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Graduation project

Field Training Management System using Cloud Computing

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الاهـــــــــــــــــاء

أهدي هذا العمل المتواضع إلى أبي الذي لم يبخل علي يوماً بشيء

وإلى أمي التي زودتني بالحنان والمحبة

أقول لهم: أنتم وهبتموني الحياة والأمل والنشأة على شغف الاطلاع
والمعرفة

والى إخوتي وأسرتي جميعاً

ثم إلى كل من علمني حرفاً أصبح سناً بركة يضيء الطريق أمامي

ثم الى الذي ضحى وانكر الذات في سبيل الوطن

الى من هم اعز منا جميعا

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Abstract

Cloud Computing is a general term for anything that involves delivering hosted services over the Internet or a model for delivering information technology services in which resources are retrieved from the Internet through Web-based tools and applications.

It eliminates the costs and complexity of buying, configuring, and managing the hardware and software needed to build and deploy applications. Instead, these applications are delivered as a service over the Internet ("cloud"). In this project we will use this environment.

In this project we will use this environment and apply it to special case and solve problems that get at universities. The problem is lack opportunities of field training that students face every year, and difficulties in finding training providers so we could use Cloud Computing environment to build a system that can make it easy to find training opportunities and avoid trouble of research and time wasting and cost.

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Chapter 1

Introduction

1.1 Overview

1.2 Importance of Project

1.3 Project Objectives

1.4 Problem Statements

1.5 Estimated Cost

1.6 Project Schedule

1.7 Risks

Chapter 1

Introduction

1.1 Overview

Today the world is moving forward rapidly, and this progress has been reflected on most aspects of life, especially in the areas of technology, as a result of the scientific revolution brought about by technology in recent years, it was necessary to keep up with technology and its application in all areas of life, this including technology in the field of Cloud Computing. In this project we will provide description of what Cloud Computing means and what relationship that deals directly with this technique, also explain and clarify cloud computing platforms in how to use these platforms in building so many online applications, since it provides tools to help providers to design modern applications as solutions for many problems, so will make a practical and software form by constructing system of field training that will be explained in details later, also this presents the estimated cost and time plan for the project.

1.2 Importance of Project

With the development of available technologies through appearance of Web 2.0 and Web 3.0 and the increasing in Internet speeds available for users. Many organizations tended to available its applications for use by Internet through Cloud Computing techniques.

This describes a new generation of Computing in which services, software or storage are provided over the Internet (or “Cloud”) to enterprises or individuals.

In this project will focus on survey of Cloud Computing provided to individual users.

Descend of project importance from the importance of Cloud Computing, which has many benefits we will mention some of them now but we will come to it in detail in the second chapter which are summarized as:

1. The possibility of expansion and development, rather than to purchase a new server with an area of high and higher standards, all you need is to enter and change the settings, just in seconds and get it wants.
2. Cost, you will not only pay in exchange for service. Does not have a monthly payment system, just pay for the service.
3. You don't need to rely place or the tool, you can enter on the Cloud from anywhere in the world (only need Internet), and can be used any device capable of browsing the Internet, whether mobile or computer or other.
4. Users will not face technical problems or maintenance and development of system you need is to use only.
5. Always, because the data your reservation in more than one place in the world and reduces probability of losing these data a very high rate.

1.3 Project Objectives

The project aims to achieve a number of goals:

1. Make a full survey for Cloud Computing technology in several directions

- ❖ Cloud Computing providers
- ❖ Applications of Cloud Computing
- ❖ Services of Cloud Computing
- ❖ Component of Cloud Computing
- ❖ Tools for developments and hosting in Cloud Computing

2. Innovation-based system and high quality is aimed at solving the problem of management training field and allow all students and businesses benefit from

The Cloud of computerized technology as a solution to the problems they face in economic or educational facilities whether local or international.

1.4 Problem Statements

During each summer students faces problems of registering field training course in there universities, too suffering from lack of opportunities of training and training providers, this problem result of several reasons, the huge number of students whose growing per year, inability of the university to accommodate such a large number of distribution and follow-up them, and lacking companies or training providers in Arab world.

This pushes the students to search for training opportunities by themselves, but in fact this did not become easy where finding opportunities for field training it's very difficult and more expensive and waste cost and effort.

In this project we will build system that manage communication between companies and students using new technology called Cloud Computing so that make process of finding training more quickly and easily.

1.5 Estimated Cost

1.5.1 Print Costs

The following table shows the cost of printing a report, the initial and final copy, which part from total Costs of this project.

Table 1.1 Printing Cost

	Type:	Number:	Notes:	Price:
1	Printing the initial report	3	This copies are given to the supervisors through introduction graduation project discussion	\$16
2	Printing the final report	3	This copies are given to the supervisors through graduation project discussion	\$24
3	Computer and its requirements	-	-	\$300

1.5.2 Software Cost

Table 1.2 software cost

	Type:	Number:	Notes:	Price:
1	Windows XP professional	3	Work has been done using the operating system pre-existing	\$20.0

1.5.3 Total Costs

Table 1.3 Total Costs

	Type:	Total cost:
1	Printing and requirements costs	\$340
2	Software costs	\$20
3	Two Worker costs	\$1000
	Final cost	\$1360

1.6 Project Schedule

The important things on the construction of any project , setting a specific timetable must walk and abide by it for the construction of parts of the project, it is known that the time element is the most important reasons for the success of any project or failure to develop a schedule, it must distribute the work on each individual member in stuff , and work periods that will comply with it, and determine the starting point of the project and the expected time to reach the results and is worth mentioning that the schedule consists of two sections the first section consists of 16 weeks from the first term which contains the tasks of gathering preliminary information about the survey of Cloud Computing and also to identify the basic requirements that will be adopted, while the second table will be built as equal to the first table in time period , or about 16 weeks too, which will be chosen to work on the project , and tables illustrate this division for each task will be to work on when to start and when will it end.

Table 1.4 First Schedule Table

Week Task	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Project selection																
Set project plane																
Determine project Requirements																
Structural Design																
Entering to System details																
Testing system parts																
Documentation																

Table 1.5 Second Schedule Table

Week Task	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
Building System parts																
Collecting System parts																
Test the full system																
Documentation																

1.7 Risks

Is a risk that can be exposed to the project are things that can lead to non-completion of the project, or turned over in a late stage and therefore the knowledge and analysis of these risks is very important because of their impact on the project.

The risks can be classified into three main types:

1-Project Risks:

Are risks that affect the schedules of the project tasks?

2-Product Risks:

The risks related to the product and its qualitative and the quality of the system in an integrated shape.

3-Business Risks:

Are risks may face the organization that works to build and develop the project or organization benefiting from the project.

Table 1.6 Risk Type

	Risk	Risk Type	Description Risk
1	Project time	Risk related to the project	Probability inability to end the project on time in spite of access to the required results
2	The project budget	The risk related to the work	Possibility of increasing the cost of the project
3	Requirements of the project	Risk related to the project and product	You may appearance a requirement for the project had not been previously listed within the

			requirements of the project
4	Technology	The risk related to the work	The possible appearance of competitor system is characterized by a set of achievements
5	Problem affects programs	Risk related to the project and product	affect one software or files Sudden damage which leads to loss of time and effort

1.7.1 Treatment of Risks

1- Risk Identification:

Definition of risk is the first step in the process of risk management, analysis and risk will be divided into five types as follows:

Table 1.7 Risk Identification

Risk Type	Classify Risk	Description Risk
Technology	work	That are not compatible with what the technology is expected to play
People	project	Is for an emergency with one of the individuals or one of individuals give up of the project
Organization	work	Inability to afford the costs of the project
Requirements	Project and product	Difference in determining the requirements, or change one of these requirements or to add or delete any of the requirements
Estimation	Project and product	Underestimation of the costs of the project or its time table size

2-Risk analysis

At this stage we will work on the analysis of the risks that identified in the previous table with the possibility to study the impact it on the project and the possibility of their occurrence can be illustrated in the following table:

Table 1.8 Risk Analyses

	Risk	Probability	Impact
1-	Project time	50%→75%	Critical
2-	Project estimated	25%→50%	Catastrophic
3-	Project team	50%	Critical
4-	Technology change	0.0%→25%	Marginal
5-	Requirements change	0.0%→25%	Marginal
6-	Change in project size	0.0%→25%	Marginal
7-	Damage software	0.0%→10%	Catastrophic

3-Risk Planning

Must put a mechanism for handling risk after the occurrence or avoid its occurrence based on expected it or minimize its impact after it occurs

Clarify this mechanism by the following table:

Table 1.9 Risk Planning

	Risk	mechanism
1	Project time	Re-schedule the time and its distribution within the available period
2	Project estimated	Selection of cheap equipments and software as possible
3	Project team(disease-)	The ability of each individual member of the work to understand the work assigned to others (the probability that a person takes the place of the other)
4	Technology change	Possibility of obtaining technology is available and at a low price
5	Change in project size	The possibility of assigning extra work for each individual member of the project and thus the production of the project in suitable time and quality
6	Damage software	Make backup copies with each update
7	Requirements change	Do not allow the beneficiaries of the system change requirements after the eighth week

4- Risk Monitoring

This stage is the last stages, and must be present at all stages of work on the project, it provides the project staff enough information to all what we can get from the potential risks and therefore work to minimize the impact.

Chapter 2

Concept of Cloud Computing

2.1 Introductions

2.2 Cloud Computing Definition

2.3 Component of Cloud Computing

2.4 Cloud-Computing Platforms

2.5 Example of Cloud Computing Services

2.6 Cloud Computing Providers

2.7 Advantages of Cloud Computing

2.8 Disadvantages of Cloud Computing

2.9 Literature Review

2.10 SalesForce and Force.com Platform

Chapter 2

Concept of Cloud Computing

2.1 Introduction

History has shown that incremental advances in technology and changes in business models create major paradigm shifts in the way that software applications are designed built and delivered to end users. In the 1980s the invention of personal computers computer networking and graphical user interfaces gave rise to the adoption of client/server applications that ran on expensive inflexible character-mode mainframe applications. Today we're witnessing another advance, powerful mobile Computing devices reliable broadband Internet access service-oriented architectures and the high cost of managing dedicated on premises applications are driving the transition away from traditional software toward the delivery of decomposable managed shared on-demand Web-based services.

2.2 Cloud Computing Definition

Cloud Computing software as a service (SaaS) and on-demand software are related terms that generally refer to hardware software applications and services that are available for immediate use because they execute in the Cloud (the Internet). Cloud Computing may also be thought of as utility-based Computing because similar to power and water utilities

users pay only for the resources they use on a month-to-month basis. Cloud Computing is gaining popularity among businesses of all sizes. This model is beginning to replace the traditional on-premises model of delivering software applications because by comparison Cloud Computing delivers unprecedented levels of ease productivity and success [1] With Cloud Computing organizations can simply use readily available applications and services to focus on getting their work done. They're no longer saddled with the burdens and high costs of managing data centers hardware and software. Just as power companies relieve homeowners from having to maintain personal power generators for electricity Cloud-based solutions relieve companies from having to maintain dedicated computer systems and staff to provide their business applications, so the Cloud Computing provides:

- Computation.
- software applications
- Data access.
- Data management.
- Storage resources.

2.3 Components of Cloud Computing

There are several components for cloud computing technology

- 1) **Application:** The application itself, which is the end user use it and this applications hosted in servers and remote by user. And run these applications only through browsers and of course availability of the Internet
- 2) **Clients:** is generally a Web browser such as Microsoft Internet Explorer, Mozilla Firefox or Google chrome so it must become more powerful.
- 3) **Infrastructure:** refer to combination of hosting, Hardware and building that Contain the hardware.
- 4) **Platform:** platform as a service (PaaS) is away to rent hardware, operating system, storage and network capacity over the Internet
- 5) **Service** users can reap from their Cloud experience and find full readiness For use these services.

2.4 Cloud-Computing Platforms

Every paradigm shift in software brings a fresh set of challenges for companies that build or consume applications. Cloud Computing is no different. From an operational point of view Cloud Computing presents several unique requirements for an application provider:

- 1- **Operations/Availability:** – Application providers are responsible not only for building the application but for hosting and maintaining it so that it remains available for users.
- 2- **Deployment:** – For an application to be considered “on-demand” it must have automated mechanisms that let users sign up log in and start work immediately.
- 3- **Flexibility:** – A Cloud-based application must be elastic automatically scaling its consumption of computing resources to the demands placed on it at any given time. Shared Cloud-based applications must also address some unique technical requirements:
 - ❖ **Customization:** – An application must let each organization customize its data model interface and business logic to fit its needs.
 - ❖ **Security:** – An application must have bulletproof configurable security mechanisms that let an organization secure data among different types of users and organizations.
 - ❖ **Integration:** – An application must be able to combine selected data and functionality via industry-standard protocols both with other Cloud applications and with traditional on-premises applications.

- ❖ **Device Independence:** – An application must work on various devices including desktop computers and mobile devices so users can be productive wherever and however they work. [1]

2.5 Example of Cloud Computing Services

- ❖ Google Docs - Online documents, spreadsheets, presentations in Figure 2.1
- ❖ Facebook such that (your account, application, games)
- ❖ Photoshop online on <http://www.pixlr.com/>
- ❖ Neevia applications document converter to PDF format on (<http://convert.neevia.com/pdfconvert/>)

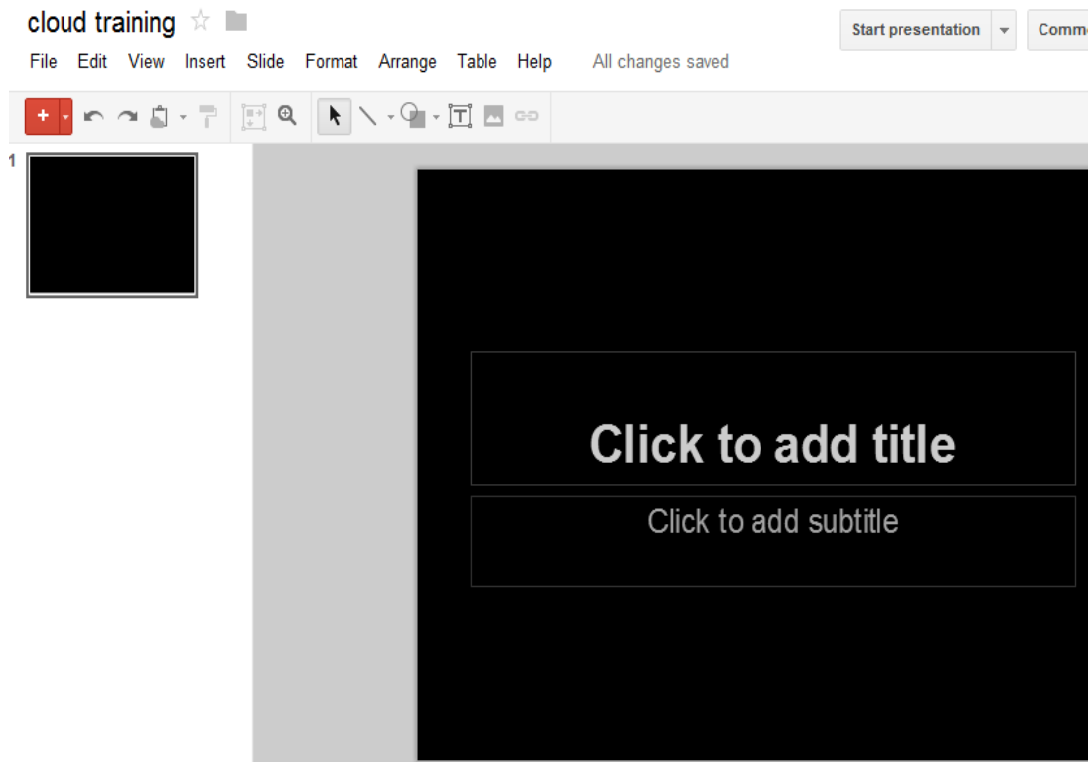


Figure 2.1 Google docs [2]

2.6 Cloud Computing Providers

- ▶ Salesforce
- ▶ Amazon
- ▶ Google
- ▶ IBM
- ▶ ZOHO
- ▶ Microsoft

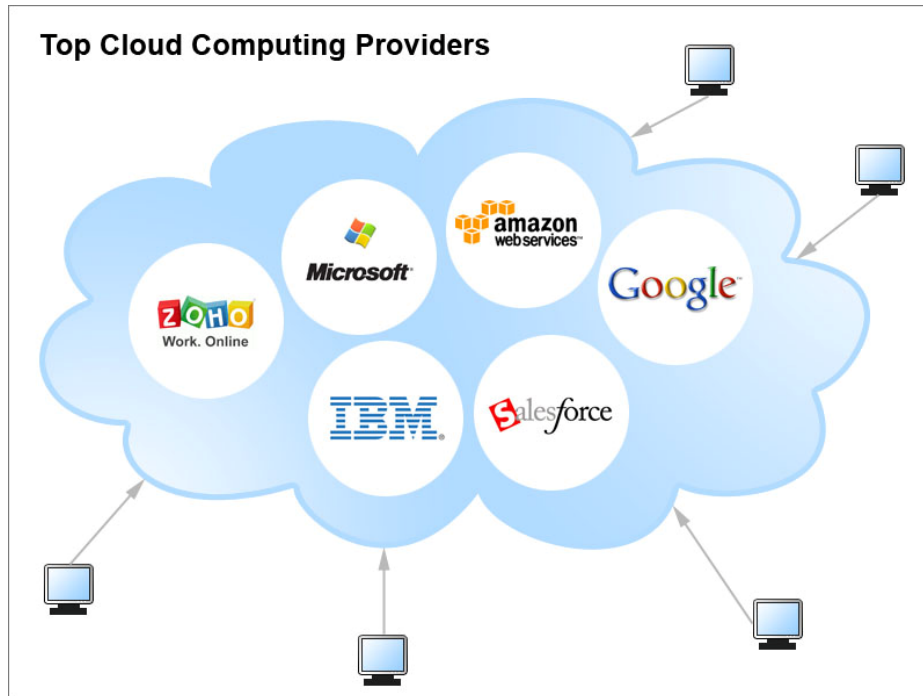


Figure 2.2 Cloud Computing providers [3]

2.7 Advantages of Cloud Computing

1. The less number of servers the lesser space to store the network equipments
2. Reduce the time and cost to manage server.
3. Easy to upgrade and replace.
4. If something does go wrong, you can get the support of your service providers.
5. Cloud Computing helps businesses become mobile.
6. Data storage at Cloud Computing is secure.

2.8 Disadvantages of Cloud Computing

1. Cloud Computing requires a stable Internet connection.
2. When a main data center crashes all the virtual machines created using this data center will be affected.
3. You do not have control over the remote servers, their software, or their security.

4. It may be difficult to migrate massive amounts of data from the one Cloud provider to another Cloud provider.

2.9 Literature Review

Seem to have been famous for the term "Cloud Computing" on the area of information technology in recent times. There is a growing realization that the vision of Computing will come in a day and be the fifth tool after the water, electricity, and gas and telephone communications. This software tool, like all the other four existing facilities will provide a basic level of Computing services that are necessary to meet the daily needs of the community in general. For the delivery of this vision, a number of computer models have suggested and the last model known as Cloud Computing.

There was a set of literature reviews focus on the Cloud Computing definitions, the importance of software engineering techniques in Cloud Computing mechanism, and discusses the unique characteristics of Cloud Computing, which makes it a new, requires new techniques in software engineering to use. However, there are significant challenges facing Cloud Computing that is increasingly in the discussion.

Cloud Computing is a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable Computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction. (This definition is from the latest draft of the NIST Working Definition of Cloud Computing published by the U.S. Government's National Institute of Standards and Technology.)[5]

2.9.1 Projects Tagged "Cloud Computing"

✓ Apache LibCloud

Apache LibCloud is a client library for interacting with many of the popular Cloud server providers. It was created to make it easy for developers to build products that work between any of the services that it supports

✓ Useful Desktop

Useful Desktop is a locked-down and secure desktop Linux distribution designed for schools, libraries, kiosks, Internet cafes, digital signage, and public access computers. Customization and control is all done through the Cloud: a simple and intuitive administration Web site. The "Useful MultiSeat" desktop virtualization software that supports Ethernet and USB connected zero clients is also included. Desktop settings can be managed for thousands of desktops at once via session profiles, which are created and stored in the Cloud. Key features include time management, print cost recovery, Internet filtering, privacy protection, automated clean-up, remote desktop monitoring and control, prepaid cards, and automatic updates. It replaces both DiscoverStation and Desktop Server. [4]

2.10SalesForce and Force.com Platform

Force.com is Cloud Computing for the enterprise. Using the Force.com platform private enterprises and commercial software providers alike can quickly create and run custom business applications over the Internet without the need for up-front software and hardware expenditures configuration and maintenance. In addition to supporting the sales marketing and support applications for which salesForce.com is best known Force.com makes the core technologies behind Salesforce CRM available for developing enterprise-class applications that serve a wide range of business needs and customer interactions. And because the design of Force.com meets all the unique requirements of Cloud applications service providers can easily deliver trusted secure configurable and customizable services that can support multiple devices and are easy to upgrade and integrate with other applications. [6]

Chapter 3

Tools for Developments

3.1 Introduction

3.2 SalesForce Corporation

3.3 Application Development with Force.Com Platform

3.4 Tutorial to Building Simple Report



Chapter 3

Tools for Developments

3.1 Introduction

People today are using traditional software programs tremendously despite the fact of these programs are expensive and the process of installing these programs is not an easy at the moment this problem started fade where there have been several companies in the world use the concept of the Cloud where it is building platforms and displayed it to the user via the Internet without any difficult to install it. You can make the best choice for your projects by these platforms, in this chapter We will talking about Force.com platform, Force.com is different from other platform as a service (PaaS)solutions in its focus on business applications. Force.com is a part of Salesforce.com, which started as a SaaS Customer Relationship Management (CRM) Vendor.

This chapter is intended to help.

-  To read about Cloud Computing or PaaS and want to learn how Force.com work.
-  To get started with Force.com but need to select a suitable first project.

3.2 Salesforce Corporation

3.2.1 History

The Company was founded in March 1999 by Marc Benioff, Parker Harris, Dave Moellenhoff, and Frank Dominguez as a company Specializing in software as a service (SaaS). Salesforce.com is headquartered in San Francisco, with regional headquarters in Merges, Switzerland (covering Europe, Middle East, and Africa), Singapore (covering Asia Pacific less Japan), and Tokyo (covering Japan). Other major offices are in Toronto, New York, London, Sydney, and San Mateo, California. Salesforce.com has its services translated into 16 different languages and currently has 82,400 customers and over 2,100,000 subscribers.

3.2.2 Customer Relationship Management (CRM)

System manages the Relationships with customers and one of the most important solutions that allow follow-up sales and marketing activities so that it works in the first instance to make the Client's primary focus helps.

The formation of an integrated database you can about the way most of the work accomplished sales and follow-up and open accounts for customers and save all the events that occur on a daily basis and to issue reports and arrange business efficiency and preview Staff in the performance of the Sale and keep good Relationship with the client and the performance of entire section.

Furthermore, Customer Service Management system could be used so that Communication with customers through it all by email and text messages via Mobile Phone, which makes the service a form of communication styles.

3.2.3 Modern Salesforce CRM

Today, CRM is change to Cloud Computing. Instead of buying and maintaining expensive servers and software to manage Customer conversations and information, Companies can use Web-based (“Cloud”) applications to run their CRM and get a high return on their investment. Salesforce.com is a leader in Cloud Computing, offering a complete set of CRM Cloud applications, a Cloud platform, and a Cloud Infrastructure For CRM to work effectively, it must have three characteristics:-

- ✚ High reliability – uptime that exceeds 99.9%
- ✚ High performance – data access in less than 300 ms
- ✚ High security

SalesForce CRM is an online Web-based Customer Relationship Management (CRM) service from Salesforce.com. As with all CRM software, it captures and organizes Communications and Information from current or prospective Customers from many departments across a company.

3.3 Application Development with Force.Com Platform


SalesForce.com pioneered Cloud Computing with our comprehensive CRM application Suite. More recently, it opened up our Infrastructure so everyone can use it for custom Application development. With Salesforce.Com Force.com Cloud platform, you can build any business application and run it on our servers The Force.com platform is a rich development environment designed to enable the database applications at the center of most corporate application development projects. With its comprehensive stack of database, integration, logic, and user interface (UI) capabilities, Force.com can be used in various application Scenarios that were, until recently, the exclusive domain of

Traditional client/server ,and application server database tools such as Visual Basic, .NET, and Java and applications that extend Salesforce CRM, such as professional services Project Management.

3.3.1 Tools for Development

Two primary tools to develop Force.com applications:

 Force.com builder

 Force.com IDE

3.3.2 Force.com Builder

The builder is a declarative Web interface that makes it easy for anyone to create database objects and configure other aspects of the platform such as custom object, field, Workflows, Web services, and Email services.

The interface creates metadata, which Force.com uses to generate a default user interface (UI) for each database object, with associated list, detail, create, edit, and delete pages. Using this declarative approach, users can create an entire application, including the persistence layer, without any programming.

What follows is an illustrated tour of the builder environment that shows some of the resulting pages that comprise an application built with the builder

When you login to your account you see user interface to create objects and your application [7]

3.3.3 Database on Force.Com

Terminology:

- ✚ Object → Tables
- ✚ Custom fields → columns
- ✚ Relationships → Foreign key
- ✚ Records type → Views
- ✚ Record → Row in tables

3.3.4 Examples of Force.com Builder

3.3.4 .1 Creating a Simple Application

Creating application that contains several object such that student object which consisting on particular items, name, university Id, and so on. On the Force.com platform, these data objects are called custom objects. If you are familiar with Databases, you can think of a custom object as representing a table. An object Comes with standard fields and screens that allow you to list view and edit Information about the object. But you can also add your own fields to track Or list just about anything you can think of.

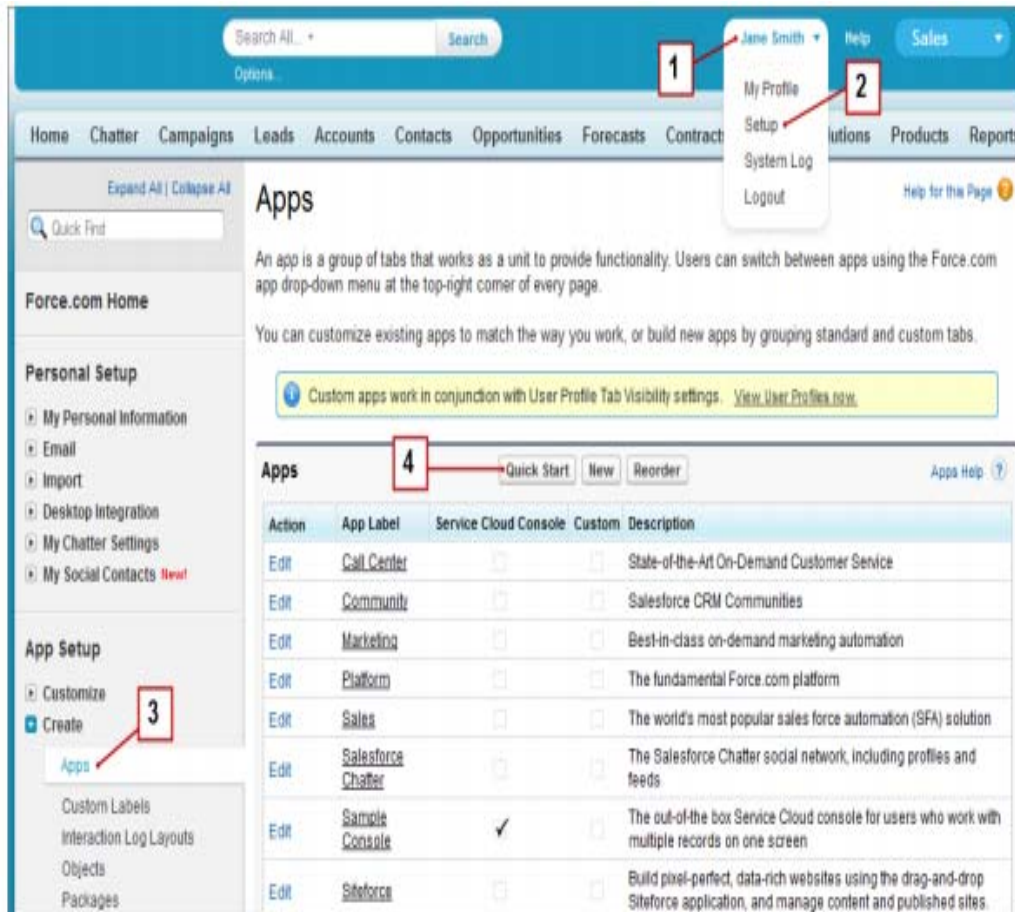


Figure 3.1 creating applications [8]

3.3.4 .2 Creating Custom Object

In the user interface, you can extend your organization's data by defining custom objects. Custom objects are custom database tables that allow you to store information unique to your Organization.

The student object has several fields that you can create by the default User Interface on Force.com Platform.

Then create Custom fields to store the information that is important to your organization. Before begin, should determine the type of Custom field that want to create.

Custom Object Definition

Edit

Save

Save & New

Cancel

Custom Object Information

The singular and plural labels are used in tabs, page layouts, and reports.

Label

Students

Example: Account

Plural Label

studentss

Example: Accounts

Starts with vowel sound

☐

The Object Name is used when referencing the object via the API.

Object Name

Students

Example: Account

Figure 3.2 create custom object [9]

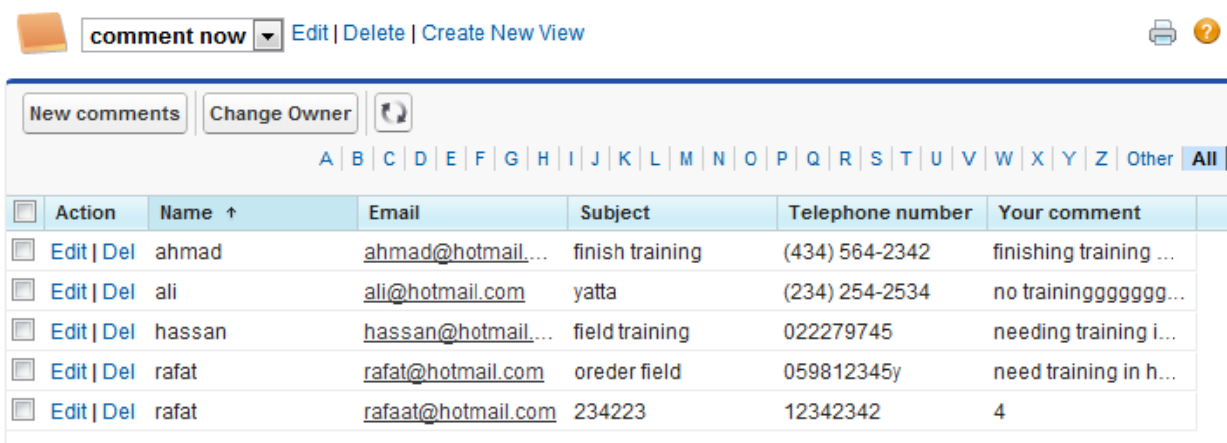
<input type="radio"/> Checkbox	Allows users to select a True (checked) or False (unchecked) value.
<input type="radio"/> Currency	Allows users to enter a dollar or other currency amount and automatically formats the field as a currency amount. This can be useful if you export data to Excel or another spreadsheet.
<input type="radio"/> Date	Allows users to enter a date or pick a date from a popup calendar.
<input type="radio"/> Date/Time	Allows users to enter a date and time, or pick a date from a popup calendar. When users click a date in the popup, that date and the current time are entered into the Date/Time field.
<input type="radio"/> Email	Allows users to enter an email address, which is validated to ensure proper format. If this field is specified for a contact or lead, users can choose the address when clicking Send an Email. Note that custom email addresses cannot be used for mass emails.
<input type="radio"/> Number	Allows users to enter any number. Leading zeros are removed.
<input type="radio"/> Percent	Allows users to enter a percentage number, for example, '10' and automatically adds the percent sign to the number.
<input type="radio"/> Phone	Allows users to enter any phone number. Automatically formats it as a phone number.
<input type="radio"/> Picklist	Allows users to select a value from a list you define.
<input type="radio"/> Picklist (Multi-Select)	Allows users to select multiple values from a list you define.
<input type="radio"/> Text	Allows users to enter any combination of letters and numbers.
<input type="radio"/> Text Area	Allows users to enter up to 255 characters on separate lines.
<input type="radio"/> Text Area (Long)	Allows users to enter up to 32,768 characters on separate lines.
<input type="radio"/> Text Area (Rich)	Allows users to enter formatted text, add images and links. Up to 32,768 characters on separate lines.
<input type="radio"/> Text (Encrypted)	Allows users to enter any combination of letters and numbers and store them in encrypted form.
<input type="radio"/> URL	Allows users to enter any valid website address. When users click on the field, the URL will open in a separate browser window.

Figure 3.3 field types [10]

3.3.4 .3 Creating a Tab for Object (Table)

Tabs are used to organize objects and records. Each tab is associated with a unique object; a tab also lets you specify a color and an image. By tab you can show data of objects and so manipulation of data editing, deleting, updating, or inserting a new record to object, and you can changing the form of tab and show the number of field that you want.

In the project we create a comments object and their tab in figure 3.4



Action	Name ↑	Email	Subject	Telephone number	Your comment
Edit Del	ahmad	ahmad@hotmail...	finish training	(434) 564-2342	finishing training ...
Edit Del	ali	ali@hotmail.com	yatta	(234) 254-2534	no traininggggggg...
Edit Del	hassan	hassan@hotmail...	field training	022279745	needing training i...
Edit Del	rafat	rafat@hotmail.com	oreder field	059812345y	need training in h...
Edit Del	rafat	rafaat@hotmail.com	234223	12342342	4

Figure 3.4 create tab [11]

3.3.4 .4Using Formulas and Validation Rules

The Force.com platform lets you create formulas and field validation rules to help maintain and enhance the quality of the data entered in your application. Both formula fields and field validation rules use built-in functions that allow you to automatically manipulate your data, validate your data, and calculate other values based on your data. The functions you use in formula fields this is validate for simple object that Name is line item for it field.

The screenshot shows the 'Line Item Edit' form in Salesforce. At the top, there's a 'Line Item Edit' header with a '1' icon and a 'Help for this Page' link. Below the header, there are three buttons: 'Save', 'Save & New', and 'Cancel'. A red error message states: 'Error: Invalid Data. Review all error messages below to correct your data.' Below this, there's a section titled 'Information' with a red bar indicating 'Required Information'. The form contains the following fields: 'Line Item Number' (value: 1), 'Unit Price' (value: 10.00), 'Units Sold' (value: 30,000, highlighted with a red border and error message: 'Error: You have ordered more items than we have in stock.'), 'Merchandise' (value: Wee Jet), and 'Invoice Statement' (value: INV-0001). At the bottom, there are three buttons: 'Save', 'Save & New', and 'Cancel'.

Figure 3.5 create Validation Rules [12]

3.3.4 .5 Real time Workflow and Approval

Organizations can improve worker productivity and make their operations more Reliable. Force.com generalized solution for business process management is A feature called Workflow.

Workflows provide a simple way to extend objects with automated behaviors that simplify the development of Force.com applications.

Workflow is an action that is bound to an object and is automatically triggered by inserting or changing a record in the object.

A workflow can trigger a task, Email alert, update a Data Field, or send a message to another application. For example, a workflow can automatically:

1. Assign follow-up tasks to someone 2 week after a record update
2. Send someone an Email alert after inserting a record
3. Change a record's owner field at a specific date and time

An approval process is a complex, specialized type of automated workflow a Force.com

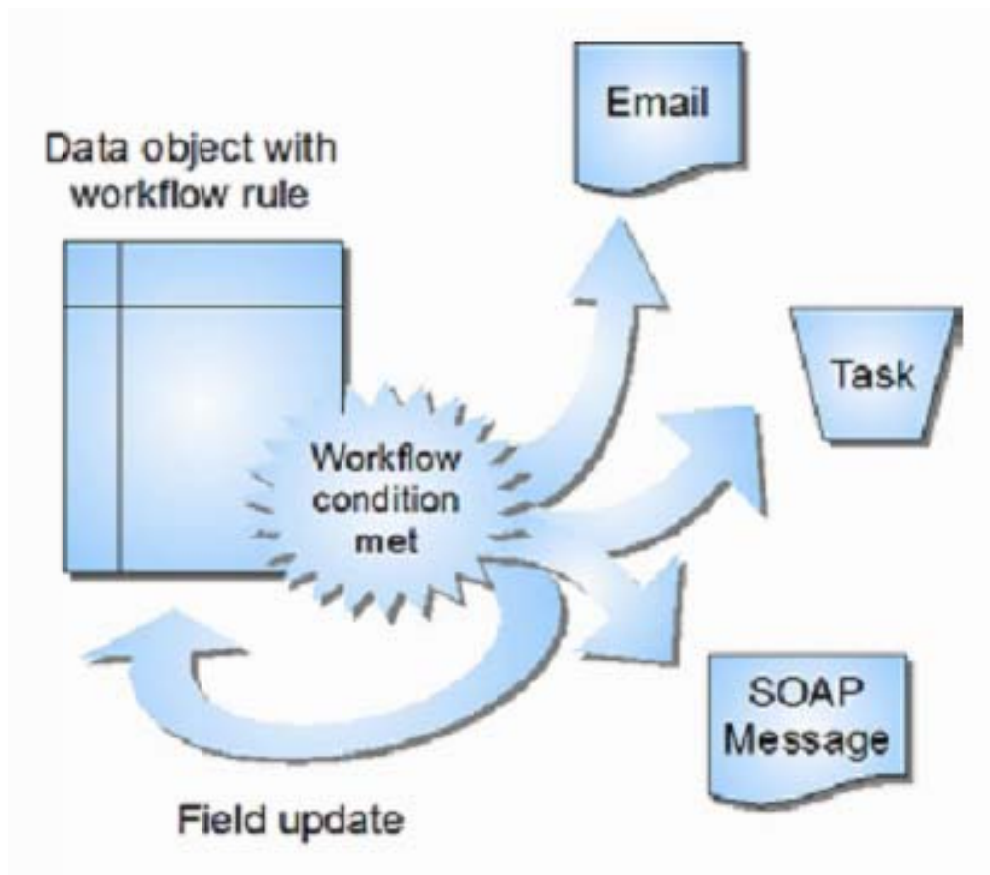


Figure 3.6 workflow and approval pattern [13]

Table 3.1 comparison between workflow and approval

Workflow	Approval process
They are activated when a record is saved.	Approval processes are triggered by explicitly clicking the "Submit for Approval" button.
Workflow consists of single step and single action	Approval process consists of multiple steps. Also different action is taken based upon whether the record is approved or rejected.
Workflows can be modified or deleted.	In approvals some attributes cannot be modified. Processes must be deactivated before approvals can be deleted.

3.3.4 .6Creating Reports and Dashboards

You've built an application that captures and manipulates data, but you want to report on that data as well. Force.com provides a drag-and-drop report builder that lets you quickly organize and present your data. It's easy to group and summarize your data, and add formulas and charts. You can then share these reports to help business users make more informed decisions. You may have noticed the reports and dashboards tabs that were automatically added when you created your app. The Reports tab provides access to a set of predefined reports, all of the reports that you create, and the reports in folders that you can access. The dashboards tab shows data from charts, gauges, tables, Metrics or VisualForce pages. Dashboards provide a snapshot of key metrics and performance indicators for your organization.

The process of building the report does not exceed seven minutes.

3.3.4 .7 Building a Custom User Interface Using VisualForce

VisualForce is a complete framework for creating Cloud Application User Interfaces (UIs) and making it possible to design, build, and deliver any kind of interface and interaction entirely in the Cloud.

The Framework includes a tag-based markup language, similar to HTML. The UIs made possible with VisualForce can extend the look and feel of standard builder applications or replace them entirely with a unique style and a set of sophisticated interactions.

With VisualForce, developers can use standard Web development technologies including HTML, AJAX, to create UIs for their Cloud applications. Through a Model-View-Controller (MVC), developers can wire together these interfaces with Apex. VisualForce markup defines which interface components to include on the page and what those components look like. Because VisualForce markup is like HTML, designers can use VisualForce tags alongside standard HTML, JavaScript, or any other code that can execute within an HTML page. In VisualForce you can create a special interface for your application that displays an object, in the project we used the VisualForce system to build an application and use the custom object as a data base and take benefit of these data and controlling of displayed it.

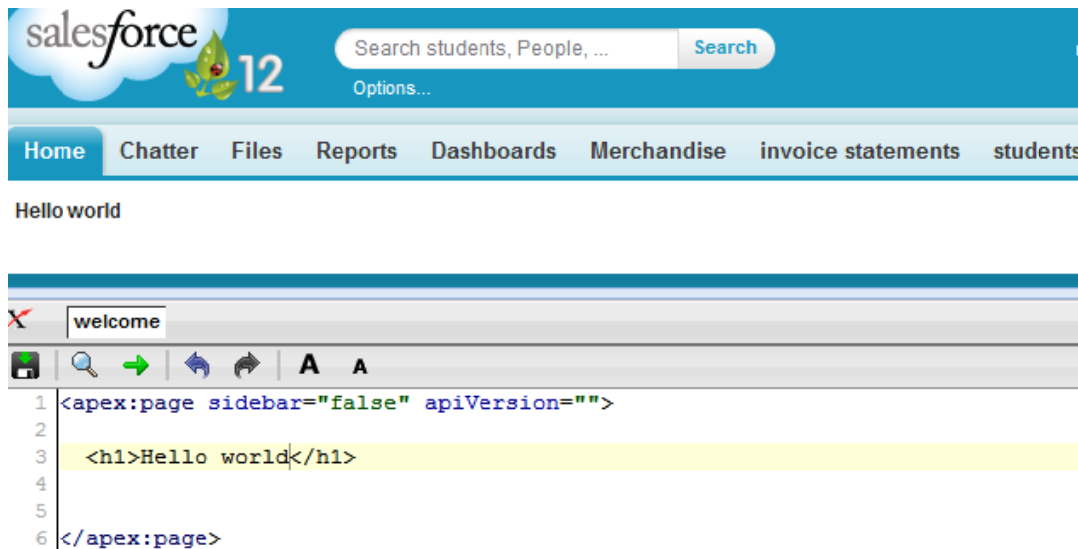


Figure 3.8 simple VisualForce page [15]

3.3.5 Benefits of VisualForce

1. User-friendly development

Developers can edit their VisualForce markup in the same window that displays the resulting page. Consequently, developers can instantly verify the result of an edit just by saving their code. The VisualForce editor pane also includes auto-completion and syntax highlighting.

VisualForce also supports “quick fixes” that allow developers to create supporting components on the fly. For example, a developer can define a new VisualForce page simply by logging in to Salesforce and then entering the name of the new page in a URL. Much like a wiki, if the page does not yet exist, the platform creates it for you.

2. Integration with other Web-based user interface technologies

Because VisualForce markup is ultimately rendered into HTML, designers can use VisualForce tags alongside standard HTML, JavaScript, Flash, or any other code

that can execute within an HTML page on the platform, including Force.com platform merge fields and expressions.

3. Model-View-Controller (MVC) style development

VisualForce conforms to the Model-View-Controller (MVC) development pattern by providing a clear division between the view of an application (the user interface, defined by VisualForce markup), and the controller that determines how the application works (the business logic, defined by a VisualForce controller written in Apex). With this architecture, designers and developers can easily split up the work that goes with building a new application—designers can focus on the look and feel of the user interface, while developers can work on the business logic that drives the app.

4. Concise syntax

VisualForce pages can implement the same functionality as s-controls but with approximately 90% fewer lines of code.

5. Data-driven defaults

VisualForce components are rendered intelligently by the platform. For example, rather than forcing page designers to use different component tags for different types of editable fields (such as email addresses or calendar dates), designers can simply use a generic `<apex:inputField>` tag for all fields. The VisualForce renderer displays the appropriate edit interface for each field.

6. Hosted platform

VisualForce pages are compiled and rendered entirely by the Force.com platform. Because they are so tightly integrated, they display the same performance as standard Salesforce pages, regardless of the amount of data being displayed or edited.

7. Automatically upgradeable

VisualForce pages do not need to be rewritten when other parts of the Force.com platform are upgraded. Because the pages are stored as metadata, they are automatically upgraded with the rest of the system. [16]

3.3.6 Apex Code

- ✚ Object- oriented programming language
- ✚ strongly-typed language
- ✚ Compiled
- ✚ Syntax similar to java and C# it has the usual array of features such as classes, interfaces, constants, class variables.
- ✚ not case sensitive

3.3.7 Created on the Cloud

- ✚ Executes on Force.com platform.
- ✚ Code must have unit test before going to Cloud.
- ✚ Can write code in the browser or in Force.com IDE
- ✚ Eclipse plug-in.
- ✚ Apex supports the standard Java-like notions of `this` and `instance of`.

Force.com IDE is in communication with the Force.com platform servers. When you hit save on an Apex class, the IDE sends the Apex class to the Force.com servers. The servers compile that class and return the result (for example, parsing errors, or compilation errors) back to the IDE where they are displayed. This is the typical mode of operation - the online mode. Projects can also be in offline mode. In this case, any changes you make are simply made on your local machine. When you go online, you can synchronize those changes. [17]

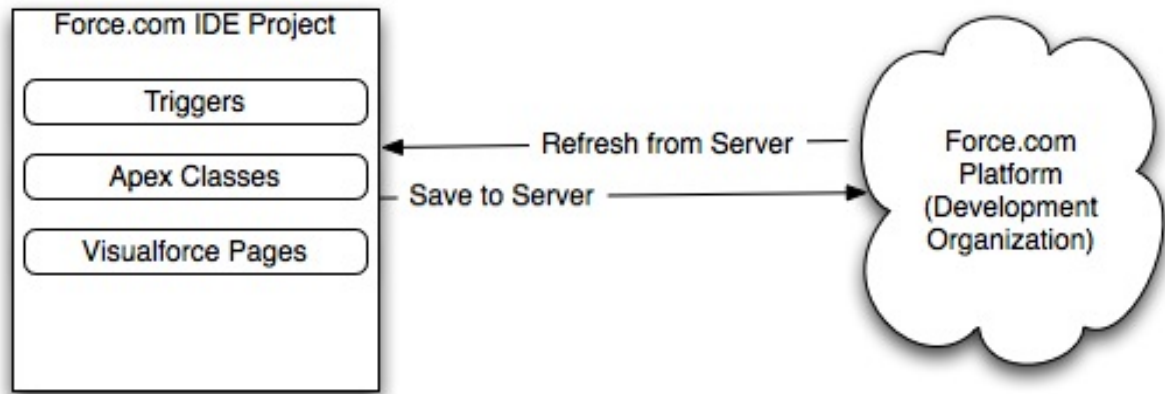


Figure 3.9 Force.Com IDE [18]

3.3.8 Primitive Data Types

Apex supports a number of different data types:

- ✚ Primitive data types such as Integer and Date
- ✚ Subject types that represent persistent objects
- ✚ Collections and enumerations
- ✚ User and system-defined Apex classes

The primitive data types include:

- ✚ Blob - for storing binary data
- ✚ Boolean
- ✚ Date, Time and Datetime
- ✚ Decimal - for representing arbitrary precession numbers, including currency
- ✚ ID - the Force.com database record identifier type
- ✚ Integer, Long, Double and String [19].

3.3.9 VisualForce with Model View Controller (MVC)

The MVC model is implemented with standard and custom objects a staple of Force.com development—as well as with three new objects: pages, components, and controllers.

- **Pages**, along with components, are the basic creative building blocks for application designers. Similar to a standard Web page, a VisualForce page uses HTML to specify the appearance of the application’s interface, with the option of using other Web technologies such as CSS, AJAX, and Adobe Flex for additional flexibility. Pages are referenced and invoked via a unique URL, just as they would be on a traditional application server. This standard markup is complemented by special VisualForce components. These components, which are similar to tag libraries in other systems, make it possible to invoke complex components with a single line of HTML. Because these components are composed and rendered on the server and then delivered to the client, this approach provides better performance and enhanced functionality compared to client-only techniques.
- **Components**, which are invoked with special HTML tags, are the key for reusing common interface elements and for binding both standard and custom elements to data. VisualForce initially ships with 25 predefined components that can be assembled with minimal coding, in building-block fashion. Some components implement common Salesforce interface elements, while others make available new features such as AJAX-based partial page refreshes. Components may provide various levels of granularity, such as displaying multiple lines of data or executing embedded functionality of an application’s meta data on a VisualForce page. All components can be captured in style sheets, to make it easy to change a component’s style regardless of how it was created.
- **Controllers** are the basic functional building blocks that control the application’s logic. Implemented in Apex code, controllers provide the underlying business rules for the interface, as well as the “connective tissue” between the application’s page presentation and the underlying data. Any given page interacts with a given controller through

components, which bring in the data to be displayed in the interface and send it out to be stored in the database. The controller provides access to the data and specifies what happens when the user interacts with an interface component. VisualForce provides pre-built, standard controllers for standard interactions such as View, Edit, and save, which can be implemented without additional coding. New behaviors that go beyond these predefined interactions—called custom controllers can be programmed in Apex to access new data sources, navigation elements, and behaviors. Because custom controllers can maintain state across page interactions, it is possible to construct interactions such as wizards, whose logic spans steps on multiple pages.[20]

The MVC Pattern in Force.com

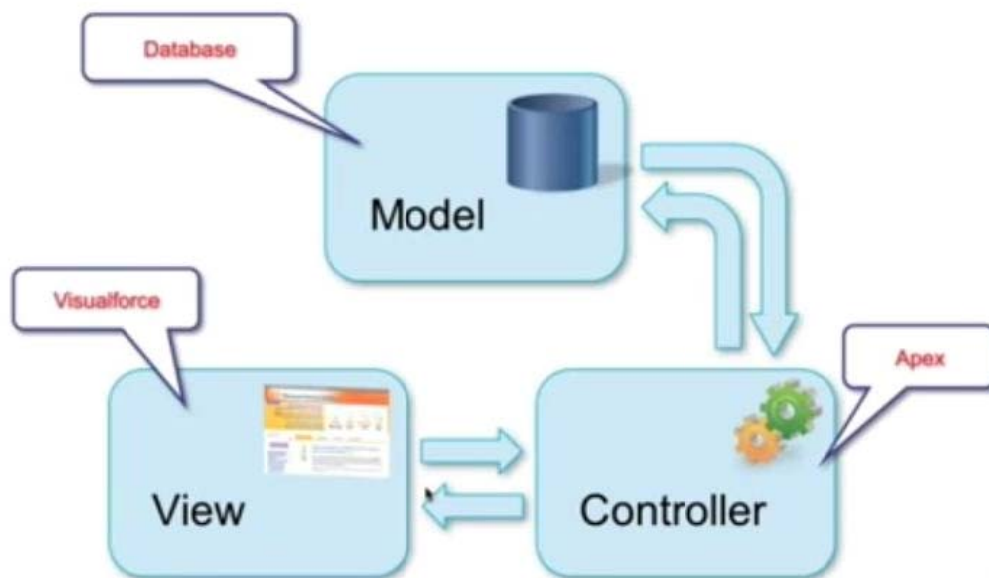


Figure 3.10 MVC patterns [21]

3.3.10 Force.com IDE

The Force.com IDE is a powerful client application for creating, modifying and deploying Force.com applications. Based on the Eclipse platform, it provides a comfortable environment for programmer's familiar with integrated development environments, allowing you to code, compile, test, and package and deploy all from within the IDE itself. Much of the actual work, such as compilation, happens on the Force.com platform—the Force.com IDE performs the communication and result parsing transparently.

Force.com IDE organize your application into project Unlike traditional software development projects where source code is compiled to create executable binaries, the resources in a Force.com project located within a Force.com organization and are copied into the local project for editing. You'll find the following folders and files in every Force.com project:

- Src/ – This folder contains all of the metadata components you have included in your project, organized by type into subfolders such as classes, objects, and pages.
- Src/package.xml – This control file, known as the project manifest, determines what metadata components are retrieved from the server when synchronizing with the project's home organization.
- Salesforce.Schema – Opening this file activates the Schema Explorer for the project's home organization.
- Referenced Packages – This folder contains the contents of any managed packages that are installed in the project's home organization. These files are read only; customizing installed managed packages from the Force.com IDE is not supported

No More.....

- No DDL script.
- No foreign key
- No connection.
- No connection pooling.

- No sizing or optimization.
- No buffer sizing, cursor sizing.
- No Disk I/O configuration.[22]

3.3.11 Force.com security

Data is the core of your information stack, and, more importantly, the repository of the business value of all of your systems. The value provided by your data justifies the very existence of your company's entire IT investment including you have to be sure that your data is safe and sound, protected from unauthorized access from outside your company, as well as safeguarded from inappropriate usage by your user community. The Force Platform is built with security as the foundation for the entire platform. This foundation includes both protection for your data and applications, and the ability to implement your own security scheme, which must be able to flexibly reflect the structure and needs of your organization. The security features of the Force Platform provide both strength and flexibility [23]

3.4 Tutorial to Develop Simple Report and dashboards

This Tutorial From <http://www.salesForce.com/us/developer/docs/workbook/index.htm>

To develop simple Report and dashboards for objects

Level: Beginner; **Duration:** 20-30 minutes

You've built an app that captures and manipulates warehouse data, but you want to report on that data as well. Force.com provides a drag-and-drop report builder that lets you quickly organize and present your data. It's easy to group and summarize your data, and add formulas and charts. You can then share these reports to help business users make more informed decisions.

You may have noticed the Reports and Dashboards tabs that were automatically added when you created your app. The Reports tab provides access to a set of predefined reports, all of the reports that you create, and the reports in folders that you can access. The Dashboards tab shows data from charts, gauges, tables, metrics, or VisualForce pages. Dashboards provide a snapshot of key metrics and performance indicators for your organization.

In this tutorial, you will display your data in reports using three different formats. The first format, tabular, lists your data in a simple table. The next two let you group your data and add a chart. You will also create a dashboard using one of your reports.

Step 1: Create a Tabular Report

In this step you will create a tabular report. Tabular reports present data in simple rows and columns, much like a spreadsheet. They don't contain groupings, but can be used to show column summaries, like sum, average, maximum, and minimum.

1. Click the Reports tab.
2. Click **Create New Folder**.
3. In Report Folder Label, enter Merchandise Reports.
4. Click **Save**.
5. Click **Create New Custom Report**.
6. In the Select Category panel, select Other Reports.
7. In the Select Report Type panel, select Merchandise and click **Create**. Report types set the rules for which records to show in reports, based on object relationships. They also determine which fields you can use.

The report builder appears, with its dynamic preview built from a limited number of records. The Merchandise Name field is in the report by default. The default report format is tabular.

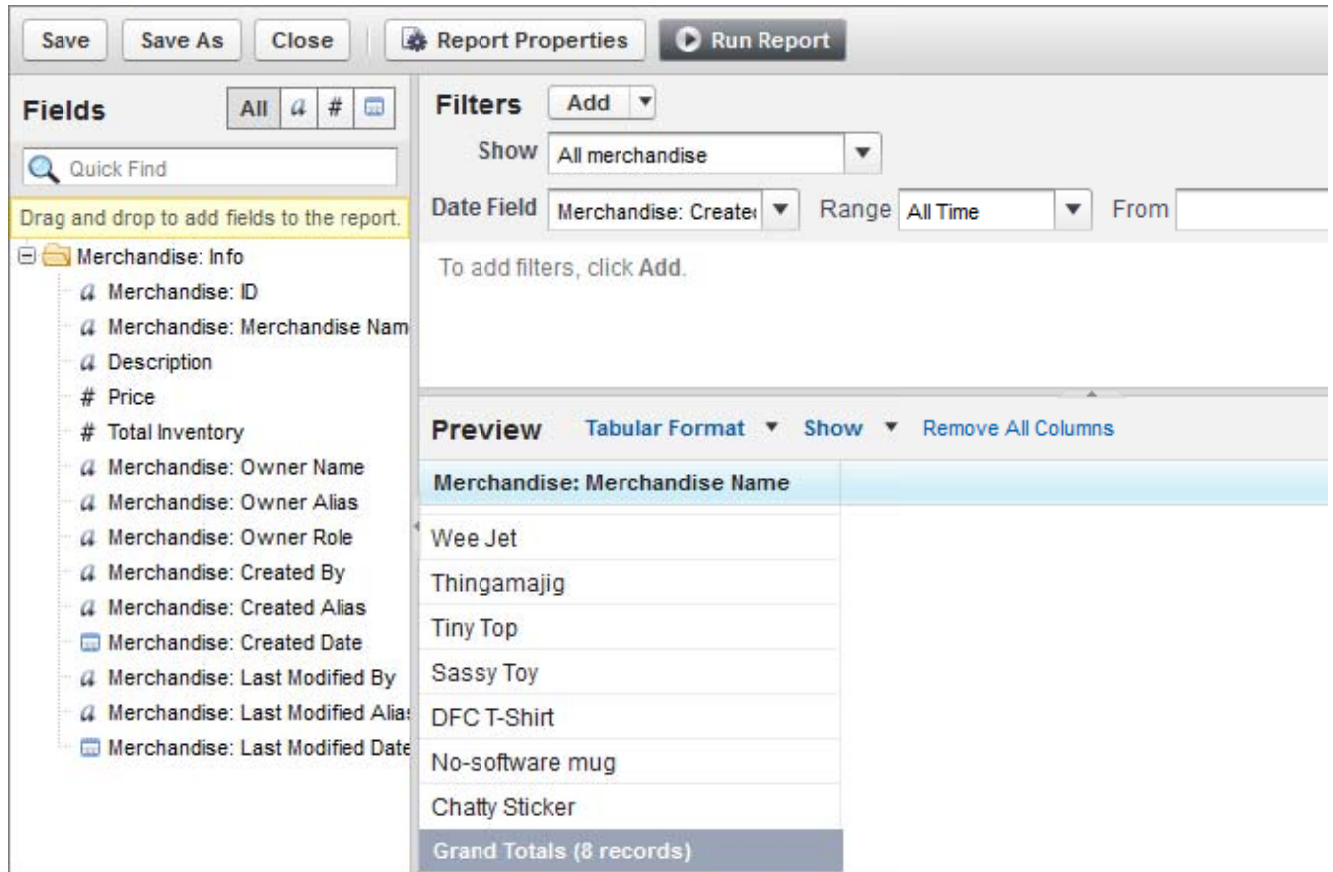




Figure 3.A run Report

8. Drag each of the following fields from the Fields pane to the Preview pane, placing them beside the Merchandise Name column. To select multiple fields or columns, press CTRL (Windows) or Command (Mac).

- Description
- Price
- Total Inventory

You now have a basic report, but let's add a few bells and whistles like sums and averages.

1. Click  next to Price header and select Summarize this Field.
2. Select Max and Min.
3. Click **Apply**.
4. Click  next to Total Inventory and select Summarize this Field.

Price	Total Inventory
\$12.50	
\$9.50	
\$4.20	
\$5.99	
\$14.99	
\$25.99	
\$9.99	
\$3.99	

Sort Ascending
Sort Descending
Group by this Field
Limit Rows by this Field
Summarize this Field...
Remove Column

Figure 3.B sorting record

5. Select Sum.
6. Click **Apply**.
7. In the Filters pane, select All Merchandise from the View drop-down list to assign the set of records that the report will use.
8. Click **Run Report**.
9. Review the data and click **Save As**.
10. In the Report Name field, enter All Merchandise with Price and Inventory.
11. Select Merchandise Reports from the Report Folder drop-down list.
12. Click **Save and Return to Report**. You will now see your All Merchandise with Price and Inventory report displayed.

Merchandise: Merchandise Name	Description	Price	Total Inventory
<u>Widge It</u>	A thingy	\$12.50	1,500
<u>Wee Jet</u>	A small plane	\$9.50	2,000
<u>Thingamajig</u>	A very useful tool	\$4.20	500
<u>Tiny Top</u>	Small spinning top	\$5.99	500
<u>Sassy Toy</u>	Stuffed toy	\$14.99	2,000
<u>DFC T-Shirt</u>	Developer Force shirt	\$25.99	485
<u>No-software mug</u>	Coffee mug with logo	\$9.99	650
<u>Chatty Sticker</u>	Fun stickers	\$3.99	3,900
Grand Totals (8 records)		max \$25.99 min \$3.99	11,535

Figure 3.C view data

The procedures you followed in creating this report will be similar to those you follow in the later steps. You selected the objects that you want to report on, selected the report format, determined which fields to display, optionally added summary data, and set data filters for the report. The other reports in this tutorial follow similar instructions, with the addition of grouping and charts.

Tell Me More....

- You can order the report data by clicking the column headers to toggle between ascending and descending order. The Grand Totals area of the report indicates the record count as well as the summaries you chose. You can make additional changes to this report by clicking **Customize**.
- You can click through to the data records that are being reported on, a characteristic found in all reports onForce.com. For example, click the name of any merchandise record listed in the report to view its detail page.
- The folder a report is placed in determines its visibility and security. Modify these settings by clicking **Edit** on the Report Folder on the Reports tab. While you are not able to specify a specific user to access a report folder, you can add Public Groups, Roles, or Roles and Subordinates to control visibility.
- You can return to your reports at any time by selecting the Reports tab, selecting the Merchandise Reports folder, and clicking **Go**.

Step2: Create a summary Report



Summary reports allow for more advanced customization than tabular reports. You can group report data by up to three levels and add a chart. In this step you'll create a summary report and group by the merchandise name.

1. Click the Reports tab.
2. Click **Create New Custom Report**.
3. Select Other Reports, then Invoice Statements with Line Items and Merchandise.
4. Click **Create**.
5. The default format is tabular, but we want a summary report. Click **Tabular Format** and choose Summary instead.

- From the Fields pane on the left, within the Line Item folder, select the Unit Price field, drag it to the Preview pane, and drop it on the right of Merchandise Name. A green line will appear when you can drop the field to create a new column. Warning



If you drop Unit Price or Units Sold into a grouping by mistake, click the down arrow next to the field name and choose **Remove Group**. You need to drop the field into a column, which is located just above the grouping zone.

- Click the down arrow  next to Unit Price, select Summarize this Field, choose Average, and then click **Apply**
- Again in the Fields pane on the left, within the Line Item folder, select the Units Sold field, drag it to the Preview pane, and drop it on the right of Unit Price.
- Click the down arrow  next to Units Sold, select Summarize this Field, choose Sum, and then click **Apply**
- Select the Merchandise Name field (either from Fields or Preview panel) and drag it to the area labeled **Drop a field here to create a grouping**. This aggregates data by the unique merchandise item.

The report now includes all the invoices and their associated line items grouped by merchandise item, as well as average price and total units sold.

	Invoice Statement: Invoice Number	Line Item: Line Item Number	Unit Price	Units Sold
<input type="checkbox"/>	Merchandise: Merchandise Name: <u>Thingamajig</u> (1 record)			
			avg \$10.00	6
	<u>INV-0001</u>	<u>1</u>	\$10.00	6
<input type="checkbox"/>	Merchandise: Merchandise Name: <u>Wee Jet</u> (1 record)			
			avg \$9.99	100
	<u>INV-0001</u>	<u>3</u>	\$9.99	100
<input type="checkbox"/>	Merchandise: Merchandise Name: <u>Widge It</u> (1 record)			
			avg \$5.00	8
	<u>INV-0001</u>	<u>2</u>	\$5.00	8
Grand Totals (3 records)			avg \$8.33	114

Figure 3.D view record with id

Now let's add a fancy combination chart to the report:

1. In the Preview pane, click **Add Chart** to create a chart to represent your data. The Chart Editor Dialog box appears.
2. Click the vertical bar chart.
3. In the Y-Axis drop-down list, select Sum of Units Sold.
4. In the X-Axis drop-down list, select Merchandise: Merchandise Name.
5. Select Plot additional values.
6. In the Display drop-down list, select Line.
7. Select Use second axis.
8. In the Value drop-down list, select Average of Unit Price.
9. Click **OK**.
10. Click **Save**.
11. In the Report Name field, enter Merchandise Sold by Invoice No & Price.
12. In the Report Description field, enter What merchandise has been selling and what's the average unit price?
13. In the Report Folder drop-down list, select Merchandise Reports.
14. Click **Save and Run Report**.

The combination chart shows the data, plotting each merchandise item against units sold (across all invoices) as well as superimposing a second graph mapping the average unit price for the item.

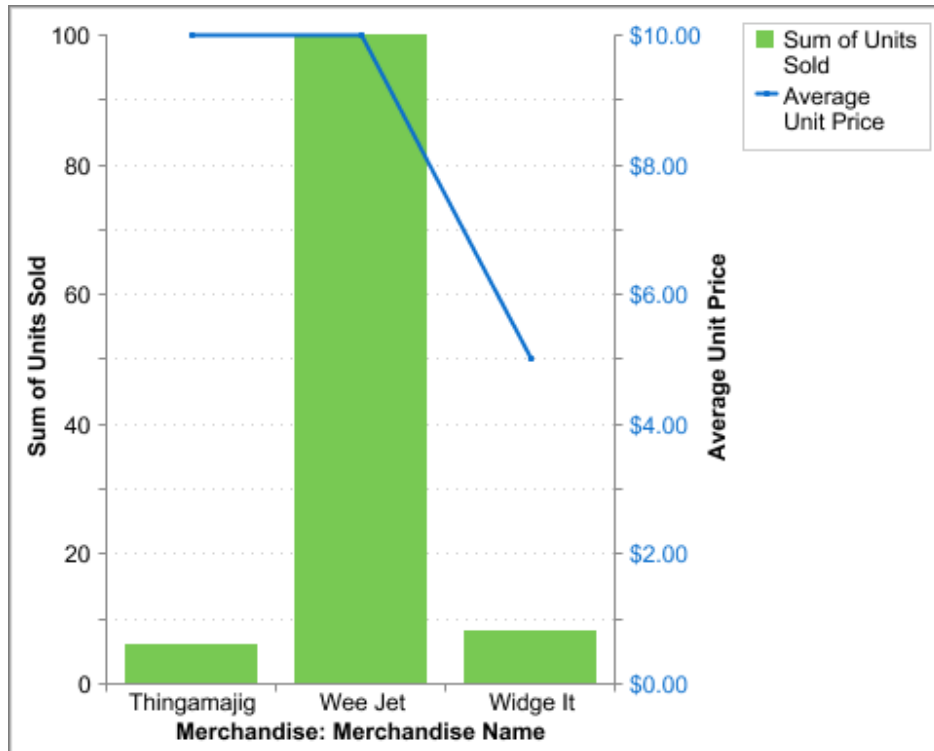


Figure 3.E chart for record

Step 3: Create a Matrix Report

In this step you will create a matrix report that groups and summarizes both columns and rows. This report will show summary data of merchandise items per day and across different invoice statement status values.

1. Click the Reports tab.
2. Click **Create New Custom Report**.
3. Select Other Reports, then Merchandise with Line Items and Invoice Statements.
4. Click **Create**.
5. In the Preview panel, click **Tabular Format** and choose Matrix from the drop-down list.
6. Clear the slate by selecting **Remove all Columns** and then click **OK** in the popup.
7. Double-click Invoice Statement: Invoice Value to add it to the report. In the popup, select the Sum checkbox.
8. Double-click Line Item: # Units Sold to add it to the report. In the popup, select the Sum checkbox.

9. Create a column grouping for the status of invoice statements by dragging the Invoice Statement: Status field to the column grouping drop zone.
10. Create a row grouping by dragging the Invoice Statement: Created Date field to the row grouping drop zone.
11. Create a secondary row grouping by dragging the Merchandise: Merchandise Name field to the second row grouping drop zone.
12. In the Filters pane, ensure that All merchandise is selected from the **Show** drop-down list.
13. Click **Run Report**.

You'll get an astounding amount of information generated in the report. Values are tallied both horizontally and vertically, and within the report, depending on the column (Invoice Status) and row groupings (Created Date and Merchandise Name).

				Invoice Statement: Stat	
	Invoice Statement: Created Date	Merchandise: Merchandise Name		Open	Negotiating
<input type="checkbox"/>	8/2/2011	<u>Thingamajig</u>	Sum of Invoice Statement: Invoice Value Sum of Units Sold Record Count	\$1,099.00 6 1	\$0.00 0 0
		<u>Wee Jet</u>	Sum of Invoice Statement: Invoice Value Sum of Units Sold Record Count	\$1,099.00 100 1	\$9,812.00 1,000 1
		<u>Widge It</u>	Sum of Invoice Statement: Invoice Value Sum of Units Sold Record Count	\$1,099.00 8 1	\$9,812.00 1,000 1
		Subtotal	Sum of Invoice Statement: Invoice Value Sum of Units Sold Record Count	\$1,099.00 114 3	\$9,812.00 1,000 1
<input type="checkbox"/>	1/31/2012	<u>Sassy Toy</u>	Sum of Invoice Statement: Invoice Value Sum of Units Sold Record Count	\$0.00 0 0	\$449.00 0 0
		Subtotal	Sum of Invoice Statement: Invoice Value Sum of Units Sold Record Count	\$0.00 0 0	\$449.00 0 0
Grand Total			Sum of Invoice Statement: Invoice Value Sum of Units Sold Record Count	\$1,099.00 114 3	\$10,262.00 1,000 1

Figure 3.F date for record

Now let's add a combination chart to this report:

1. Click **Customize**.
2. Click **Add Chart**. The Chart Editor dialog box appears.

3. Select the Vertical Bar Chart.
4. In the Y-Axis drop-down list, select Sum of Units Sold.
5. In the X-Axis drop-down list, select Invoice Statement: Created Date.
6. In the Group-By drop-down list, select Invoice Statement: Status.
7. Select the Stacked graph type.
8. Select Plot additional values.
9. For Value, select Record Count
10. Select Use second axis.
11. Click the Formatting tab to further customize the chart.
12. For Chart Title, enter Units Sold per Day by Invoice Status.
13. For Legend Position, select Bottom.
14. Select Show Axis Label.
15. Click **OK**
16. Click **Save**.
17. For Report Name, enter Daily Units Sold by Invoice Status.
18. For Report Description, enter How many units are we selling each day, by Invoice Status?
19. For Report Folder, select Merchandise Reports.
20. Click **Save and Run Report**.

The resulting graph summarizes the units sold, and automatically takes into account the status of each invoice, grouping the invoices over daily periods. Note that you'll need invoices from more than one date to see anything fancy.

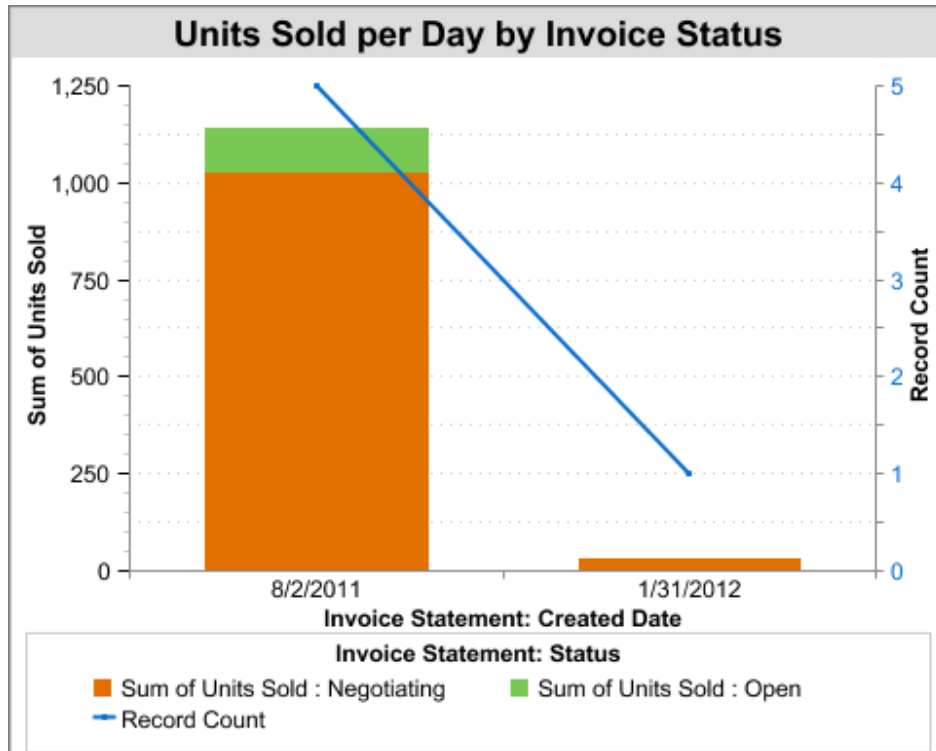



Figure 3.G chart for unit sold

Tell Me More....

- The Sum of Units Sold has a scale on the left side of the chart that correlates to the columns of your chart. Record Count has its own scale on the right side of the chart that correlates to the blue line on your chart.
- The chart and report currently display all records, regardless of when they were created. If you want to narrow the time frame that is represented, you can define it in the upper right corner of the page. Choose either a predefined duration or enter your own custom dates and click **Run Report** to update the page.
- You can quickly change how your chart is displayed by clicking **Edit**.
- Because you defined multiple grouping levels in the report, you'll see multiple summary rows, as you see in Invoice Statement: Status.
- You can deselect **Show | Details** to only show summary information, making your report easier to see.

Step 4: create a Dashboard

You can show all the reports you've built in the same place by including them in a dashboard, which provides a graphical summary of the data in your app. Your data can be represented by charts, tables, metrics, gauges, and Even VisualForce components. Similar to reports, dashboards are organized into folders.

1. Click the Dashboards tab.
2. Click **Create New Folder**.
3. For Dashboard Folder Label, enter Merchandise Dashboards.
4. Click **Save**.
5. Click **New Dashboard**.
6. Click **Dashboard Properties**.
7. For Title, enter Merchandise and Invoice Summary.
8. Click **OK**.
9. From the Components tab, drag the vertical bar chart to the first column.
10. From the Data Sources tab, click **Reports**, click + next to Merchandise Reports, and drag Daily Units Sold by Invoice Status on top of the vertical chart in the first column.
11. On the Vertical Bar Chart, click .
12. Select Use chart as defined in source report.
13. Click **OK**.
14. Add a header to the component by clicking **Edit Header** and entering Items Sold per Day.
15. Click **Save**, and then in the pop up, **Save and Run Dashboard**.

Your dashboard now has one component in the left column. You can add up to 20 components to create a more complex dashboard.

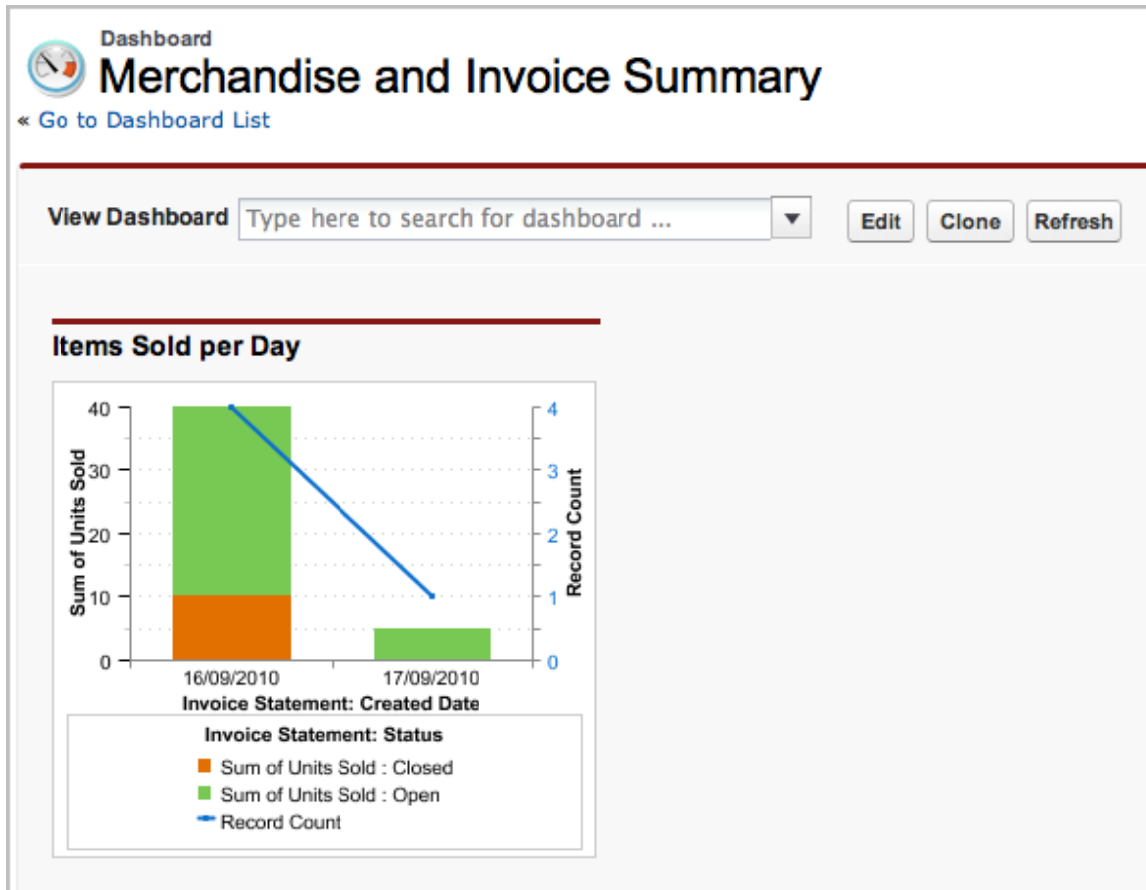



Figure 3.H summary for objects

Tell Me More....

- When you set a running user for a dashboard, it runs using the security settings of that single, specific user. All users with access to the dashboard see the same data, regardless of their own personal security settings. To set the running user, click  next to the View dashboard as field.
- Dashboards can be updated either manually or on a schedule, and can be delivered through email.
 - A dashboard won't automatically refresh unless it is set to do so. Each time you view a dashboard, it indicates in the upper right corner when it was last refreshed. To refresh the data in the dashboard, click **Refresh**.
 - You can add the dashboard to your Home tab

1. Click **Setup** | **Customize** | **Home** | **Home Page Layouts**.
2. Click **Edit**, then **Edit** again, and select the Dashboard Snapshot checkbox.
- c. Click **Next**, then **Save**. Select your Home tab to see it in action.

Summery

Apex is a powerful object-oriented language, with many of the features typically found in similar languages such as Java. In this tutorial you created an Apex class and used a few of the features of the language, such as arrays, iteration, and querying the database. If you did the bonus step, you modified the VisualForce page to use the data passed back to the controller to display a message using an AJAX update, without refreshing the entire page.

Chapter 4

System Analysis and design

4.1 System Objectives

4.2 General Block Diagram

4.3 System Requirement

4.4 How System Works

4.5 System Modeling

4.5.1 Analysis of Requirements Using

4.6 Graphical User Interface(GUI)

Chapter 4

System Analysis and Design

4.1 System Objectives

During the registration period for summer courses at the university, students suffer from the problem in registration field training course, large number of students registered for this course and lack of places that provides training for these students. This project provide a solution to this problem as technical style appeared in the recent years called Salesforce site as Cloud Computing platform .The aim of this new computerized system to service the students and supervisor in the university based on that system must be able to satisfy the following aims:

- The students can register field training through Internet.
- The university students can see on a collection of information and data and offers from company of field training through private pages for each user with privacy this data.
- Supervisor, administrator can enter to this information and make required modification through Internet.
- Contact between system and users away from the routine.

****Problem Solving Outline**

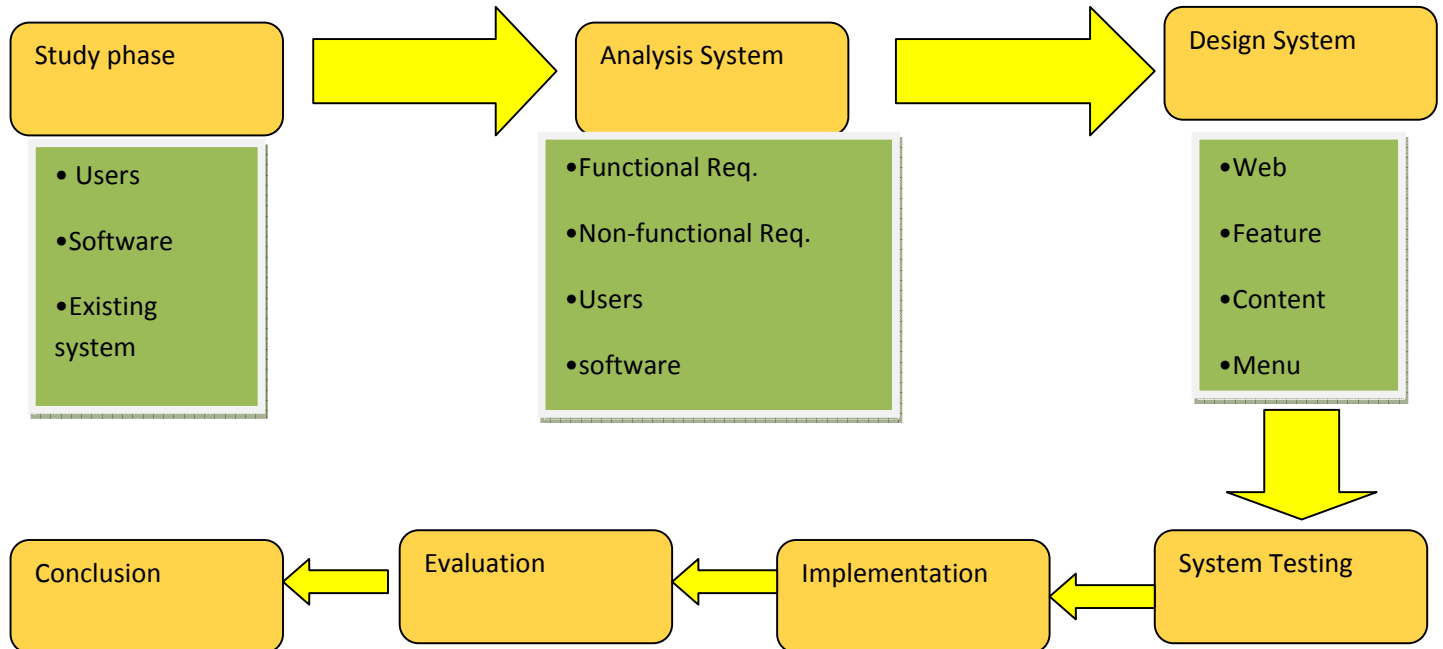


Figure 4.1 Problem Solving Outline

4.2 General Block Diagram

According to previous clarify the system will be contain five parts, definition of site, registration requirements at the site, announcements, the deal with the system will be through Internet, for this will be a group of users on clients and the system with data base of Salesforce on university servers as follow.

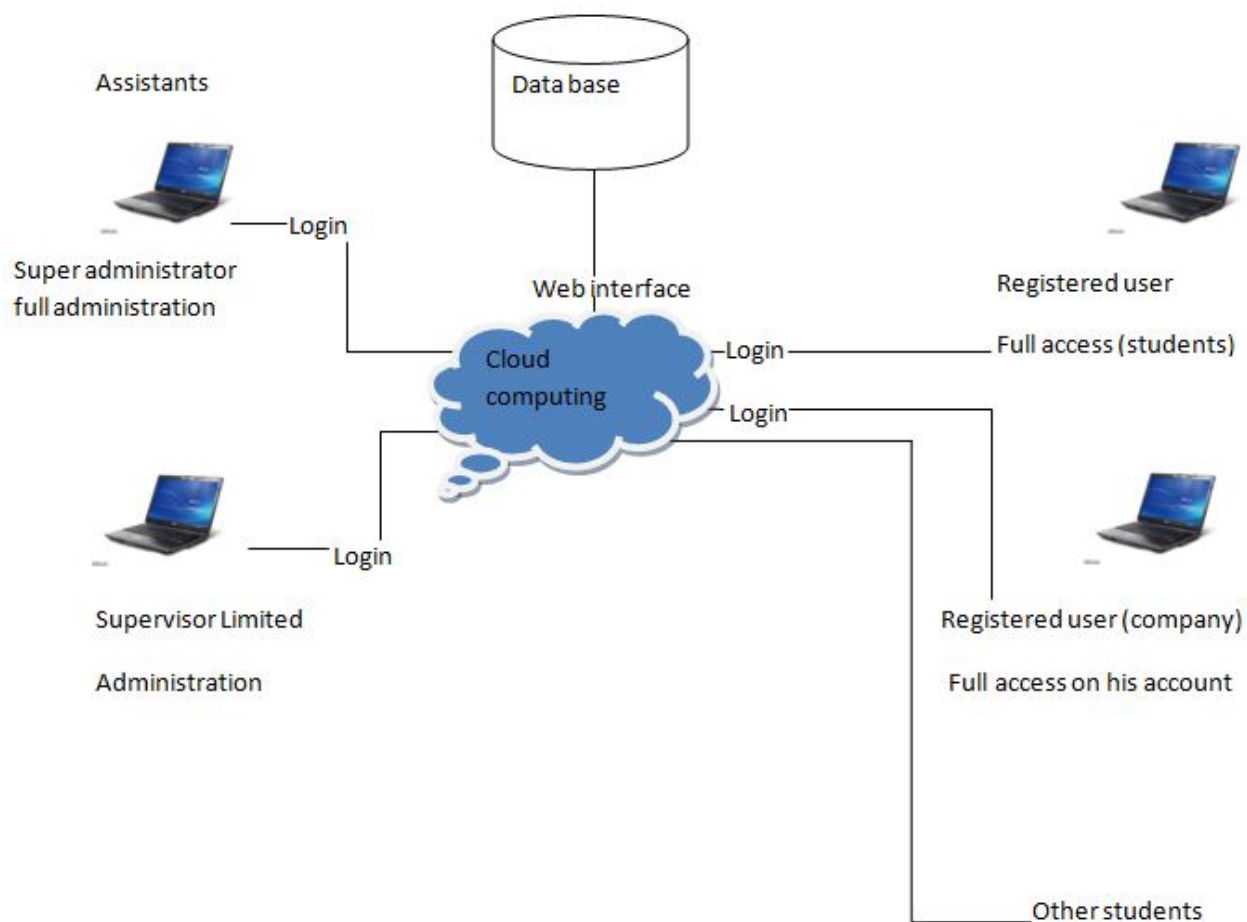


Figure 4.2 System in General Block Diagram

4.3 System Requirements

This system includes a set of requirements divided into functional requirements and non-functional and will be clarified as follows:

4.3.1 Functional Requirements

The system includes a set of functional requirements for Users of system directly:

1. For student, it must be see all companies that declared its need for trainee students before register in site and should know nature of training in every company, and the training period and place of the company or provider of the training.
2. The system must be able to determine the number of students enrolled for field training course after entered all required data.
3. The system must be able through supervisor to distribute students on suitable training places after contact with students and companies, then displaying this distribution to home page.
4. The system must to be able for students and companies to updating their data, if they need.

4.3.2 Non-Functional Requirements

1- The work environment:

- The proposed system is a system for the registration of field training course solve the problem of application management and follow-up field training by analyzing the system and re-represent it in a modern and computerized technology Cloud Using

SalesForce which will help us build a database system and provides all the tools you will use them in building this system.

- The system is working in a Force.com environment.
- Lead him to the desired goal in an easy and understandable for the user.
- That the system is available to the user so that it can access services anywhere, anytime.
- That the system is flexible so that the user input by the director on its own page by quality.

2- The application interface

Based on the principles of Human Computer Interaction (HCI) has been the use of colors and eye-pleasing interface will be designed in a manner appropriate to the subject and target group, and that the user can navigate easily between Web pages.

And the Force.com platform gives nice VisualForce and interface.

3-Safety

- The information saved online is unaffected if the device breaks, the hard disk is destroyed, if the device gets infected by virus or other disastrous events. These incidents usually lead to loss of most or all the valuable information but online storage provides an effective backup tool. Furthermore, the traditional backup methods, such as CD and DVD, can also be destroyed or infected by viruses. Sometimes, a DVD-R gets damaged and prevents the user from saving or restoring his critical data when he needs it. Maintaining data in online storage will help the user to avoid cost, time and effort resulted from damage or loss of data saved in the traditional mediums. Hence online storage is a very effective automated disaster recovery solution that provides security and peace of mind to the user.
- Not be allowed to enter the application without making sure the user name and password.

- Do not allow access by any user to the database.

4- Speed

Speed access to the system interaction between the system and user interfaces through the application to be sorted, clear and easy to use so the user can browse the application and review its contents easily.

5- Usability

The system should be easy to use.

6- Dependency

The accuracy and Reliability of the System so that it can relies on this System and the accuracy of the Data in it.

4.4 How System Works





The system receives many inputs, where home page has a several links such as companies link where a particular company enter their data on the site and determine what training and also the number of students who want them and then send their data, where data is stored on Salesforce site ("Cloud"), Then the supervisor of the academic training has seen the registered companies, and he can activate these companies on company link.

When the entry of any person on the site he can seeing companies, student who wants to registration a course training, must be put their personal and academic data and must be determined name of company they want, then appears the role of the academic supervisor of distributing the students on companies depending on many elements such as precedence in the registry and select the company and the compatibility of training and places students with companies.

4.5 System Modeling

In this section we will show primary diagrams which is required for create the system and we will use UML (Unified Modeling language) which is a collection of diagrams and shapes which is use to describe design the system software.

In this chapter we will use a collection of models according to UML system for describe this system are as follows:

-  Activity diagrams
-  Use cases.
-  Sequence Diagram.
-  UML Classes

4.5.1 Analysis of Requirements Using Activity Diagrams

Activity diagram based on clarification different work stages, functions and actions, resulting from users or any external operations.

This system is divided to students, supervisor, and administrator interaction with the system on Internet. For clearing this diagram for respect to the student, supervisor, administrator with the system, the following forms have been developed.

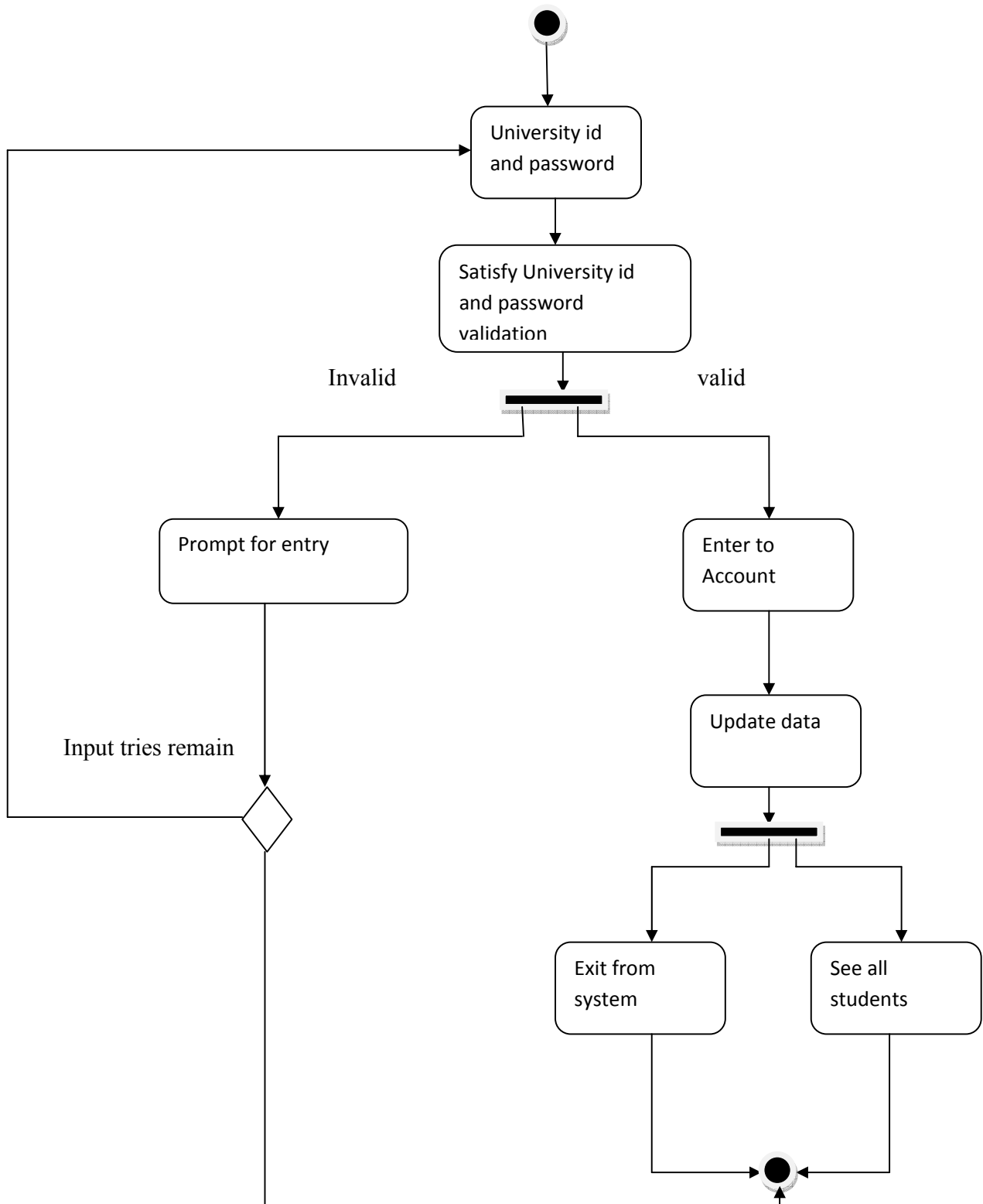


Figure 4.3: Activity Diagram student, supervisor, company, with home page

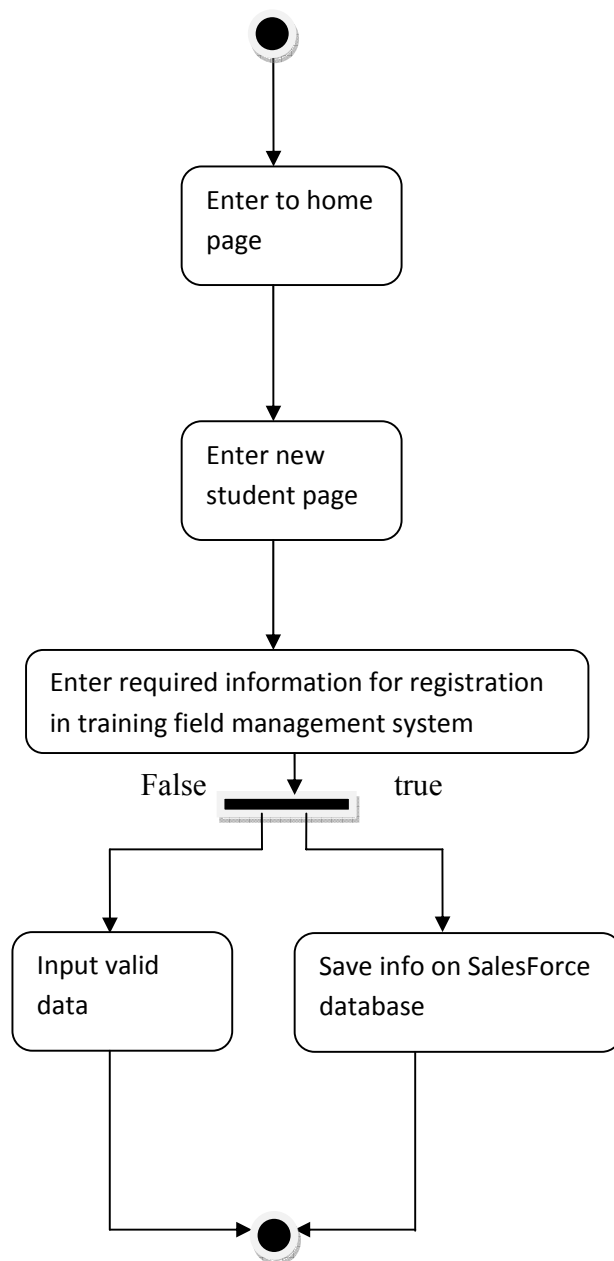


Figure 4.4: Activity Diagram student with page of new student.

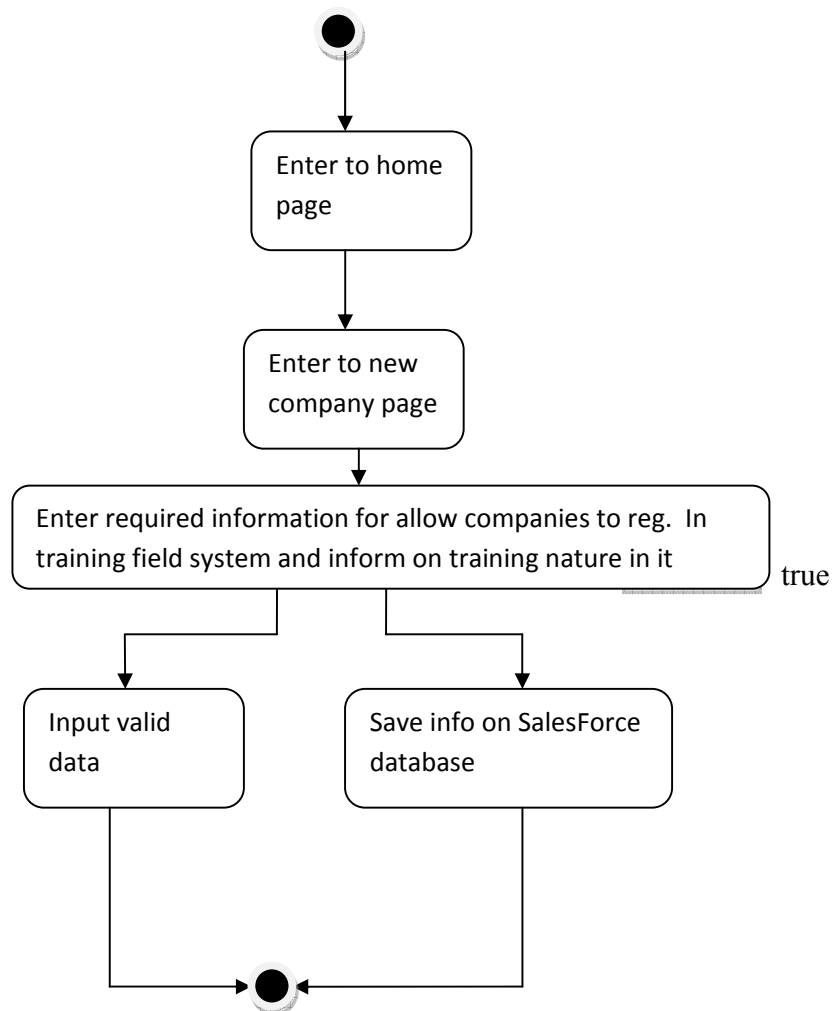


Figure 4.5: Activity Diagram Company with page of new company.

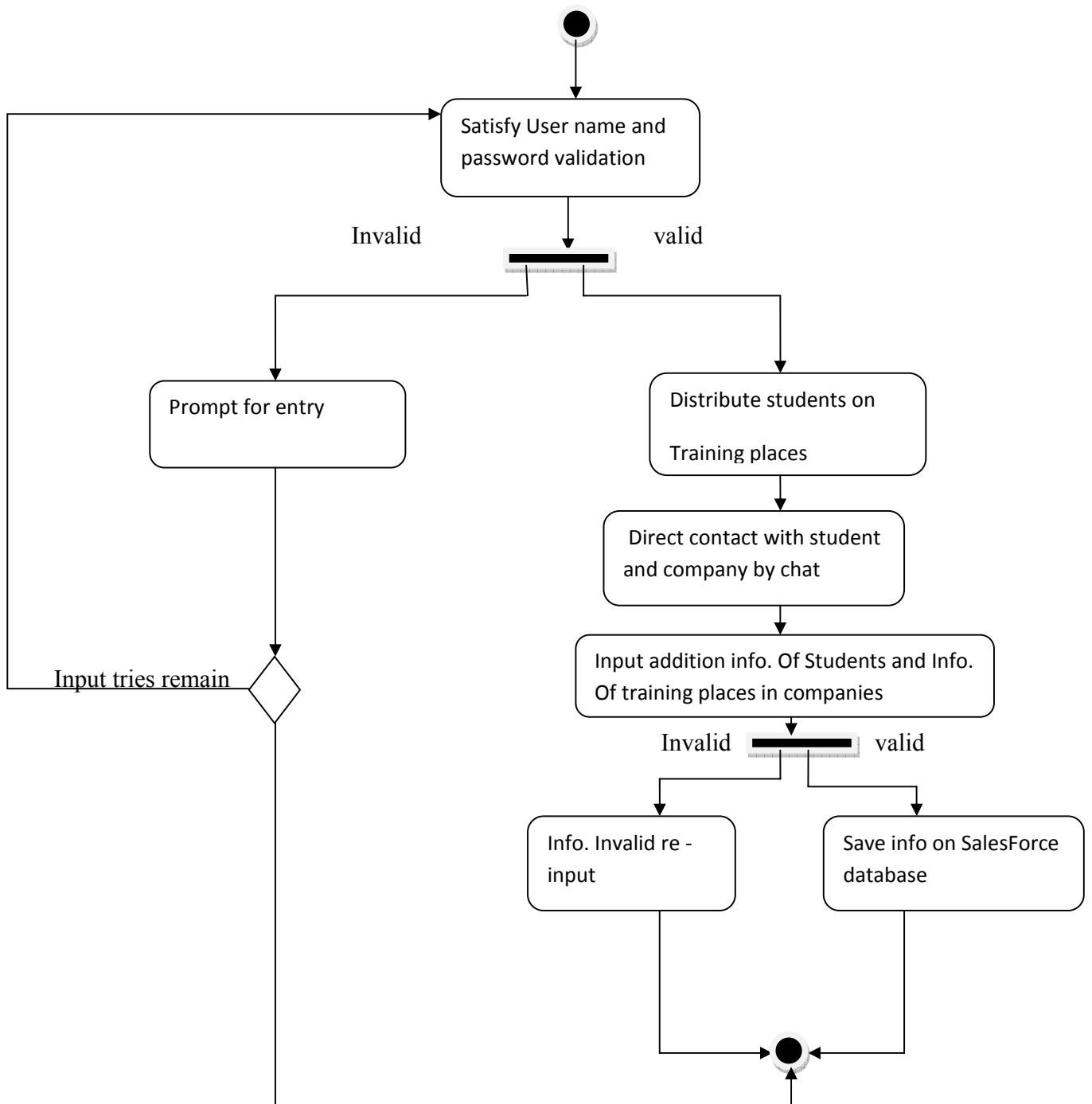


Figure 4.6: Activity Diagram supervisor.

4.5.2 Analysis of Requirements Using Use Case

This type is to clarify the processes in the form of general steps, this illustration planned contain of oval shapes which is clear the nature task, also there is share contact between oval shape and the person who work this task.

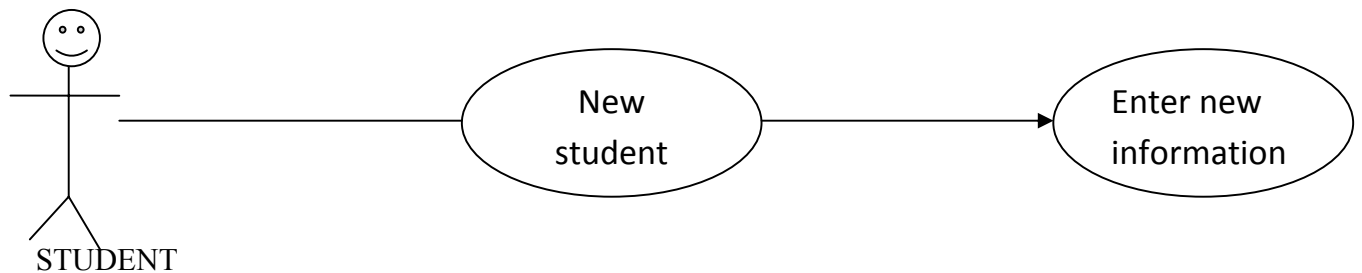


Figure 4.7 use case for new student

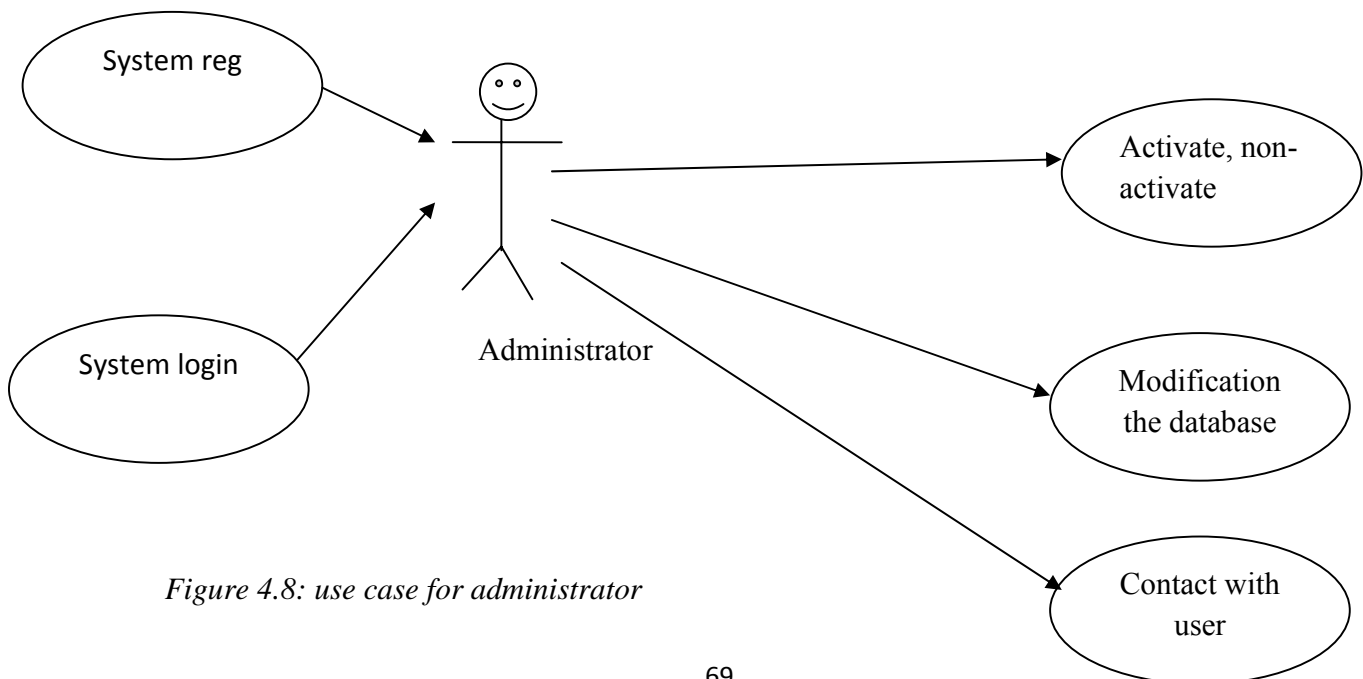


Figure 4.8: use case for administrator

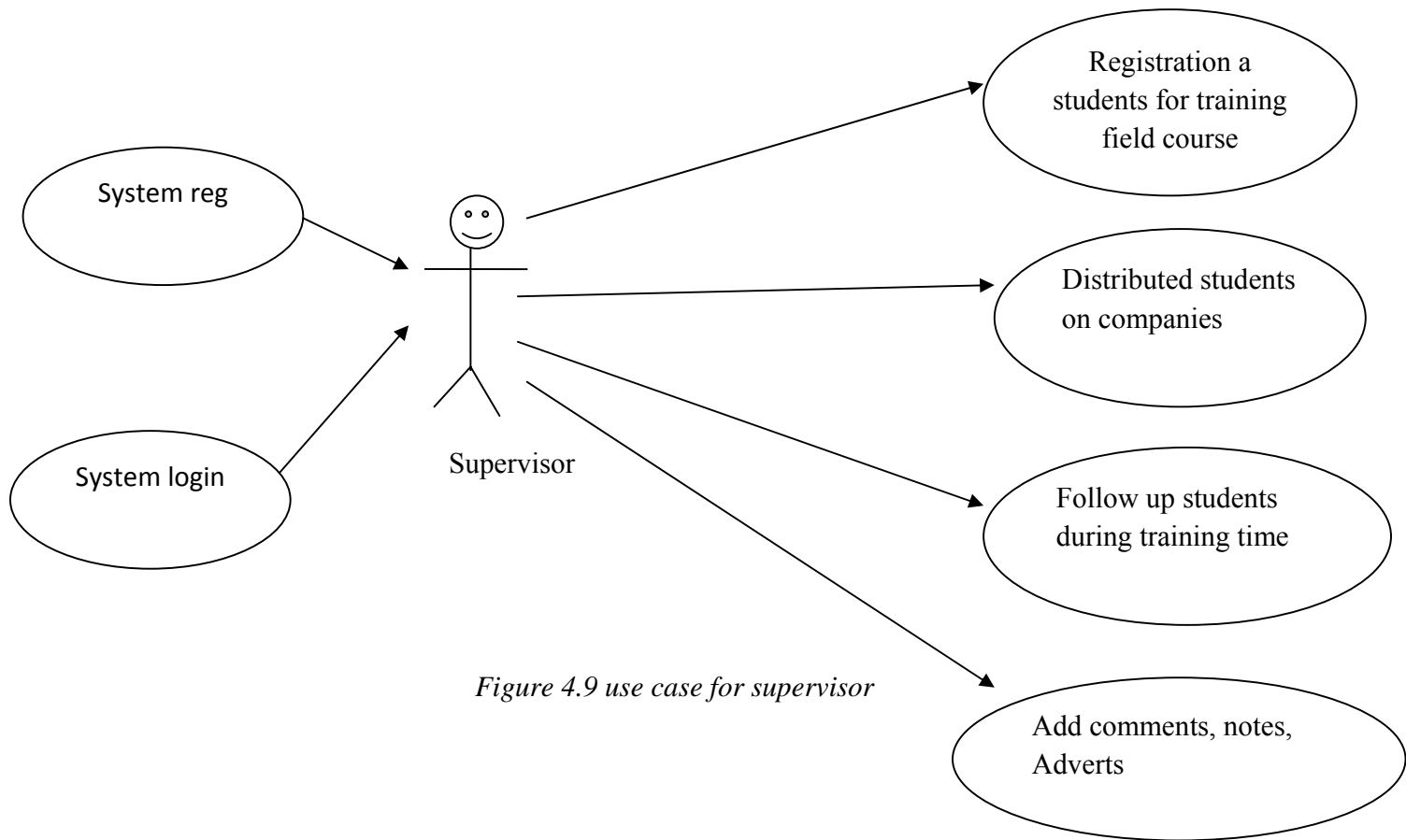


Figure 4.9 use case for supervisor

Table 4.1 use case for administrator

Use-case: Administrator

Primary actor: User (Supervisor, Students, Companies).

Goal in context: additions, deletions, activate, non-activate, modification the Database system.

Preconditions: User must have Internet; System has been programmed for entering University Id and password for Defining User.

Scenario:

1. User (i.e. student, company): enter password and university id.
2. User (i.e. student): watching the advertisements offered for registration and training places allowed training in it.
3. User (i.e. student): fill the required data in the application for registration for field training.
4. User (i.e. company): offers places for the students to train in it.
5. Administrator: activation, non-activation, Add, delete, contact with registered user and non registered user.

Exceptions:

1. University id or password incorrect: user re enters correct password.
2. Registration for the training of the field is not active by the supervisor.
3. Companies to cancel the offer to train students.

When available: access to users page.

Frequency of use: many times per day.

Channel to actor: actor access system by enter password and university id.

Secondary actors: non-registered users.

Open issues:

1-should there be away to activate the system without the use of a password.

2-should the user display text messages and add any texts object without back to administrator

Table 4.2 use case of supervisor

Use-case:	supervisor
Primary actor:	user (student, companies).
Goal in context:	Supervisor responsible for registration a students for training field course , distributed him on companies , follow up students during training time , add comments, notes, adverts
Preconditions:	user must have Internet, system has been programmed for entering university id and password for defining user.
Scenario:	<ol style="list-style-type: none">1. Supervisor: observes requests for field training of students.2. User (i.e. student): enter password and university id.3. User (i.e. student): watching the advertisements offered for registration and training places allowed training in it.4. User: fill the required data in the application for registration for field training.5. User (i.e. company): offers places for the students to train in it.6. Supervisor: distribution of students to places of training and follow up.
Exceptions:	<ol style="list-style-type: none">1. University id or password is incorrect: user reenters correct password.2. Registration for the training of the field is not active by the supervisor.3. Companies to cancel the offer to train students.
When available:	access to users page.
Frequency of use:	many times per day.
Channel to actor:	actor access system by enter password and university id.
Secondary actors:	non-registered users.
Open issues:	<ol style="list-style-type: none">1. Should there be away to activate the system without the use of a password.2. Should the uses display text messages and add any texts objects without back to administrator.

4.5.3 Analysis of Requirements Using Sequence Diagram

This type of diagrams is considered the best in clarify the relationship between objects system, where it is contact system classes with each other by horizontal lines, this lines represent messages transmission between the different objects.

The first shape clarify sequence processes which doing by student with home page

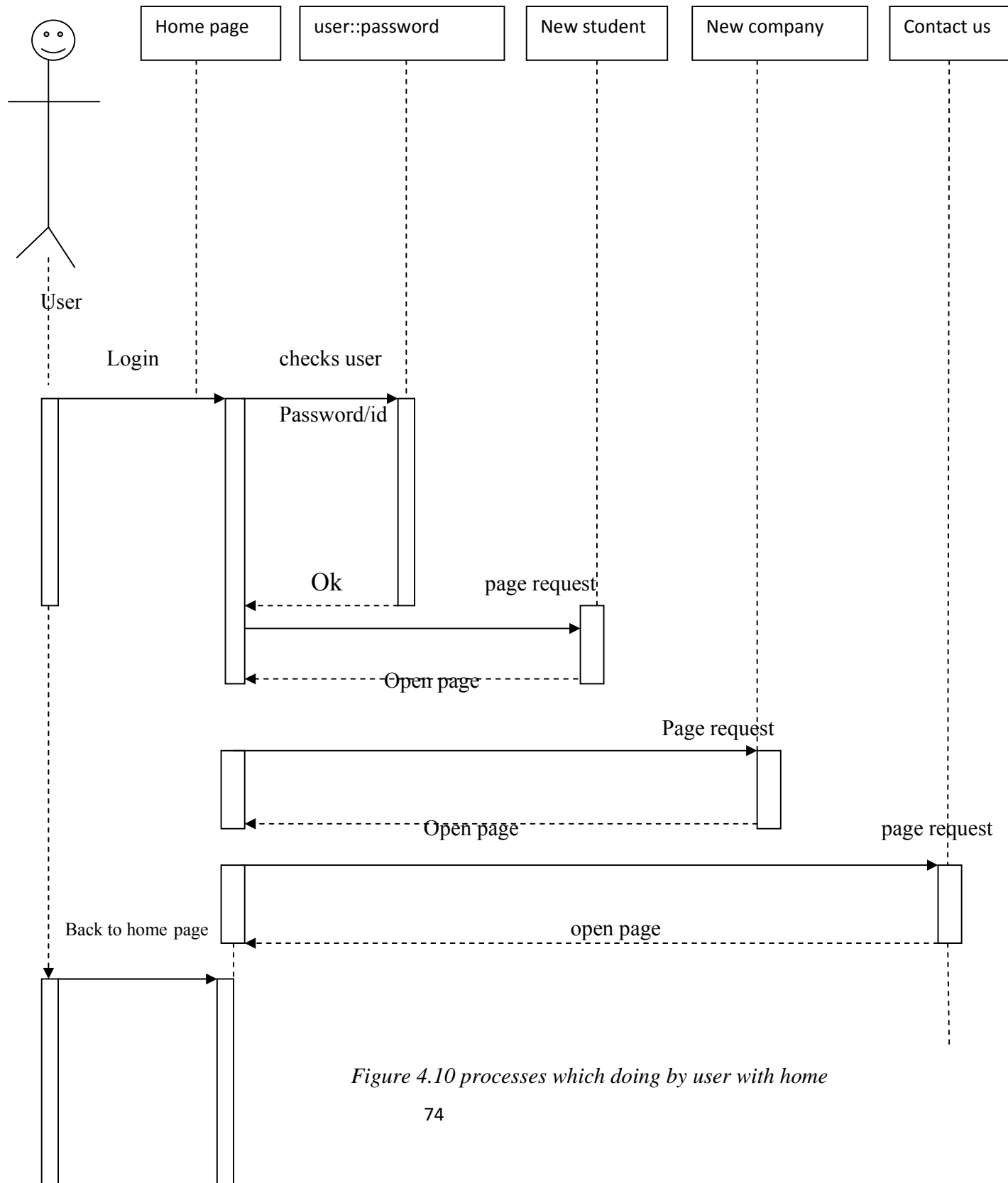


Figure 4.10 processes which doing by user with home

The UML diagram in Figure 4.11 schematizes the relationships between the objects

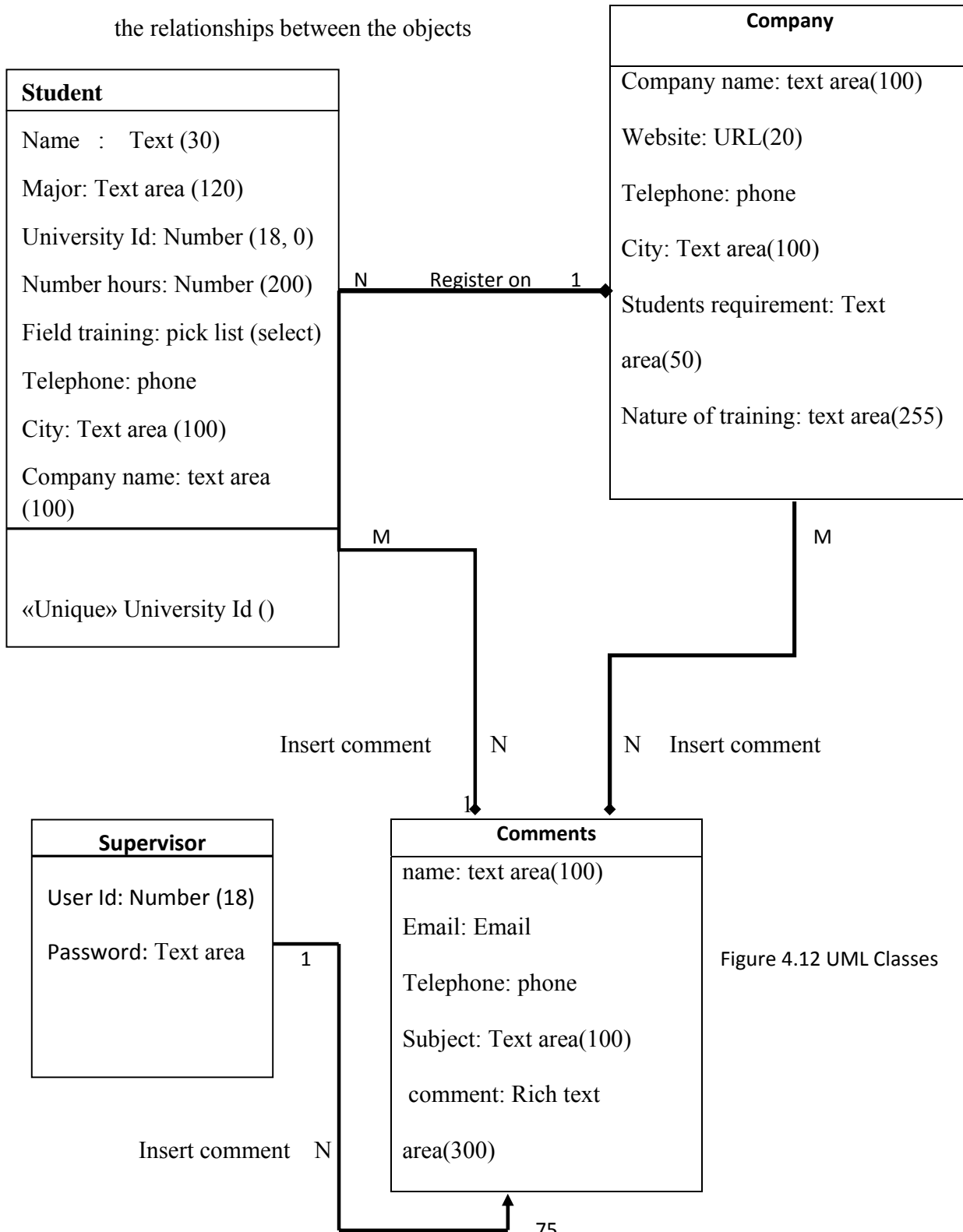


Figure 4.12 UML Classes

After all this clarification in this chapter for system diagrams, and explained the aims of system, we will be preparing all previous requirements for implementation system process in next chapter.

4.6 Graphical User Interface (GUI)

In this section we will review interfaces that will be handled by the user to interact with the system, whether the presentation of information located on the database or insert data into this system.

The students will deal with this system through the pages on the Internet, and will clarify the mechanism through graphics and interfaces that the student deal with it

In each stage and these interfaces will be designed using a VisualForce environment, as follows:-

The First Figure shows the Homepage of System that explains the main function of Site.

Cloud Training Manamgmt

Time : 2012.05.11 AD at 15:27:00 GMT

[Home](#)
[New Company](#)
[New Student](#)
[login](#)
[Contact us](#)

Definition of Site

For Students:-

THE SITE HELP YOU TO FINDING YOUR TRAINING FIELD WITH EASE, WHERE REQUIRING THE REGISTRATION OF A NEW ACCOUNT AND THEN WAIT A SPECIFIED PERIOD DETERMINED BY THE ACADEMIC SUPERVISOR FOR YOU AT THE UNIVERSITY THEN APPEARS THE COMPANY OR WORKPLACE THAT IS ACCEPTING IT AS IT HAS SOME CONDITIONS TO BE MET TO REGISTER AS THE COMPANY THAT OFFERING TRAINING HAVE BEEN IDENTIFIED TIME AND PLACE OF TRAINING AND ALSO WHAT TRAINING YOU SELECT SEVERAL SECTIONS.

For Enterprises:-

ALSO FOR THE COMPANIES ALSO REQUIRES THEM TO REGISTER ON THE SITE IN THE LINK ABOVE WHERE IT WAS FOUND THEIR NEED FOR STUDENTS OF SPECIFIC DISCIPLINES REQUIRED DURING REGISTRATION ALSO BEQUIRES THEM TO CLADIFY ALL INFORMATION BELATED TO THE COMPANY

Registration requirements at the site

- The student must have completed the credit hours by law to record training
- that he had told the supervisor's academic training its need for training
- that the student has logged in the course registered mail and pay for this course
- to wait a specified period after registering on the site until it is put in place Field
- The student determines the registration number at the beginning of training


Participations

- Companies
- Student on field
- Comments

Figure 4.12 Homepage

New company page

New Company



[Home](#)[New Company](#)[New Student](#)[Login](#)[Contact us](#)

Company Registration

ADD Company

The company must enter information about the number of students who are then absorbed

Company name

city

phone

Students requirments

Nature of training

Figure 4.13 new company page

New student page

New Student

Home New Company New Student Login Contact us

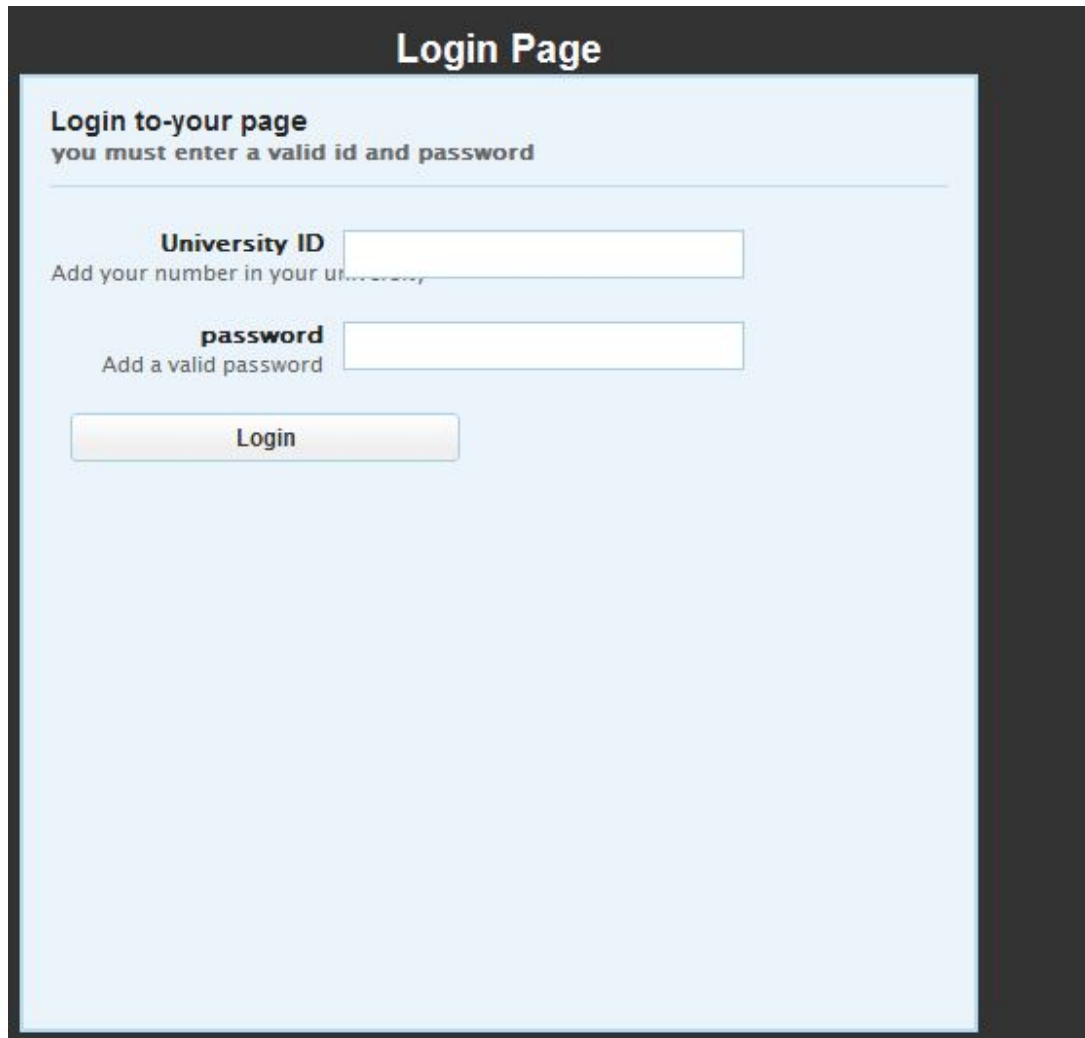
students registration

The student must enter valid information for training | = Requ

Fname	<input type="text"/>	Lname	<input type="text"/>	University ID	<input type="text" value="0"/>
The number of passed hours	<input type="text"/>	password	<input type="text"/>	Confirm password	<input type="text"/>
Field training	<div>Available field training 1 field training 2</div>	Major	<input type="text"/>	Telephone	<input type="text"/>
Email	<input type="text"/>	City	<input type="text"/>	Another information	<input type="text"/>

Figure 4.14 new student page

Login page



The image shows a login page with a dark grey header bar containing the title "Login Page" in white. Below the header is a light blue rectangular area. Inside this area, at the top left, is the text "Login to-your page" in bold, followed by "you must enter a valid id and password" in a smaller font. A horizontal line separates this header from the input fields. There are two input fields: the first is labeled "University ID" in bold, with the placeholder text "Add your number in your university" below it; the second is labeled "password" in bold, with the placeholder text "Add a valid password" below it. Both labels are in bold. Below the input fields is a "Login" button with a light grey gradient and a thin black border.

Login Page

Login to-your page
you must enter a valid id and password

University ID
Add your number in your university

password
Add a valid password

Login

Figure 4.15 login pages

Comments page

Figure 4.16 new comment page

Chapter 5

Implementations and Testing

5.1 Development Environment

5.2 Implementation example

5.3 Development Process

5.4 Testing

Chapter 5

Implementations and Testing

In this chapter description of how components of the system were implemented, and also provide the system testing process.

5.1 Development Environment

The implementation of the system was done on two environments, the software that was used in the implementation and testing consists of:

- **VisualForce Environment:** We used this Environment to build Pages in the Project; VisualForce is a framework that allows developers to build sophisticated, custom user interfaces that can be hosted natively on the Force.com platform. The VisualForce framework includes a tag-based markup language, similar to HTML. In the VisualForce markup language, each VisualForce tag corresponds to a coarse or fine-grained user interface component, such as a section of a page, a related list, or a field. The behavior of VisualForce components can either be controlled by the same logic that is used in standard Salesforce pages, or developers can associate their own logic with a controller class written in Apex.
- **Apex Controller:** controller is a class written in Apex that implements all of a page's logic and by this controller you can build your custom property, functions, methods and variables.

These controllers enable you to manipulate objects (database table) for, presentation it inserting, deleting and updating.

5.2 Implementation example

In this chapter we will talk about some code lines that were written for programming the system.

Example1: Login page in apex code

```
Public class mylogin {
    Public string pass {get;set;}
    Public double idu {get;set;}
    Public string messag {get;set;}
    Public string message1 {get;set;}
    public string fname {get;set;}
    public string lname {get;set;}
    public string field {get;set;}
    public string tel {get;set;}
    public string major {get;set;}
    public string city {get;set;}
    public integer count=0;

    public mylogin(ApexPages.StandardController controller) {

    }

    public pagereference log()
    {
        list<student__c> st=[select
        University_ID__c,password__c,fname__c,lname__c,major__c,city__c,Field_traning__c,
        Telephone__c from student__c];
        for(student__c a : st)
        if(a.University_ID__c==idu && a.password__c==pass){
```

```

fname=a.fname__c;
lname=a.lname__c;
idu=a.University_ID__c;
pass=a.password__c;
major=a.major__c;
city=a.city__c;
field=a.Field_traning__c;
tel=a.telephone__c;
count++;
}
else
message1='you shoud enter A valid id or password';
}

if(count==1)
return page.user;
else
return null;
}
List<student__c> selectcon;
Public List<student__c> getAllContacts()
{
    List <student__c> allcons = [Select fname__c,lname__c,major__c,University_ID__c
from student__c];
    return allcons;
}
Public void selectcon()
{
    student__c con = [Select fname__c,lname__c,major__c,University_ID__c from
student__c];

```

```

        selectcon = new List<student__c>();
        selectcon.add(con);
    }
    Public List<student__c> getselectedContact()
    {
        return selectcon;
    }
    public pagereference change()
    {
        return page.update;
    }
}

```

Example2: New Student page with VisualForce and apex code

VisualForce code:

```

<apex:form >
    <apex:pageBlock title="students registration" mode="edit">
        <apex:pageBlockButtons >
            <apex:commandButton action="{!save}" value="ADD Student"
        /><apex:outputText value="{!message}"></apex:outputText>
        </apex:pageBlockButtons>
        <apex:pageBlockSection title="The student must enter valid information for
training " columns="3">
            <apex:inputField value="{!thestudent.Fname__c}" />
            <apex:inputField value="{!thestudent.Lname__c}" />
            <apex:inputField value="{!thestudent.University_ID__c}" required="true"/>
            <apex:inputField value="{!thestudent.The_number_of_passed_hours__c}"
required="true"/>
            <apex:inputField value="{!thestudent.password__c}" />
            <apex:inputField value="{!thestudent.Confirm_password__c}" />

```



```

        <apex:inputField value="{!thestudent.Field_traning__c}"/>
        <apex:inputField value="{!thestudent.Major__c}"/>
        <apex:inputField value="{!thestudent.Telephone__c}"/>
        <apex:inputField value="{!thestudent.Email__c}"/>
        <apex:inputField value="{!thestudent.City__c}"/>
        <apex:inputField
value="{!thestudent.Another_information__c}"/>

```

```

    </apex:pageBlockSe    </apex:pageBlock>
</apex:form>

```

Apex code:

```

public class mystudent{
public account acct{get;set;}
public string pass{get;set;}
public string conf {get;set;}
public string message {get;set;}
public student__c thestudent{get;set;}
public mystudent(apexpages.standardcontroller stdcontroller)
{
}
public pagereference save()
{
thestudent=new student__c();
if(thestudent.password__c==thestudent.Confirm_password__c){
    insert thestudent;
thestudent=new student__c();
    return page.home;}
else{
    message='your password not same';

```

```

    Return null;
}
}

public void addstudent()
{
}
}

```

5.3 Development Process

Spiral software engineering model was used in the development process, because the overall features and requirements of the system not clear at the beginning of the development process, many prototypes of the system was implemented, refinement of the requirements was done, and components was tested individually and many integrity tests done, until a final version of the system was delivered.

5.4 Testing

In this section we will explain the test system and the errors that can get when you enter data in different sections of the system, and will clarify all existing page in the system and clarify the processes that get on it.

The following figure illustrates the process of entering students to their main pages and shows the error message to lack of proper of university id or the correct password if the Id and password are correct there is no error and the System entered to student data:

The image shows a web application's login page. At the top, the title "Login Page" is centered in a bold, black font. Below the title, the heading "Login to-your page" is followed by the instruction "you must enter a valid id and password". The form contains two input fields: "University ID" with the value "056765" and "password" with masked characters ".....". A red error message, "you shoud enter A valid id or password", is displayed to the right of the input fields. A "Login" button is positioned below the password field.

Login Page

Login to-your page
you must enter a valid id and password

University ID 056765 you shoud enter A valid id or password
Add your number in your university

password
Add a valid password

Login

Figure 5.1 Validation Error for incorrect password or id

The following figure illustrates the process of company registration
And validation error if has no data entered or error data, after correct insertion the data
stored in company object (table):

Company Registration

ADD Company

The company must enter information about the number of students who are then absorbed

Company name

Error: You must enter a value

city

Error: You must enter a value

phone

Error: You must enter a value

Students requirments

Nature of training

Error: You must enter a value

website

other informations

ADD Company

Figure 5.2 validation error of company registration

The following figure illustrates the process of student registration

The data after insertion stored in student object and validation of error data:

students registration

The student must enter valid information for training

Fname	<input type="text"/>	Lname	<input type="text"/>	University ID
	Error: You must enter a value		Error: You must enter a value	
The number of passed hours	<input type="text"/>	password	<input type="text"/>	Confirm password
	Error: You must enter a value		Error: You must enter a value	
Field traning	<div>Available field traning 1 field traning 2</div> <div>Chosen</div>	Major	<input type="text"/>	Telephone
			Error: You must enter a value	
Email	<input type="text"/>	City	<input type="text"/>	Another information
	Error: You must enter a value		Error: You must enter a value	

Figure 5.3 student registration and validation error

The following figure illustrates the process of insertion a comments

The data after insertion stored in comments object and validation of error data:

The screenshot shows a web form titled "You Can Contact Us" with a button labeled "ADD Comment". Below the title is a header "Enter Your Questions and/or Comments Here". The form contains five input fields: "Name", "Email", "Telephone number", "Subject", and "Your comment". The "Name" and "Subject" fields are highlighted with red borders and have red error messages below them: "Error: You must enter a value". The "Your comment" field is a large text area with a rich text editor toolbar above it, containing icons for undo, redo, bold, italic, underline, link, unlink, bulleted list, numbered list, and indent.

Figure 5.4 comments and validation error

At the home page in left side it have a participations part and it have three links the first link is a companies, its displays companies registered in site where the student can see and choose the company that suits him.



Companies that are available

Company Name	location of company	nature of training	telephone of company	student required
Exsalt company	ramallah	network	(022) 295-6746	2student
Eqiam programming company	hebron	C# and <u>vb.net</u> programming	(022) 234-5678	3 student

Figure 5.5 Available companies

The second link its student on field that illustrates distribution of student on companies after the supervisor distribute them and approval of training.



from this page you can see the company's right for you and take advantage of their training as soon as

Companies that are available

First name	last name	university ID	name of company
Ahmad ali	herbawe	80,345	Exsalt company
Rafat mohammad	ideas	60,781	Eqiam company
hassan	jbours	70,564	Eqiam company

Figure 5.6 student distributions on companies

The third link its comments page after the supervisor activate it

All Comments

Name	Subject name	The comment
ahmad	finish train	im finish my training in company
ali	need training	need training in ramallah city and nature of training is programming

You Can Contact Us [ADD Comment](#)

Enter Your Questions and/or Comments Here

Name

Email

Telephone number

Subject

Your comment

↶

↷

B

I

U

abc

Figure 5.7 comments page

The supervisor page enables the supervisor to see all objects (tables) and he can control all of data delete, update, the main function of supervisor here distribute students to companies that are commensurate with them and showing it on home page.

Supervisor can enter to this page in login page by specified university id and password.

View:

student now

[Edit](#) | [Create New View](#)

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z Other **All**

New student

Change Owner

<input type="checkbox"/> Action	student number ↑	Fname	University ID	City	Email	Field traning	Major
<input type="checkbox"/> Edit Del	stu-0023	Rafat mohammad	60,781	yatta	rafaat_1988@hotmail.com	field traning 2	computer software eng
<input type="checkbox"/> Edit Del	stu-0024	hassan	70,564	hebron	hassan@hotmail.com	field traning 1	communication Eng
<input type="checkbox"/> Edit Del	stu-0025	Ahmad ali	80,345	alquds	ahmad@gmail.com	field traning 1	IT

View:

company2

[Edit](#) | [Create New View](#)

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z Other **All**

New company

Change Owner

<input type="checkbox"/> Action	company number ↑	city	Company name	Nature of training	other informations	phone	Stud
<input type="checkbox"/> Edit Del	com-0033	hebron	Eqiam programming company	C# and vb.net programming	begin from next sunda	(022) 234-5678	3 stu
<input type="checkbox"/> Edit Del	com-0034	ramallah	Exsalt company	network		(022) 295-6746	2stu

View:

comment now

[Edit](#) | [Create New View](#)

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z Other **All**

New comments

Change Owner

<input type="checkbox"/> Action	Name ↑	Email	Subject	Telephone number	Your comment
<input type="checkbox"/> Edit Del	ahmad	ahmad@hotmail.com	finish train	022234566	im finish my traini

Figure 5.8 supervisor page

The following page it's the student page that enable his to update his data

Page to update your data	
You must enter your password to be able to update your details	
Password	<input type="password"/>
Fname:	<input type="text"/>
Lname:	<input type="text"/>
University ID:	<input type="text"/>
New password:	<input type="password"/>
Confirm password:	<input type="password"/>
Field traning # :	<input type="text"/>
Major:	<input type="text"/>
Telephone:	<input type="text"/>
Email:	<input type="text"/>
City:	<input type="text"/>

Figure 5.9 update student's data page

Chapter 6

Conclusion and Future Work

6.1 Conclusions

6.2 Future work

Chapter 6

Conclusion and Future Work

6.1 Conclusions

After completion of this system and observe how it works we draw a set of results and benefits, which appear in all sections whether for students, or for companies or universities.

- ☒ We conclude from department of students in this system is working to open the way for progress students to register for the site and entering all data required that is stored via Cloud Computing. Through the process of registration on the site you have reservation process and the right of priority in obtaining the appropriate training opportunity, which is determined by the academic supervisor of the students or the supervisor of the field training at the university.
- ☒ System achieves all facilities for students; help them from trouble of research, effort to find a company or a place to end their training course.
- ☒ Also for the university, the system helps the universities to dealing with the huge number of students to facilitate conduct of the distribution of students and screened for training.
- ☒ This system provides users (students) , ability to see some data, e.g. the student can see companies registered on the site and also he can seeing the students registered for the field training course first, second, after their entering to their main page.

- ☒ Also for academic training supervisor responsible for the site is almost, has the ability to see all information that entering to the site of comments and student's data and data for companies where he has the ability to modify and control the process of show or hide this data.
- ☒ Also for the registration section of the companies this system helps companies in the registry at the site and enter all the required information and determine the number of students and the quality of training provided to the student.
- ☒ Other conclusions of project he returned for project group a set of benefits, which came to acquire this collection of many experiences in the field of programming language Apex and VisualForce also how to deal with Cloud databases
- ☒ Also the group gained large practical experience and how to work under high pressure and therefore now has the ability to face future projects can be a share this group of work and determination as well.

6.2 Future work

- ☒ Develop this system to be a comprehensive for all universities in the country where they have selection list of the university, then every university have each a specific database, which is stored in the source in the Cloud or on Sales Force platform each university has a particular page connects you to other pages in which the student can register training through it.
- ☒ Future planning of this project is development of the system by linking the student database in the system with the student database at the university in order to facilitate verification of student data, e.g. university id , or the number of hours that required finish them for begin training.

- ☒ System could be developed in a greater work functions than the field training, for example the graduates system, the university through this site is responsible for providing employment for a certain class of graduates and set up a special section to these services, This section must be active across the Internet and a programmer with the latest techniques and correspond with Employment agencies.

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