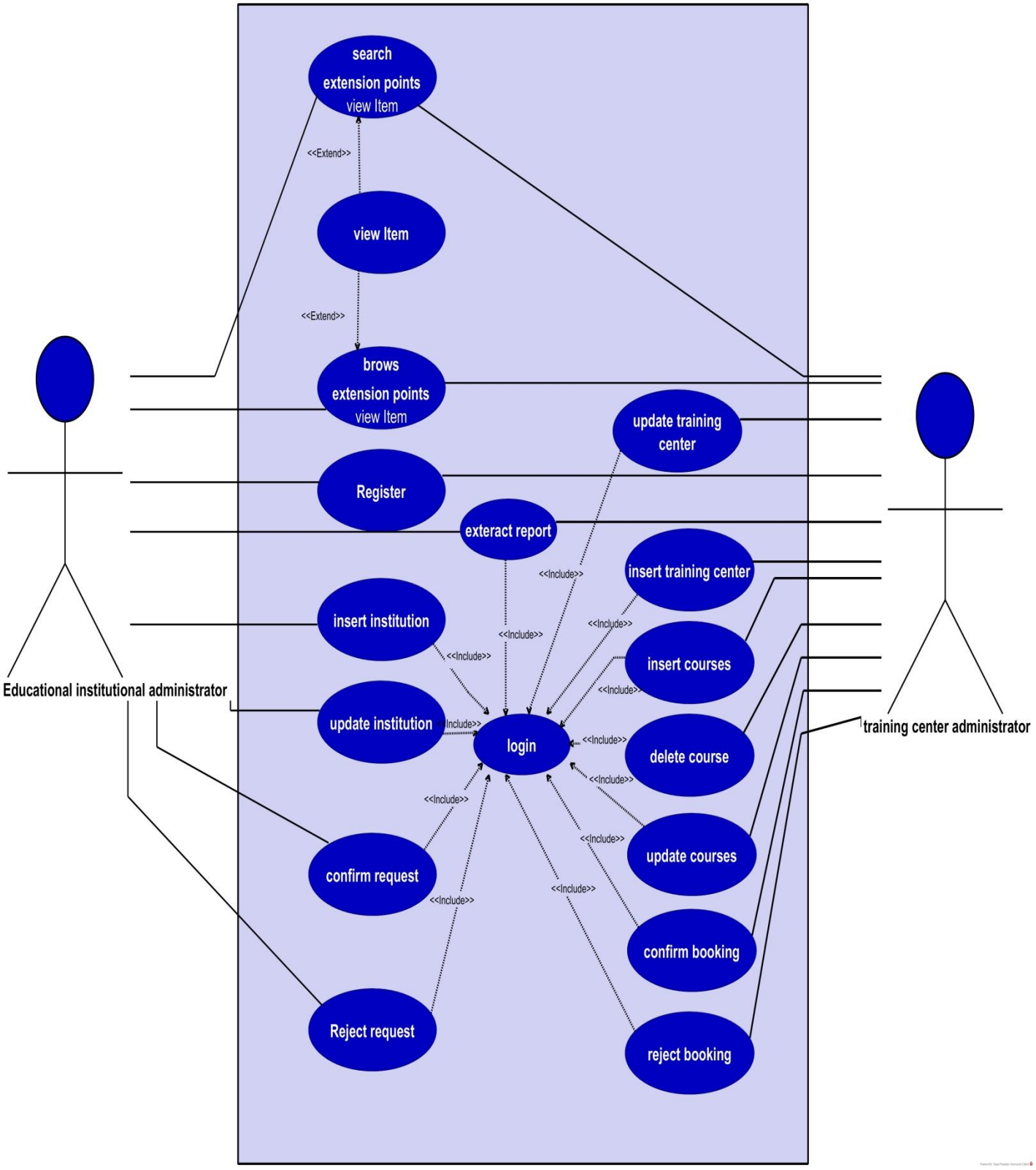


Figure 3 . 3: Training center & educational administrator Use Case

3.1.1.5 Student & parent Use Case

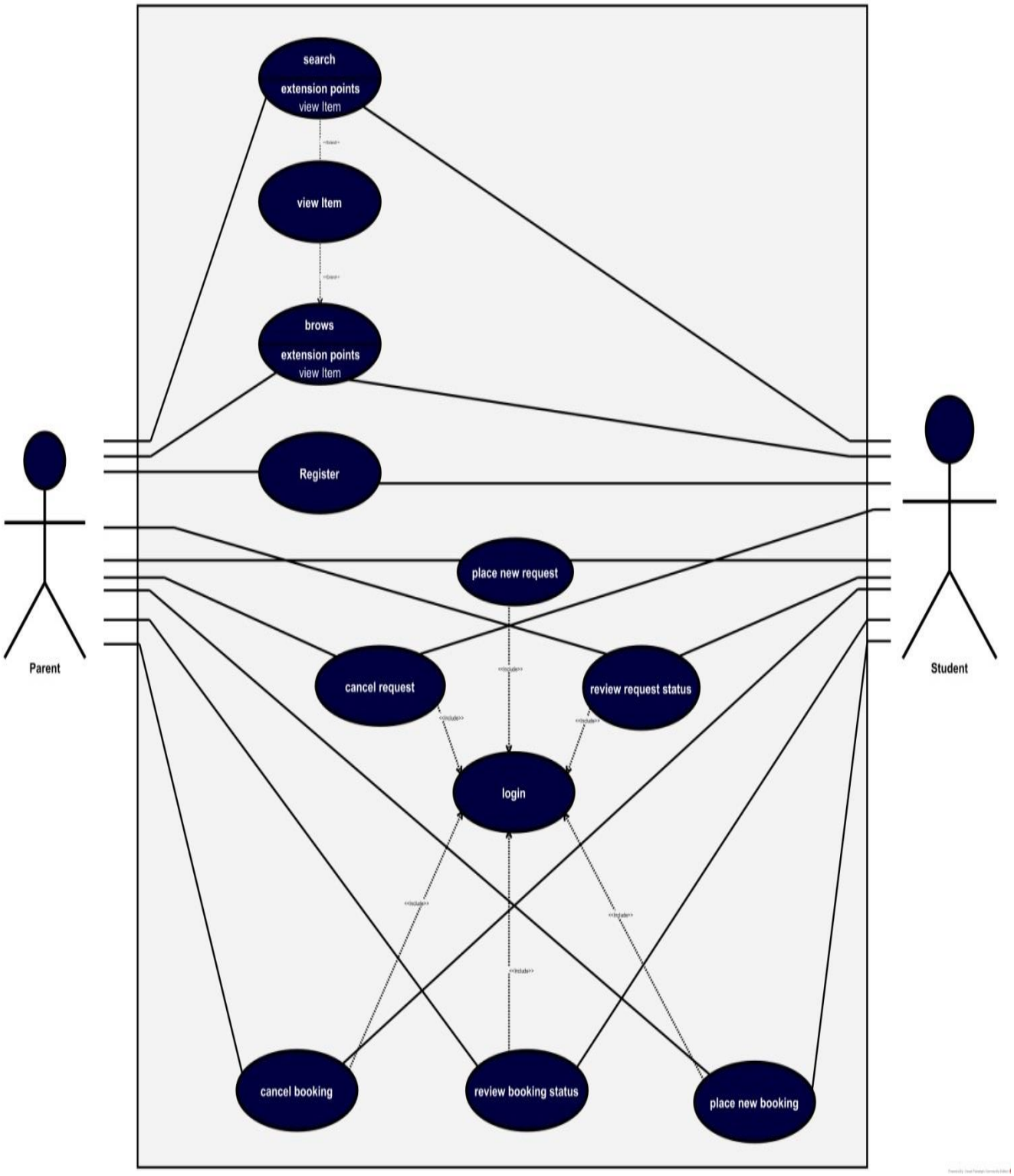


Figure 3 . 4: Student & parent Use Case

3.1.1.6 Administrator Use Case

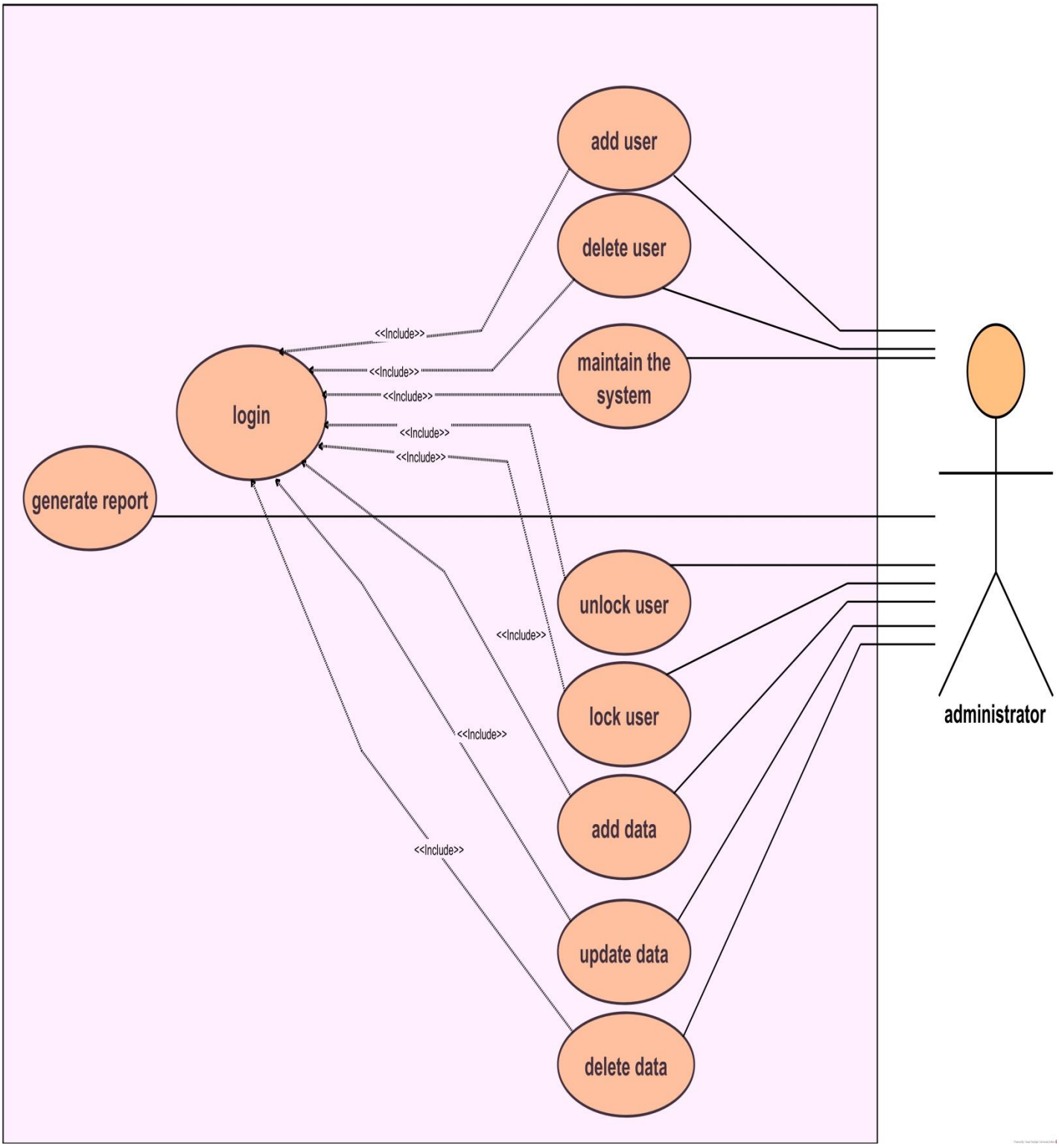


Figure 3 . 5: Administrator Use Case

3.1.2 Use Case Description (Schema for Detailed Use Cases)

Use Case 1 – (UC – 1)-browse	
Related Requirements	REQ 1-14-27-38
Initiating Actor:	All actors
Actor's Goal:	brows the system
Participating Actors:	
Preconditions:	system must enable all users to brows it without registration A61
Postconditions:	all user can brows the system
Flow of Events for Main Success Scenario:	
→	1-user brows the system
←	2- System display its main page
Flow of Events for Extensions (Alternate Scenarios):	
	if the user can't brows the system
←	1- user's browser display message to check connection
→	2-user brows the system
←	3- System display its main page

Figure 3 . 6: Schema for Use case 1

Use Case 2 – (UC – 2)-search	
Related Requirements	REQ 6-15-27-37
Initiating Actor:	All actors
Actor's Goal:	search for items the system
Participating Actors:	
Preconditions:	system must enable all users to brows it without registration
Postconditions:	System view items
Flow of Events for Main Success Scenario:	
←	1-System Ask user to enter a name and select carteria
→	2-user enters search data
←	3- System check data.
←	4- If entersed data is valid the system will view the items
Flow of Events for Extensions (Alternate Scenarios):	
	if entersed data is invalid system will not view any item and display message to re-enters another name and carteria.
←	1-System Ask user to enter a name and select carteria
→	2-user enters search data
←	3- System check data.
←	4- If entersed data is valid the system will view the items

Figure 3 . 7 : Schema for Use case 2

Use Case 4 – (UC – 4)-registration	
Related Requirements	REQ 4-13-25-35
Initiating Actor:	All actors
Actor's Goal:	making registration on the system
Participating Actors:	
initiating Actor:	system must enable new user to add his data for registration
Postconditions:	user became registered user on the system
Flow of Events for Main Success Scenario:	
←	1-System Ask user to enter user's information
→	2-user enters his data
←	3- System check user's data.
←	4- If mandatory data are filled correctly System accepts a new user
Flow of Events for Extensions (Alternate Scenarios):	
	If mandatory data not filled correctly the system ask user to re enters correct data
←	1-System Ask user to enter user's information
→	2-user enters his data
←	3- System check user's data.
←	4- If mandatory data are filled correctly System accepts a new user

Figure 3 . 8: Schema for Use case 4

Use Case 5 – (UC – 5)-login	
Related Requirements	REQ 5-14-26-36
Initiating Actor:	All actors
Actor's Goal:	login to the system
Participating Actors:	
Preconditions:	User must have user name and password.
Postconditions:	System accepts login
Flow of Events for Main Success Scenario:	
←	1-System Ask user to enter username and password
→	2-user enters login data.
←	3- System check login data.
←	4- If login data is valid user can login the system
Flow of Events for Extensions (Alternate Scenarios):	
	if login data is invalid system will reject the login and display message to re-enters correct username and password
←	**1- System Ask user to reenters username and password**
→	2- user enters login data.
←	3- System check login data.
←	4- If login data is valid user can login the system

Figure 3 . 9: Schema for Use case 5

Use Case 6 – (UC – 6)-insert educational institution	
Related Requirements	REQ 8
Initiating Actor:	an educational institution administrator & System admin
Actor's Goal:	insert educational institution on the system
Participating Actors:	
Preconditions:	the educational institution administrator & System admin must have privilege to add new educational institution on the system's database
Postconditions:	the educational institution became existed on system's database
Flow of Events for Main Success Scenario:	
←	1-System Ask user to enter educational institution's information
→	2-the educational institution administrator enters the required data
←	3- System check educational institution's data.
←	4- If mandatory data are filled correctly System accepts the new educational institution
Flow of Events for Extensions (Alternate Scenarios):	
	If mandatory data not filled correctly the system ask user to re enters correct data
←	1-System Ask user to enter educational institution's information
→	2-educational institution administrator & System admin enters the required data
←	3- System check educational institution's data.
←	4- If mandatory data are filled correctly System accepts the new educational institution

Figure 3 . 10 : Schema for Use case 6

Use Case 7 – (UC –7)-update educational institution	
Related Requirements	REQ 9
Initiating Actor:	an educational institution administrator
Actor's Goal:	update educational institution on the system
Participating Actors:	
Preconditions:	the educational institution administrator must have the privilege to update educational institution on the system's database
Postconditions:	the educational institution became updated on system's database
Flow of Events for Main Success Scenario:	
←	1-System Ask user to enter educational institution's updated information
→	2-the educational institution administrator enters the required data
←	3- System check educational institution's data.
←	4- If mandatory data are filled correctly System accepts the updated information
Flow of Events for Extensions (Alternate Scenarios):	
	If mandatory data not filled correctly the system ask user to re enters correct data
←	1-System Ask user to enter educational institution's updated information
→	2-the educational institution administrator enters the required data
←	3- System check educational institution's data.
←	4- If mandatory data are filled correctly System accepts the updated information

Figure 3 . 11 : Schema for Use case 7

Use Case 8 – (UC – 8)- confirm requests of the educational institution	
Related Requirements	REQ 10
Initiating Actor:	An educational institution administrator
Actor's Goal:	confirming joining requests for the educational institution
Participating Actors:	
Preconditions:	the educational institution administrator must have the privilege to change to view joining requests and change their status
Postconditions:	the status of joining requests for the educational institution became confirmed
Flow of Events for Main Success Scenario:	
←	1-System views the pending joining requests to the educational institution administrator to proceed his action
→	2- the educational institution administrator confirms the joining request
←	4- System shows acknowledge message with accept action
Flow of Events for Extensions (Alternate Scenarios):	
	if the sytem doesn't accept the change of joining requests status
←	1-System views the pending joining requests to the educational institution administrator to proceed his action
→	2-educational institution administrator confirms the joining request
←	4- System shows acknowledge message with accept action

Figure 3 . 12: Schema for Use case 8

Use Case 9– (UC – 9)- reject requests of the educational institution	
Related Requirements	REQ 11
Initiating Actor:	An educational institution administrator
Actor's Goal:	Rejecting joining requests for the educational institution
Participating Actors:	
Preconditions:	the educational institution administrator must have the privilege to change to view joining requests and change their status
Postconditions:	the status of joining requests for the educational institution became rejected
Flow of Events for Main Success Scenario:	
← → ←	1-System views the pending joining requests to the educational institution administrator to proceed his action 2- the educational institution administrator rejectes the joining request 4- System shows acknowledge message with accept action
Flow of Events for Extensions (Alternate Scenarios):	
	if the sytem doesn't accept the change of joining requests status
← → ←	1-System views the pending joining requests to the educational institution administrator to proceed his action 2-educational institution administrator rejects the joining request 4- System shows acknowledge message with accept action

Figure 3 . 13: Schema for Use case 9

Use Case 11 – (UC – 11)-insert Training centers	
Related Requirements	REQ 17
Initiating Actor:	Training center administrator & System admin
Actor's Goal:	insert Training centers on the system
Participating Actors:	
Preconditions:	The training centers administrator & System admin must have privilege to add new training centers on the system's database
Postconditions:	the training centers became existed on system's database
Flow of Events for Main Success Scenario:	
←	1-System Ask user to enter the training centers's information
→	2-the training centers administrator enters the required data
←	3- System check user's data.
←	4- If mandatory data are filled correctly System accepts the new training centers
Flow of Events for Extensions (Alternate Scenarios):	
	If mandatory data not filled correctly the system ask user to re enters correct data
←	1-System Ask user to enter training centers's information
→	2-The training centers administrator & System admin enters the required data
←	3- System check training centers's data.
←	4- If mandatory data are filled correctly System accepts the new training centers

Figure 3 . 14 : Schema for Use case 11

Use Case 12 – (UC – 12)-Update Training centers	
Related Requirements	REQ 18
Initiating Actor:	Training centers administrator & System admin
Actor's Goal:	Update Training centers on the system
Participating Actors:	
Preconditions:	The training centers administrator & System admin must have privilege to update training centers on the
Postconditions:	The training centers became updated on system's database
Flow of Events for Main Success Scenario:	
←	1-System Ask user to enter the training centers's information
→	2-the training centers administrator enters the required data
←	3- System check training centers's data.
←	4- If mandatory data are filled correctly System accepts the update
Flow of Events for Extensions (Alternate Scenarios):	
	If mandatory data not filled correctly the system ask user to re enters correct data
←	1-System Ask user to reenters the training centers's information
→	2-the training centers administrator enters the required data
←	3- System check training centers's data.
←	4- If mandatory data are filled correctly System accepts the update

Figure 3 . 15 : Schema for Use case 12

Use Case 13 – (UC – 13)-insert course	
Related Requirements	REQ 19
Initiating Actor:	Training centers administrator
Actor's Goal:	Insert Training centers's course on the system
Participating Actors:	
Preconditions:	The training centers administrator must have privilege to add new training centers's course on the system's database
Postconditions:	The training centers's course became existed on system's database
Flow of Events for Main Success Scenario:	
←	1-System Ask user to enter the training centers's course information
→	2-the training centers administrator enters the required data
←	3- System check the training centers's course data.
←	4- If mandatory data are filled correctly System accepts the new training centers's course
Flow of Events for Extensions (Alternate Scenarios):	
	If mandatory data not filled correctly the system ask user to re enters correct data
←	1-System Ask user to enter training centers's course information
→	2-The training centers administrator enters the required data
←	3- System check training centers's course data.
←	4- If mandatory data are filled correctly System accepts the new training centers's course

Figure 3 . 16 : Schema for Use case 13

Use Case 14 – (UC – 14)- Update course	
Related Requirements	REQ 20
Initiating Actor:	Training centers administrator
Actor's Goal:	Update Training centers's course on the system
Participating Actors:	
Preconditions:	The training centers administrator must have privilege to update training centers's course on the system's database
Postconditions:	The training centers's course became updated on system's database
Flow of Events for Main Success Scenario:	
←	1-System Ask user to enter the training centers's course information
→	2-the training centers administrator enters the required data
←	3- System check the training centers's course data.
←	4- If mandatory data are filled correctly System accepts the course's update
Flow of Events for Extensions (Alternate Scenarios):	
	If mandatory data not filled correctly the system ask user to re enters correct data
←	1-System Ask user to enter training centers's course information
→	2-The training centers administrator enters the required data
←	3- System check training centers's course data.
←	4- If mandatory data are filled correctly System accepts the course's update

Figure 3 . 17: Schema for Use case 14

Use Case 16 – (UC – 16)- confirm booking requests for training centers's course	
Related Requirements	REQ 22
Initiating Actor:	The training centers administrator
Actor's Goal:	confirming booking requests for the training centers
Participating Actors:	
Preconditions:	The training centers administrator must have the privilege to view booking requests and change their status
Postconditions:	the status of booking requests for the educational institution became confirmed booking
Flow of Events for Main Success Scenario:	
←	1-System views the pending booking requests & the training centers administrator proceeds his action
→	2-The training centers administrator confirms the booking request
←	4- System shows acknowledge message with accept action
Flow of Events for Extensions (Alternate Scenarios):	
	if the sytem doesn't accept the change of joining requests status
←	1-System views the pending booking requests & the training centers administrator proceeds his action
→	2-The training centers administrator confirms the booking request
←	4- System shows acknowledge message with accept action

Figure 3 . 18: Schema for Use case 16

Use Case 18 – (UC – 18)- place joing requests for the educational institution	
Related Requirements	REQ 29
Initiating Actor:	A parent
Actor's Goal:	placing joining requests for the educational institution
Participating Actors:	
Preconditions:	A student must have the privilege to add joining requests
Postconditions:	A new joining requests for the educational institution is done
Flow of Events for Main Success Scenario:	
←	1-System Ask user to enter joining request for the educational institution's information
→	2-The parent enters the required data
←	3- System check joining request's data.
←	4- If mandatory data are filled correctly System accepts placing new joining request
Flow of Events for Extensions (Alternate Scenarios):	
	if the sytem doesn't accept the placing of new joining requests
←	1-System Ask user to enter joining request for the educational institution's information
→	2-The parent enters the required data
←	3- System check joining request's data.
←	4- If mandatory data are filled correctly System accepts placing new joining request

Figure 3 . 19: Schema for Use case18

Use Case 19 – (UC – 19)- cancel joing requests for the educational institution	
Related Requirements	REQ 30
Initiating Actor:	A parent
Actor's Goal:	cancelling joining requests for the educational institution
Participating Actors:	
Preconditions:	A parent must have the privilege to cancel joining requests
Postconditions:	joining requests for the educational institution is canceled
Flow of Events for Main Success Scenario:	
←	1-System Ask user to choose joining request for the educational institution
→	2-The parent cancel the required data
←	3- System display acknowledge with canceled request
Flow of Events for Extensions (Alternate Scenarios):	
	if the sytem doesn't accept the cancel joining requests
←	1-System Ask user to choose joining request for the educational institution
→	2-The parent cancel the required data
←	3- System display acknowledge with canceled request

Figure 3 . 20 : Schema for Use case19

Use Case 21 – (UC –21)- place booking request for training centers's course	
Related Requirements	REQ 32
Initiating Actor:	A student
Actor's Goal:	placing booking request for training centers's course
Participating Actors:	
Preconditions:	A student must have the privilege to place booking request
Postconditions:	A new booking request for training centers's course is done
Flow of Events for Main Success Scenario:	
←	1-System Ask user to enter booking request for training centers's information
→	2-The student enters the required data
←	3- System check booking request for training centers's course data.
←	4- If mandatory data are filled correctly System accepts placing new booking request
Flow of Events for Extensions (Alternate Scenarios):	
	if the sytem doesn't accept the placing of new joining requests
←	1-System Ask user to enter booking request for training centers's information
→	2-The student enters the required data
←	3- System check booking request for training centers's course data.
←	4- If mandatory data are filled correctly System accepts placing new booking request

Figure 3 . 21: Schema for Use case 21

Use Case 22 – (UC – 22)- cancel booking request for training centers's course	
Related Requirements	REQ 33
Initiating Actor:	A student
Actor's Goal:	cancelling booking request for training centers's course
Participating Actors:	
Preconditions:	A student must have the privilege to cancelbooking request for training centers's course
Postconditions:	booking request for training centers's course is canceled
Flow of Events for Main Success Scenario:	
←	1-System Ask user to choose booking request for training centers's course
→	2-The student cancel the required data
←	3- System display acknowledge with canceled request
Flow of Events for Extensions (Alternate Scenarios):	
	if the sytem doesn't accept the cancel booking request for training centers's course
←	1-System Ask user to choose booking request for training centers's course
→	2-The student cancel the required data
←	3- System display acknowledge with canceled booking

Figure 3 . 22: Schema for Use case 22

3.1.3 Traceability Matrix

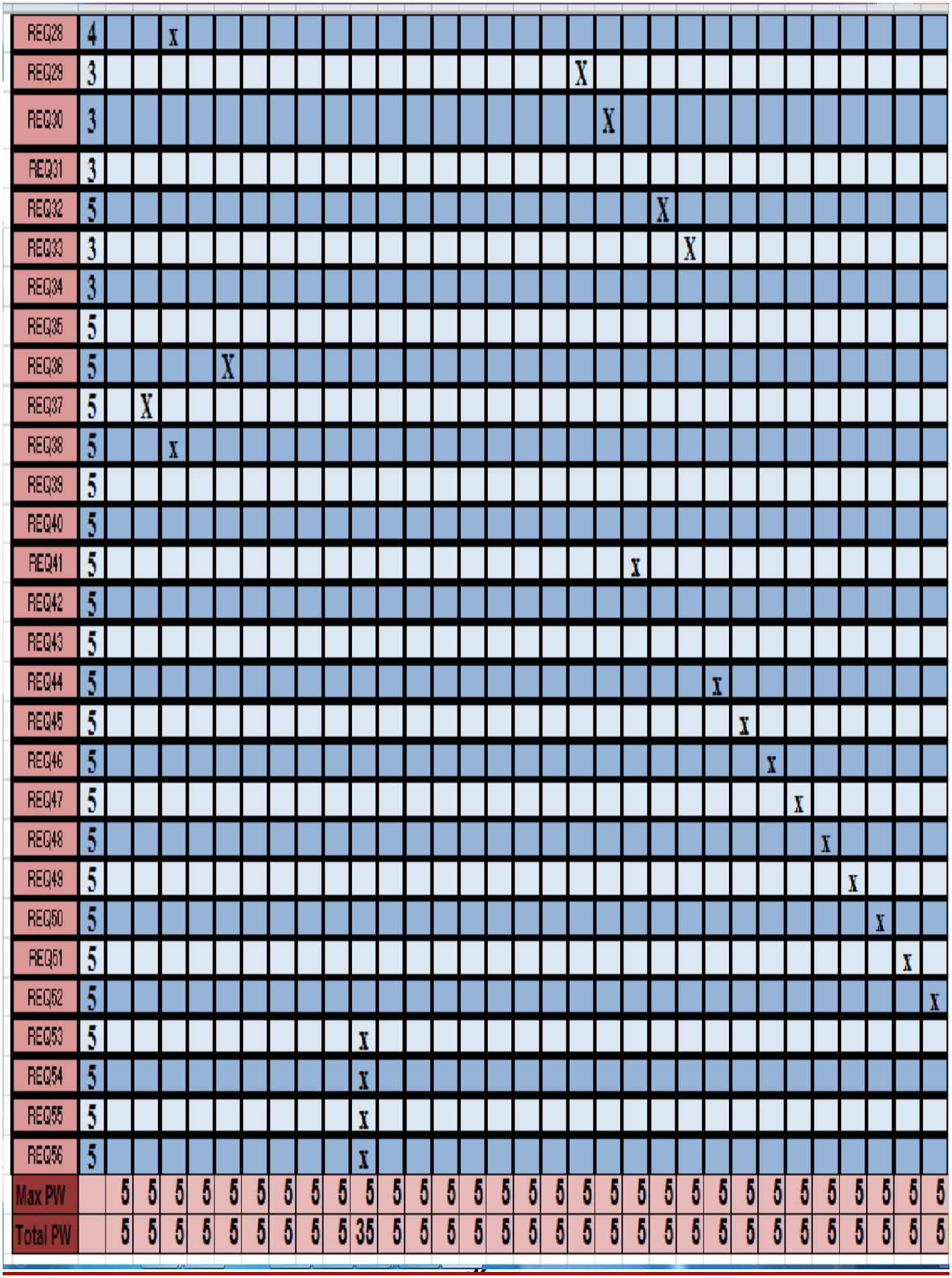
Purpose

"Traceability refers to the property of a software artifact, such as a use case or a class, of being traceable to the original requirement"[2]

- **To check that all requirements are covered by the use cases**
- **To check that none of the use cases is introduced without a reason (i.e., created not in response to any requirement)**
- **To prioritize the work on use cases**

Table 3 . 1: Mapping: System requirements to Use cases…continued

Requirements	PW	UC-1	UC-2	UC-3	UC-4	UC-5	UC-6	UC-7	UC-8	UC-9	UC-10	UC-11	UC-12	UC-13	UC-14	UC-15	UC-16	UC-17	UC-18	UC-19	UC-20	UC-21	UC-22	UC-23	UC-24	UC-25	UC-26	UC-27	UC-28	UC-29	UC-30	UC-31
REQ1	5	X																														
REQ2	5																															
REQ3	5			x																												
REQ4	5				X																											
REQ5	4					X																										
REQ6	4		X																													
REQ7	4			x																												
REQ8	3						X																									
REQ9	3							X																								
REQ10	3								X																							
REQ11	3									X																						
REQ12	4										x																					
REQ13	4				X																											
REQ14	4					X																										
REQ15	4		X																													
REQ16	3			x																												
REQ17	3											X																				
REQ18	3												X																			
REQ19	3													X																		
REQ20	5														X																	
REQ21	4																															
REQ22	3																X															
REQ23	3																	X														
REQ24	3										x																					
REQ25	3				X																											
REQ26	3					X																										
REQ27	3		X																													
REQ28	4			x																												



3.2 System domain model

What is domain modeling?

The domain model typically shows the major business entities, their functional responsibilities, and the relationships among the entities. It also provides a high-level description of the data that each entity provides.

The goal of domain modeling is to understand how system-to-be will work. Requirements analysis determined how users will interact with system-to-be (external behavior). Domain modeling determines how elements of system-to-be interact (internal behavior) to produce the external behavior.

3.2.1 Interaction diagrams

Overview

From the name interaction it is clear that the diagram is used to describe some type of interactions among the different elements in the model. So this interaction is a part of dynamic behavior of the system.

This interactive behavior is represented in UML by two diagrams known as Sequence diagram and Activity diagram. The basic purposes of both the diagrams are similar.
Sequence diagram emphasizes on time sequence of messages and Activity diagram emphasizes on the flow of events of the system.

Purpose:

A system sequence diagram represents in a visual form a usage scenario that an actor experiences while trying to obtain" [3] The purposes of interaction diagrams are to visualize the interactive behavior of the system.

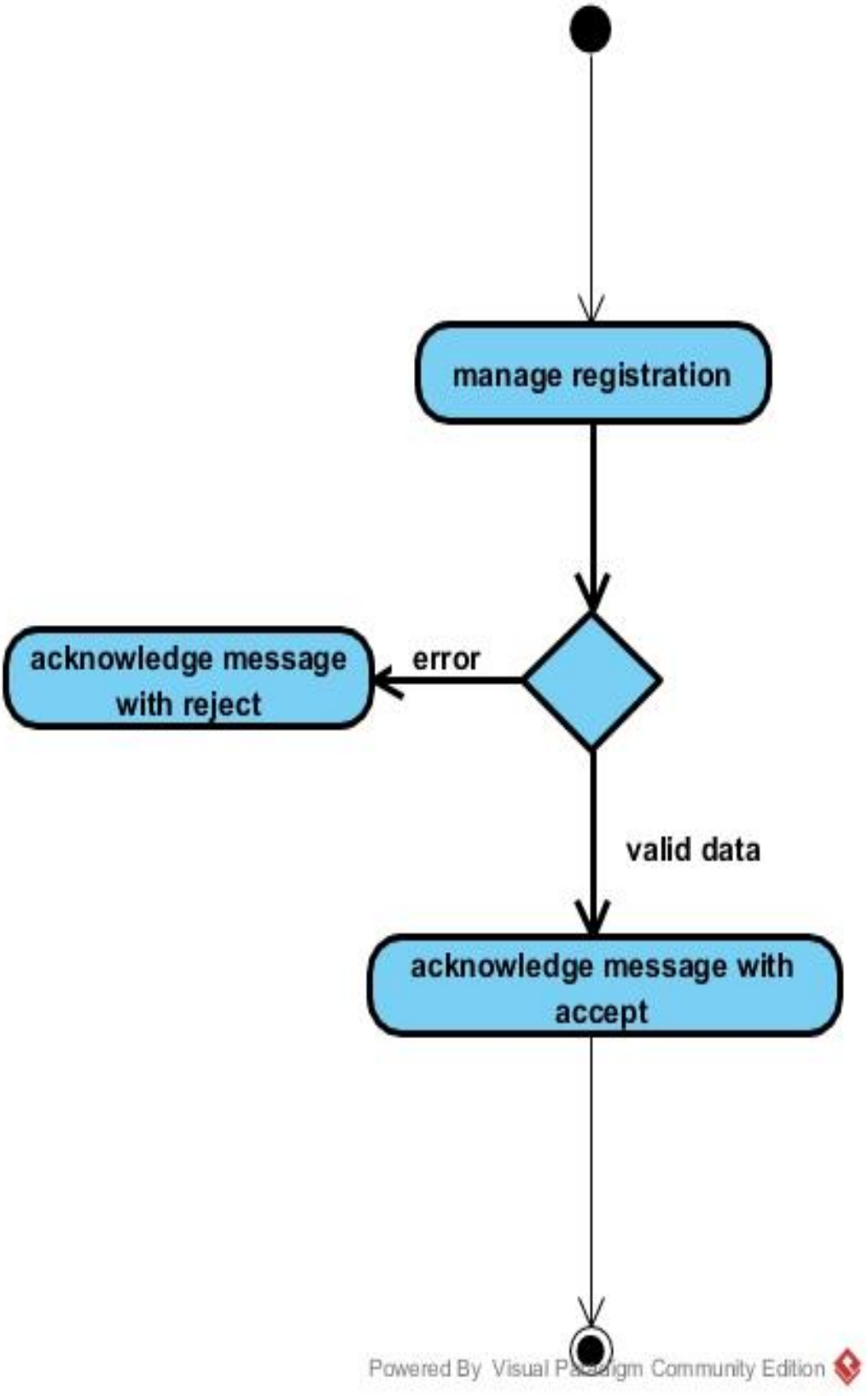
So the purposes of interaction diagram:

- To capture dynamic behavior of a. system
- To describe the message flow in the system.
- To describe structural organization of the objects.
- To describe interaction among objects.

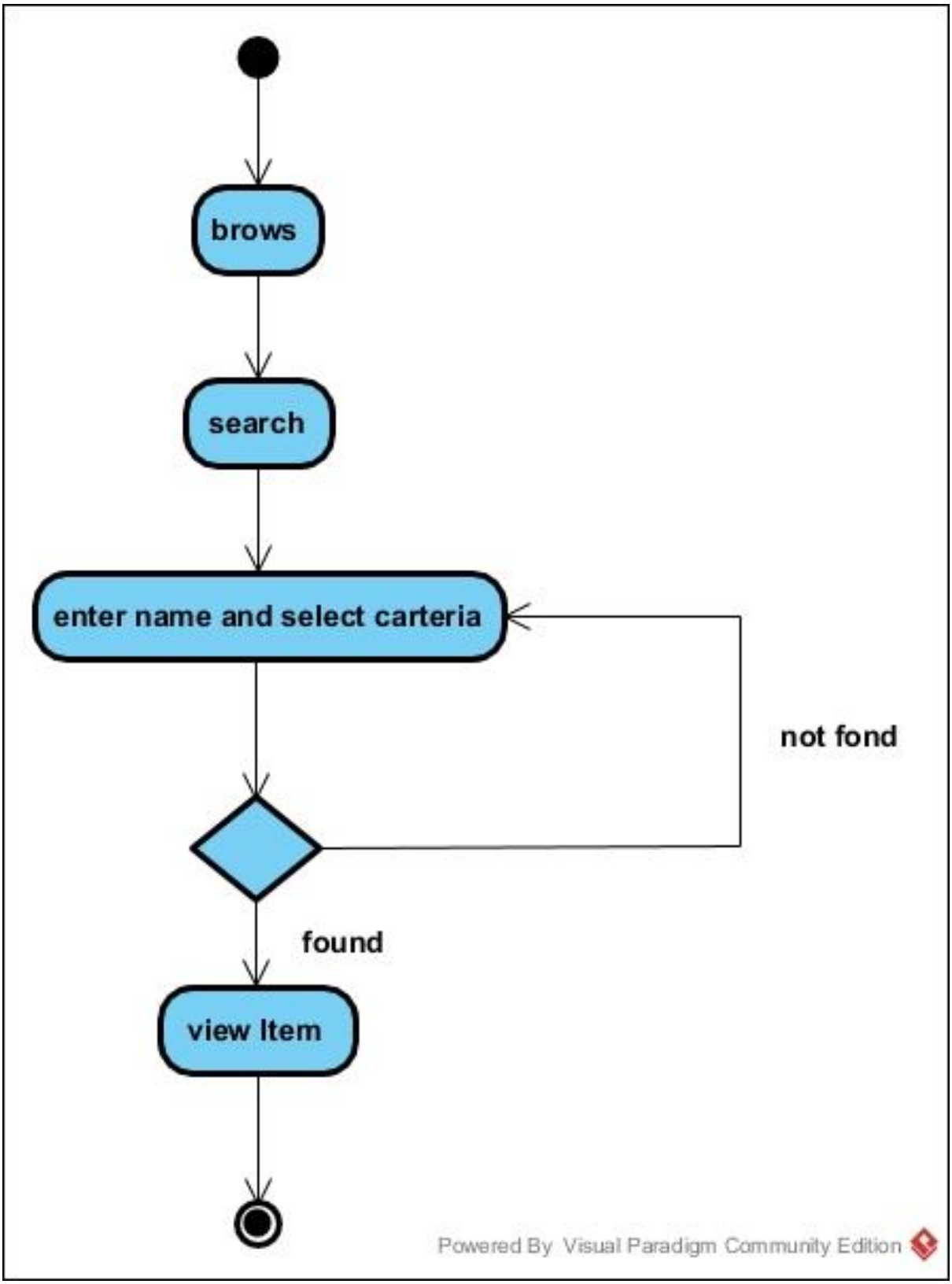
3.2.1.1 Activity diagrams

The activity diagram is a simple and intuitive illustration of what happens in a workflow, what activities can be done in parallel, and whether there are alternative paths through the workflow. Activity diagrams as defined in the Unified Modeling Language.
You can use activity diagrams to visualize the workflow of a business use case. A complete workflow description will have a basic flow, and one or several alternative flows.

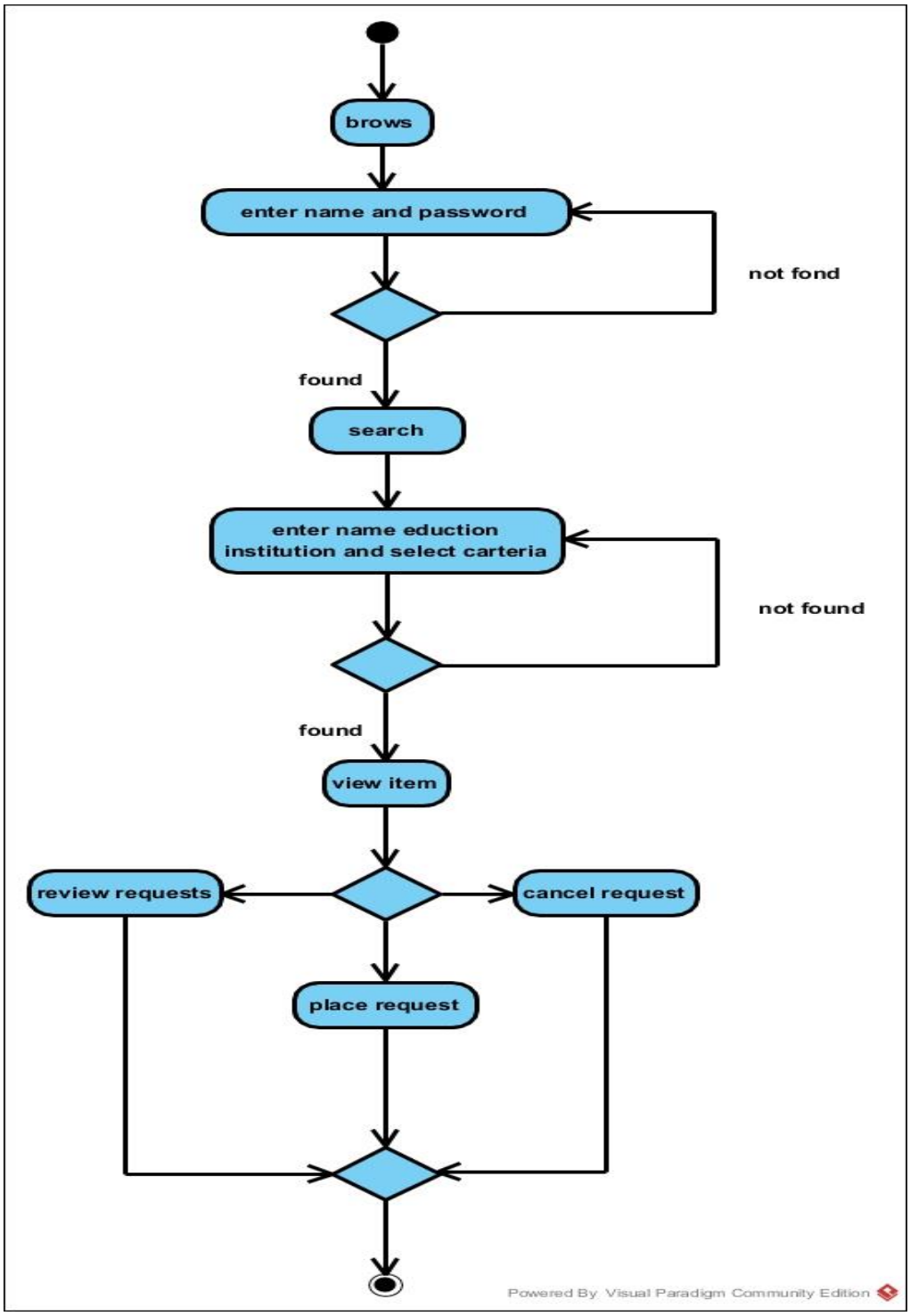
Activity Diagram of Registration



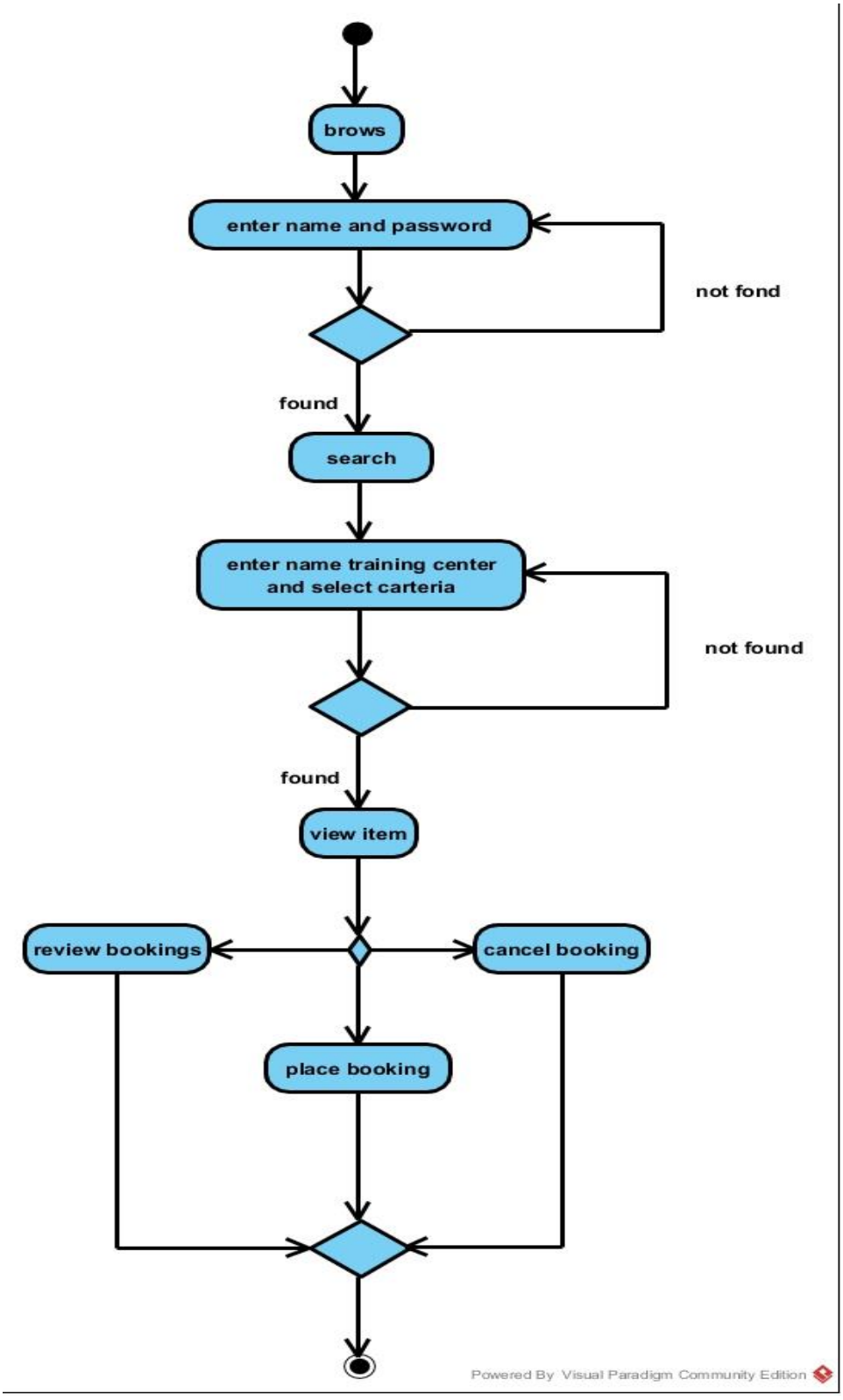
Activity Diagram of view Item



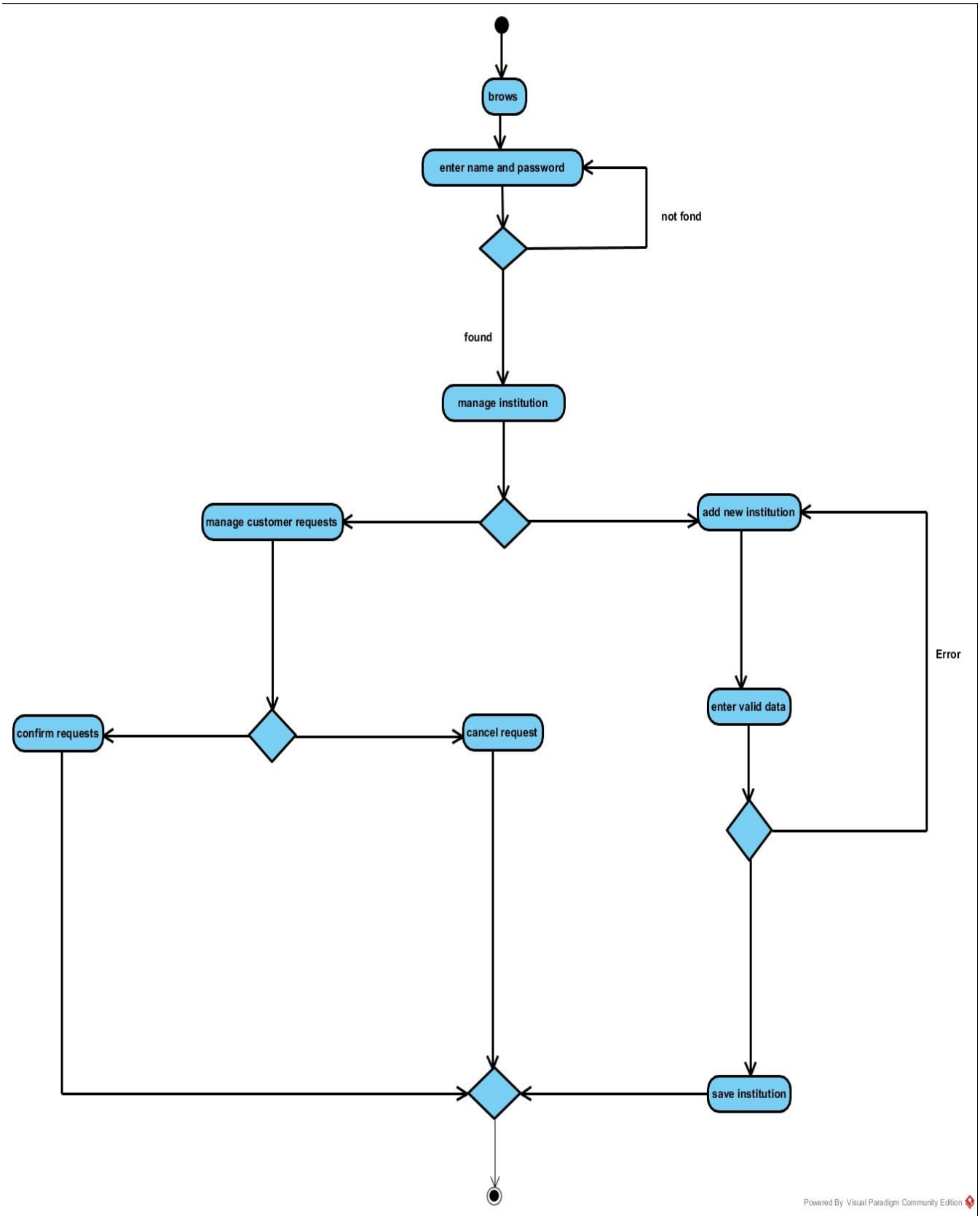
Activity Diagram of view Item



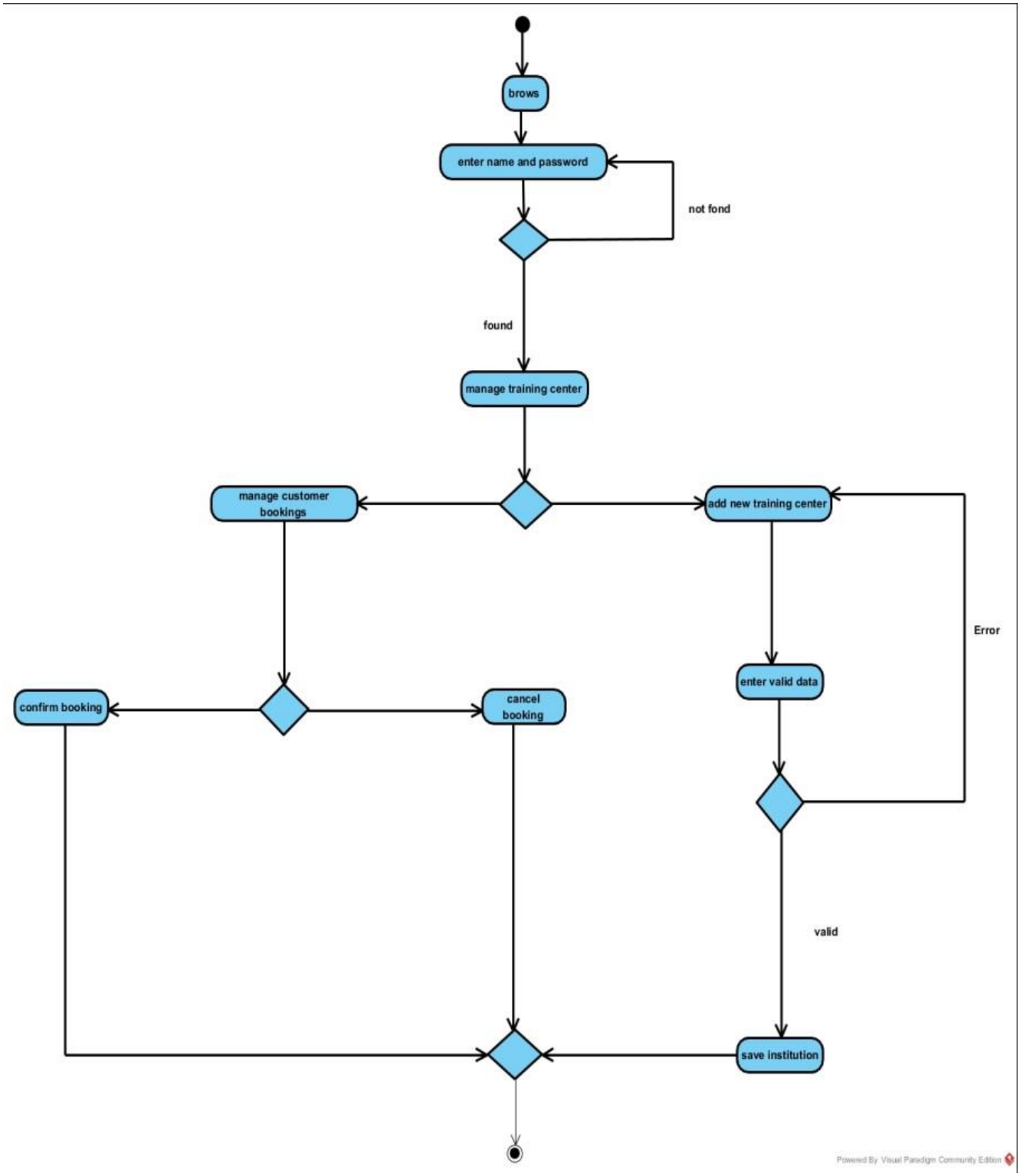
Activity Diagram of Student and Parent activities



Activity Diagram of Educational Institution Administrator activities

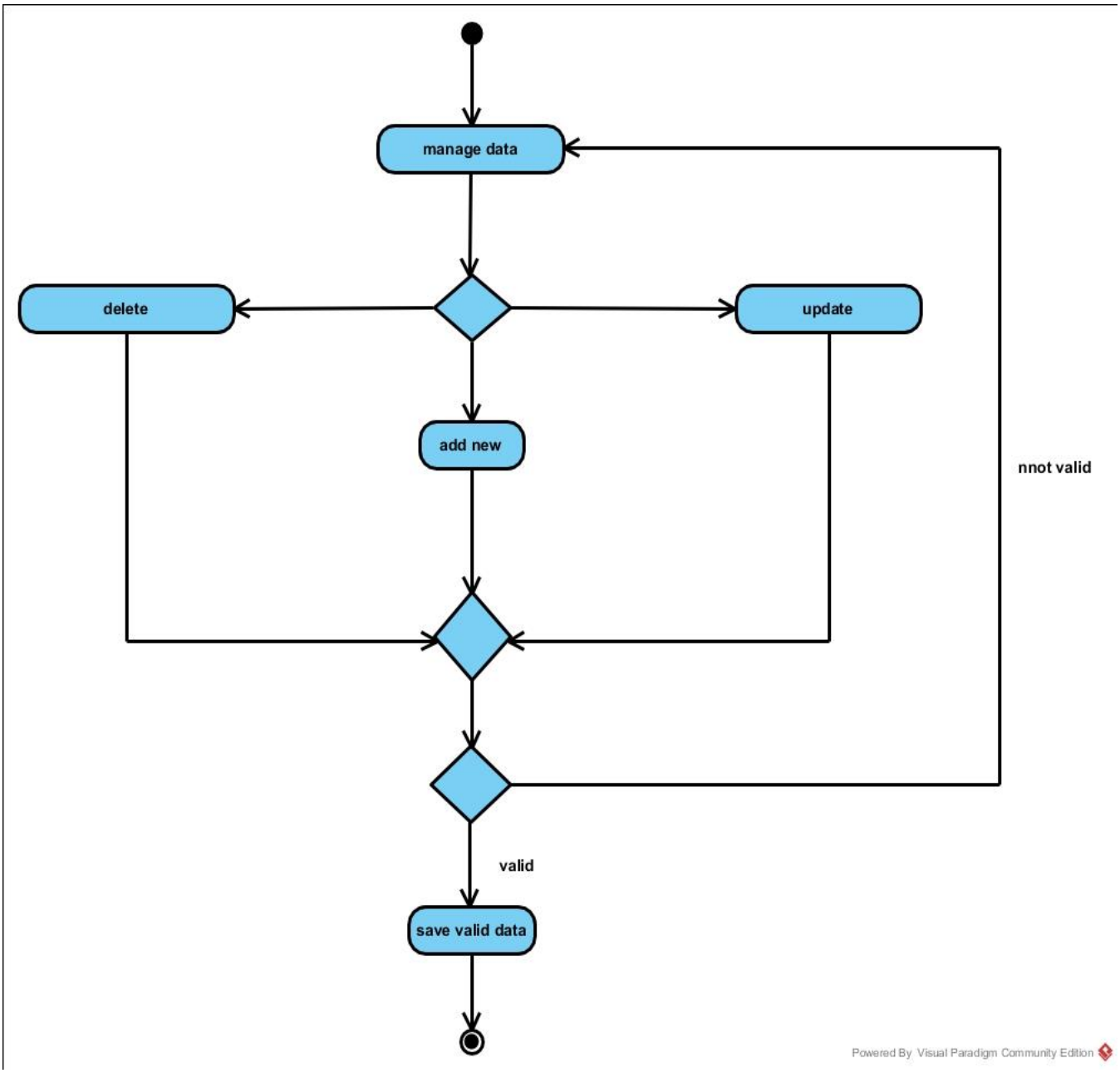


Activity Diagram of Training center administrator activities

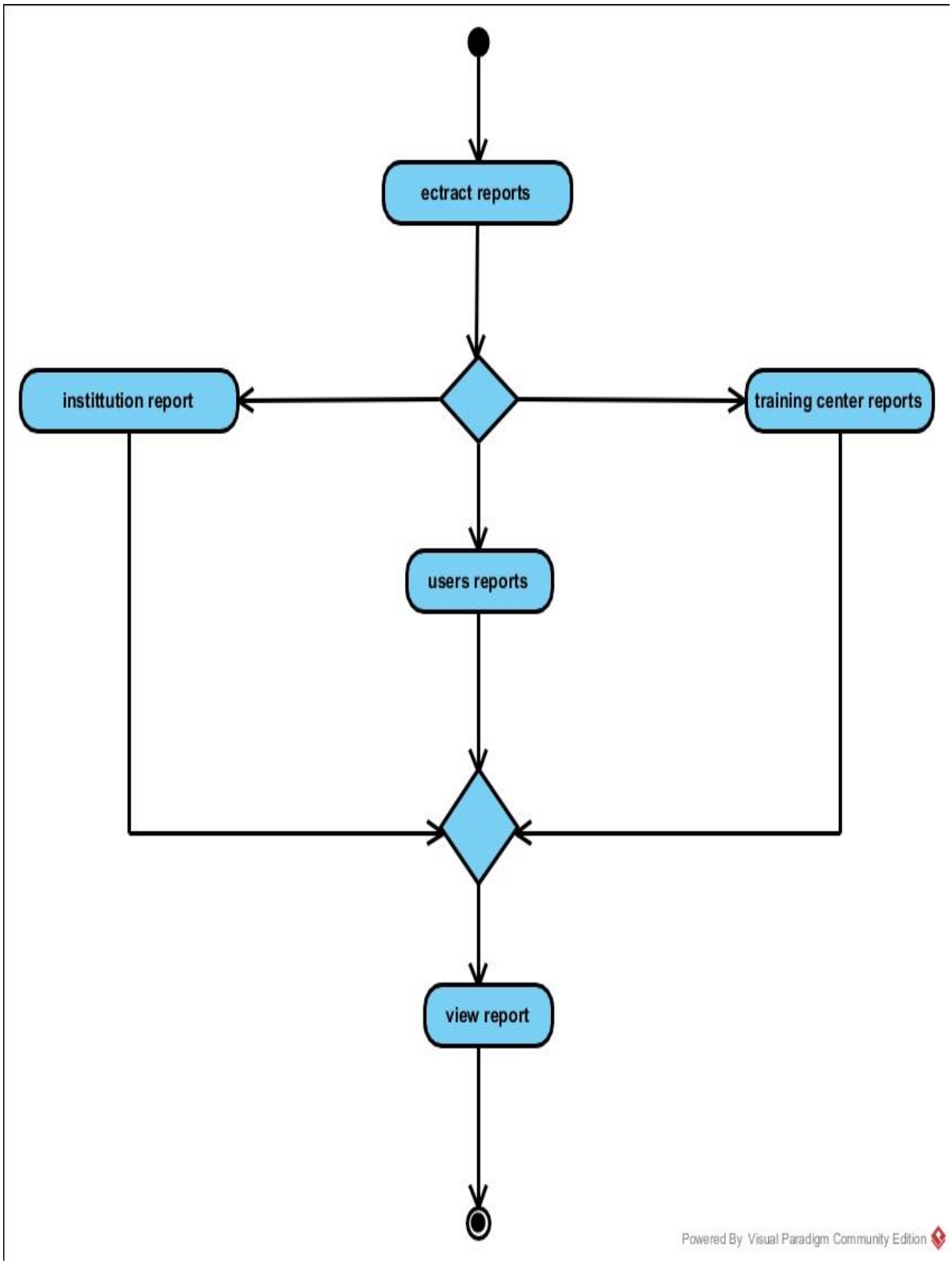


o

Activity Diagram of Administrator's Management for Data



Activity Diagram of Administrator's Management for Data

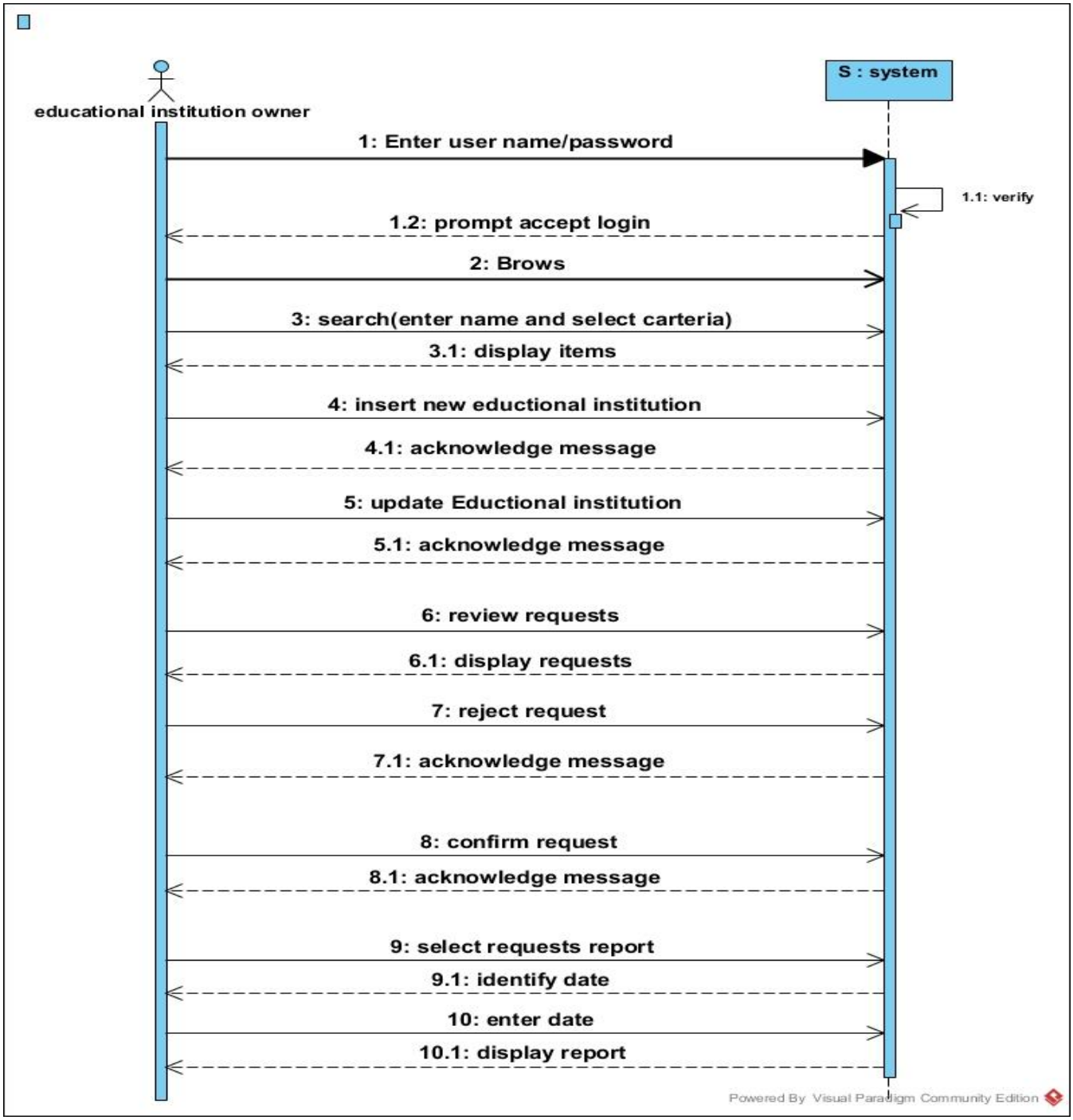


3.2.1.2 sequence diagrams

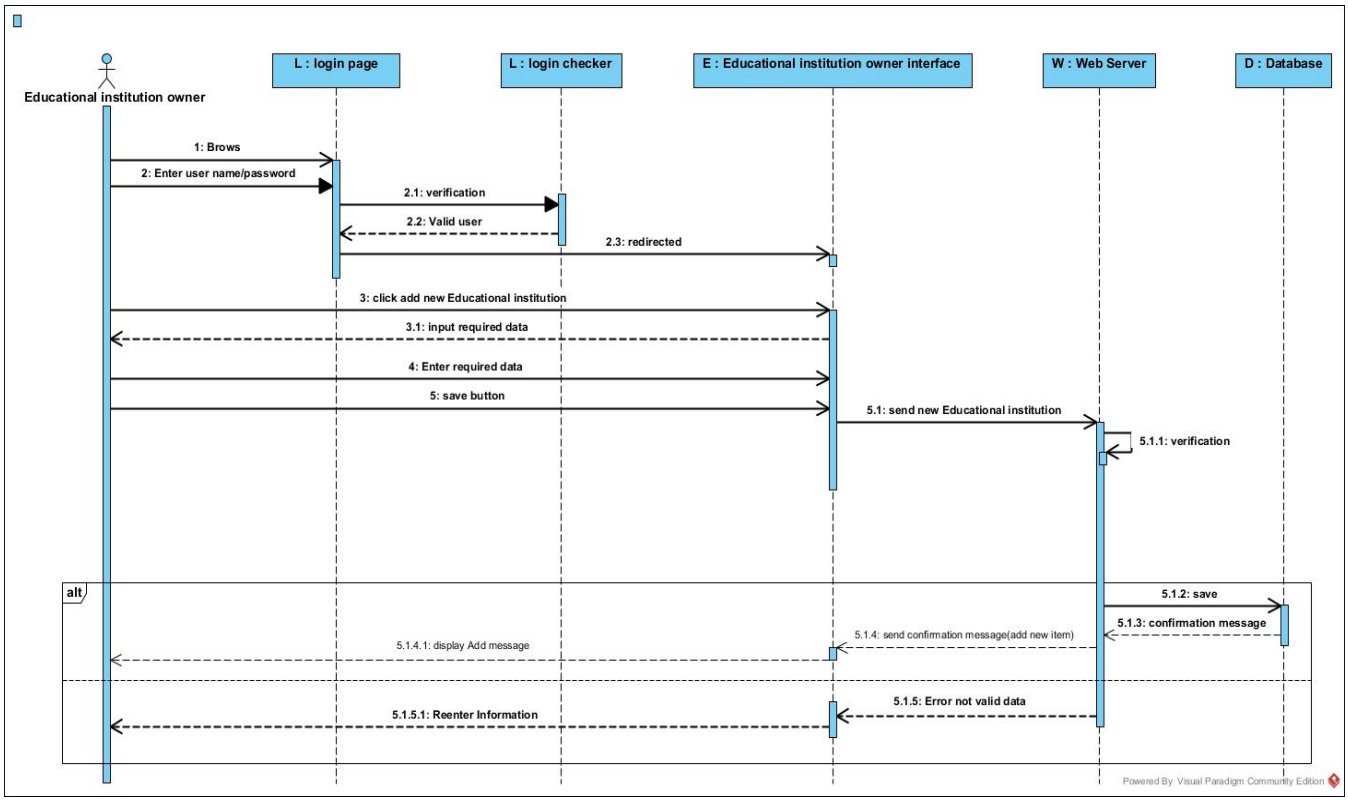
UML sequence diagrams model the flow of logic within your system in a visual manner, enabling you both to document and validate your logic, and are commonly used for both analysis and design purposes. Sequence diagrams are the most popular UML artifact for dynamic modeling, which focuses on identifying the behavior within system.
We two Types of

- **System** Sequence Diagrams considered interactions between the **actors**
- **Object** Sequence Diagrams consider interactions between the **objects**

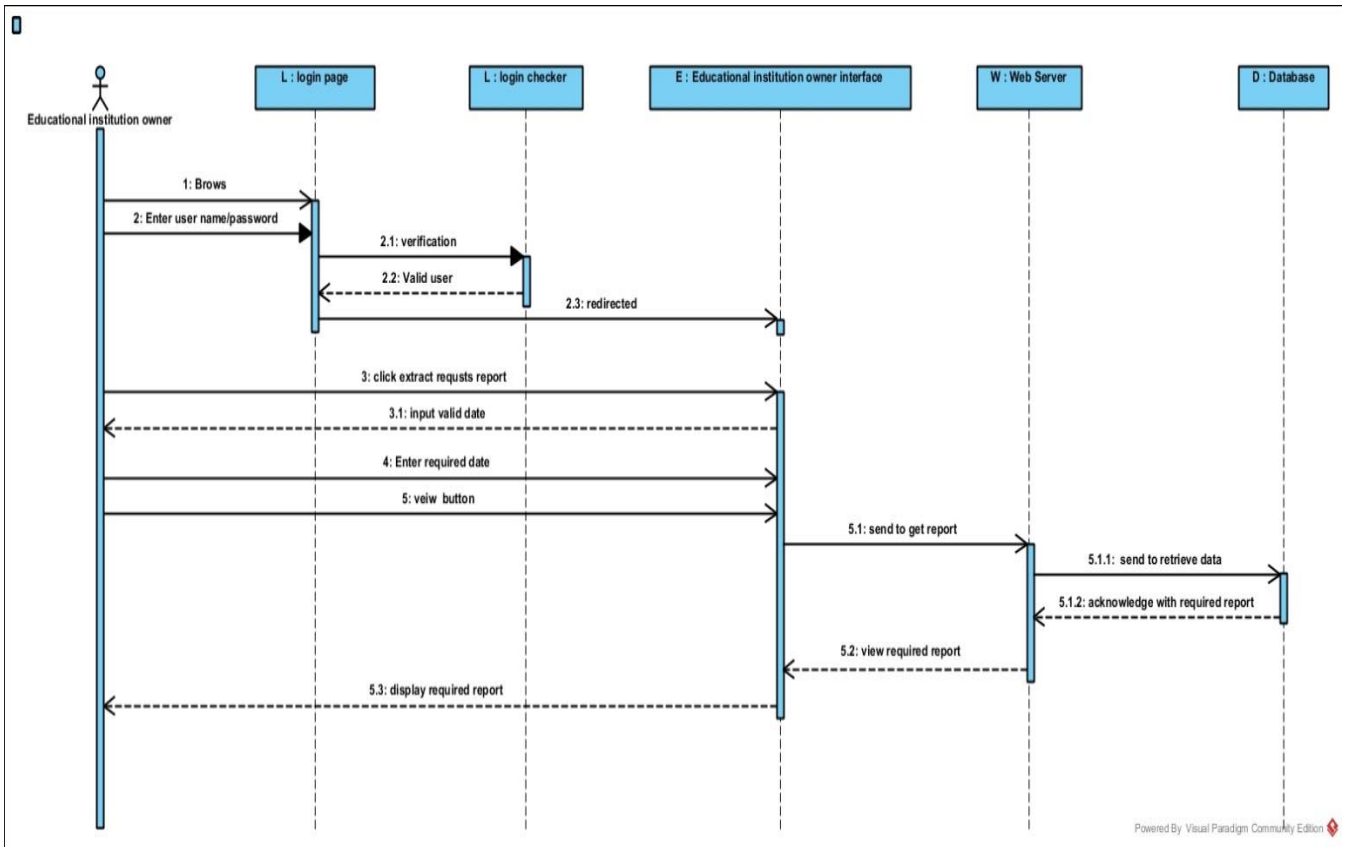
System Sequence Diagram of Educational Institution Administrator



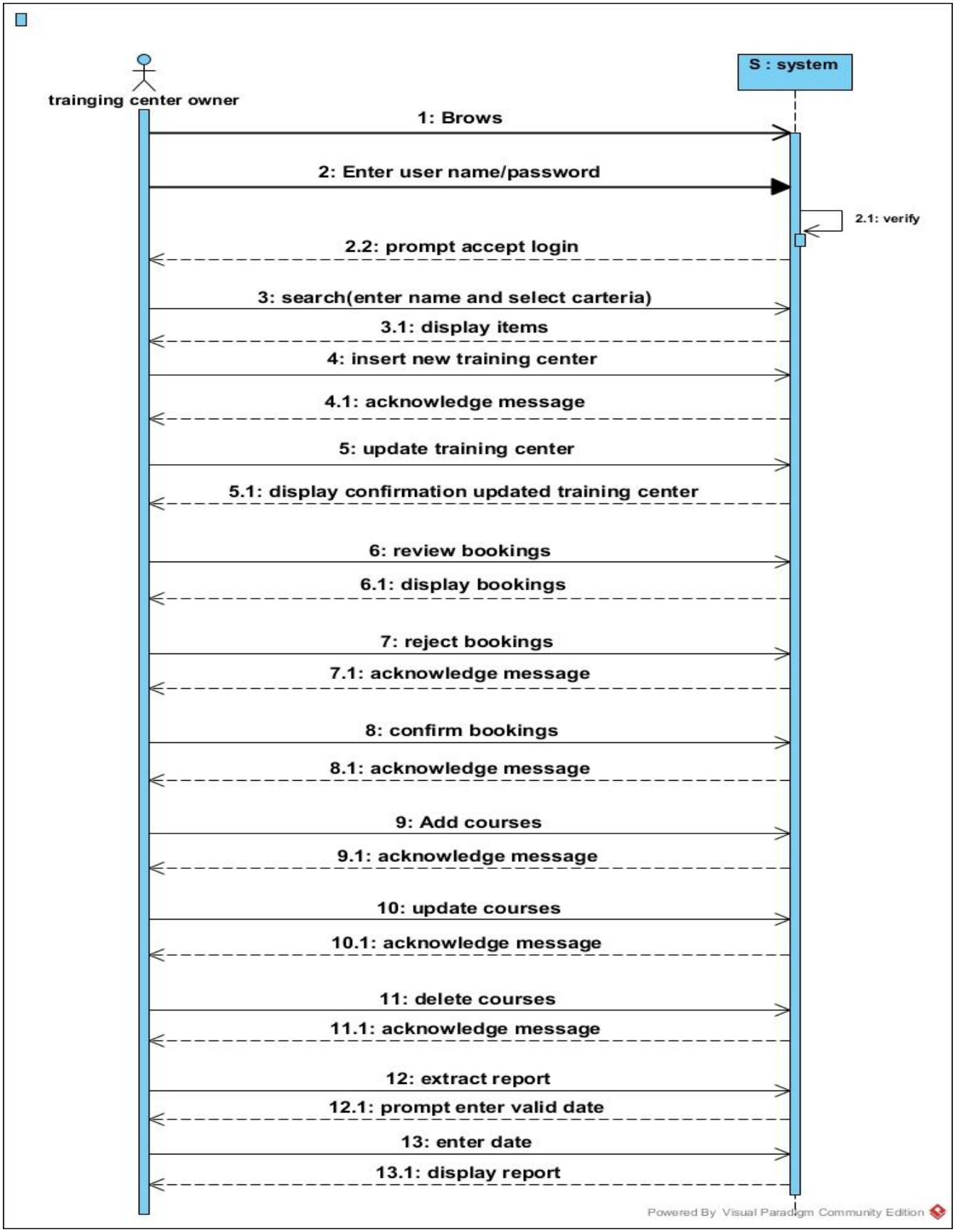
Object Sequence Diagram of Educational Institution Administrator (Add Educational Institution)



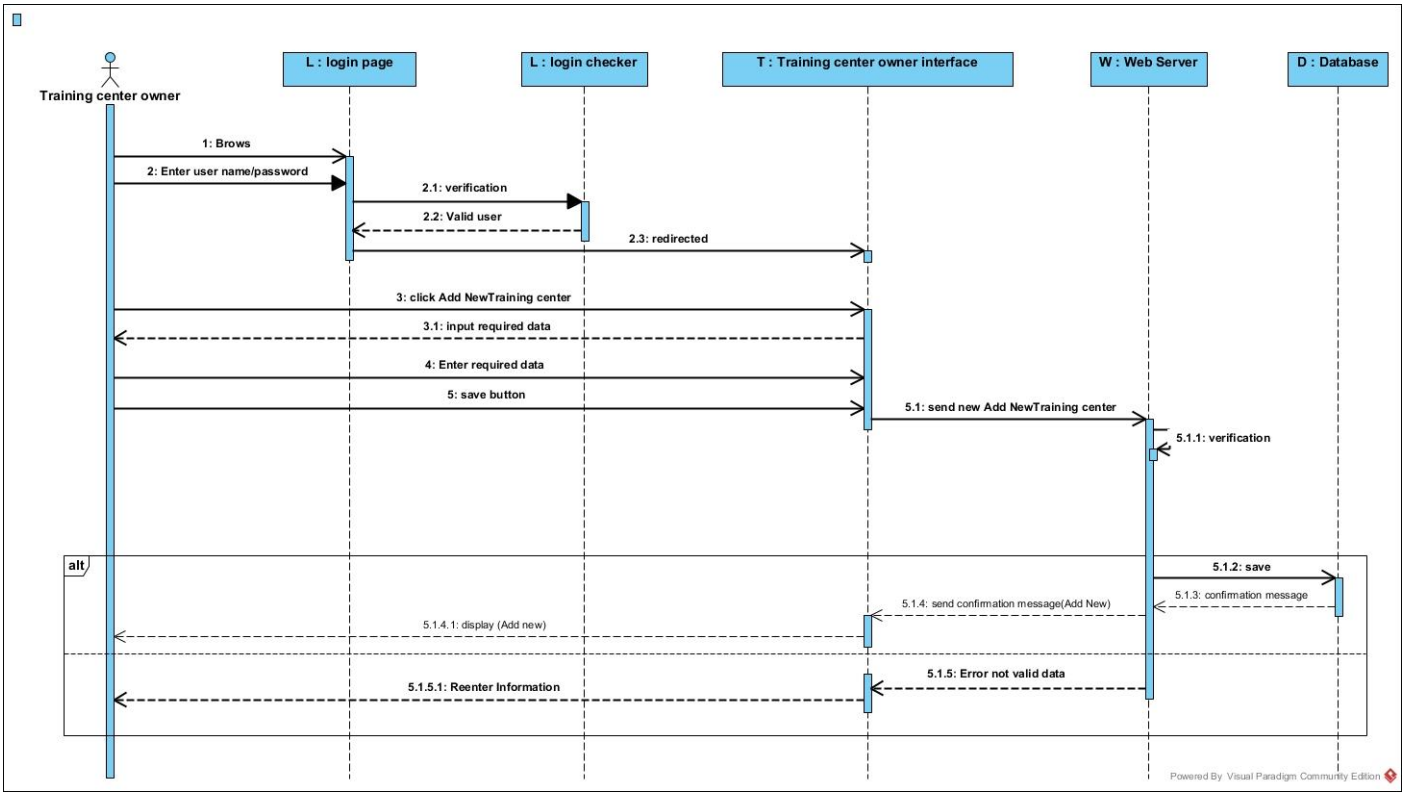
Object Sequence Diagram of Educational Institution Administrator(Exctract Report)



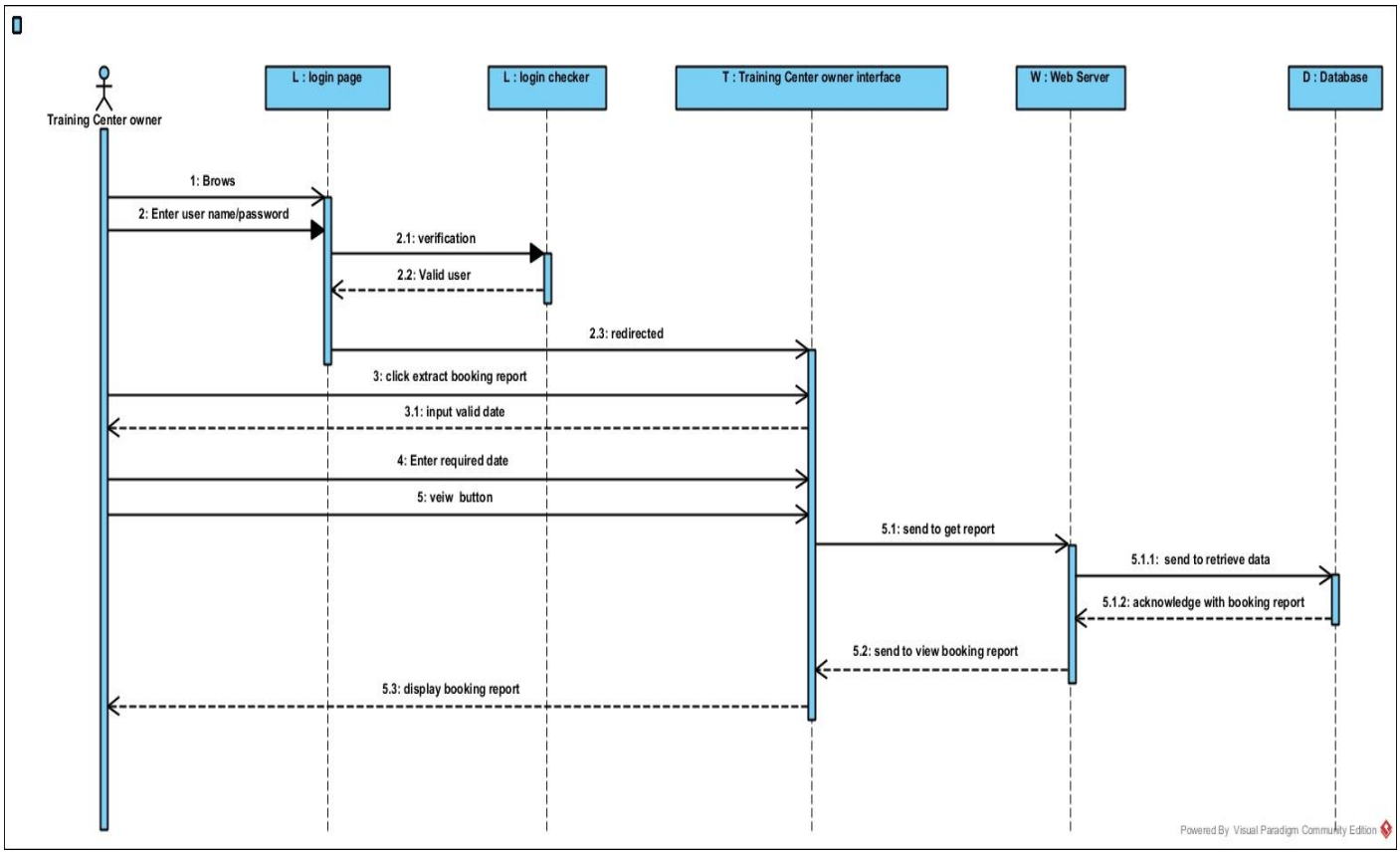
System Sequence Diagram of Training Center Administrator



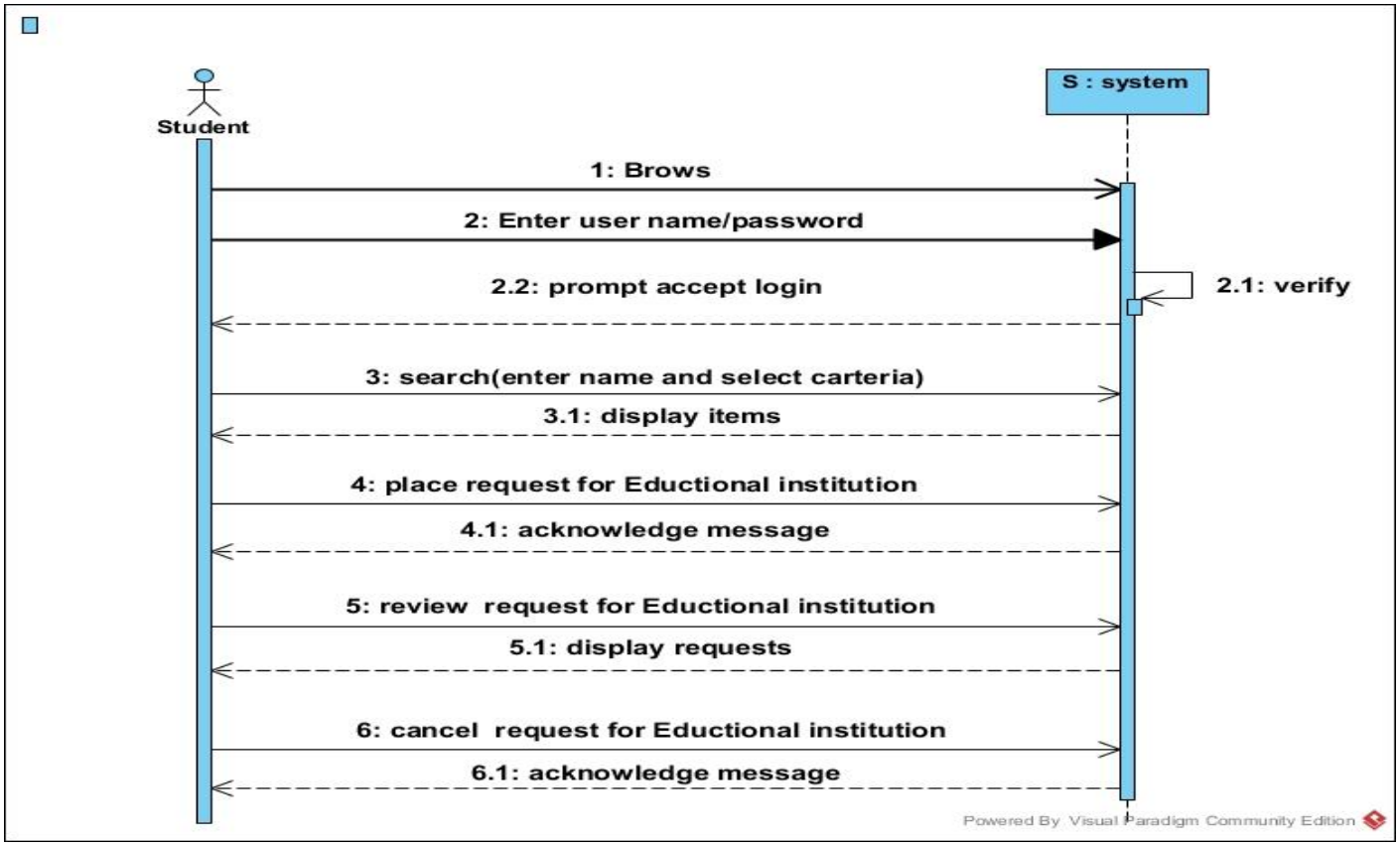
Object Sequence Diagram of Training Center Administrator (Add Training Center)



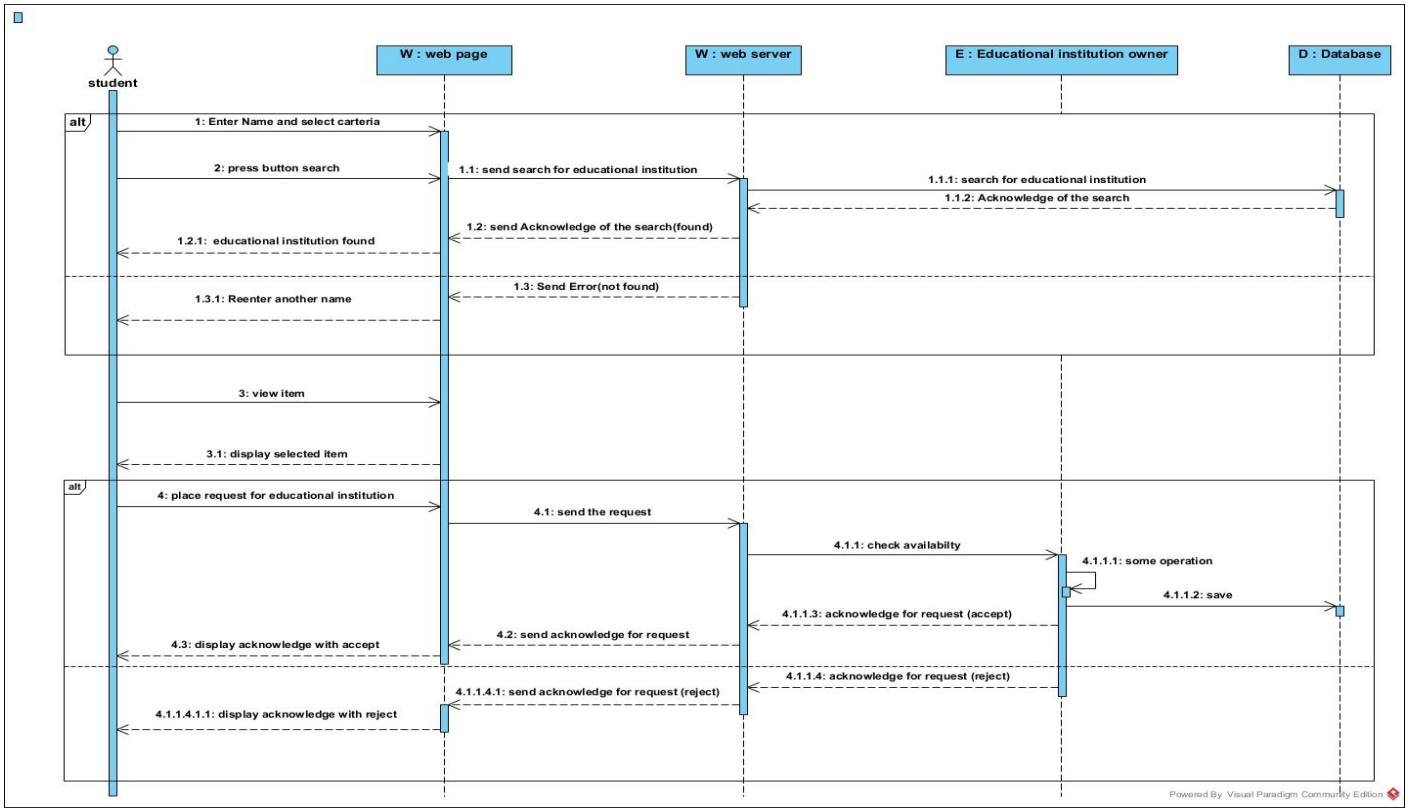
Object Sequence Diagram of Training Center Administrator (Exctract Report)



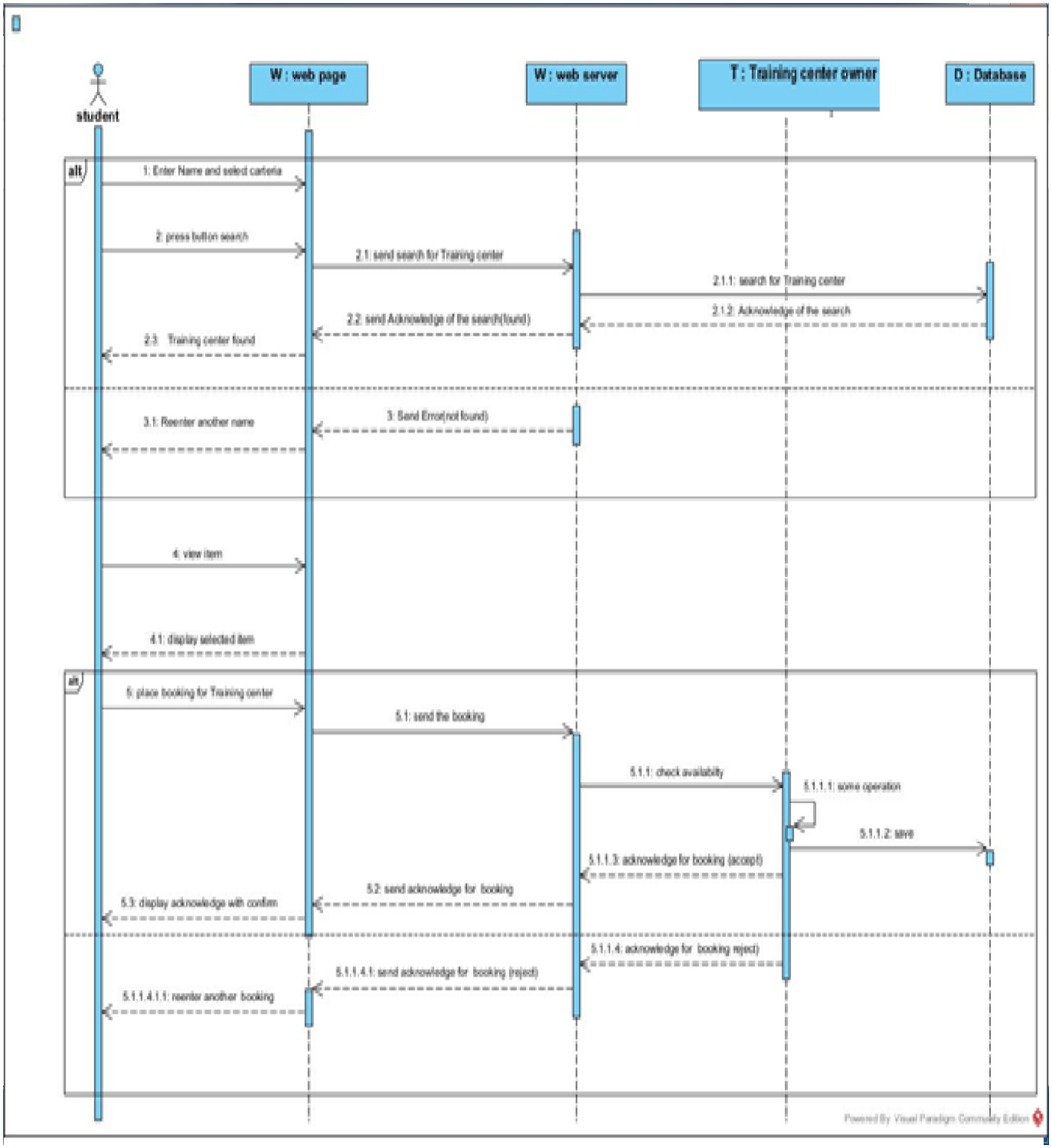
System Sequence Diagram of Student



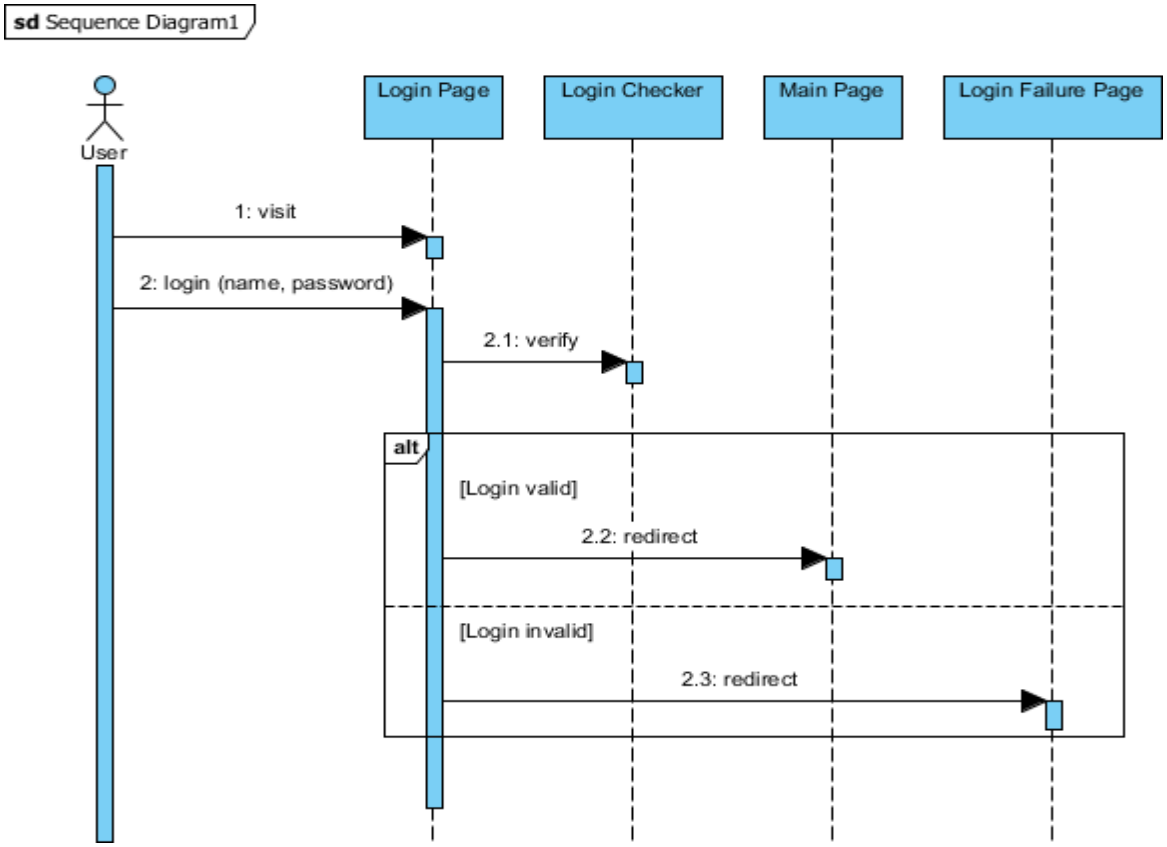
Object Sequence Diagram of Student (place joining request)



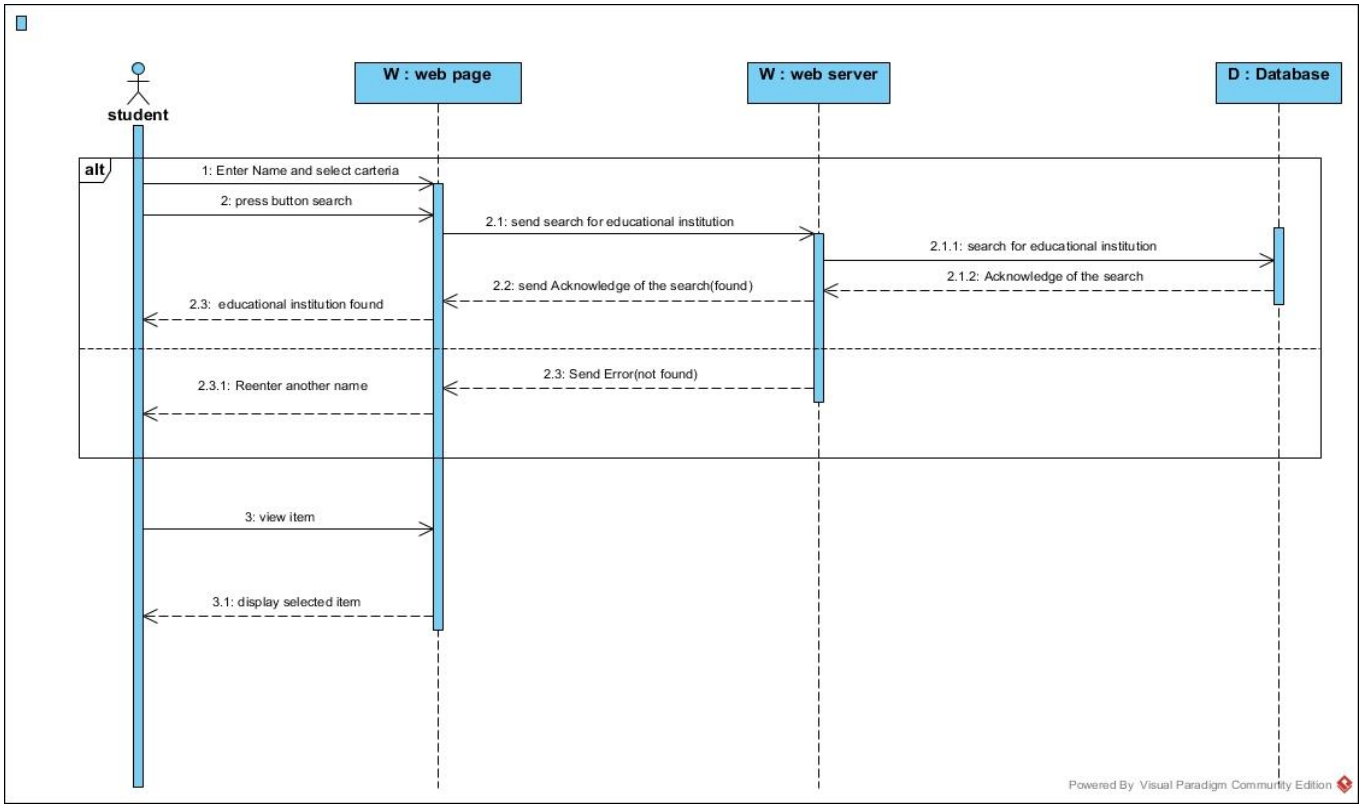
Object Sequence Diagram of Student (place bookingrequest)



System Sequence Diagram of Viewer (unregistered user)



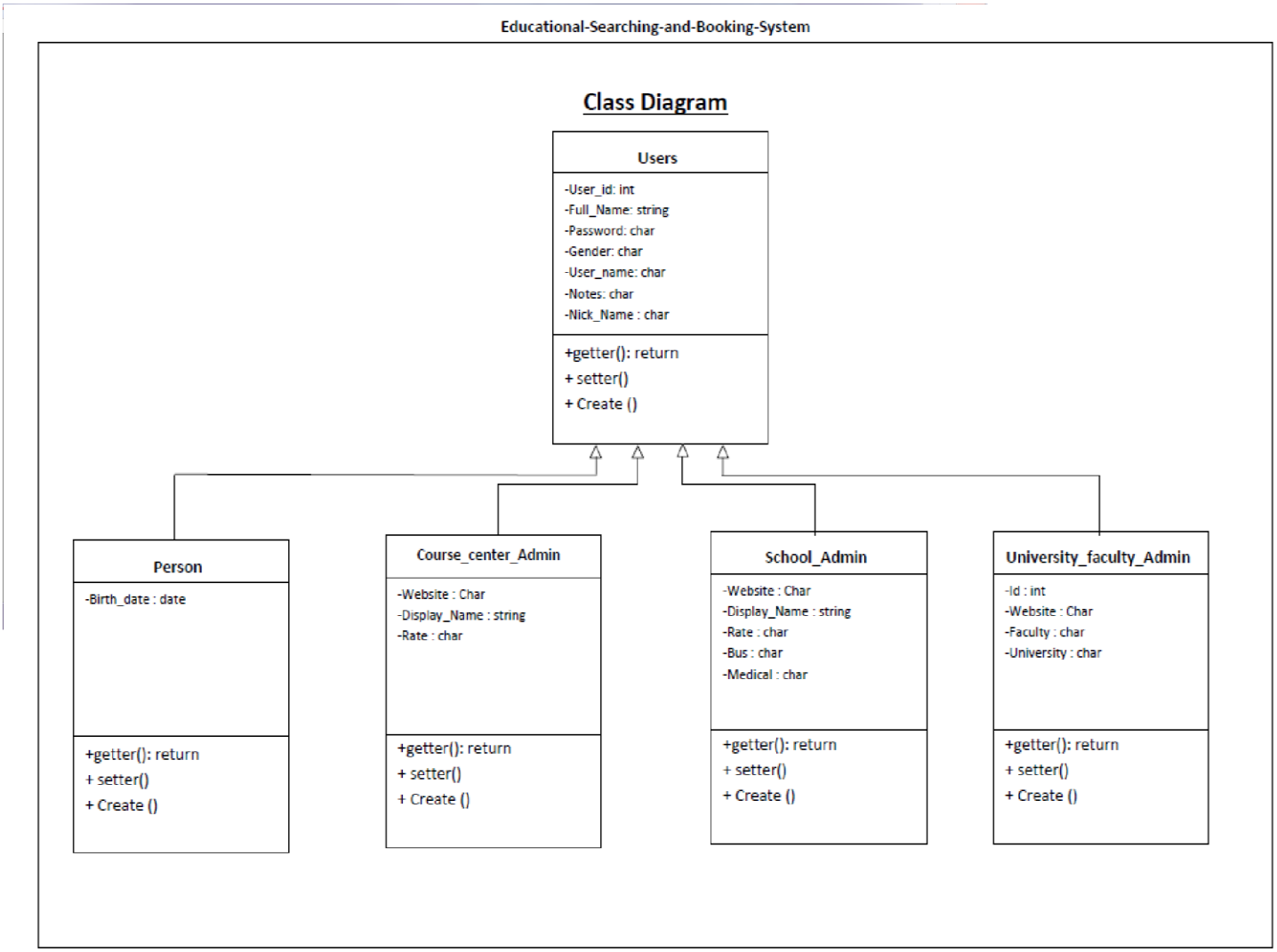
Object Sequence Diagram of Viewer (unregistered user)



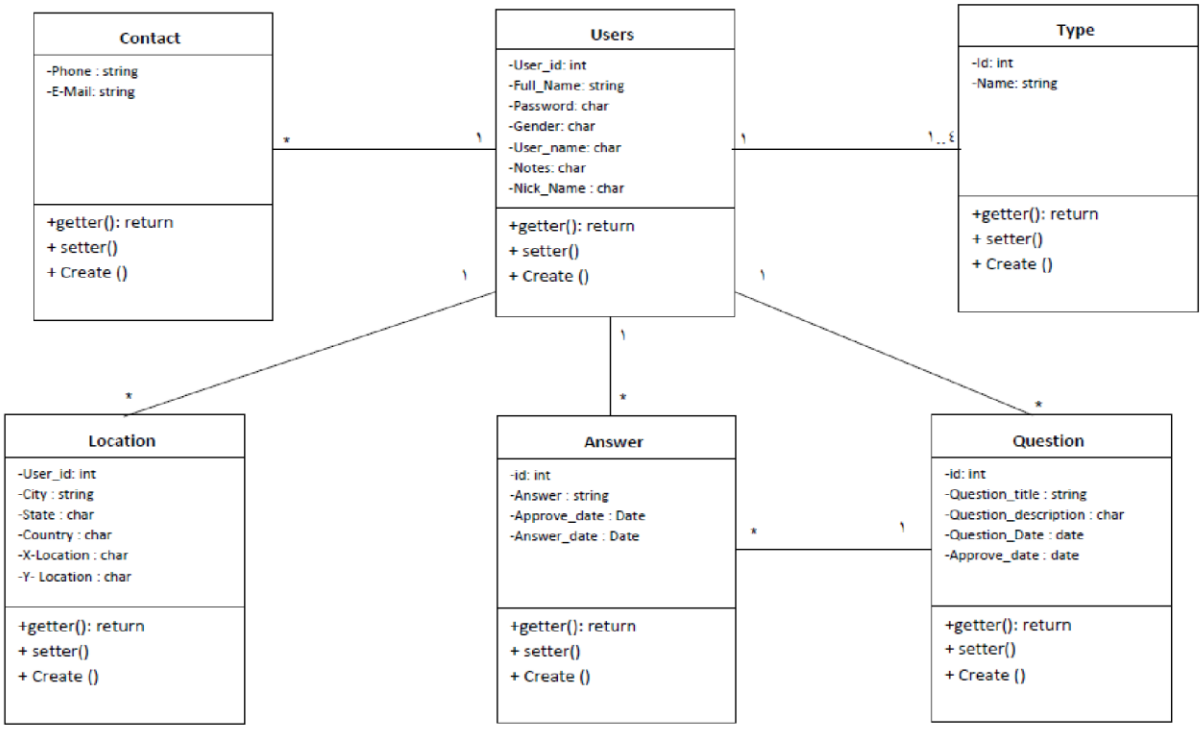
3.3 Database Design

3.3.1 Class Diagram

"The object model, represented in UML with class diagrams, describes the structure of the system in terms of objects, attributes, associations, and operations." [4]The class diagram in the (UML) describes the structure (or methods), and the relationships among objects. The points that are going to be covered are indicated as follows:
Classes
Interfaces
Relationships
Inheritance
Aggregation and Composition

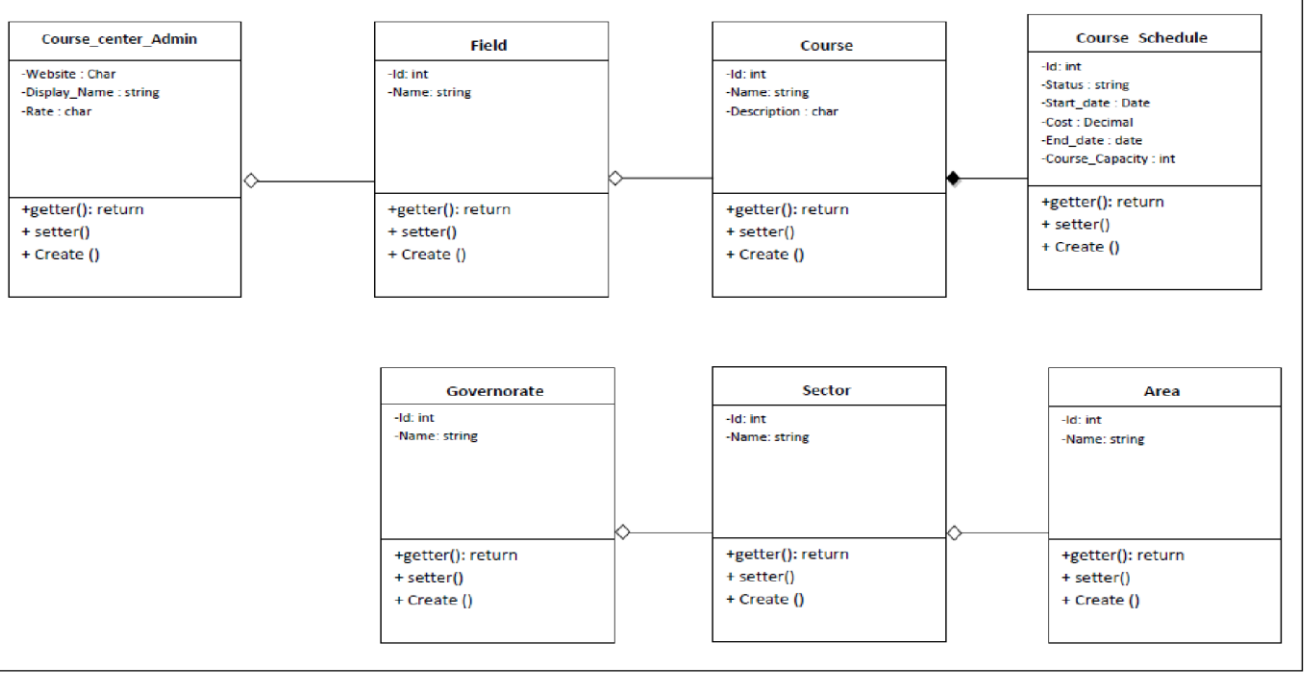


Class Diagram



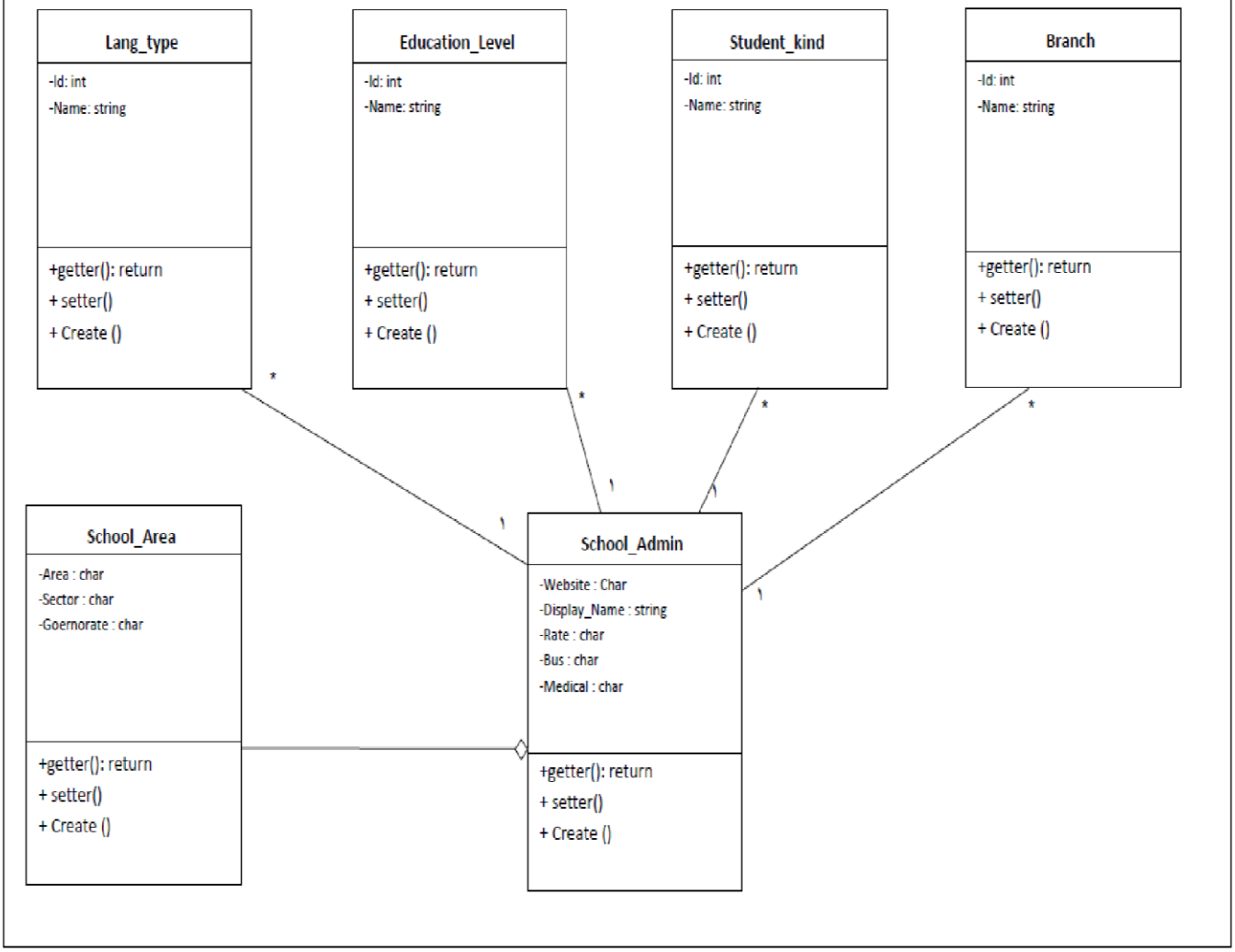
Educational-Searching-and-Booking-System

Class Diagram

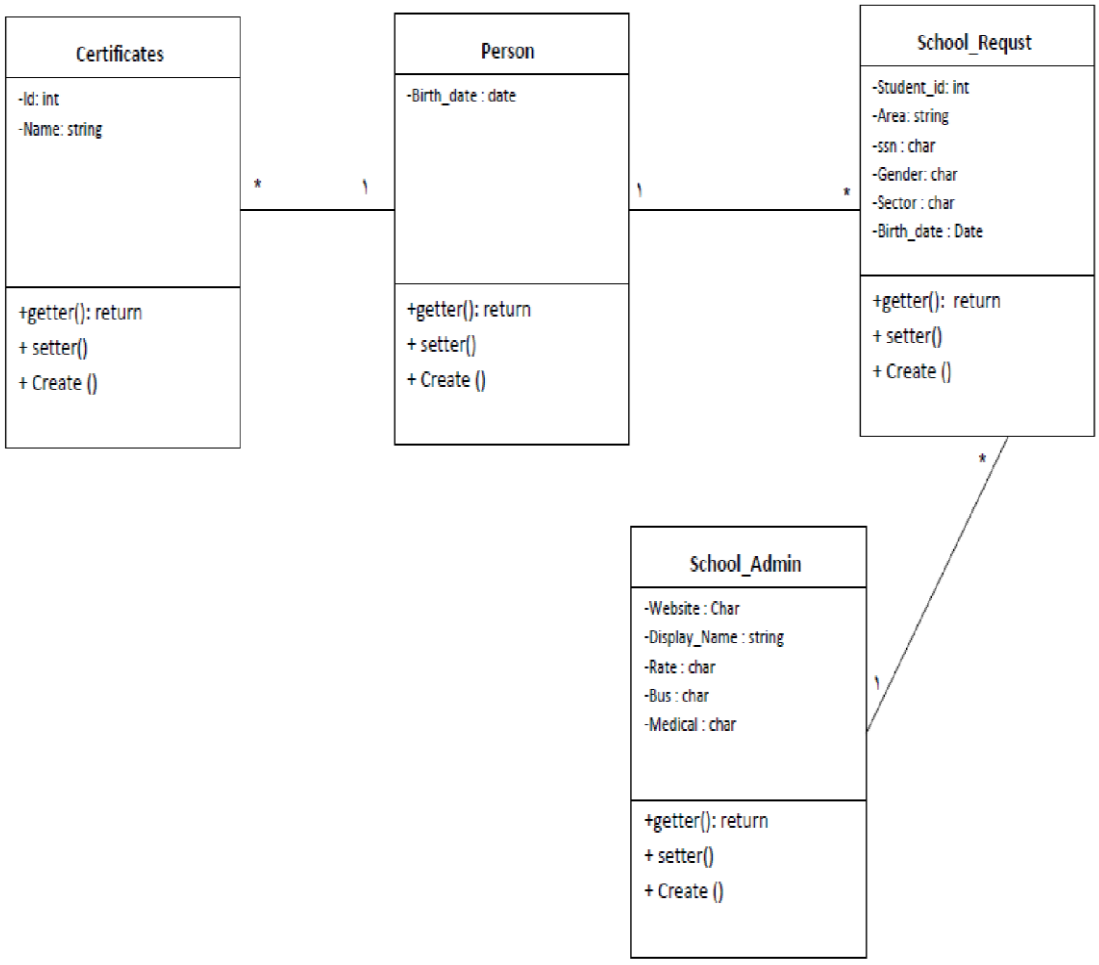


Educational-Searching-and-Booking-System

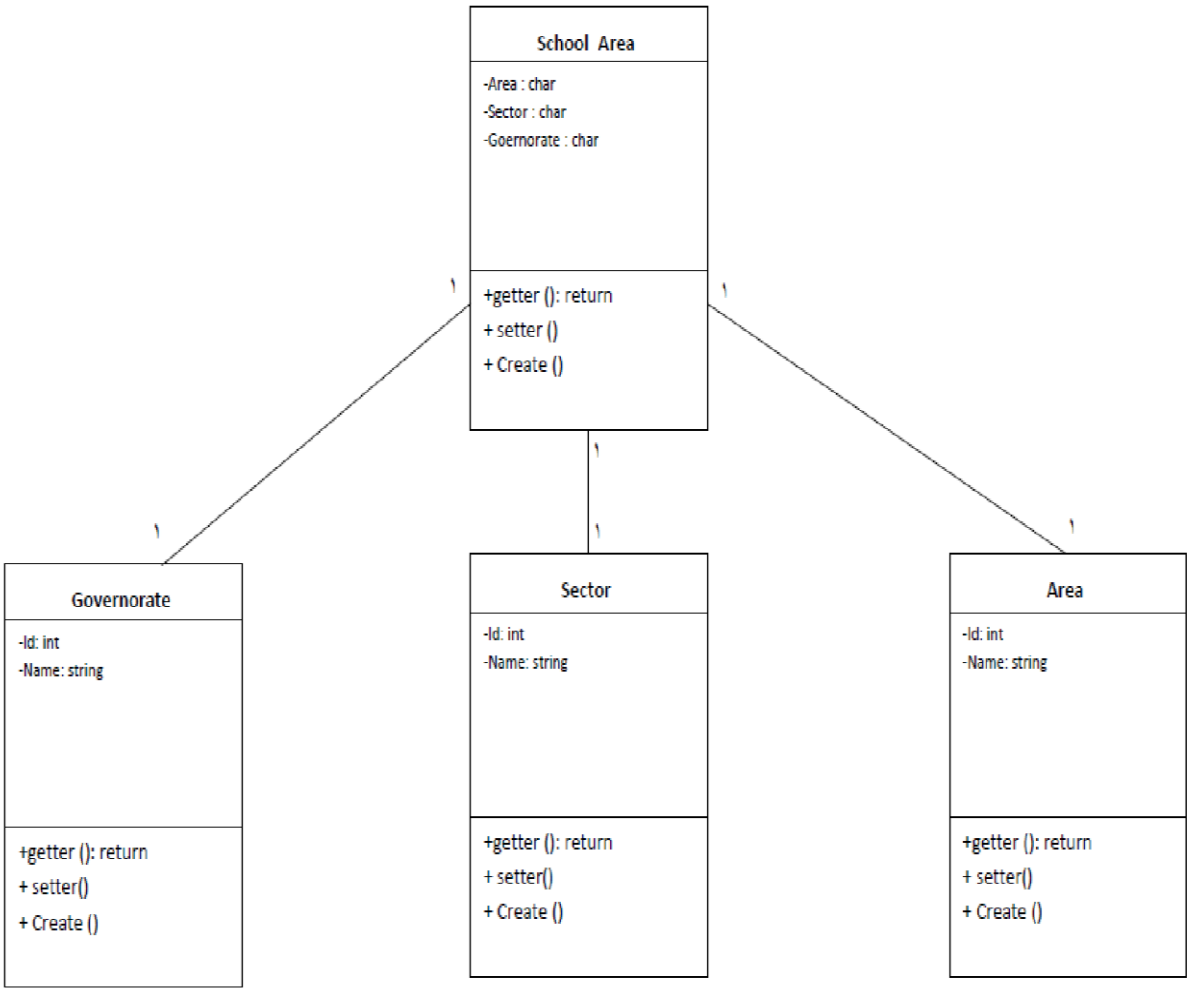
Class Diagram



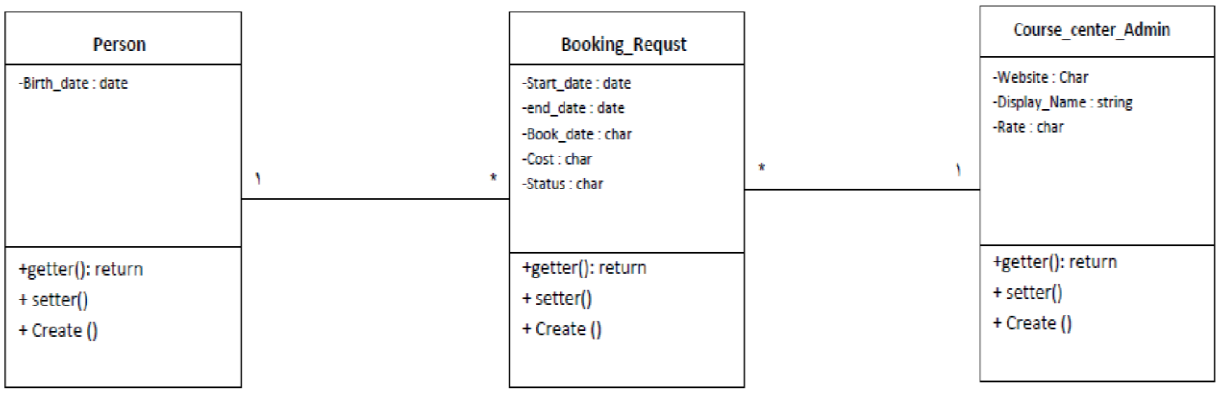
Class Diagram



Class Diagram

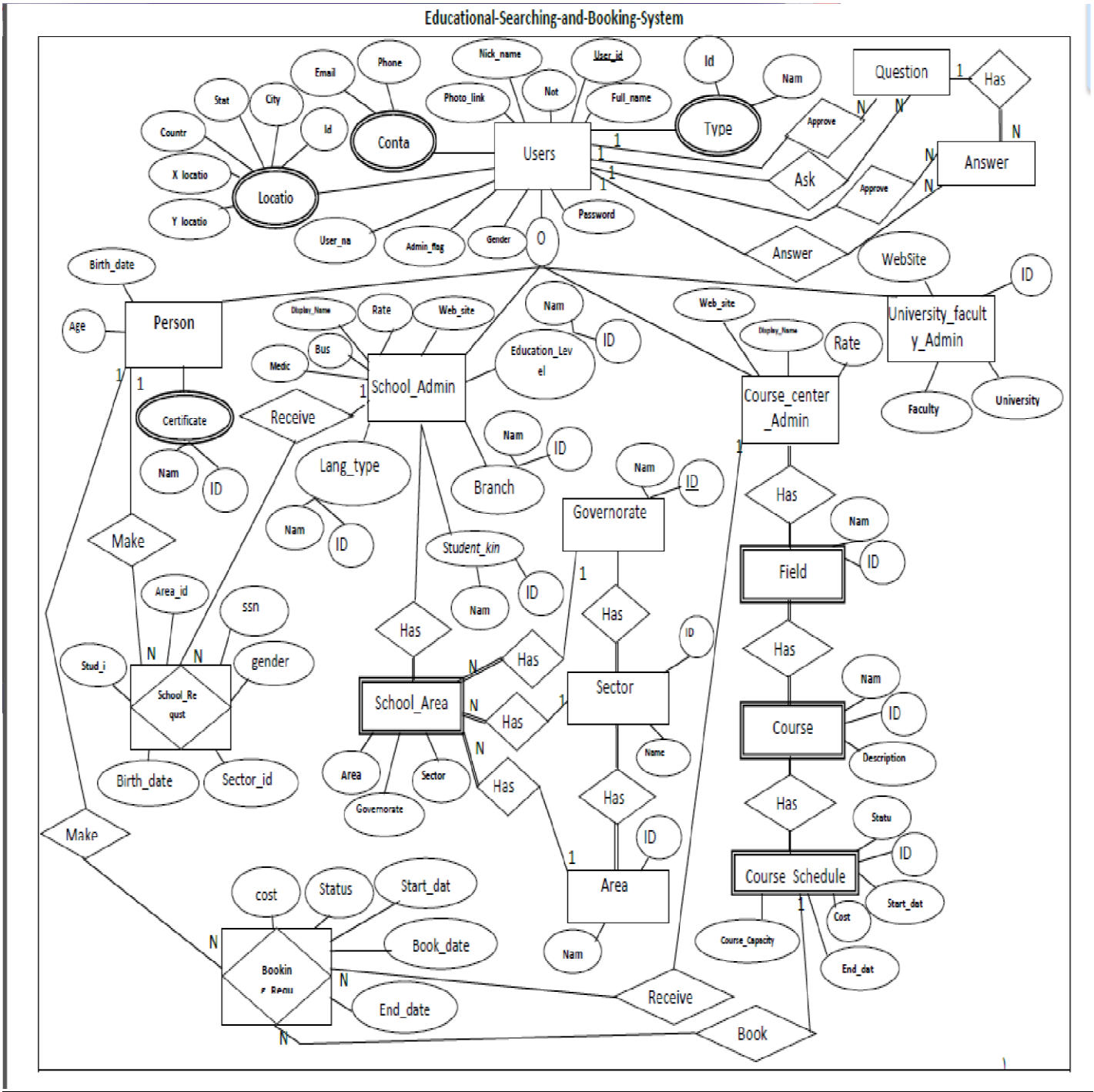


Class Diagram



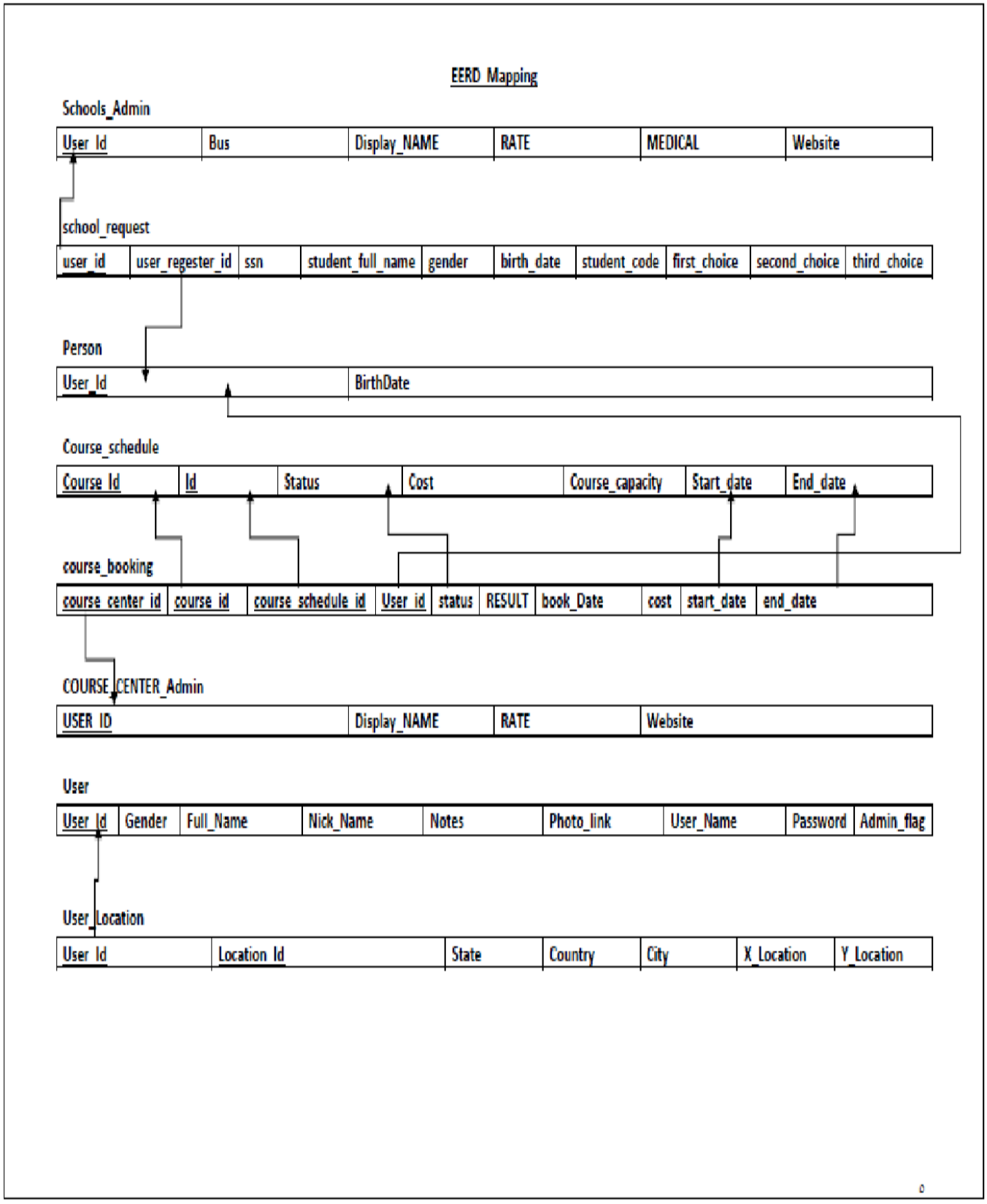
3.3.2 ERD

"The ER model describes data as *entities*, *relationships*, and *attributes*."[5], ERD, ER Diagram or ER model, is a type of structural diagram for use in database design. An ERD contains different symbols and connectors that visualize two important information: The major entities within the system scope, and the inter-relationships among these entities.

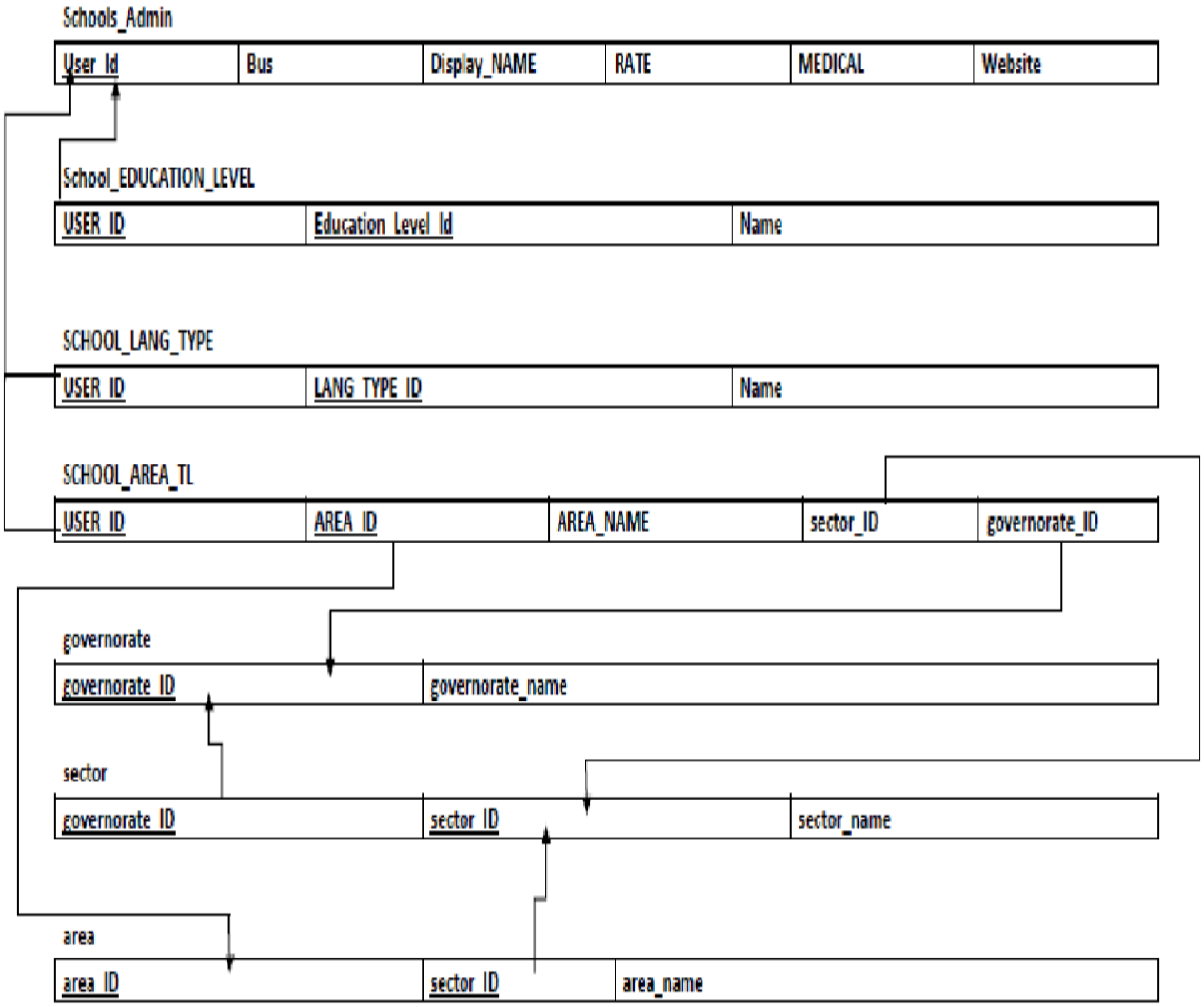


3.3.3 Mapping

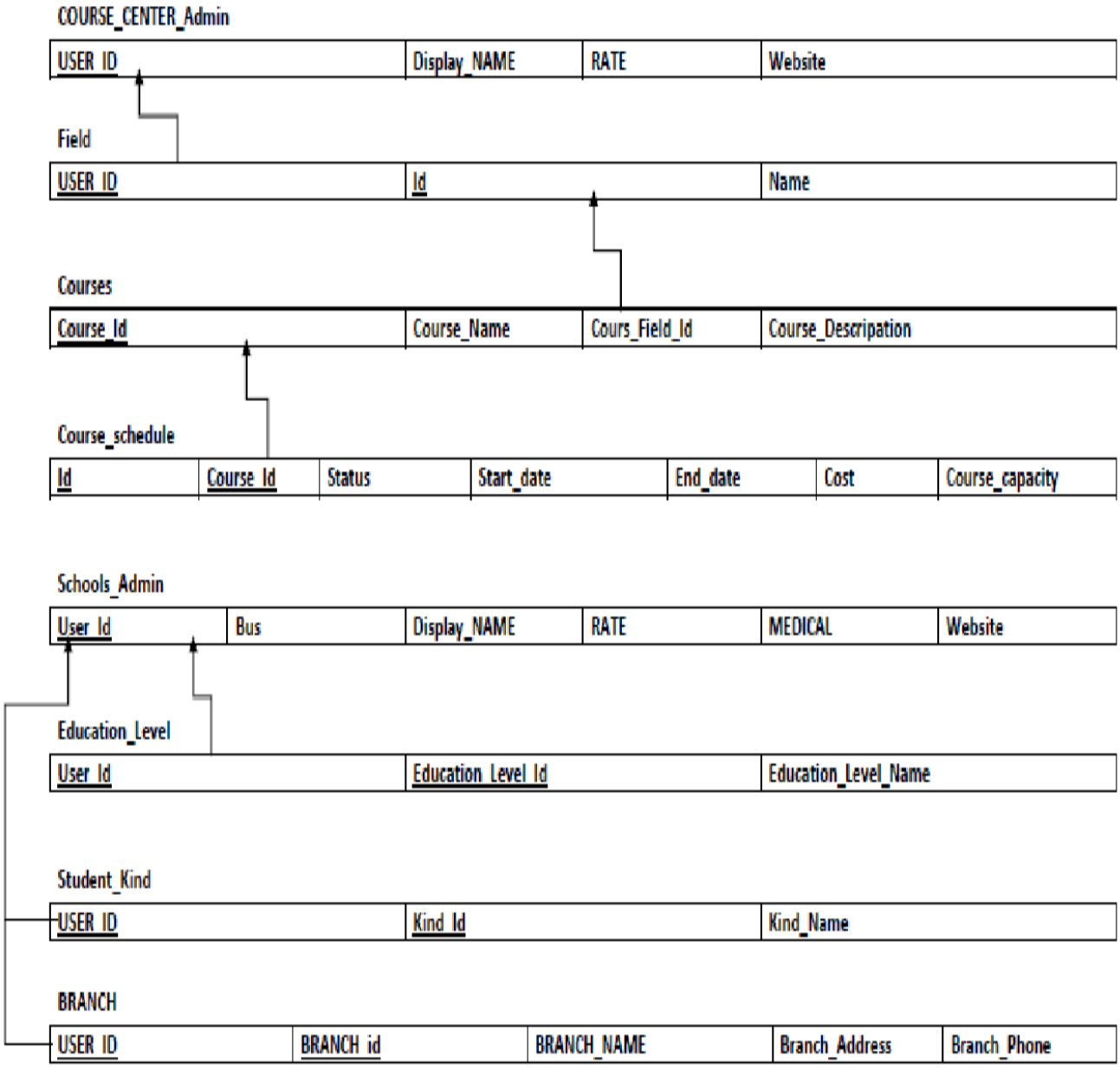
Educational-Searching-and-Booking-System



EERD Mapping



EERD Mapping



EERD Mapping

Users

User_Id	Gender	Full_Name	Nick_Name	Notes	Photo_link	User_Name	Password	Admin_flag

Type

User_Id	Id	Name

Contact

User_Id	Email	Phone

COURSE_CENTER_Admin

USER_ID	Display_NAME	RATE	Website

Person

User_Id	BirthDate

Certificate

User_Id	Certificate_Id	Name

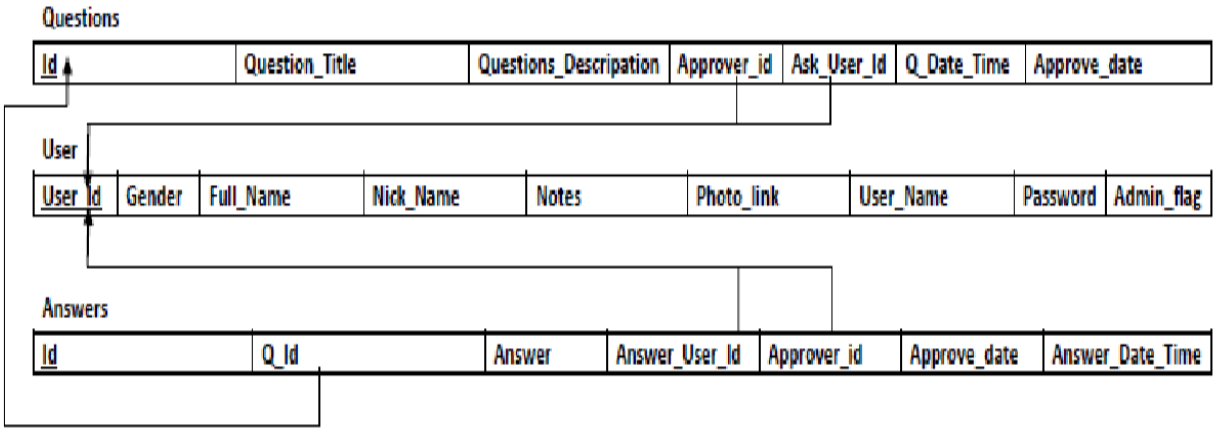
Schools_Admin

User_Id	Bus	Display_NAME	RATE	MEDICAL	Website

University_Faculties_Admin

User_Id	FACULTY_ID	FACULTY_NAME	University_Name	WEBSITE

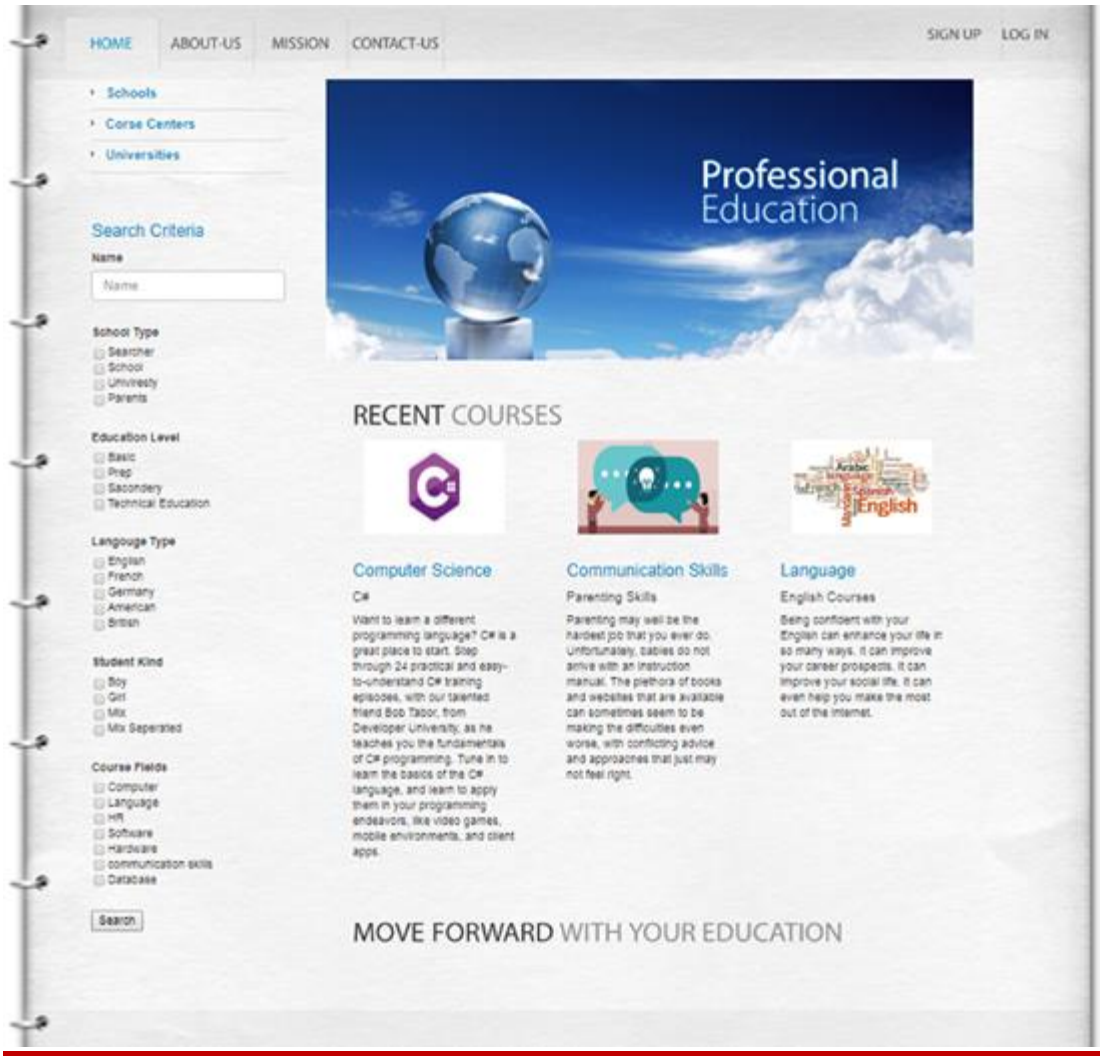
EERD Mapping



Chapter 4: System Implementation & Testing Plan

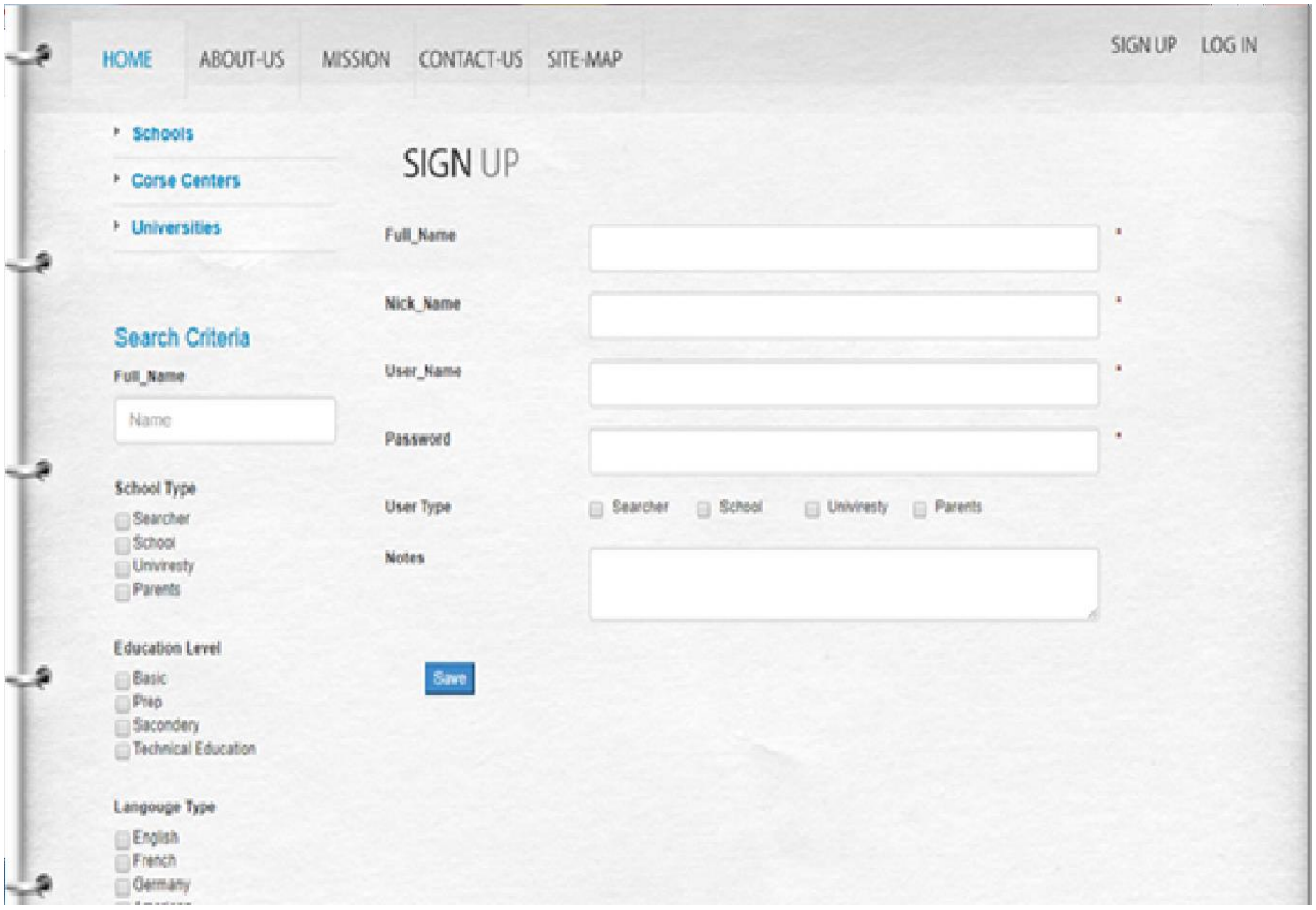
4.1 Interface Design

4.1.1 Home page



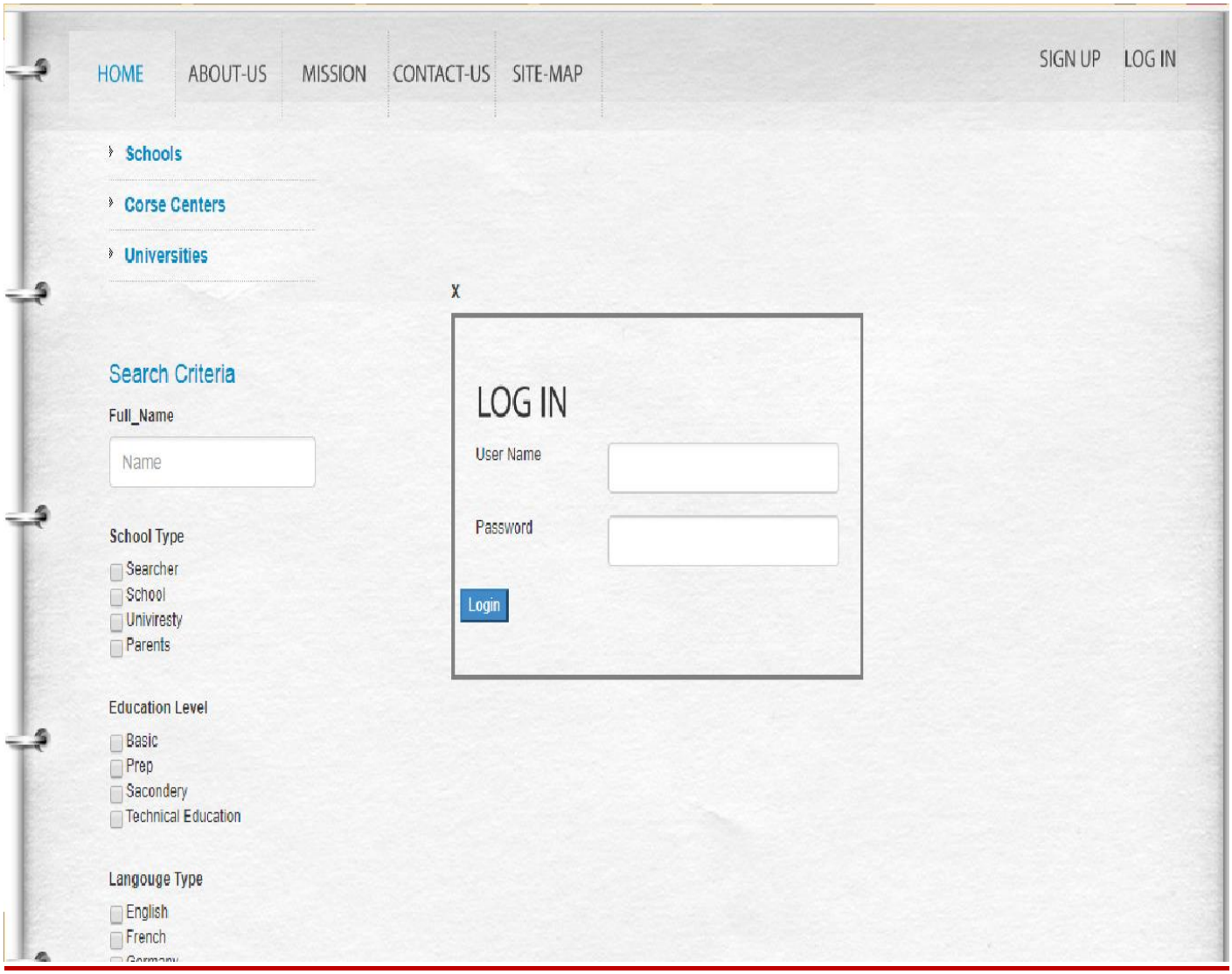
Above figure shows the home page of "Online Educational search and booking system" web based system. This interface contains Sign In, Sign Up, Search name, Search categories and Log Out. Although in this interface Log Out in showing as a navigation bar but it will appear after Log In of clients or administrator. So, it will be more convenient for clients to search directly for their desired item. This is also contains the news of latest promotions available for clients.

4.1.2 Sign Up page



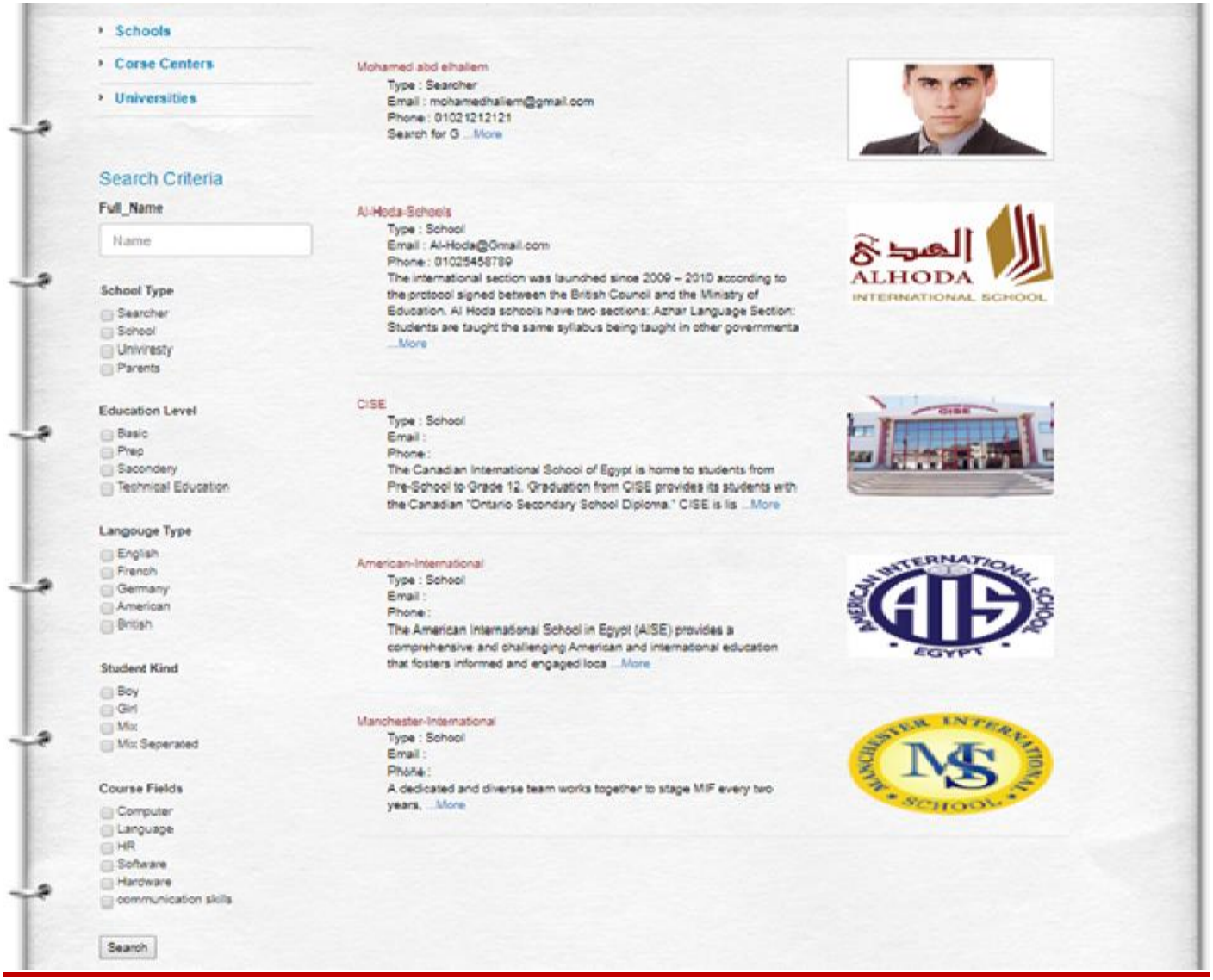
Above figure shows the Sign Up page for clients. From here clients can register to the system by providing their necessary details (Username, First Name, Last Name etc.

4.1.3 Login page



Above figure is showing the interface of system Log In. We create this Log In interface as a general for both clients and administrator. The Log In form in directly connected with the database. So, whenever anyone wants to key in the Username and Password, it will read the data from database for matching purpose.

4.1.4 Search page



Above figure In this interface users can search for courses, training centers, and educational institutions, depending on the selected criteria on the left of the interface. Users also can see all required information about selected item before booking a course or place a request for educational institution.

4.1.5 Adding Educational Institutions page

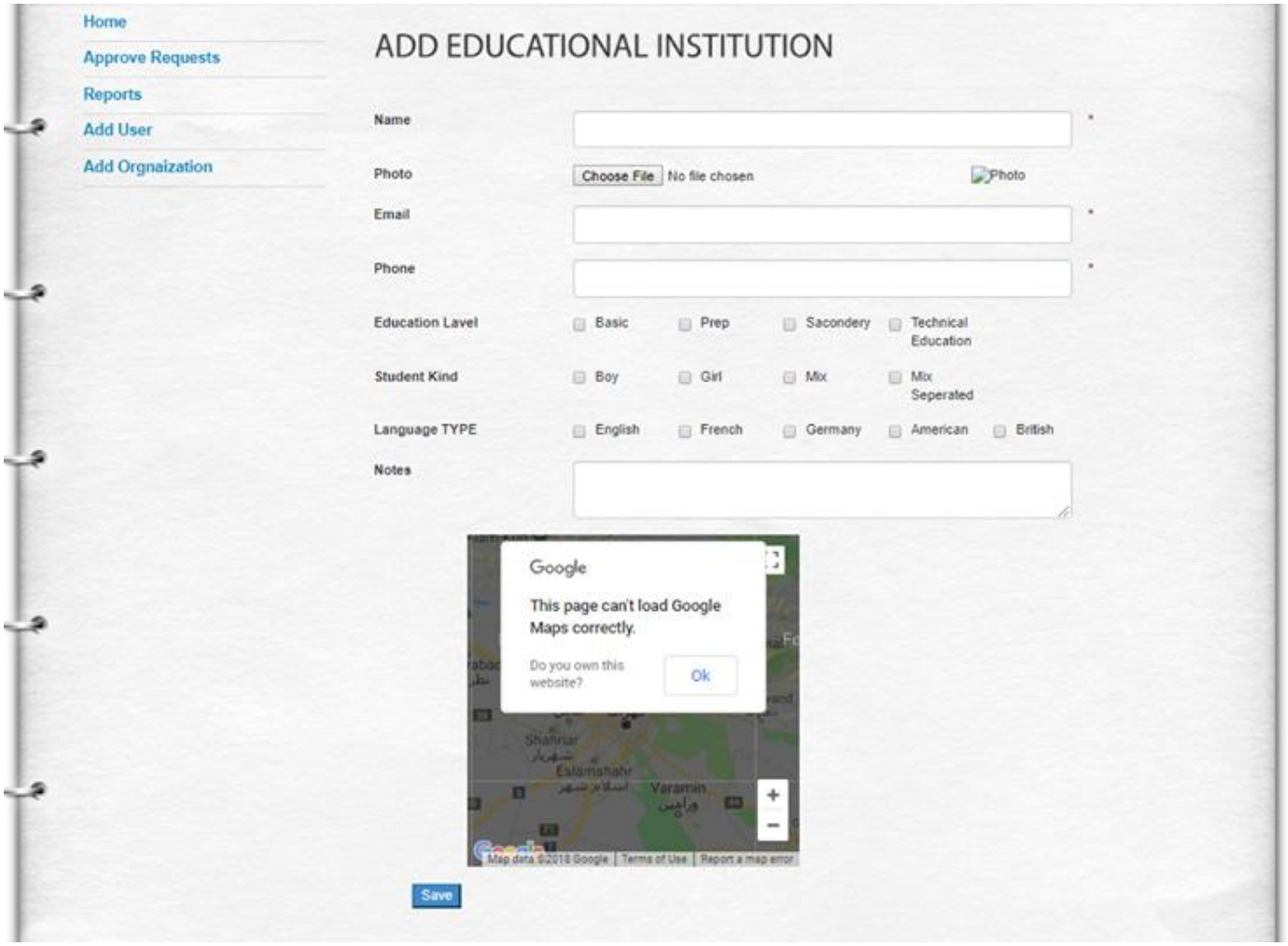


Figure shows educational institutions administrators use this interface to add educational institutions. They should make sure they enter the valid details otherwise the system will not allow them to proceed until giving all the valid necessary details then they have to click the button “Save”

4.1.6 Joining Request For School page

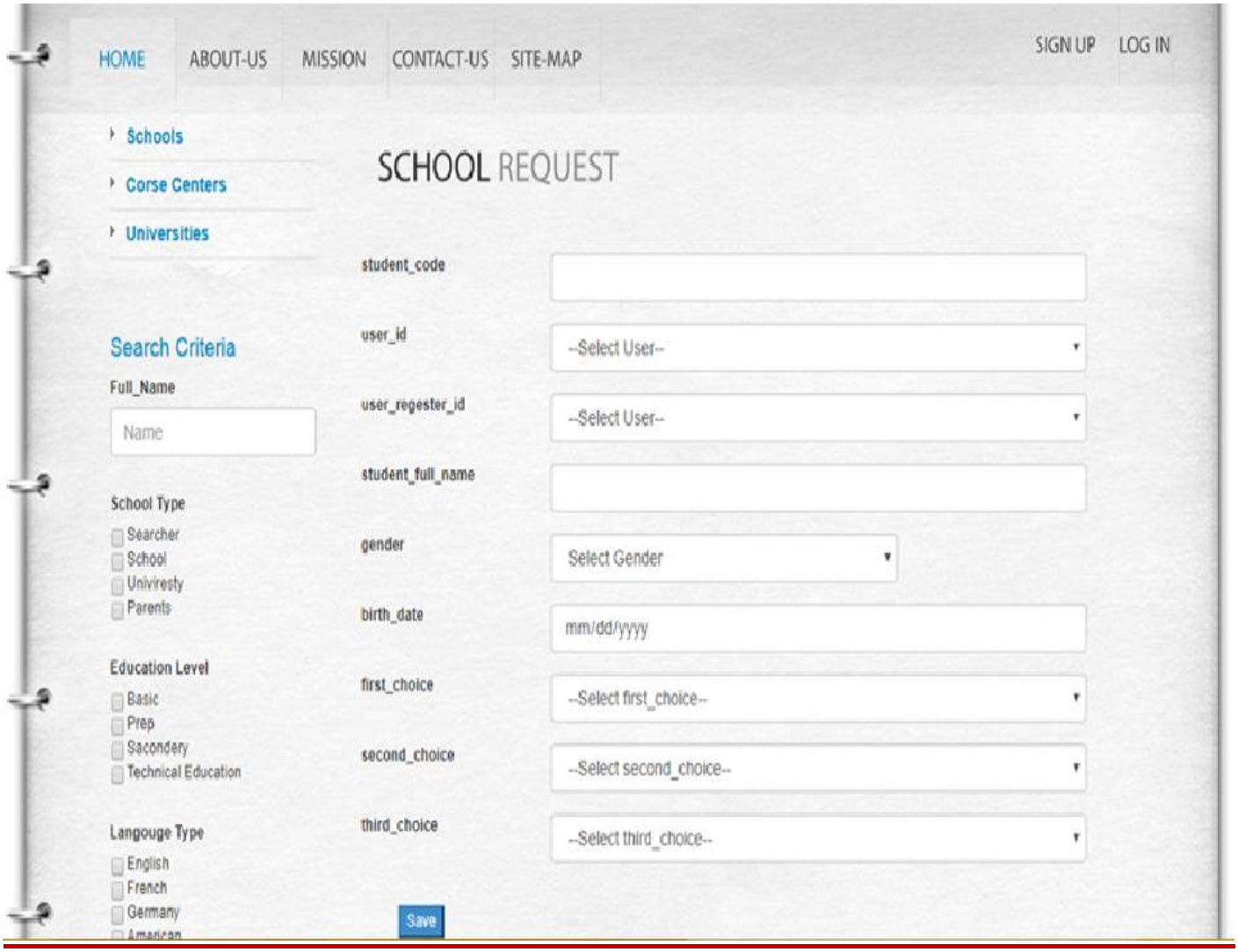
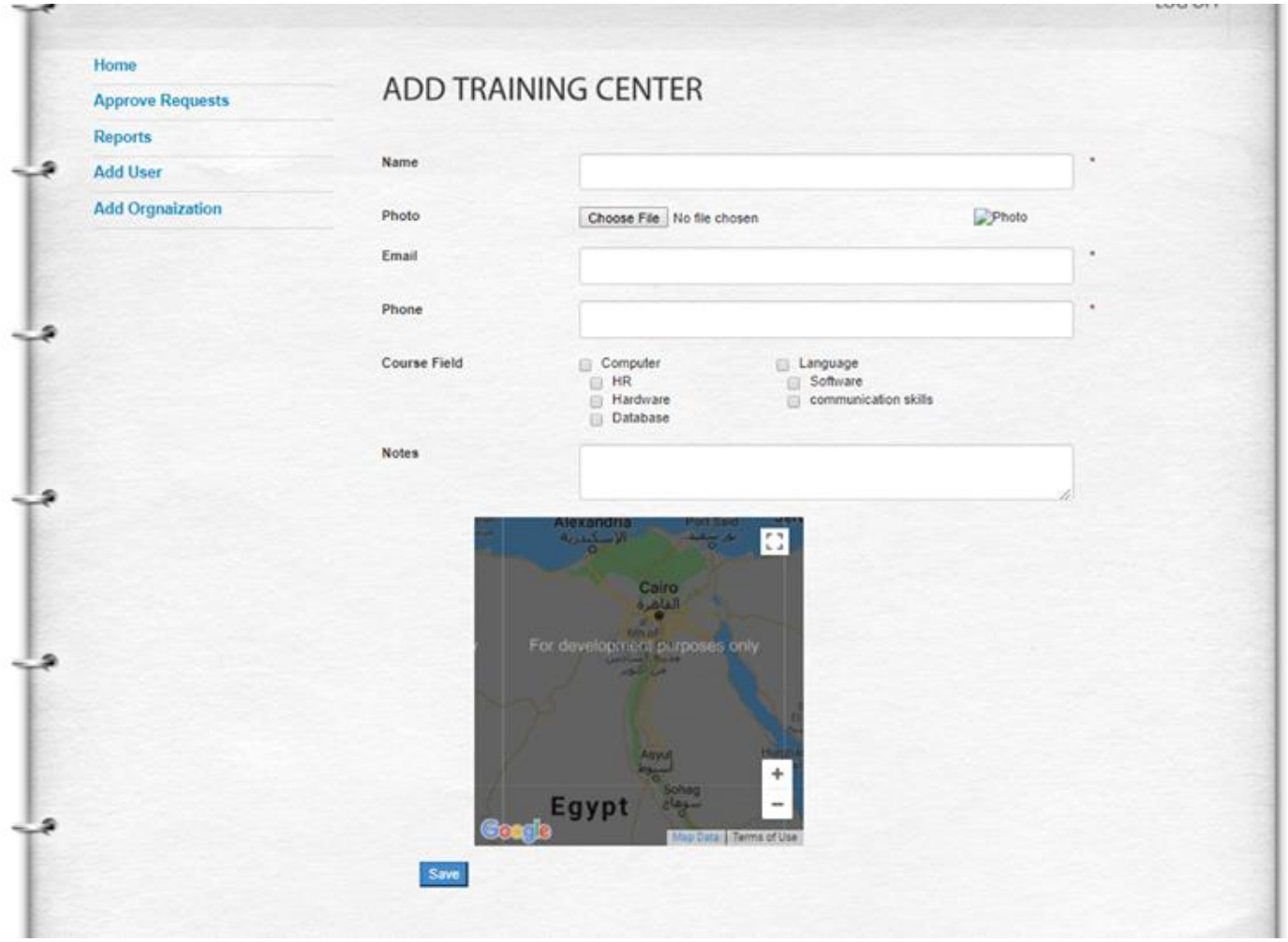


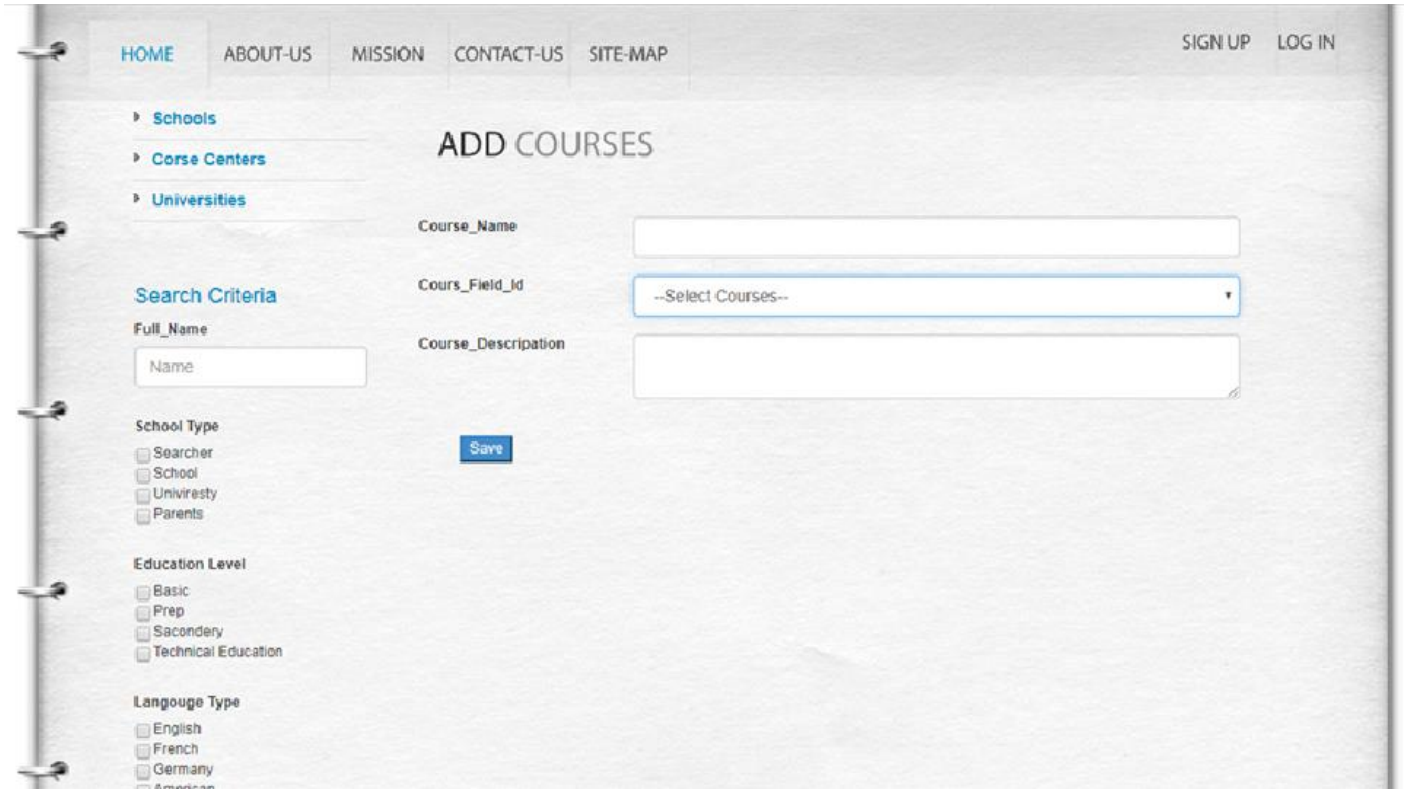
Figure 8 shows students or parents use this interface to place joining request for an educational institution. They should make sure they enter the valid details otherwise the system will not allow them to proceed for placing request. After giving all the valid necessary details they have to click the button “Save”

4.1.7 Add Training Center page



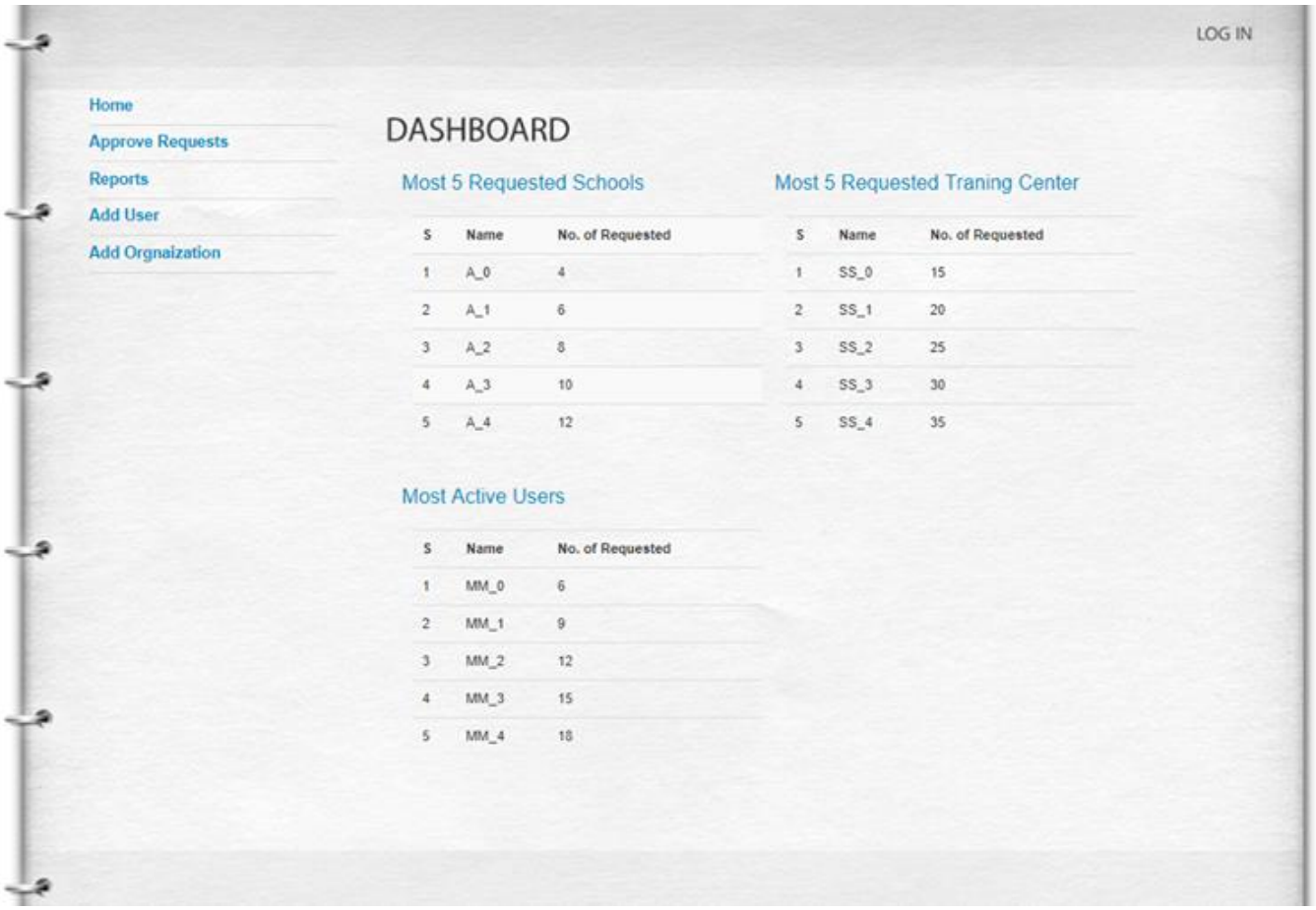
Above figure shows training center administrators use this interface to add training center. They should make sure they enter the valid details otherwise the system will not allow them to proceed until giving all the valid necessary details then they have to click the button “Save”

4.1.8 Add Course page



Above figure shows training center administrators use this interface to add courses. They should make sure they enter the valid details otherwise the system will not allow them to proceed until giving all the valid necessary details then they have to click the button “Save”

4.1.9 Administrator interface



Above figure shows System administrators can use this interface to add user ,extract report, approve request, add organization.

4.2 Test PLan

Testing shows the presence or absence of bugs that can cause the system to fail. Every step in the development process must start with a plan of how to verify that the result meets a goal. A test case is a particular choice of input data to be used in testing a program.

4.2.1 Test Case 1:

Test Case Identifier	TC-1
tested Use case	UC-5
Failed Criteria / Pass	The test passes if the user entered password valid username and
data Input	User name , password
procedure Tested	Expected Result
: Step1 a valid username with Enter wrong password	display message That The system password is incorrect
: Step2 invalid username with Enter correct or wrong password	display message That The system .the username is not correct
: Step3 a valid username with Enter correct password	user to login The system allow

4.2.2 Test Case 2:

Test Case Identifier	TC-2
tested Use case	UC-7
Failed Criteria / Pass	The test passes if the educational administrator entered institution Correct Data
data Input	All educational institution's required Data
procedure Tested	Expected Result
: Step1 invalid educational Insert institution's data	refused the data and The system display message to reenter Correct required data
: Step2 valid educational Insert institution's data	accept the data and The system will educational institution's record new data

4.2.3 Test Case 3:

Test Case Identifier	TC-3
tested Use case	UC-12
Failed Criteria / Pass	The test passes if the training center entered Correct Data administrator
data Input	All training center's required Data
procedure Tested	Expected Result
: Step1 invalid training center's Insert data	refused the data and The system display message to reenter Correct required data
: Step2 training center's valid Insert data	accept the data and The system will training center's data record new

4.2.5 Test Case 4:

Test Case Identifier	TC-4
tested Use case	UC-21
Failed Criteria / Pass	the student The test passes if entered Correct Data for a booking course request for training center's
data Input	All booking request for training center's required Data
procedure Tested	Expected Result
: Step1 invalid training center's Insert data	refused the data and The system display message to reenter Correct required data
: Step2 training center's valid Insert data	accept the data and The system will booking request for record new training center's

4.2.4 Test Case 5:

Test Case Identifier	TC-5
tested Use case	UC-18
Failed Criteria / Pass	the student The test passes if request entered Correct Data for a joining request for the educational institution
data Input	All joining request's required Data
procedure Tested	Expected Result
: Step1 invalid training center's Insert data	refused the data and The system display message to reenter Correct required data
: Step2 training center's valid Insert data	accept the data and The system will joining request for the record new educational institution

Chapter 5: Conclusion and Future Work

5.1 CONCLUSION

Every parent and student should gather some specific data about educational institutions and training centers. And most of the times it is not enough to write the information down in a notebook, so our system makes several key contributions to

Nowadays information technologies make educational life simpler and more productive by implementing databases and information systems. Therefore, this study about the implementation principles and requirements of databases and information systems was made. This knowledge improved planning capabilities of information system.

Fortunately, our system's database and structure were designed successfully. Then we were decided to use the following web development tools: ASP.NET, C#, and Windows Server SQL database system. The project required deeper knowledge of these tools' syntax and usage, so a lot of testing was done to handle the code.

Our system covers most of educational levels and training centers' courses. System's database contains information about, address, phones, and e-mails, geographical area of private and public educational institution with different levels.

Our system is divided into two parts as they both use the same database. The first part is for providing students and parents as they are system's stockholders with information about educational institutions and training centers' courses, and how the system is supporting them to manage their joining requests for school and booking for courses. It was implemented successfully.

The second part of our system is designed and implemented for educational institutions and training centers administrators. They have the functionality to add, and edit their institutions' data, and handling the requests that are introduced by students or their parents, and also to view specific data or reports. It was also implemented successfully.

The usage of this system is at no cost and accessible for everyone without any logging in. The system provides online booking services. Clients can search for suitable educational institution and training centers' courses that are registered in our system's database.

In conclusion, every goal of the project was reached. Of course, the topic of the project is quite extensive and there could be a lot more ideas to improve it. But the implementation of the project covered all main requirements for implementing a real working environment. Therefore, it is ready for making more improvements in the future.

5.2 Future Work

Although we are very satisfied with the result and believe that the overall goal of the project has been met, but there are still several improvements that could be implemented in our system.
In the future, we will integrate more services to our main system "Online Educational search and booking system" to make it a more sophisticated auto-help tool and to provide a wide range of facilities to the end user. These services will include:

- Another extension of this work is moving our system to mobile app for Android is a step that helps wide range of clients.
- Clients will enable clients to book online and pay with credit or debit card.
- The system will send booking confirmation email after successful payment.
- System will offer special means of communication through newsletters

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