Session 01

Cloud Platform Services and Salesforce

Objectives

- Define cloud computing
- Describe the cloud computing delivery models
- Describe the Salesforce platform
- Explain new features in the Salesforce platform
- Describe the services offered by Salesforce
- Explain the process of working with Salesforce
- Describe Visualforce

Introduction

Cloud computing is an approach that enables convenient and on-demand access through the Internet to computing capabilities and resources.

Following figure shows an overview of cloud computing.

Cloud Delivery Models

SaaS

- This is a software distribution model in which applications are presented by a vendor or service provider and made accessible to customers over the Internet.

PaaS

- In PaaS, a hosting environment or platform is provided to the consumer using which applications can be built and deployed to the cloud. The consumer can control the platform to an extent, but does not have any control over the hardware, software, or operating system being used.

IaaS

- Using IaaS, the consumer can rent computing power, storage, networks, and other computing resources. The consumer can control the hardware, software, or operating system being used.

Software as a Service 1-5

Following figure depicts the SaaS delivery model.

Software as a Service 2-5

In the SaaS delivery model, software is hosted by an Application Service Provider (ASP). This software is then made available to multiple customers over the Internet.

The fees for such cloud-based services may be paid through monthly fees, which cost less than actual licenses. When the subscription period expires, the software is no longer valid.

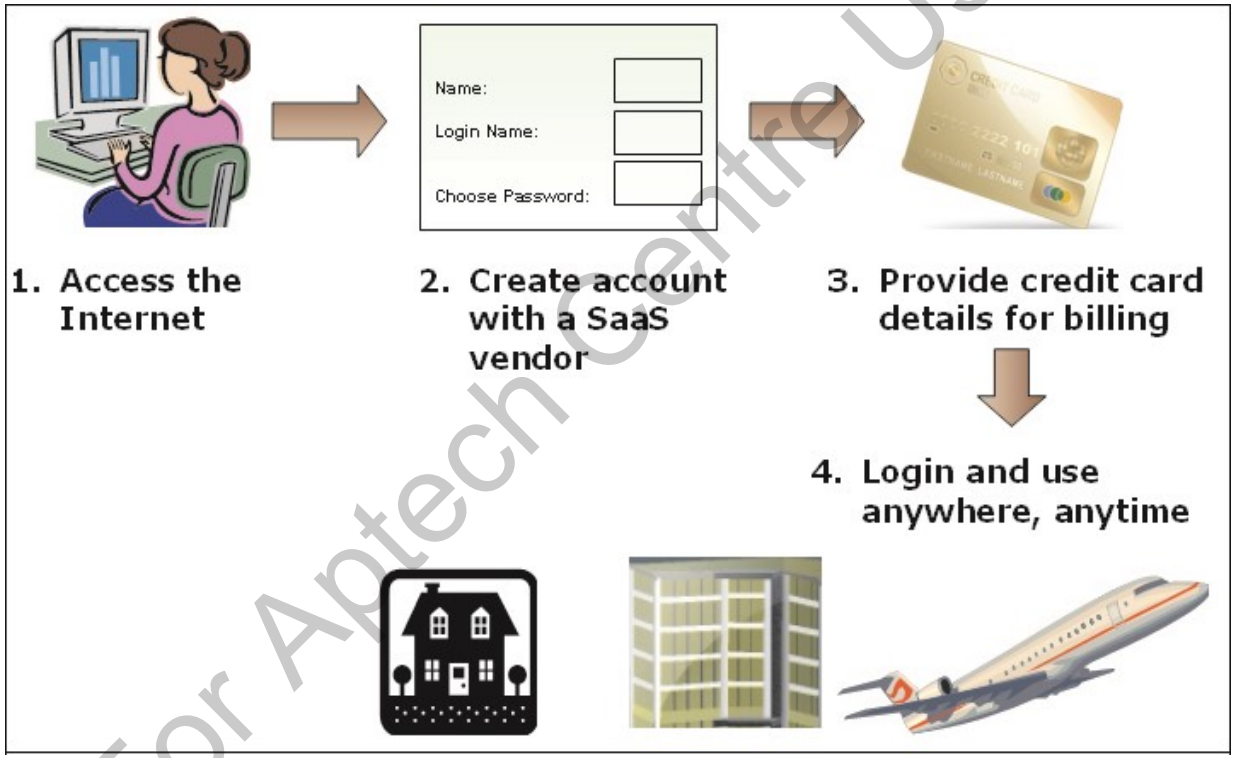
As the software is hosted remotely, the customers do not need to invest in additional hardware. The software is located in the vendor's data center.

The user can launch the browser and log on to access the software. The vendor also provides the compute power, storage, and networking infrastructure necessary to run the software.

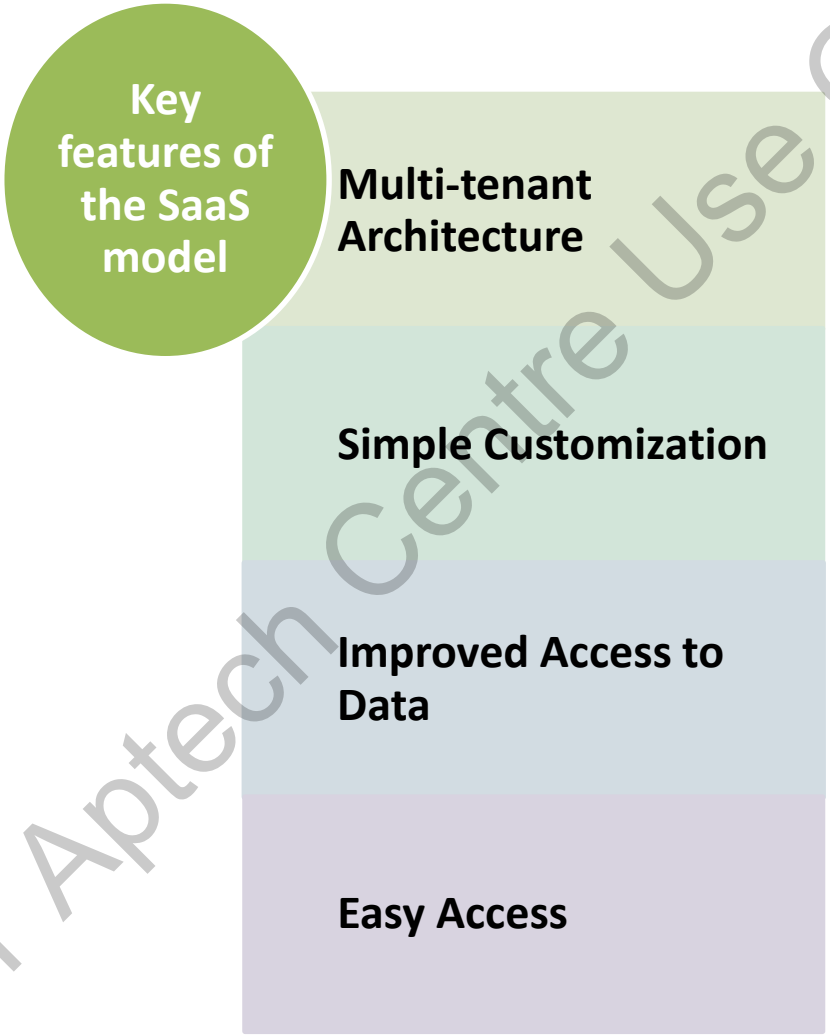
To use a SaaS application, typically, a user needs to access the Internet, create an account with a SaaS vendor, enter credit card details, and then, the user can use the application anywhere any time by logging into the software.

Software as a Service 3-5

Following figure illustrates usage of SaaS.



Software as a Service 4-5



Software as a Service 5-5

Multi-tenant Architecture

- Multi-tenancy is an approach where a single instance of the software running on a server serves multiple clients or tenants. This means that separate hardware systems or software instances need not be created for each individual client.

Simple Customization

- Each user can customize applications without any hassles to fit their business processes without affecting the common infrastructure on the cloud.

Improved Access to Data

- SaaS provides improved access to data from any networked device. In addition, it makes it easy to handle data and ensures everyone sees the same information at the same time.

Easy Access

- A SaaS application can be easily launched through a browser.

Advantages and Disadvantages of SaaS 1-2

Following table lists the advantages of the SaaS delivery model.

Feature	Description
No Installation	Service vendors manage the installation and hosting of the software. Hence, the software can be used directly by end users without requiring installation on the local machine.
No Maintenance	The service vendors also manage the maintenance of the software regularly. Hence, the end user does not have to perform any maintenance.
Reduced Costs	Since the SaaS software is hosted remotely and is subscription based, the customer need not invest in hardware, software, and the resources needed to manage them. Thus, costs are considerably reduced.

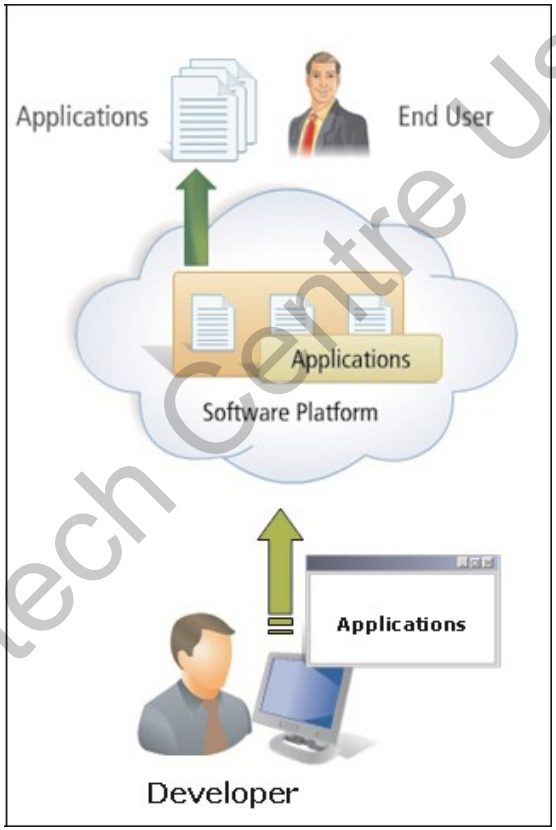
Advantages and Disadvantages of SaaS 2-2

Following table lists some of the disadvantages of SaaS.

Drawback	Description
Powerful and Reliable Internet Connection Required	The Internet connection to access applications on the cloud should be high-speed as all the components have to be loaded on the browser.
Increased Security Risks	The most challenging part for SaaS and the cloud computing industry is the threat of attacks on customer data and applications. Hence, SaaS vendors need to implement strong security measures to ensure that the applications can be safely run and the customer data is secure.

Platform as a Service 1-2

Following figure shows the Platform as service delivery model.



Platform as a Service 2-2

A PaaS vendor provides a platform as a service through the Internet or a network. PaaS enables customer-created applications to be deployed on the cloud.

Depending on the vendor, PaaS may offer a full or partial platform and runtime environment to develop cloud-based applications.

PaaS simplifies the process of software development because the developer need not worry about infrastructure, application hosting, security, backup, scalability, and so on.

Features of PaaS

Strong Protocol Support

- There is strong support for protocols like Simple Object Access Protocol (SOAP) and Representational State Transfer (REST).
- The protocols also enable access to Web services and databases that are present across networks.

Support for Developer Collaboration

- In the global world today, developers and other staff in a team may not be located at one office but may be spread across the globe.
- Developers can share code, schedules, objectives, roles, and responsibilities within a team and thus increase productivity.

Infrastructure as a Service 1-2

IaaS is a delivery model that delivers computing infrastructure as a service through the Internet.

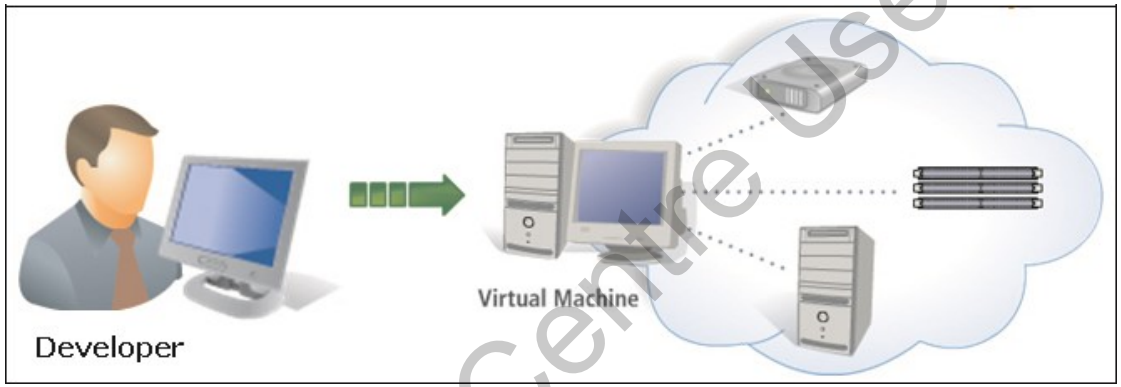
With IaaS, users create and build instances of virtual machines and then connect to them. Through the virtual machine, users can access the infrastructure that is present in the cloud.

Once connected, they can work on the remote machine just as they work on local machines.

They can install software on that machine, create volumes (logical hard disks), and work with documents and data.

Infrastructure as a Service 2-2

Following figure shows IaaS.



- By using IaaS, users can avoid purchase of servers, software, data center space, or network equipment for developing and maintaining their applications.
- Instead, they can use these resources from vendors that offer IaaS. The service is typically billed as pay-per-use. Thus, users can save substantially on expensive infrastructure.
- An IaaS vendor maintains the storage, database, message queue, or any other middleware, and the hosting environment for virtual machines.

Features of IaaS

Supports Utility computing - service and billing model	• Utility computing is a model where IT resources are available to be consumed as utilities, unlike the traditional methods of paying for the package whether or not we end up using it.
Enables automation of administrative task	• By principle, a cloud relies on demand resource allocation in a near instant manner and hence, almost all the traditional system administrative tasks such as server provisioning, resource allocation, backup, patch, and update are automated in a cloud environment.
Provides dynamic scaling	• Since IaaS is an on-demand service-provisioning model, it has to be able to provision and de-provision resources as and when the demand increases or decreases.
Supports Desktop virtualization	• Cloud services can provision not only server based resources but can also provision desktops over the network.

Advantages and Disadvantages of IaaS 1-2

IaaS provides the core benefits of the cloud, while still affording a large degree of control to the client.

Global Access

- Provides the convenience of accessing your data from any location and any device, with an Internet connection.

Retained Control

- Offers more control than the other two models SaaS and PaaS, primarily because this gives access to the hardware layer (virtual) itself.

Predictable Costs

- By subscribing to an IaaS cloud, you can trade these large, upfront, and uncertain costs for a predictable monthly bill, which is also less in cost.

Advantages and Disadvantages of IaaS 2-2

Disadvantages of IaaS are as follows:

Privileged User Access

- It is the responsibility of the cloud service vendor to implement strong security measures to protect and secure sensitive data of customers. The customers should also verify whether the vendor providing services ensures privileged and secured user access.

Regulatory Compliance

- Traditionally, the application service vendors undergo security audits and obtain certificates to prove their security credentials. In cloud computing, however, many vendors may skip this procedure.

Data Location Control

- Cloud service vendors must prepare a contract for the customer stating that they will commit to store and process data in specific jurisdictions and adhere to local privacy requirements and laws of the land.

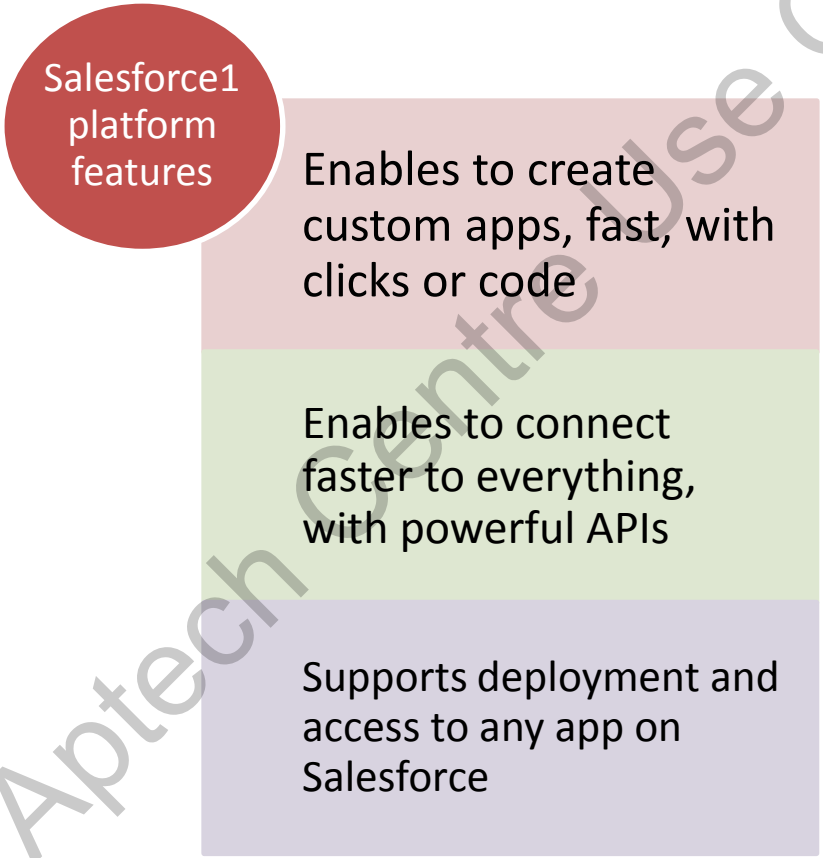
Salesforce 1-4

Salesforce is one of the foremost enterprise cloud computing vendors. It offers various products such as Customer Relationship Management (CRM) in the form of SaaS and Force.com in the form of PaaS.

In 2013, Salesforce introduced Salesforce1 as a new social, mobile, and cloud customer platform designed to transform sales, service, and marketing apps.

The Salesforce1 platform is designed to accelerate the development and deployment of apps.

Salesforce 2-4



Salesforce 3-4

The various services of the platform are now explored in detail.

CRM

- The CRM model is delivered as a cloud service through the Internet to organizations and customers.
- The two types of CRM cloud services provided by Salesforce are namely, Sales cloud and Service cloud.

Sales Cloud

- CRM sales cloud apps provide the managers, a real-time visibility into their team's activities so that they can forecast sales.
- It also helps sales representatives to manage customer's information, which reduces the time in handling data.

Service Cloud

- Service Cloud is a social customer service application. It enables you to manage customer information and service conversations in the cloud.
- Service Cloud refers to the 'service' (as in 'customer service') module in the Salesforce.com platform.

Salesforce 4-4

Force.com

Salesforce also offers PaaS through its **Force.com** platform. This platform is also completely cloud based.

With **Force.com**, it is easier to build and deliver business applications, mobile applications, and Web sites.

The **Force.com** platform includes a database, security, workflow, and number of other tools to simplify the development process.

Apex is an object-oriented language that enables developers to create applications. Visualforce is a framework that allows you to build user interfaces that can be hosted on **Force.com**.

Features of Salesforce

Salesforce Automation	• Offers better customer/supplier service by enabling tracking or preferences and recording all interactions.
Marketing Automation	• Empowers integrated marketing and sales applications with automation lead conversion, real- time analytics, and multichannel campaign management and analysis.
Analytics and Forecasting	• Data quality can be managed by removing duplicate leads, contacts and customers, and ensure accurate demand forecasting.
Force.com	• Is a platform that provides infrastructure services through Internet. This enables developers to create and deliver any kind of business application.
AppExchange	• Provides an online marketplace for applications, which are developed by Salesforce.com.
Service and Support	• Salesforce.com offers its own suite of services, programs, and best practices that afford continuous improvement.

New Features of Salesforce 1-3

Salesforce Console for Sales	• The console offers a dashboard like interface eliminates time-consuming clicking and scrolling so you can quickly find, update, and create records.
Salesforce Files (Pilot)	• Salesforce **Chatterbox** is a file syncing service that keeps files secure, synced, and social in the Salesforce cloud and on your computer.
Historical Trend Reporting	• To make historical trend reports available to your users, use filters to configure the amount of data that is captured for historical reporting.
Site.com Enhancements	• The standard tabs in the community of Salesforce can be overridden by pages provided by Site.com.
Salesforce for Outlook	• The productivity can be increased by automatically syncing the two systems. Salesforce for Outlook is an application that can be installed, automatically syncs contacts, events, and tasks.
Embedded Analytics	• User can be given valuable information directly on the pages they visit often.

New Features of Salesforce 2-3

Salesforce provides many types of platform services, which are discussed as follows:

Identity Service	• Provides Identity and Access Management (IAM) for Web and mobile applications.
Chatter	• It provides status information about people and important projects automatically pushed to you. It provides an easy way to connect and share the important information.
Point and Click Development	• Force.com makes it easy to modify the functionality of Salesforce applications to meet the requirements.
Multi-language Development	• Allows developers code in any language. Changes can be done in an Integrated Development Environment (IDE) and can be deployed instantly.
Visual Workflow	• Visual Workflow allows administrators to build applications to guide users through screens for collecting and updating data.

New Features of Salesforce 3-3

Drag and Drop Analytics	• Salesforce provides you a real-time, personalized view of your business, which helps us to make smarter decisions as a team.
User Access	• Salesforce portals can be configured with users and administrators and add, edit, and remove users.
Easy API Integration	• Force.com allows administrators to integrate with libraries such as SOAP and REST APIs that controls existing platform choices.
Translation Workbench	• The Translation Workbench of Salesforce allows you to specify languages you want to use and translate.
Multi-Tenant Cloud Infrastructure	• Salesforce platform is based on multi-tenant architecture. On account of using multi-tenant architecture, the Salesforce platform becomes more secure, reliable.

Working with the Force.com Platform 1-2

In order to begin working on force.com, you only need a computer and an Internet connection.

When you sign up for a **force.com** account, you get a unique username using which you can access the **force.com** cloud computing environment.

Force.com has environments stored in the cloud. An environment lets us to start developing and testing cloud computing applications without using any server. This saves the users' time.

Working with the Force.com Platform 2-2

Some of the important characteristics of an environment are as follows:

An environment is an instance of Force.com infrastructure that lets you access, deploy, or create applications.

It holds data, custom database objects and Fields, Apex business code for the application, Visualforce UI, workflow, and so on.

All environments can be accessed through a Web browser.

Some of the environments can be accessed from Force.com IDE, SOAP API, and Metadata API.

An edition contains specific functionality, objects, storage, and limits. All environments are constructed on editions.

Environments can be used for development, testing, and production.

Working with the Force.com Platform-Different Types of Environments in Force.com

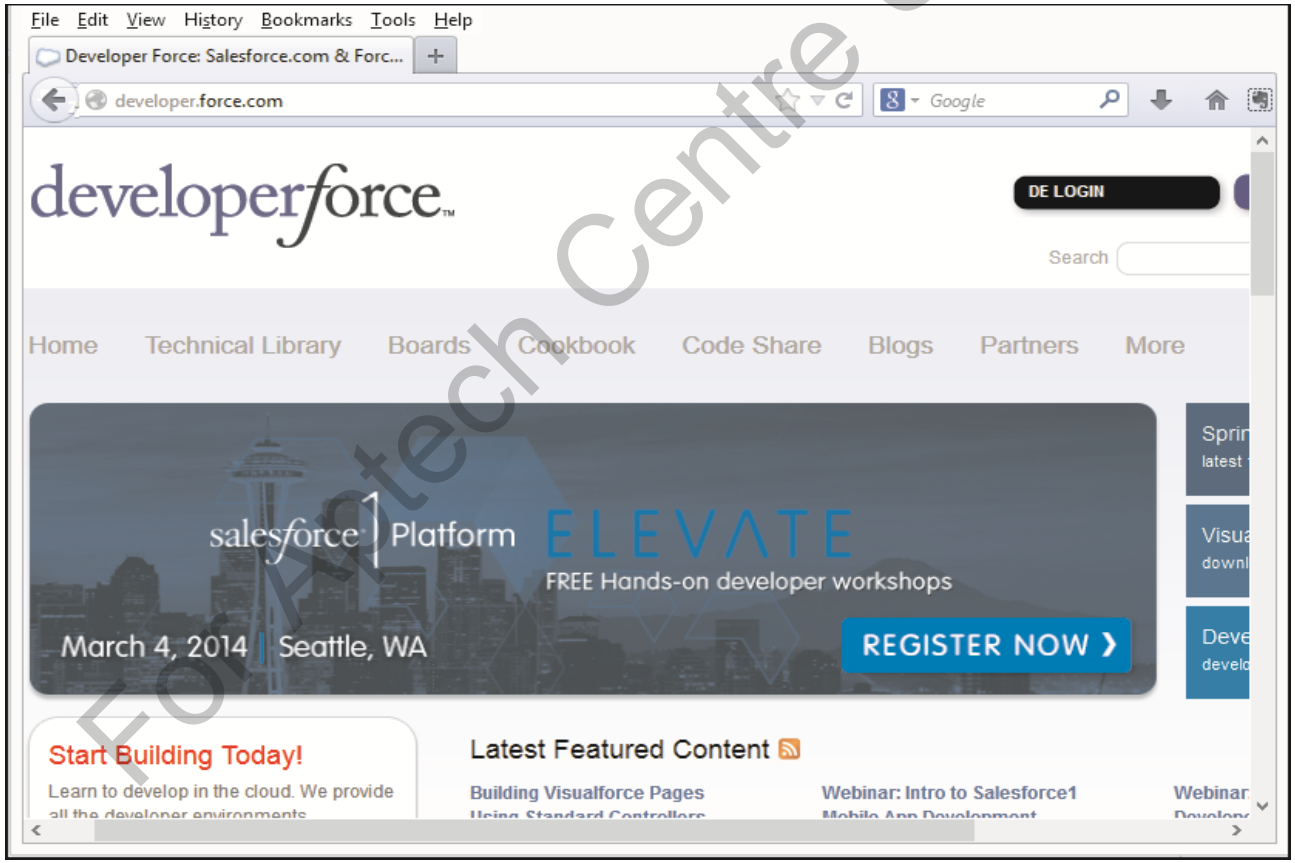
Production Environment	Development Environment	Test Environments
• This environment allows only paid users that can access business related critical data.	• This is the environment or IDE where you can extend integrate and develop on Force.com without affecting your production environment.	• These are either production or development environments that help to test the application's functionality before deployment or releasing it to customers.

Working with the Force.com Platform-Getting Started with Salesforce 1-3

The following step-by-step procedure shows how to get started with Salesforce:

1. Type http://developer.force.com in the Address bar of the browser, such as Internet Explorer.

Figure shows the developer force Web page.



2. Click **DE Login** to open the Developer Edition login page. Figure shows the developer login page.

3. If already an existing user, then enter `<user-name>` value in **Username** and `<password>` value in **Password**. For example, enter **john.mathew@abc.com** and **comp@1234 .**

Working with the Force.com Platform-Getting Started with Salesforce 3-3

4. Click **Log in to Salesforce1.**
   The start-up page is displayed.

5. Under the username drop-down, click **Setup**.

   - The **Setup** page is displayed. On the left pane, you can see **Personal Setup**, **App Setup** that stands for Application Setup, and finally, **Administration Setup**.

   - The **Personal Setup** section helps you to personalize the application for your personal use.

6. Click **App Setup** on the left pane.
   The **App Setup** page contains options to customize Salesforce.com, build, deploy, and manage applications.

7. Click **Administration Setup**. It contains the setup and customization options to help you to set up your organization.

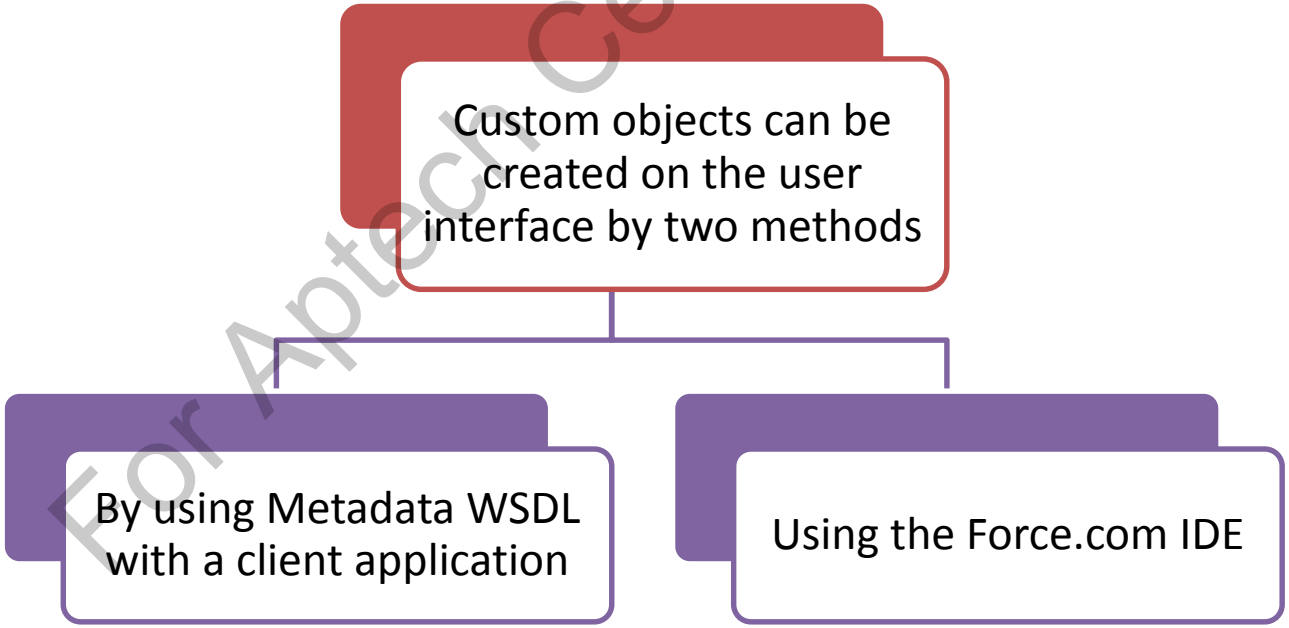
8. Click **Logout**. The **Logout** option allows you to log out of Salesforce applications.

Working with the Force.com Platform-Custom Objects in Salesforce

A Salesforce application contains a number of tabs. Each tab represents a complete application or one of its modules.

Custom objects are custom database tables that allow you to store information unique to your environment.

A name field is associated with custom object, which will be defined by the Salesforce administrator during setup.



Working with the Force.com Platform-Report in Salesforce

Report builder is a visual editor for reports. The report builder screen lets you work with report fields and filters, and shows you a preview of your report with just some of the data.

A report type is a set of rules that determine which records and fields appear in a report. Reports can use the tabular, summary, matrix, or jointed format.

An existing report can be customized using report builder.

Views represent queries using different criteria. When you run a view, Salesforce returns you relevant records and fields with data.

Working with the Force.com Platform-Custom Lists View

Custom list views can be created or edited to see a precise set of records such as contacts, documents, or campaigns.

Administrators and users with 'Manage Public List Views' permission can also edit or delete public views and some of the standard Salesforce views.

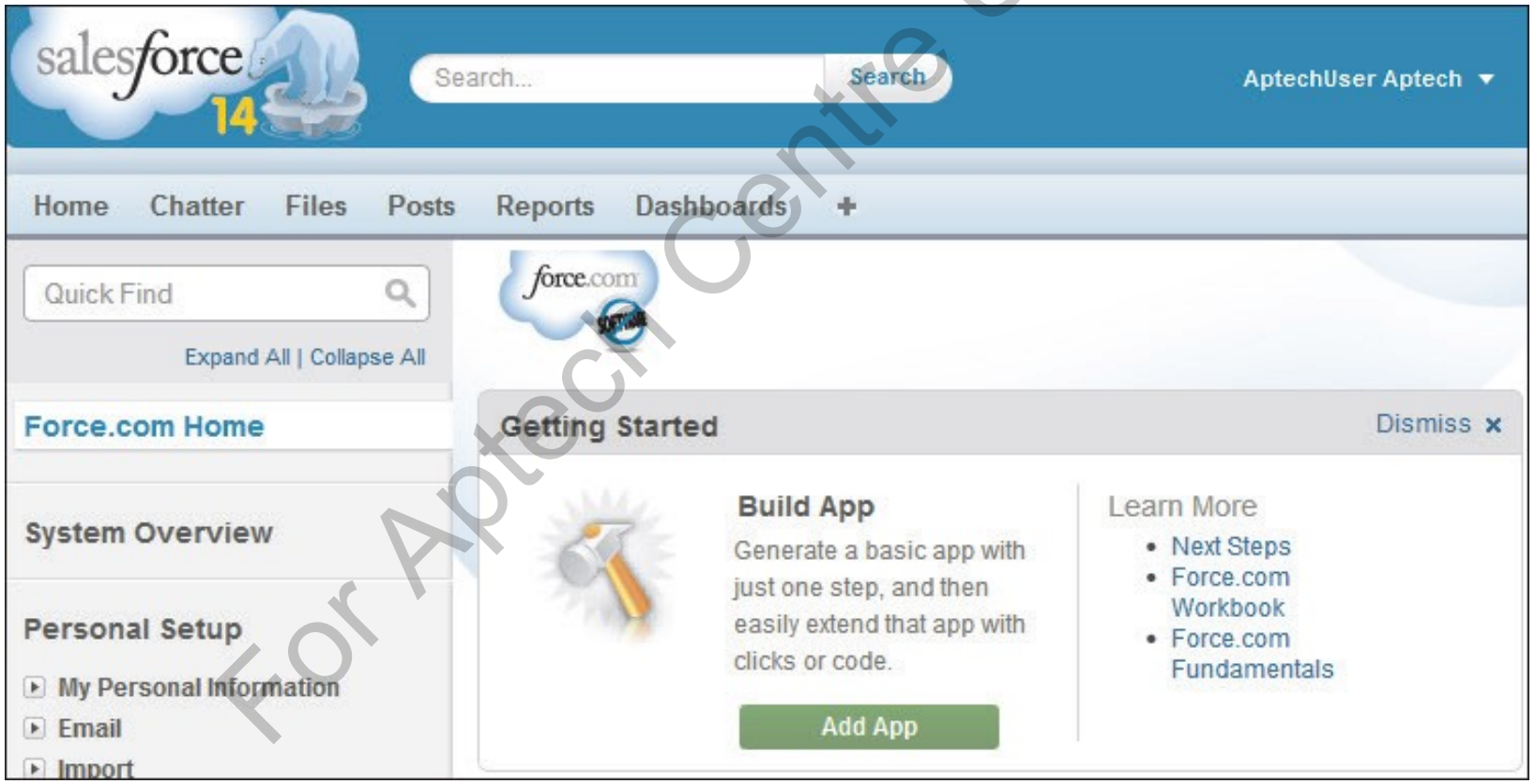
Users without the 'Manage Public List Views' permission cannot edit and they can only see the **Clone** link.

Working with the Force.com Platform-Example 1-8

The following example demonstrates working with Salesforce.

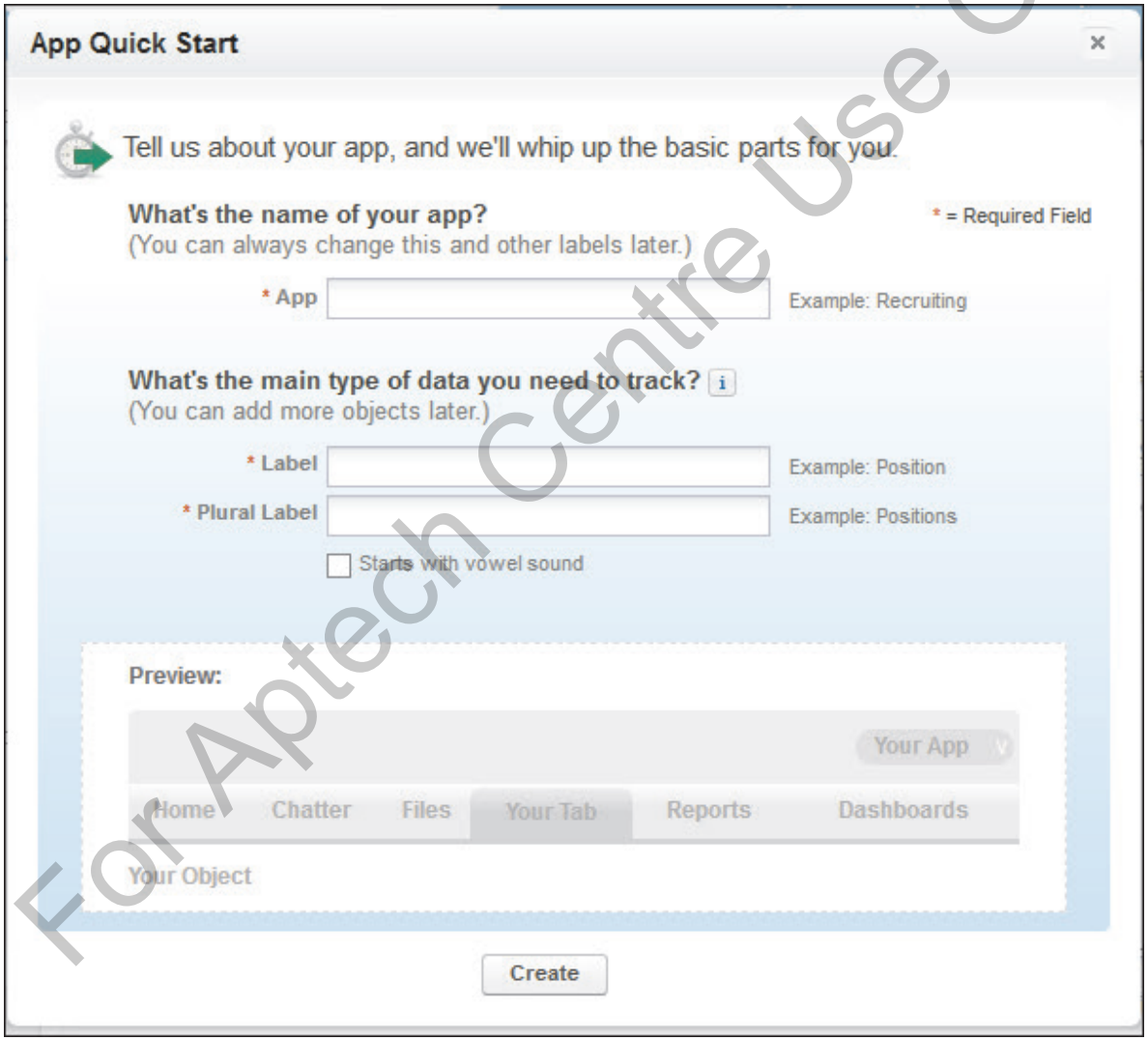
1. Login to Salesforce.

2. In your home page, you can see **Build App** as shown in figure.



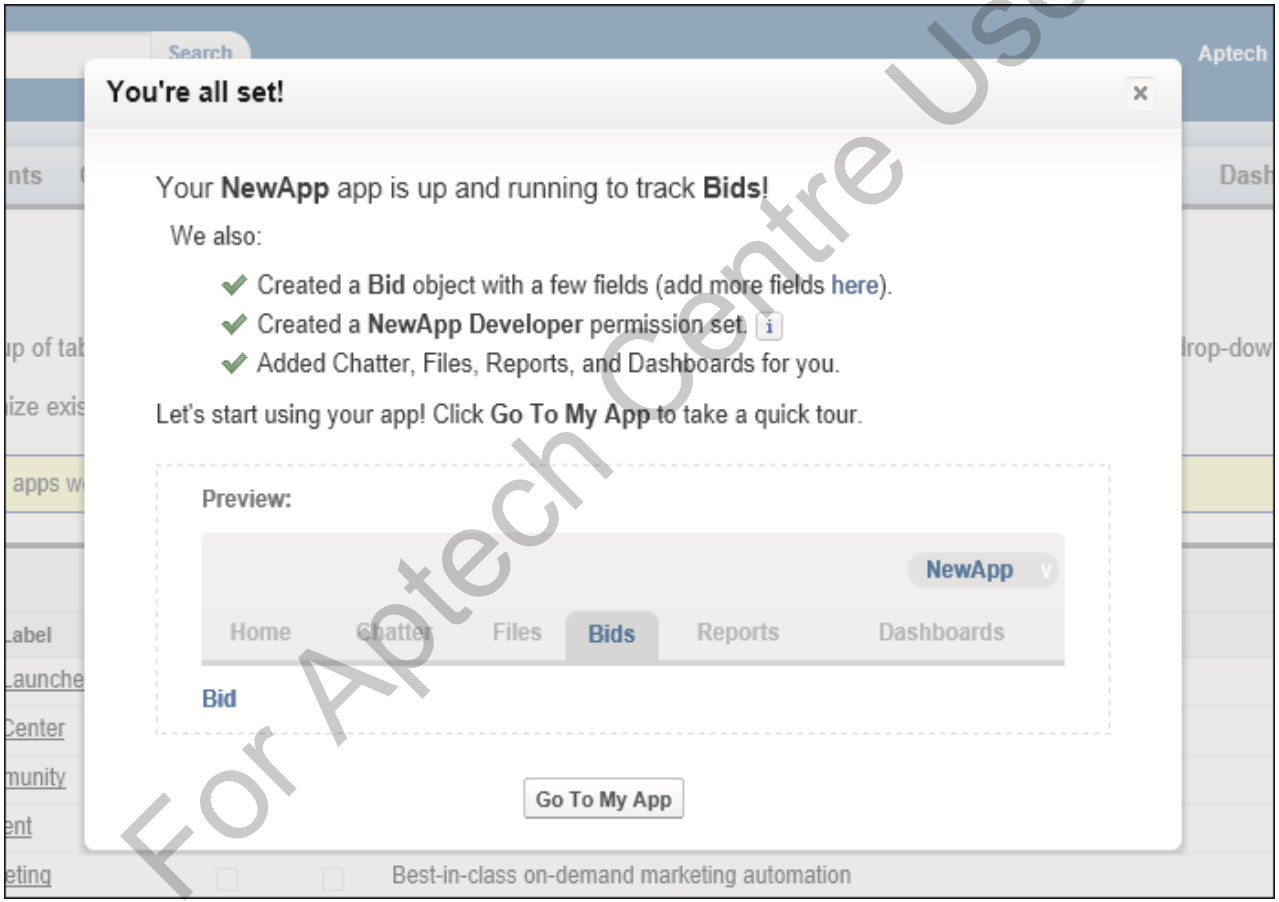
Working with the Force.com Platform-Example 2-8

3. Click **Add App** to build your application. Figure shows the screen where you can add your details.



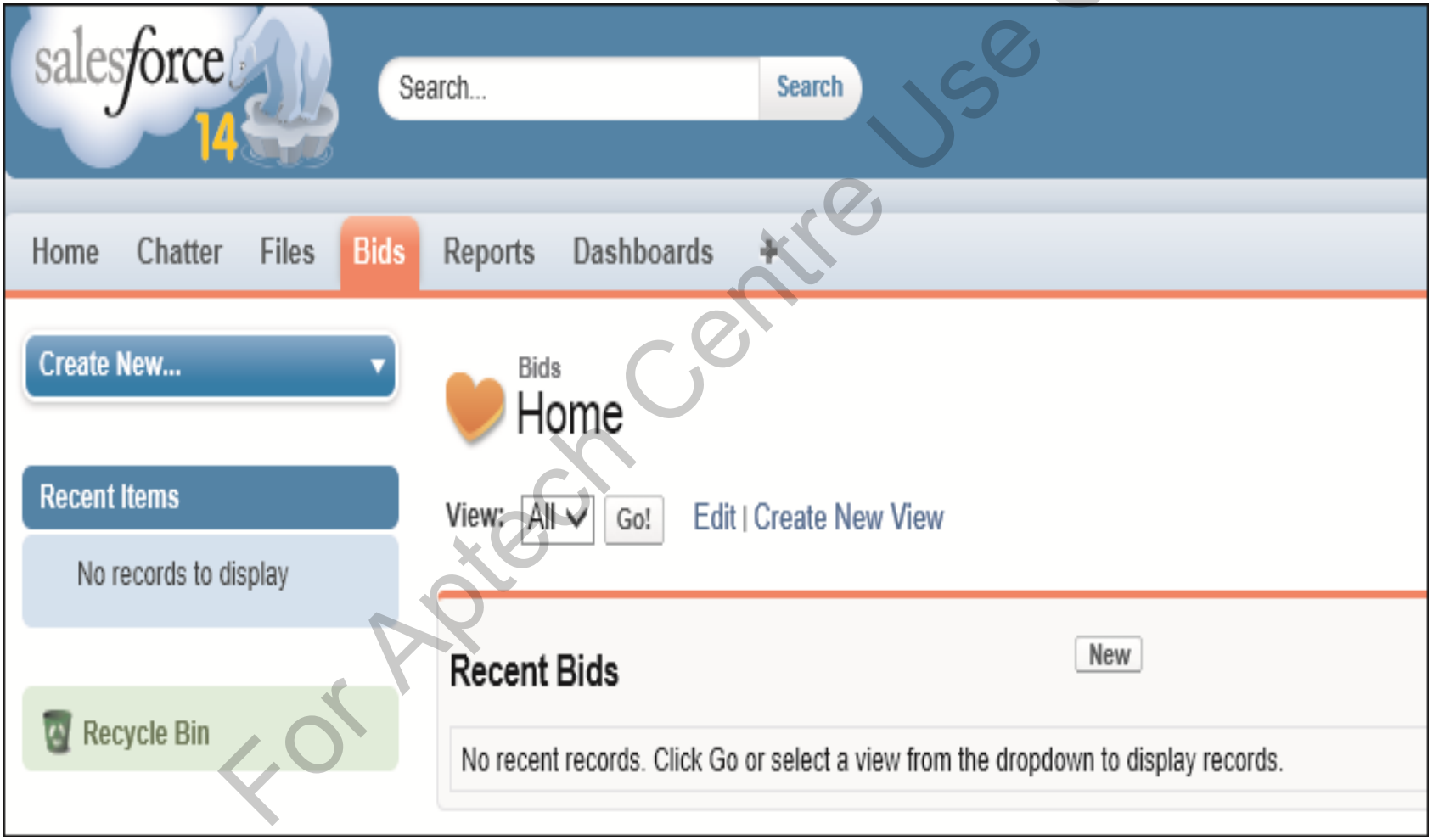
Working with the Force.com Platform-Example 3-8

Once you specify all the information, a dialog box is displayed indicating that you are all set to start. Figure shows the dialog box.



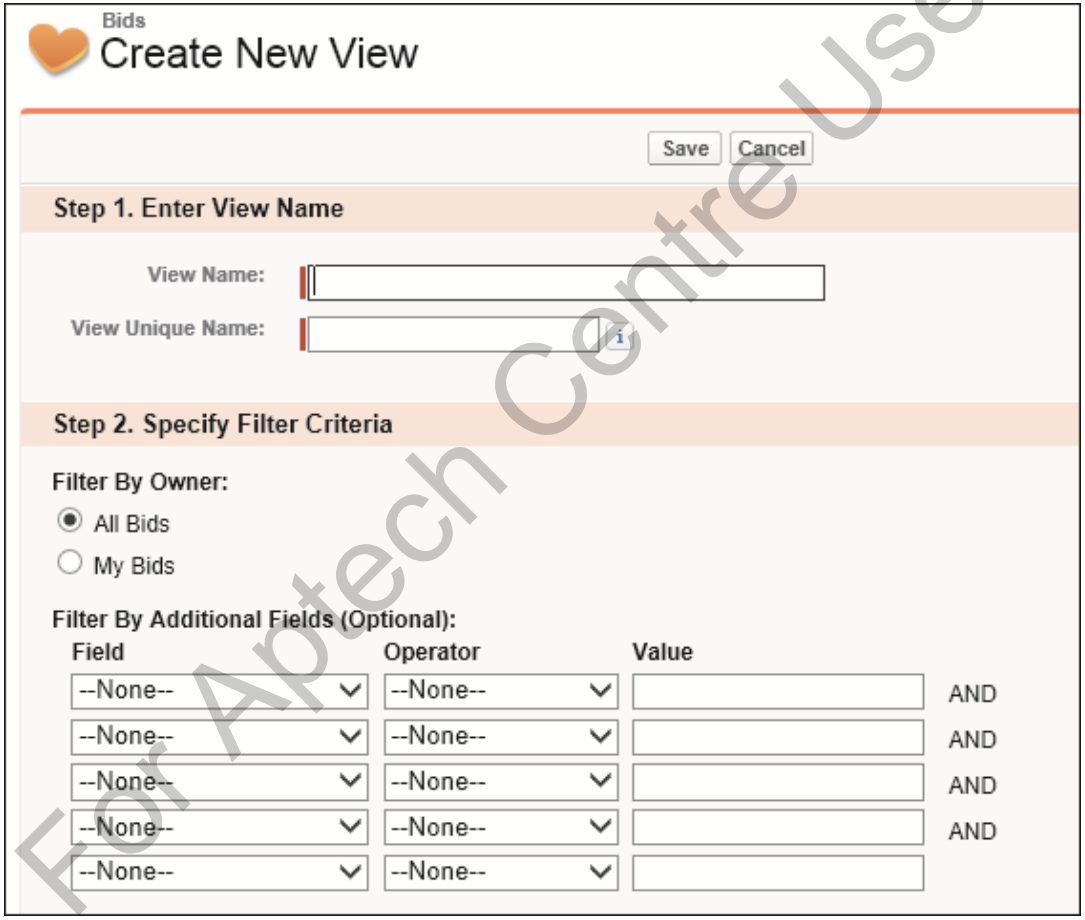
Working with the Force.com Platform-Example 4-8

4. On clicking **Go To My App**, you are taken to the App Home Page as shown in figure.



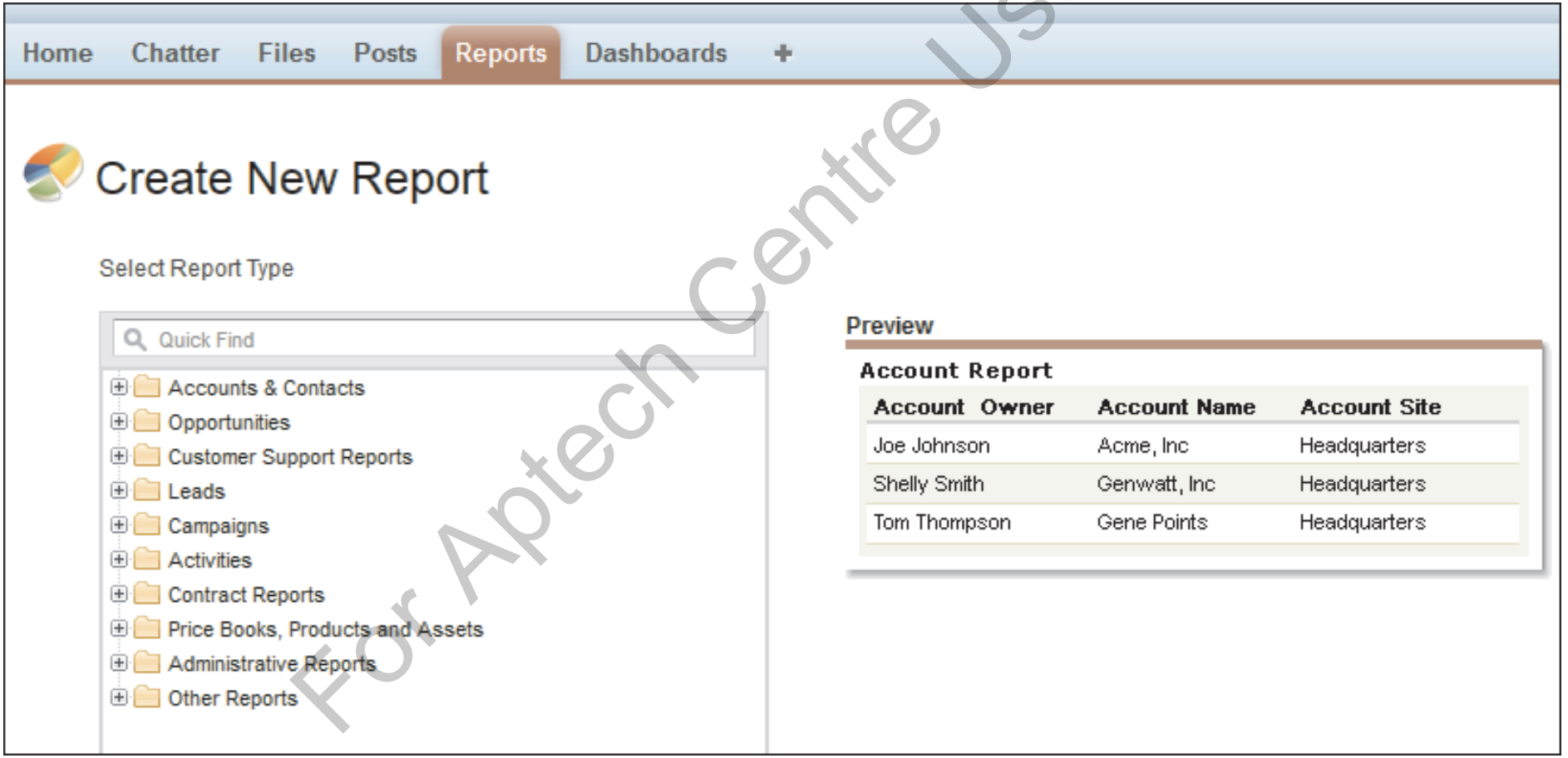
Working with the Force.com Platform-Example 5-8

5. Click **Create New View** beside **Edit**. Here, you can change your view name and add filters if required. Figure shows the screen to change the view name and filters.



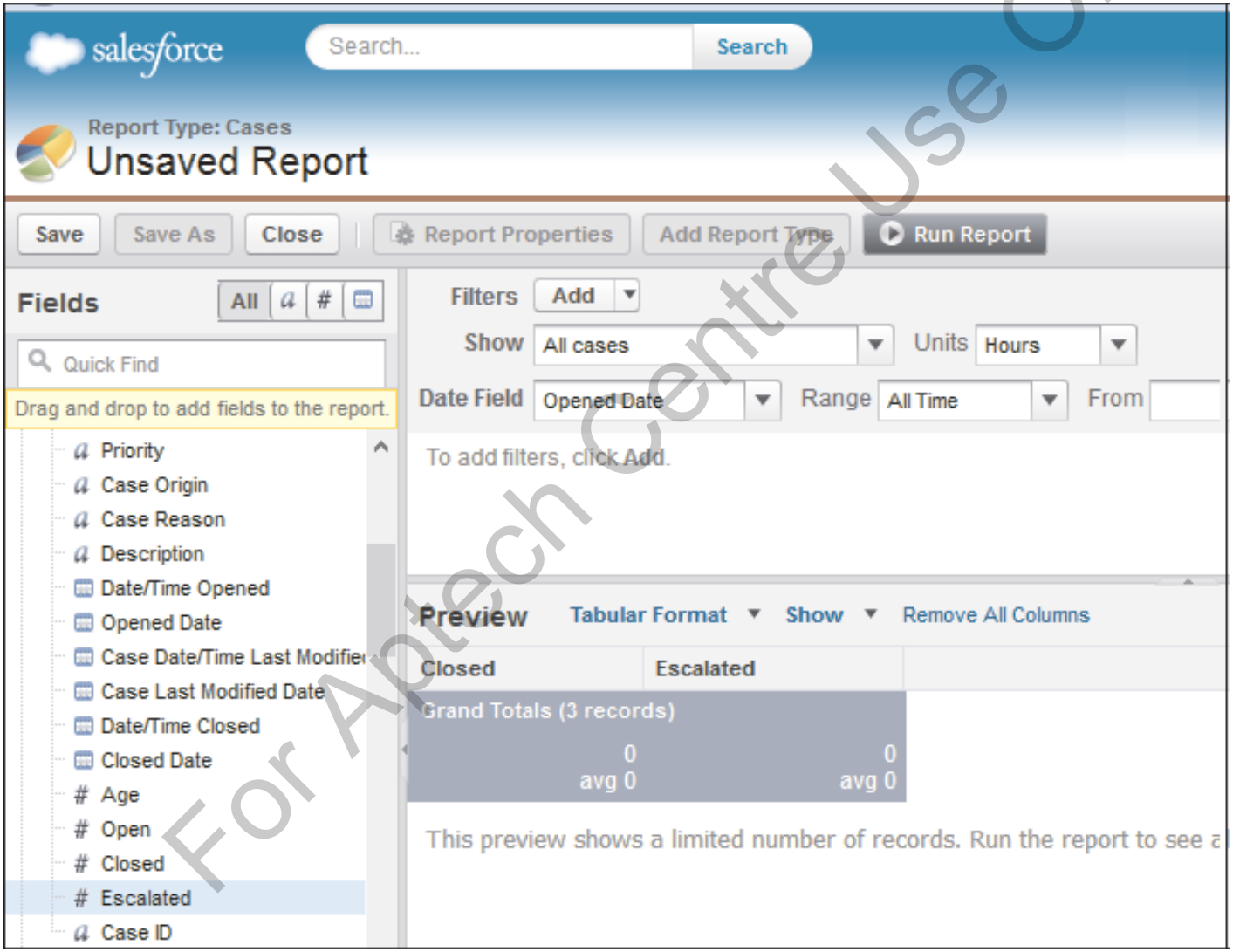
Working with the Force.com Platform-Example 6-8

6. After filling in all details, click **Save** present at the bottom of the page.
7. To create a custom report type, click the **Reports** tab and select **Bids** on your left end from the items listed. Figure shows the **Create New Report** page.



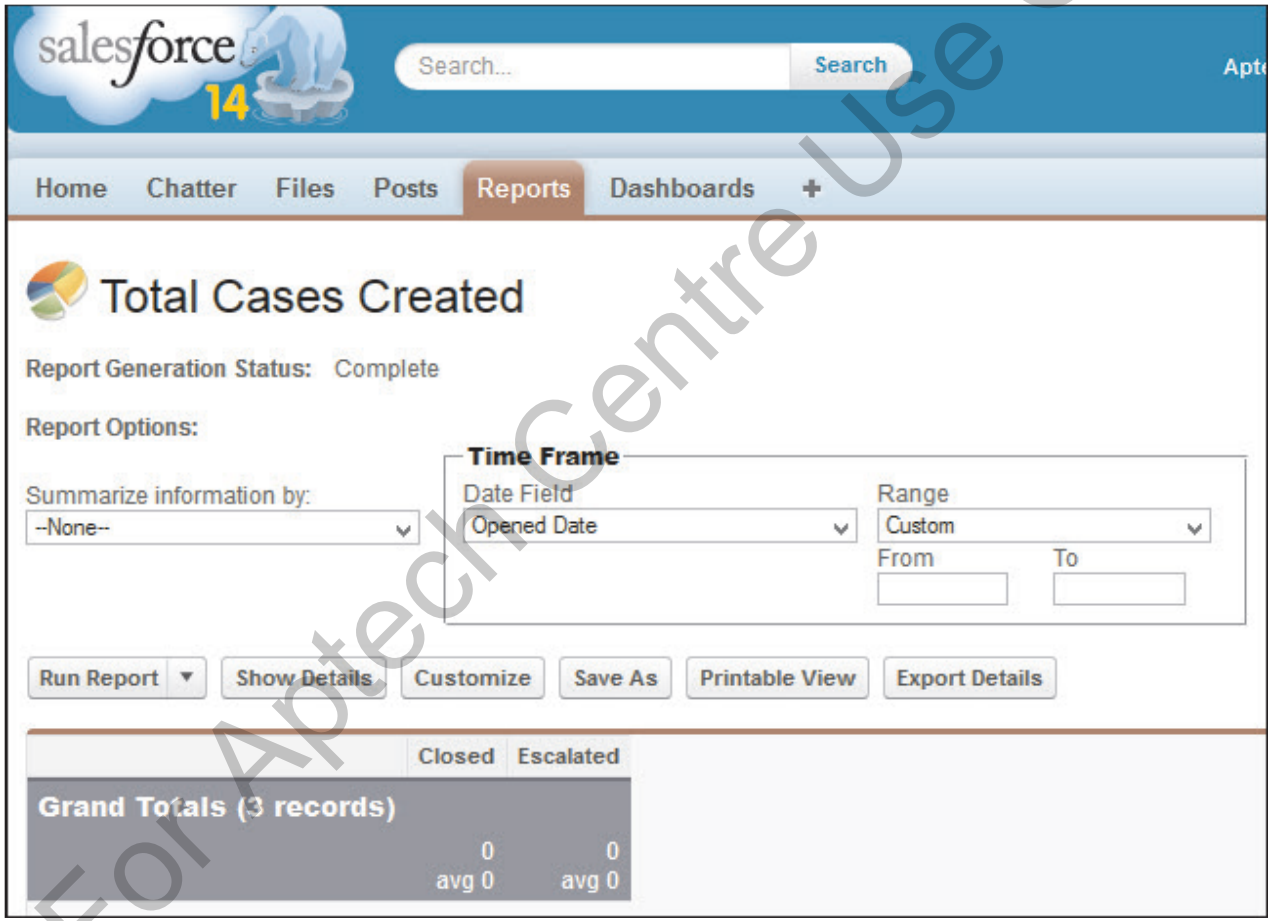
Working with the Force.com Platform-Example 7-8

In your Reports page, you can drag and drop items to add data as shown in figure.



Working with the Force.com Platform-Example 8-8

8. Once you have added all the information, click **Run Report**. The report is generated and status is available for view. Figure shows this.



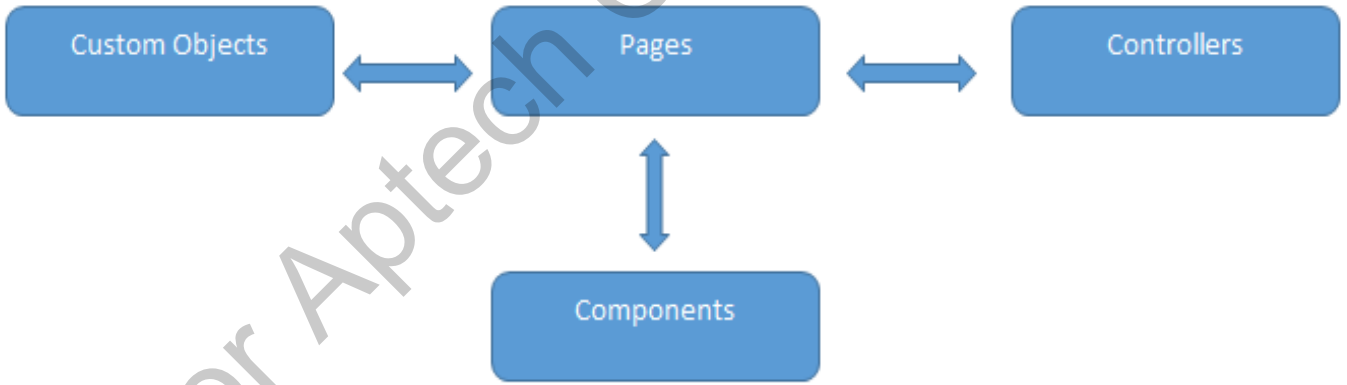
9. Click **Save As** to save your report. Enter report name, description about report if any, and location of your report and click **Save.**

Working with the Force.com Platform-Creating an Interface in Force.com 1-9

Visualforce is a framework that helps developers to build custom user interfaces that can be hosted on the Force.com platform. It contains a tag-based language similar to HTML.

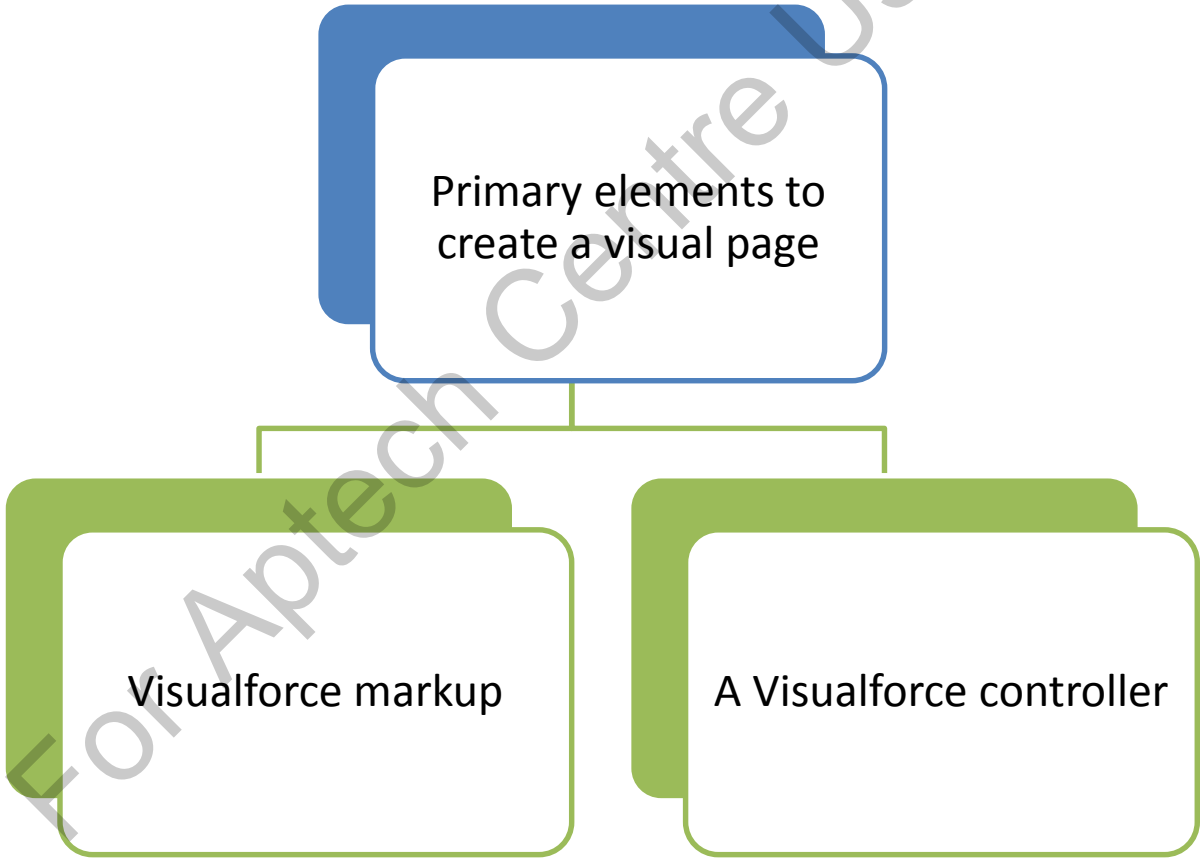
Developing with Visualforce

- Salesforce.com created a first implementation of a Model–View–Controller (MVC) architecture as shown in figure. The MVC is widely used interface architecture, which is based on the separation of data presentation from data manipulation.



Visualforce Pages:

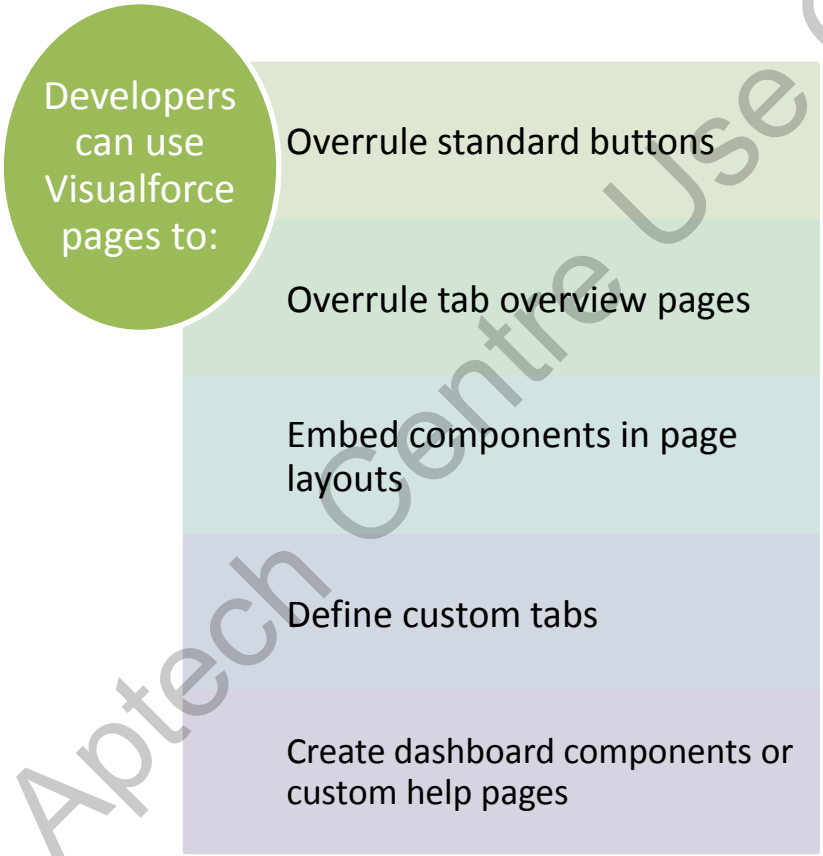
Pages are building blocks for application designers. Pages can be raised and invoked via a unique URL.



Working with the Force.com Platform-Creating an Interface in Force.com 3-9

- A controller is a set of instructions that specify what happens when a user interacts with the components that are specified such as user clicks, button, links, and so on.
- Components invoked with special HTML tags enable reuse of common interface elements.
- Some components implement common Salesforce interface elements, while others introduce new features. Figure depicts a Visualforce page.

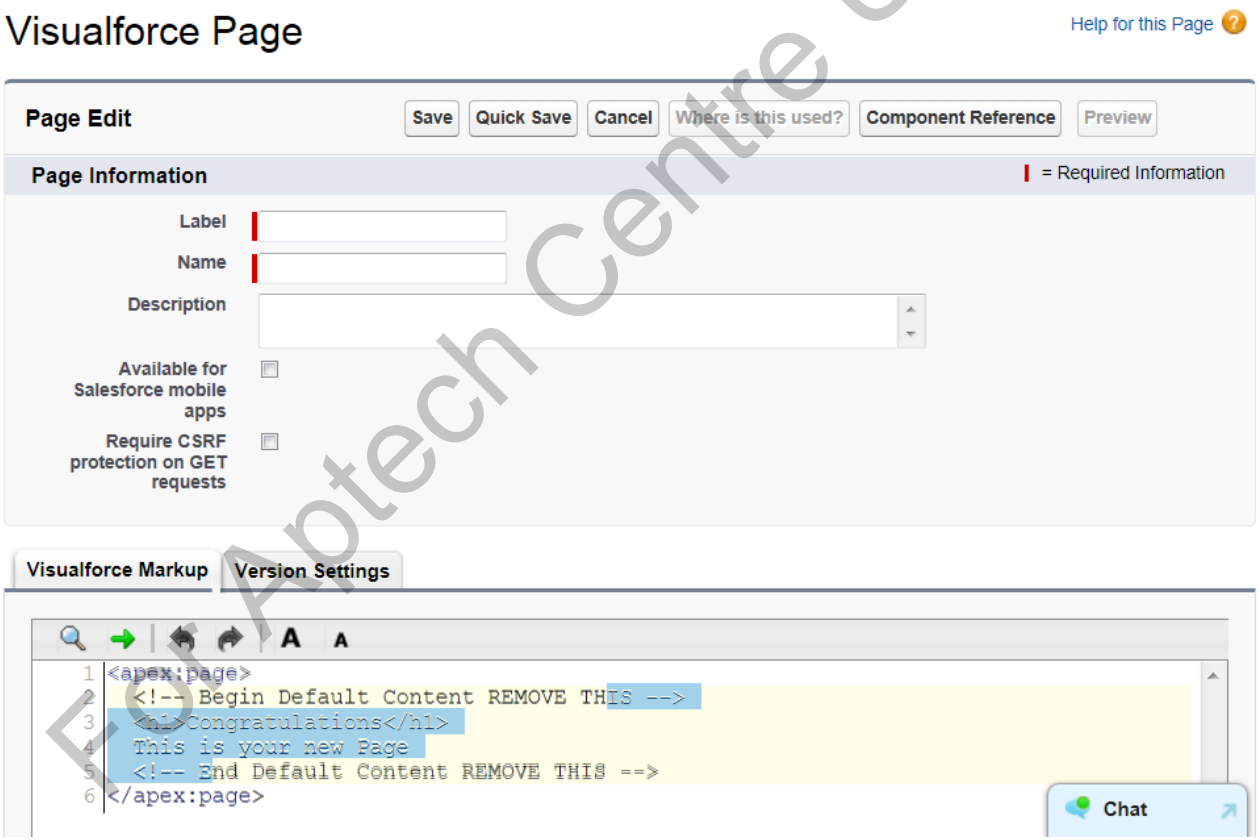
Working with the Force.com Platform-Creating an Interface in Force.com 4-9



Working with the Force.com Platform-Creating an Interface in Force.com 5-9

The following step-by-step procedure demonstrates how to work with Visualforce pages.

1. Click **Setup →Develop → Manage Your Pages→ New**. Figure shows the new Visualforce Page.



Working with the Force.com Platform-Creating an Interface in Force.com 6-9

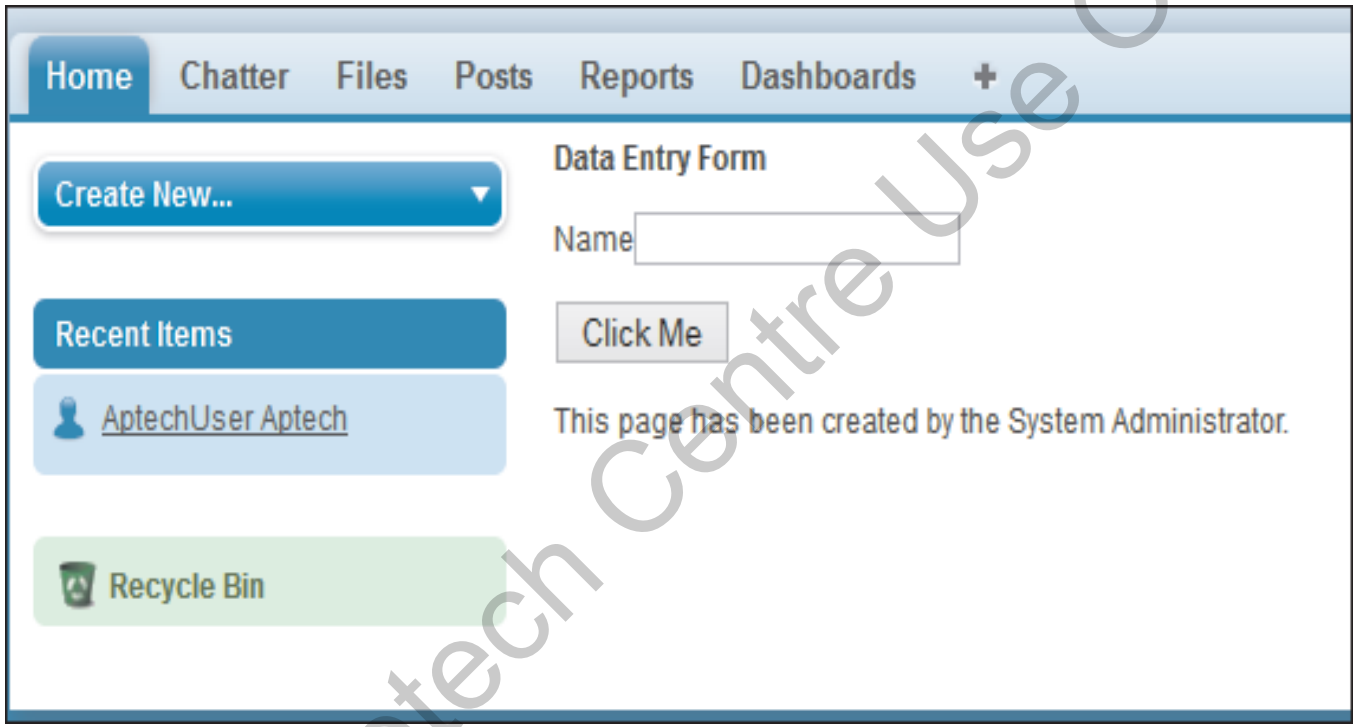
2. Enter **UserDetails** as **Label** and **using apex form tags** as the **Description**.

3. Remove the auto-generated code within **apex:page** tags.

4. Add the following code given in Code Snippet.

```
<apex:page>
<h1>Data Entry Form</h1>
<p></p>
<apex:form>
Name
<apex:inputText> </apex:inputText>
<p><input type=”button” value=”Click Me”/></p>
This page has been created by the System Administrator.
</apex:form>
</apex:page>
```

5. Click **Save** to save the file. Figure shows the outcome.



6. Create another page, **StaffDetails**, with **Description** as **Using apex tags for creating tabs**.

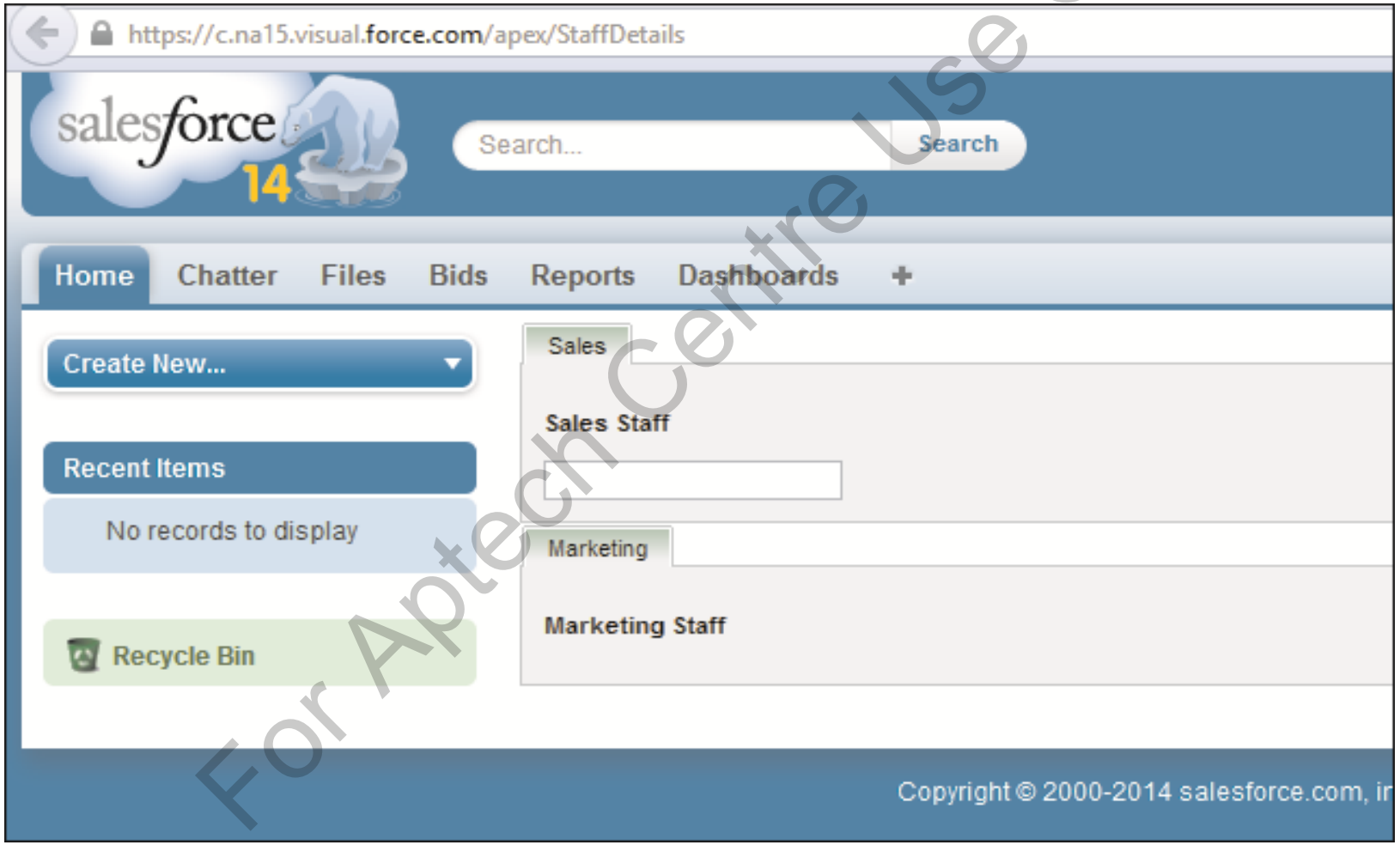
7. Delete the existing code and enter the code given in Code Snippet.

```
<apex:page >
<apex:tabPanel >
<apex:tab label="Sales">
<p><b>Sales Staff</b></p>
<input type="text"/>
</apex:tab>
</apex:tabPanel>
<apex:tabPanel >
<apex:tab label="Marketing">
<p><b>Marketing Staff</b></p>
</apex:tab>
</apex:tabPanel>
</apex:page>
```

8. Save the page.

```
<apex:tab label=”Marketing”>
<p><b>Marketing Staff</b></p>
</apex:tab>
</apex:tabPanel>
</apex:page>
```

10. Click **Preview**. The page opens in a new tab or window as shown in figure.



Working with the Force.com Platform-Salesforce Data-Loader 1-6

Salesforce Data-Loader

- The Force.com platform offers a development environment which can use to create own applications. The data-loader is a graphical tool that helps you to get and extract the data from the database objects into any destination.

Use of CSV file

- When importing data, data-loader reads, extracts, and loads data from Comma-Separated Values (CSV) files or from a database connection.
- If a user needs to load 50,000 to 5,000,000 records, he/she can use Data-loader.

Working with the Force.com Platform-Salesforce Data-Loader 2-6

Features of the Data Loader

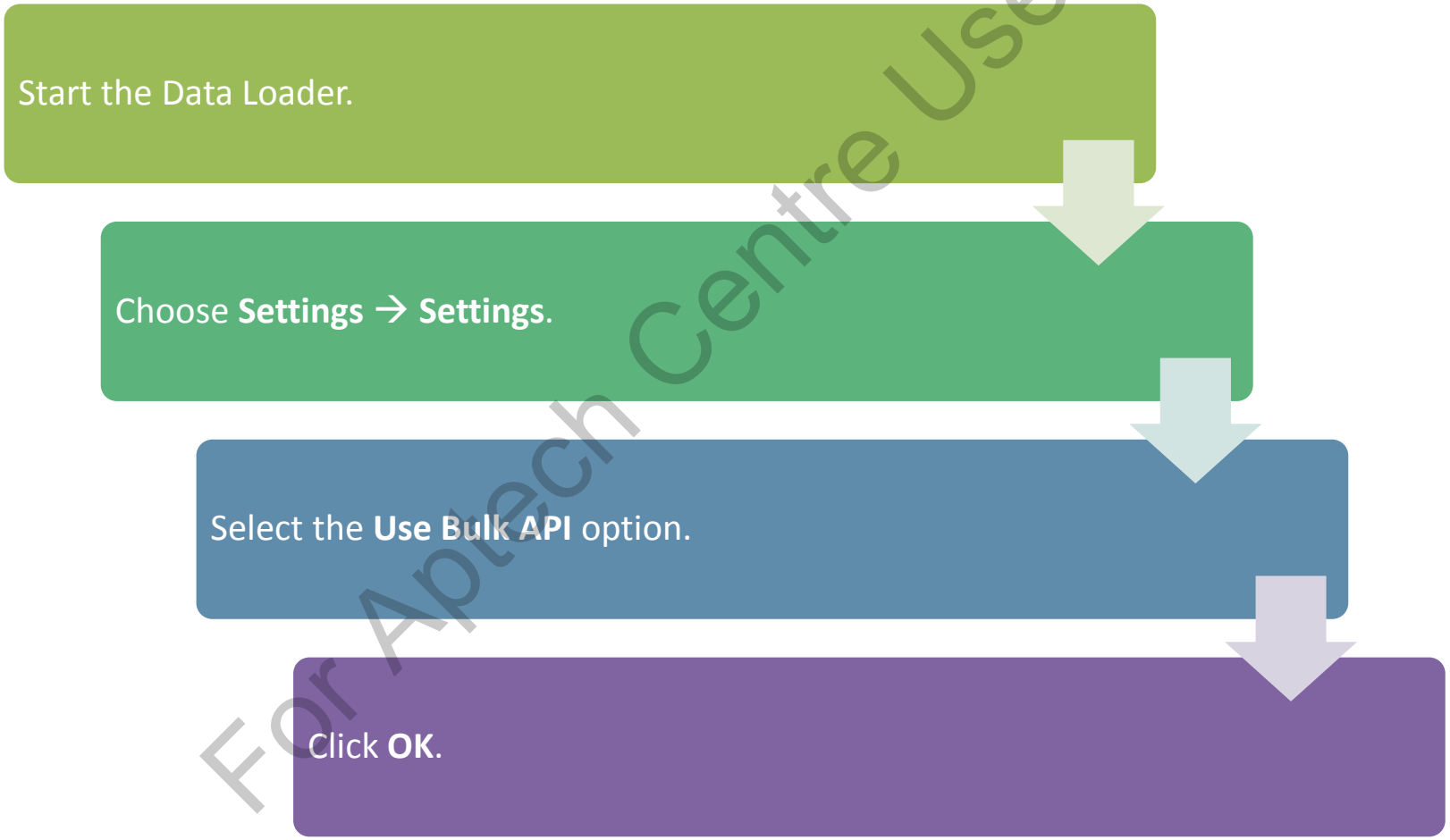
- Detailed success and error log files in CSV format
- A batch mode interface with database connectivity
- Drag-and-drop field mapping
- Support for all objects, including custom objects
- Support for large files with upto millions of rows
- A built-in CSV file viewer
- An easy-to-use wizard interface
- An alternate command line interface

Working with the Force.com Platform-Salesforce Data-Loader 3-6

The Data Loader can be downloaded by clicking **Administer → Data Management → Data Loader** and then selecting the **Download Data Loader** link. Figure shows the Data Loader page.

Working with the Force.com Platform-Salesforce Data-Loader 4-6

To configure Data Loader to use the Bulk API for various operations such as inserting, updating, and deleting records:



Working with the Force.com Platform-Salesforce Data-Loader 5-6

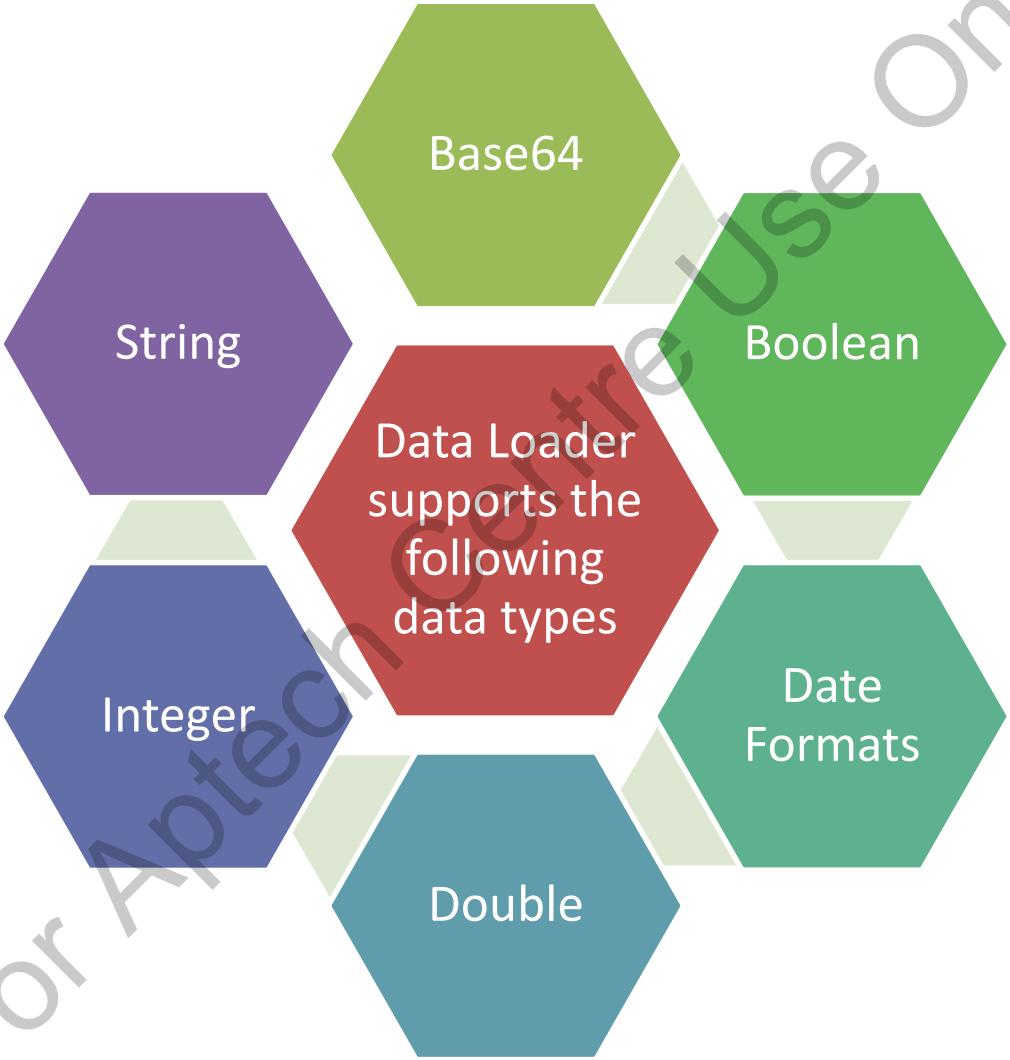
To uninstall the Data Loader client application:

Go to **Start → Control Panel → Add or Remove Programs**.

Select the **Data Loader** program.

Click **Remove**. The uninstaller removes the program from your computer.

Working with the Force.com Platform-Salesforce Data-Loader 6-6



Summary

- SaaS is a delivery model that provides access to software as a service on demand through the Internet.
- PaaS is a delivery model that provides a platform as a service through the Internet or a network, enabling developers to deploy their applications on the cloud.
- IaaS is a delivery model that delivers computing infrastructure as a service through the Internet.
- Salesforce is one of the foremost enterprise cloud computing vendors and offers various products such as CRM and Sales solutions as SaaS products.
- Salesforce also offers PaaS through its **Force.com** platform, which is completely cloud based. With **Force.com**, it is easier to build and deliver business applications, mobile applications, and Web sites.
- The **Force.com** platform includes a database, security, workflow, and number of other tools to simplify the development process and includes two development tools Apex and Visualforce.
- Apex is an object-oriented language that enables developers to create applications.
- Visualforce is a framework that helps developers to build custom user interfaces that can be hosted on the Force.com platform.