

# **Suggestion Box Application**

Project report submitted in partial fulfillment of the requirement for  
the degree of Bachelor of Technology

in

**Computer Science and Engineering**

By

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Under the supervision of

Dr. Rajni Mohana

to



Department of Computer Science & Engineering and Information  
Technology

**Jaypee University of Information Technology Wahnaghat, Solan-  
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## Candidate's Declaration

I hereby declare that the work presented in this report entitled “**Suggestion Box Application**” in partial fulfillment of the requirements for the award of the degree of **Bachelor of Technology** in Computer Science and Engineering/Information Technology submitted in the department of **Computer Science & Engineering and Information Technology, Jaypee University of Information Technology Waknaghat** is an authentic record of our own work carried out over a period from 7th February 2020 to 10<sup>th</sup> May 2020 under the supervision of **Dr. Rajni Mohana** (Associate Professor (Senior Grade)-Department of **Computer Science & Engineering and Information Technology -JUIT**) and **Mr. Shibu Kalidhasan** (Salesforce trainer at **Cognizant Technology Solutions Ltd.**).

The matter embodied in the report has not been submitted for the award of any other degree or diploma.



Arpit Dogra, 161355

This is to certify that the above statement made by the candidate is true to the best of my knowledge.



Dr. Rajni Mohana

Associate Professor (Senior Grade)

Department of Computer Science & Engineering and Information Technology

Dated:26/06/2020

## Acknowledgment

I would like to express my deep gratitude to my instructor from Cognizant Technology Solutions ltd, **Mr. Shibu Kalidhasan** for giving me the opportunity to carry out this project. I would like to thank my project guide, **Dr. Rajni Mohana** (Associate Professor (Senior Grade) - Computer Science & Engineering and Information Technology-JUIT) - Computer Science & Engineering and Information Technology), for his patient guidance, enthusiastic encouragement and useful critiques of this project. I would like to thank him for his patient guidance, enthusiastic encouragement and useful critiques of this project.

I would also like to extend my thanks to my mentor and my friends for their constant support and help throughout the final year.

Finally, I wish to thank my parents for their support and encouragement throughout my study.

## Project Report Undertaking

I Arpit Dogra Roll No.: 161355 Branch: Computer Science have done my internship with Cognizant from February 7, 2020 to June 5, 2020.

As per procedure I have to submit my project report to the university related to my work that I have done during this internship.

I have compiled my project report. But due to COVID-19 situation my project mentor in the company is not able to sign my project report.

So I hereby declare that the project report is fully designed/developed by me and no part of the work is borrowed or purchased from any agency. And I'll produce a certificate/document of my internship completion with the company to TNP Cell whenever COVID-19 situation gets normal.

Signature  \_\_\_\_\_

Name - Arpit Dogra

Date \_\_\_\_\_

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**List of Abbreviations**

Abbreviation	Explanation
LSTM	Long Short term memory
API	Application Program Interface
RNN	Recurrent neural network
NLP	Neuro-Linguistic Programming
CRM	Customer Relationship Management
AI	Artificial Intelligent
MIDI	Musical Instrument Digital Interface
RANN	Reliability Aware Neural network
NN	Neural network
GAN	Generative adversarial network
RMS	Root Mean Square
JSON	JavaScript Object Notation

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## Abstract

Salesforce is a cloud-based customer relationship management (CRM) software that accelerates business relationships and can transform the working lives of the team. Marc Benioff developed it in the late 1990s and now it has been announced as the world's most innovative company for six consecutive years by Forbes Magazine [1]. Unlike traditional CRM software, Salesforce is an internet service. It is available with just a sign-up and logs in through a browser, and it is immediately available. It is based on cloud computing, where the customers, without the need of installing any traditional software, can access the cloud, i.e., through the internet, for their business needs [2].

Salesforce provides multiple tools to automate your organization's repetitive business processes: Approvals, Process Builder, Workflow, and Flow Builder. No matter whether they're buying movie tickets, paying bills, or changing restaurant reservations, if a customer is interacting with a company, they expect a seamless, personalized experience. Lightning Flow provides declarative process automation for every Salesforce app, experience, and portal with two point-and-click automation tools: Process Builder and Flow Builder. Workflow lets you automate standard internal procedures and processes to save time across your org. A workflow rule is the main container for a set of workflow instructions. These instructions can always be summed up in an if/then statement. An automated action is a reusable component that performs some sort of action behind the scenes—like updating a field or sending an email. Once you create an automated action, add it to a process, milestone, or other automated process.

Visualforce is a web development framework that enables developers to build sophisticated, custom user interfaces for mobile and desktop apps that can be hosted on the Lightning Platform. You can use Visualforce to build apps that align with the styling of Lightning Experience, as well as your own completely custom interface.

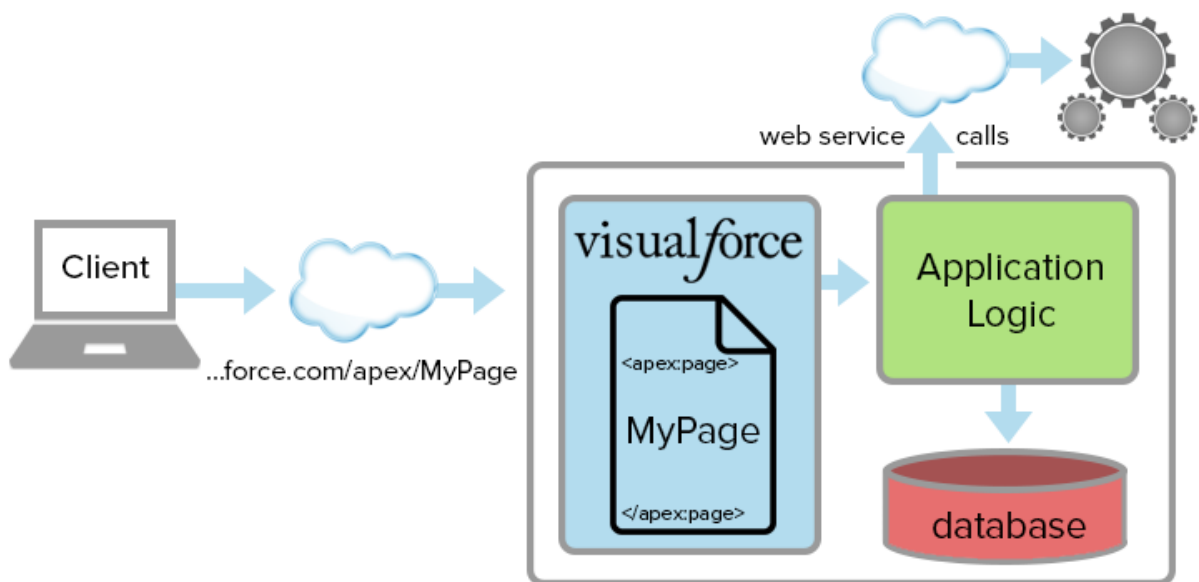


Figure 1: Salesforce

# Chapter – 1

## INTRODUCTION

### 1.1 Introduction

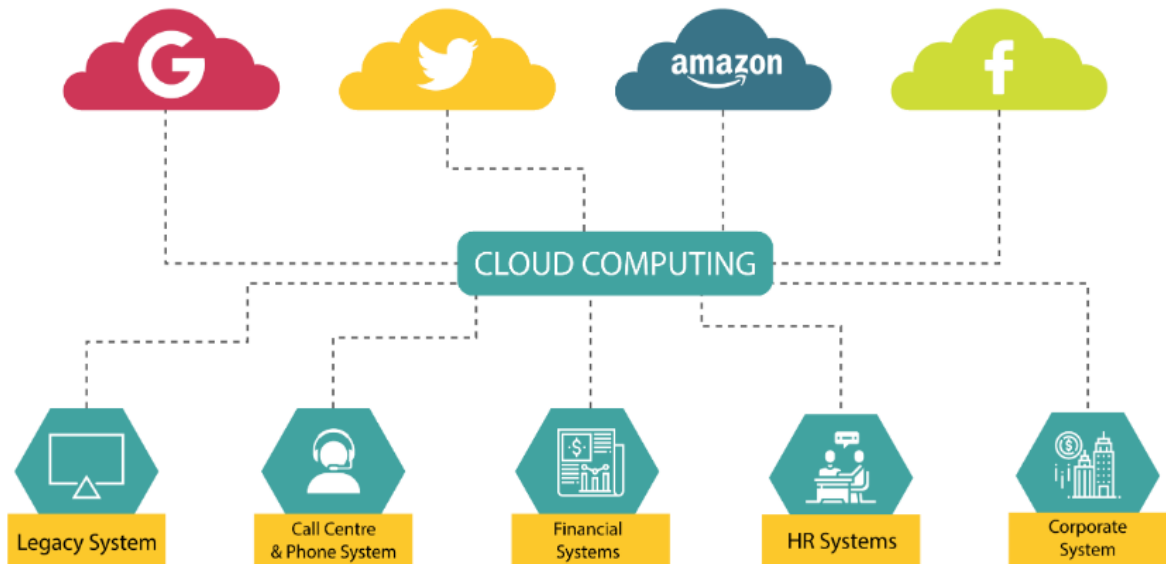
Salesforce is a client fulfillment platform, designed to help teams sell, carrier, market, examine, and hook up with their customers.

Salesforce has the entirety one wishes to run commercial enterprise from everywhere. The use of popular products and capabilities, companies can control relationships with possibilities and customers, collaborate and interact with personnel and partners, and shop the records securely inside the cloud. However general products and capabilities are best the beginning. Salesforce platform lets in to personalize and personalize the experience for clients, companions, and personnel and effortlessly expand past out of the box capability.

### 1.2 What is Cloud Computing.

It's the transport of services inclusive of storage, servers, database, software, networking, analytics, intelligence, and extra so through the cloud (internet). It brings an entire new organization, economies of scale, and flexibility in resource allocation. Cloud integration puts down the fees associated with the preservation paintings and contributes to the building of the corporation.

Shifting from a traditional garage device to a cloud will placed you in a role in which you will find many blessings which include value performance, velocity, productiveness, overall performance, planet safety and safety.



**Figure 2: Cloud Computing**

### 1.3 History of Cloud Computing

The internet has its roots within the Sixties, however never existed within the early Nineteen Nineties when it had a business connection. The podium wide web was born in 1991, and in 1993 an internet browser was mentioned as mosaic that allowed customers to look at net pages that embrace photos and text.

This turned into introduced through first-birthday celebration web sites - and no longer particularly, many of those have been corporations that had been worried in pc and generation.

As net connectivity grew faster and extra reliable, a new type of corporation was called the application service issuer or asp. Asps take current commercial enterprise plans and run them for their clients. Asp would buy computer hardware and hold the operating gadget jogging, and the customer paid a monthly subscription charge via the net. However, it wasn't till the overdue Nineteen Nineties that laptop cloud as we are aware of it today. This is wherein salesforce introduced its very own multi-tenant utility which became particularly designed:

- running "in the cloud";
- Internet access from a web browser;
- will be used by large numbers of customers at the same time at lower cost.

Since then the cloud has full-grown Associate in Nursinging grown: in 2013 international disbursal on cloud services has run a calculable forty seven billion dollar. And that's set to quite double to over \$ 108 billion in 2017 as firms invest in cloud services because the basis for brand spanking new, competitive offerings

### 1.4 Types of Cloud Computing

Three different types of cloud computing services available, which are a public, private and hybrid cloud.

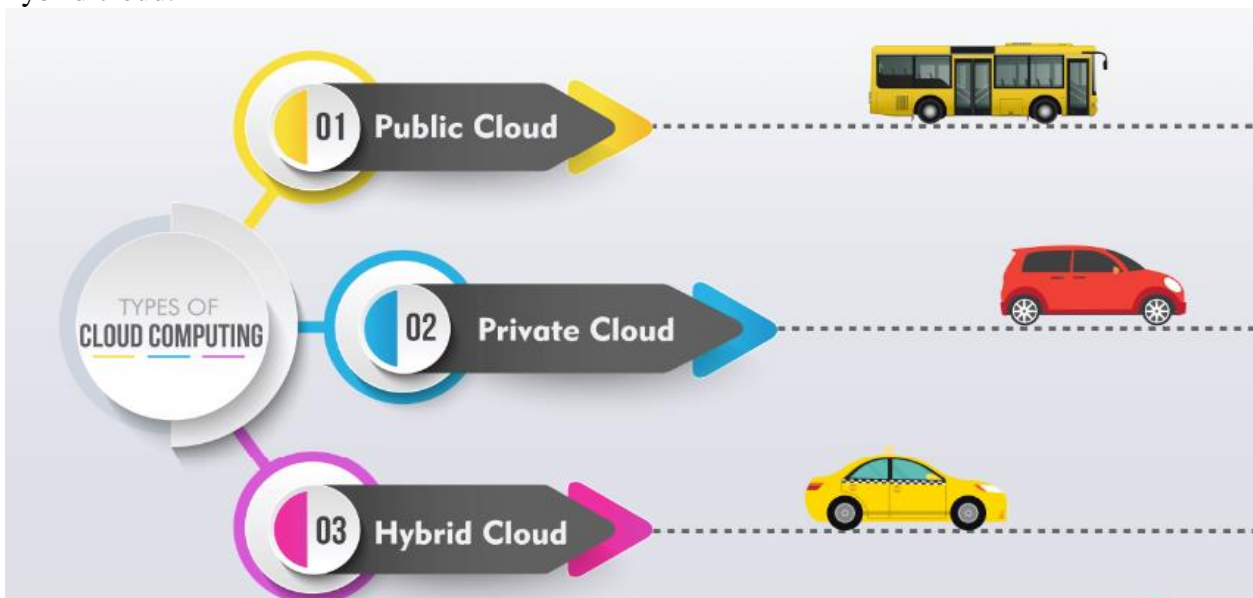


Figure 3 : Types of cloud computing

**1) Public cloud:** It has been provided by third-party vendors such as Salesforce Amazon web services, Microsoft Azure, etc. The third-party vendors maintain everything such as servers, storage, hardware, software. Via web browser you can access and manage your services.

## **2) Private cloud**

It's a cloud computing service exclusively used by a single organization. A private cloud is defined as a privately owned network that contains services and infrastructure required to manage cloud computing services.

## **3) Hybrid Cloud**

It's a combination of public cloud and private cloud and allows them to share data and applications among them. Hybrid cloud will enable your business with more deployment options, greater flexibility and also allow you to optimize your business infrastructure, compliance and security.

### **1.5 Types of Cloud Service**

We have three cloud computing services which are IaaS, PaaS, Serverless, and these are built one upon another. Having explicit knowledge on these different layers would be helpful for you to have precise knowledge on cloud computing technology.

**1) Infrastructure as a Service (IaaS):** IaaS is the most complete and flexible form of cloud carrier available. Ideally, it presents the most used laptop infrastructure supplied and managed over the net. The IaaS provider handles the quit of infrastructure (servers, data warehouse, and so on.) inside the records middle, however permits purchasers to fully customize those assets made to suit their unique needs. With IaaS, the customer should purchase, deploy, configure, and control any software they want to use, which includes such things as applications, middleware, applications, enterprise analytics, and improvement equipment. On a miles larger scale, corporations only pay for the infrastructure they use, letting them measure their computer wishes as needed without growing their capability.

**Examples of IaaS:** Microsoft Azure, Amazon Web Services (AWS), Cisco Metacloud, Google Compute Engine (GCE)

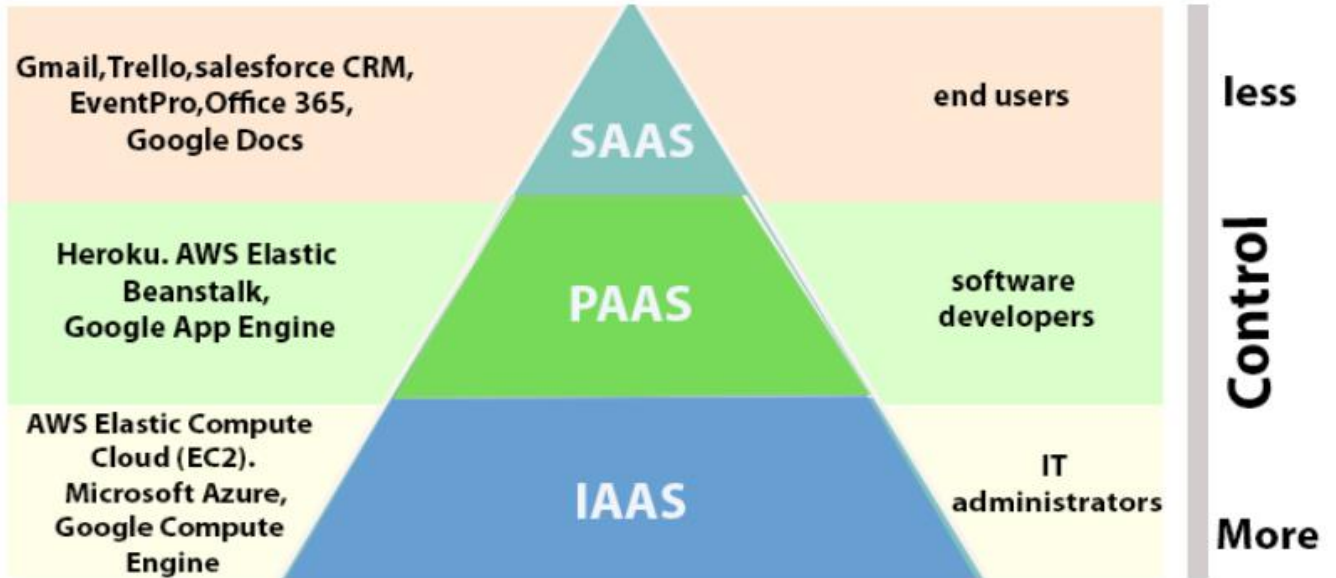
**2) Platform as a Service (PaaS):** Situated a bit higher up the cloud computing pyramid is PaaS. Whereas IaaS delivers all the tools available through the cloud and leaves it to customers to build whatever suits their needs, PaaS is a bit more specialized. Rather than pure infrastructure, PaaS provides the framework needed to build, test, deploy, manage, and update software products. It utilizes the same basic infrastructure as IaaS, but it also includes the operating systems, middleware, development tools, and database management systems needed to create software applications.

**Examples of PaaS:** AWS Elastic, Stratos, Google App Engine etc.

**3) Software as a Service (SaaS):** The SaaS supplier manages the infrastructure, operational systems, middleware, and information necessary to deliver the program, guaranteeing that the software package is offered whenever and where customers would like it. several SaaS applications run directly through net browsers, eliminating

the necessity for downloads or installations. This greatly reduces software package management problems for internal IT groups and permits firms to contour their operations with hybrid and multi-cloud deployments.

**Examples of SaaS:** Microsoft Office 365, Salesforce, Cisco WebEx, Google Apps



**Figure 4: Level of Control**

### 1.6 Colocation

There's a selection of technical and enterprise reasons why organizations are transitioning faraway from with pride owning their personal statistics centers, and variety of those motives have emerge as regarding the cloud. Extraordinary varieties of cloud computing configurations are setting remarkable computing strength into the arms of entrepreneurs for charges that would had been unthinkable a decade ago. Cloud deployments are permitting small businesses to attain new customers and are rushing up the pace of medical development. The arrival of virtualized and cloud-based web hosting solutions offers it possible options for enhancing community speed and performance. Arguably, they also equip teams to deliver greater commercial enterprise fee by means of assisting lessen overhead and capex and permitting infrastructure scalability. No longer to say, running a records center isn't a center competency for plenty businesses, and cloud-based totally answers certainly get rid of statistics middle control responsibilities from inner it skills's to-do list. A colocation provider can be the "x-aspect" in optimizing this hybrid cloud deployment, equipping it teams with the interconnection and connectivity to spin up cloud environments quick and affordably even as preserving neighborhood infrastructure.

There are a number of important advantages to a colocation-cloud hybrid model:

- Flexibility
- Greater Scale and Support
- Reduced Risk

## Chapter – 2

### LITERATURE SURVEY

**2.1 Salesforce:** Salesforce is a leading CRM (Customer Relationship Management) software used for cloud computing. It has over 800 apps to support a variety of things like producing new leads, finding new leads, growing sales, and closing deals. It is designed to manage an organization's database that is focused on customer and sales data. It also provides features for customizing its data structures built with the GUI to suit specific business needs. Recently, it has begun to offer IOT (Internet of Things) connectivity to the CRM platform.

**2.2 Features:** Salesforce started out as a CRM based cloud solution. It involves managing all aspects of an organization relationship with its customers. In addition to customer-related information, it also involves storing and managing the details from the seller organization that manages the account and needs of the customer, of the people and the department concerned. This makes the relationship with the customer easier to manage and enhance, and hence better growth for the organization.

The various features of the Salesforce platform are as follows-

1. Contact Management
2. Opportunity Management
3. Salesforce Engage
4. Sales Collaboration
5. Lead Management
6. Workflow and Approvals
7. Reports and Dashboards

**2.3 Architecture of Salesforce:** Salesforce provides a tightly personalized experience to an organization's consumers, staff, and partners. Such a framework is used to customize standard features and build custom websites, modules, applications and so on. Salesforce is very fast because of the design patterns on which the architecture is designed.



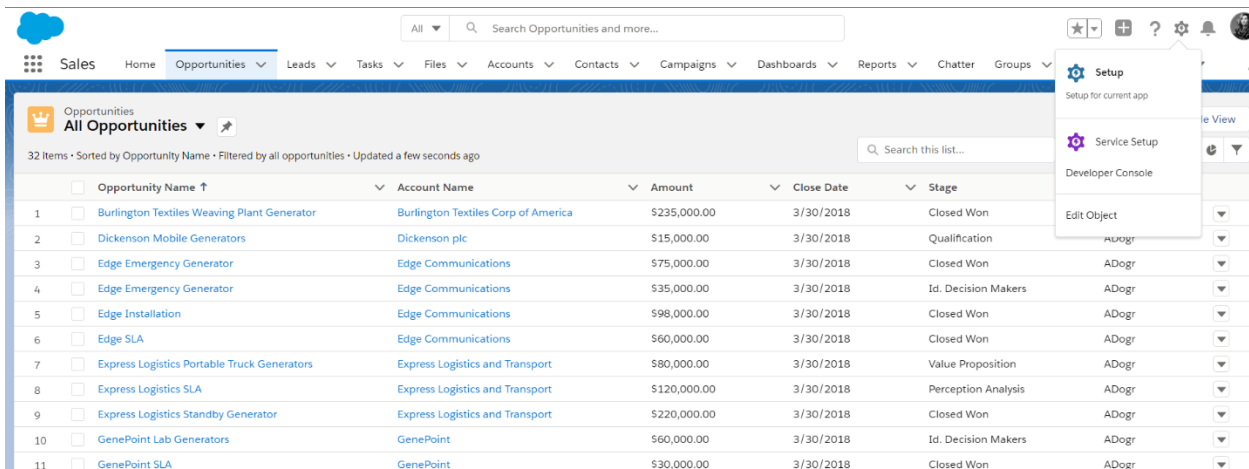
**Figure 5: Salesforce Architecture**

**2.4 Salesforce - Sales Cloud:** Sales Cloud is part of the Salesforce.com platform that focuses on the efficiency of an organization's sales team, thereby increasing sales volumes. The information on the customer's account, as well as information collected from the social platforms on the product and the customer is uniquely compared to other sales methods. This helps to determine the value of a production and to shut down sales more quickly.

**2.5 Salesforce - Service Cloud:** Service cloud in the Salesforce platform aims to provide customers with services such as assistance. This contributes towards keeping customers happier and more trustworthy. The main characteristic is to offer better delivery than conventional approaches, to meet growing consumer 's concerns and to take a constructive approach to customer complaints. In the end, this helps in improving the customer's experience and thus loyalty of the customer, which in return has a magnificent effect on sales as the customer become the advertiser.

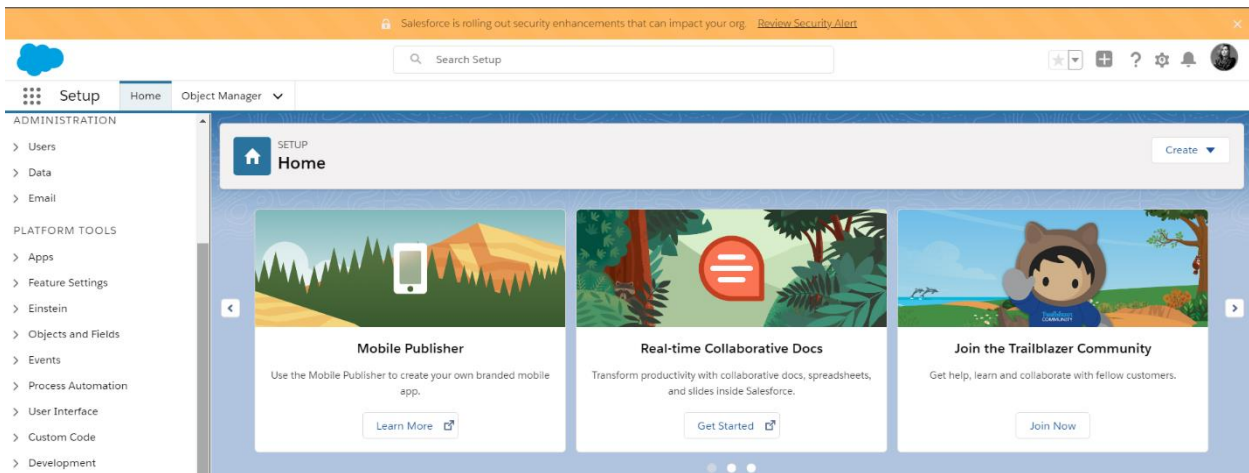
**2.6 Setup Navigation:** To configure and customize this interface, the Salesforce developer uses the setup area. It is often used to complement and incorporate other users and to develop many other apps. The same setup button is accessible by many paths. Both the traditional and contemporary lighting user interface is on the Salesforce Home page. The traditional and the lighting user interface provide several options that support the consumer. Both apps are available.

**2.6.1 Setup Location:** We can open the syntax by clicking the setup link in the right hand side. We can also use service setup or developer console to write code.



**Figure 6: Setup Location**

**2.6.2 Setup Home:** The figure shows the setup home from which we can access all type of things like custom objects, users etc.



**Figure 7: Setup Home**

**2.7 Salesforce Objects:** In relationship tables, the Salesforce Application holds info. Data for the platform framework itself and user generated details are found in the records in these tables. For example, data regarding the settings and configuration of an account have already been generated as a related table. Salesforce supports differing types of objects like normal objects, custom objects, external objects, platform events. Objects are containers for your info, however they additionally offer you special practicality. For example, when we create a custom object, the platform automatically builds things like the page layout for the user interface.

**Standard objects** are objects that are already present within Salesforce. Business objects like Account, Contact, and Lead are some of the standard objects.

**Standard objects:**

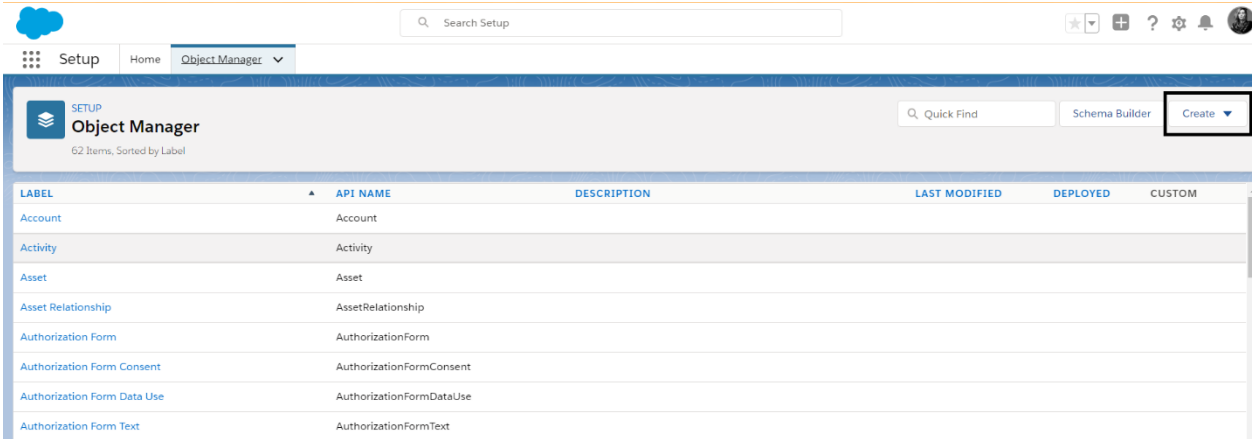
1. **Account:** Account is the object used by salesforce to store information about the clients, competitors, with which our organization is doing business.
2. **Case:** Case is an object used to store the information about the issues clients are having.
3. **Contact:** Contact is the object used to store the information about the POC in the client organization. Contact is associated with an account.
4. **User:** User is used to create a user of the salesforce system.

**Custom items** are objects that we create to store statistics it really is particular to our organization. For instance, if we need to construct a custom property object that stores records approximately the homes his corporation is promoting

**Create a Custom Object:**

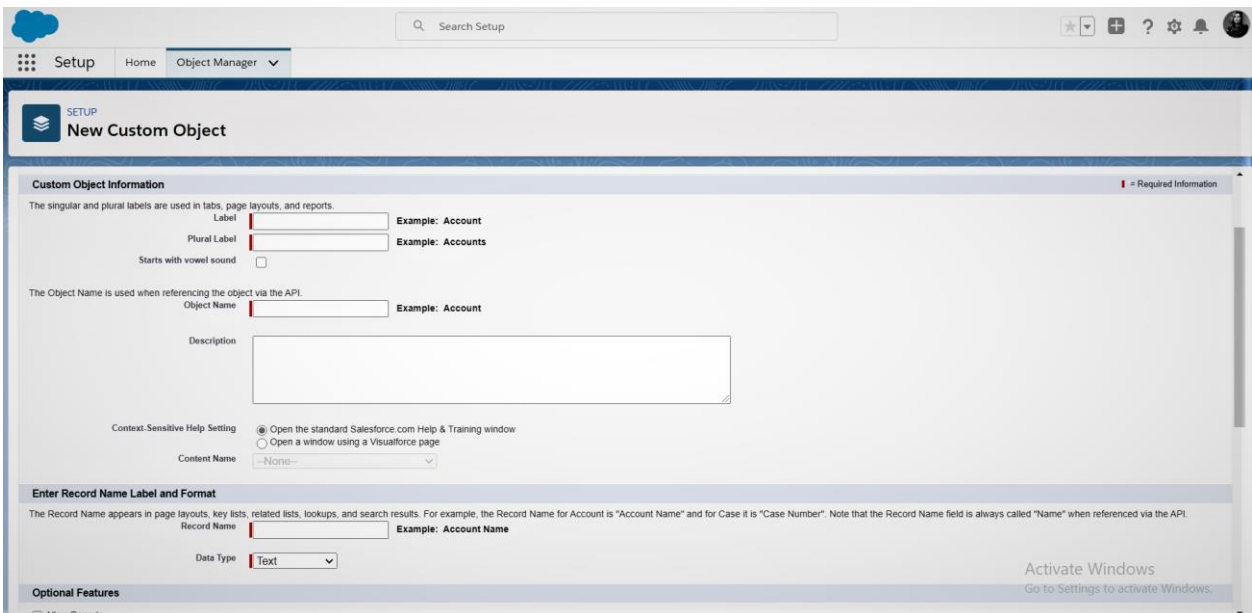
Press the create button to create.





**Figure 8: Create a Object**

There are fields which are required in order to create a custom object like label, record name, data type. So we need to fill in the required information in order to create the object.



**Figure 9: New Custom Object**

**2.8 Object Relationships:** Object relationships are a special field type that connects two objects together.

**The Wide World of Object Relationships:**

- 1. Lookup Relationships:** A lookup relationship primarily links two objects along in order that you'll be able to "look up" one object from the connected things on another object. Lookup relationships will be matched or one-to-many. The Account to Contact relationship is one-to-many relationship as an account can have many contacts.

**Self-Relationships:** We can create a relationship from an object to itself, but it should be a lookup dating, and a single file can't be linked to itself. But, a record can't directly relate to itself. We can't create a many-to-many Self-Relationships, this is, the 2 grasp-element relationships on the junction item can't have the equal grasp object.

- 2. Master-Detail Relationships:** While lookup relationships are fairly casual, master-detail relationships are a bit tighter. In this type of relationship, one object is the master and another is the detail. The master object controls certain behaviors of the detail object, like who can view the detail's data.

For example, let's say the owner of a property wanted to take their home off the market. We wouldn't want to keep any offers made on that property. With a master-detail relationship between Property and Offer, you can delete the property and all its associated offers from your system.



**Figure 10: Example of Master Detail Relationship**

- 3. Hierarchical Relationships:** These are a special kind of Lookup relationship. Hierarchical Relationship are on the User object. You'll use them for things like making management chains between users.

When you begin adding relationships between objects, keep in mind that you're increasing the quality of your information model. That's not a foul factor, however be further cautious once you do things like amendment and delete objects, records, or fields.

# CHAPTER – 3

## SYSTEM DEVELOPMENT

### 3.1 Analysis/Development/Algorithm/ Design

- **Objective:** To build a suggestion management app that allows employees to submit suggestions and track their status.
- **Analysis:** We are going to create the app definition and a facts model for the utility. Our utility calls for simplest one custom object. Then we are able to adjust the person interface on the browser and on the salesforce cell app the use of web page layouts, compact layouts, and global moves. Automate calculations, facts great, and database updates to enhance the person enjoy using formulation, validation guidelines, and a system builder. We will create reports and dashboards to track the status of suggestions and analyze how well the company manages suggestions.
- **Design:** Our solution will be based on creating a Suggestions custom object. Instead of creating a Suggestions custom object, we can use Cases, a Salesforce Service Cloud standard object. But we want to explore building a custom app without using Service Cloud.
- **Solution:**
  - **Step 1: Create Suggestion custom object:**
    - From setup, open object manager and create a new custom object.

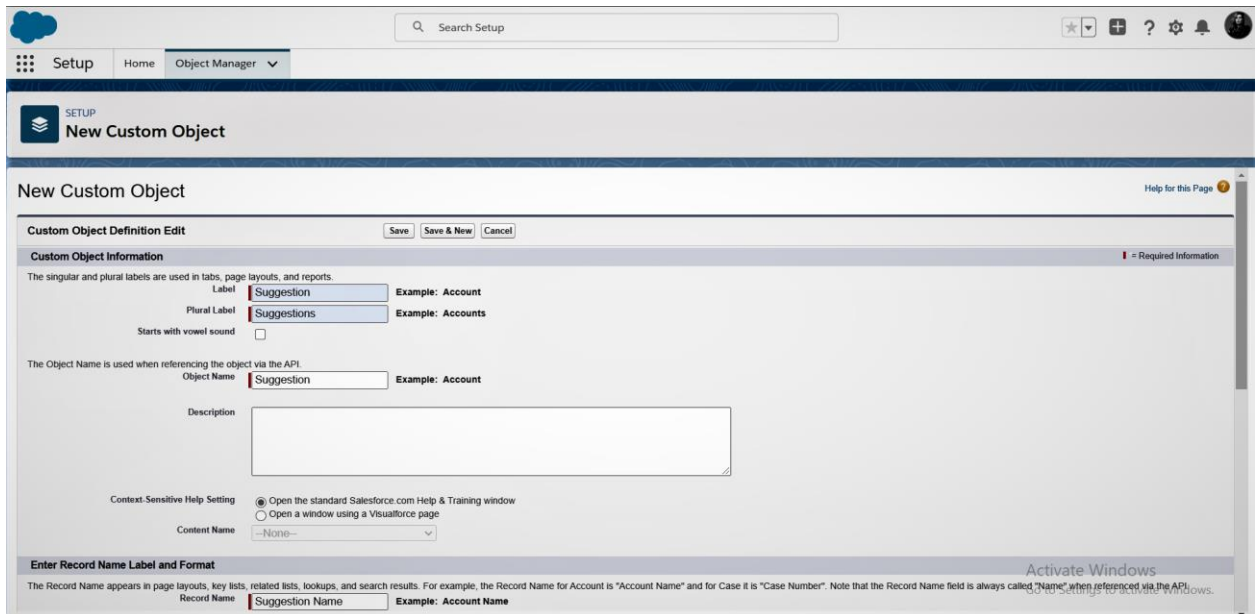
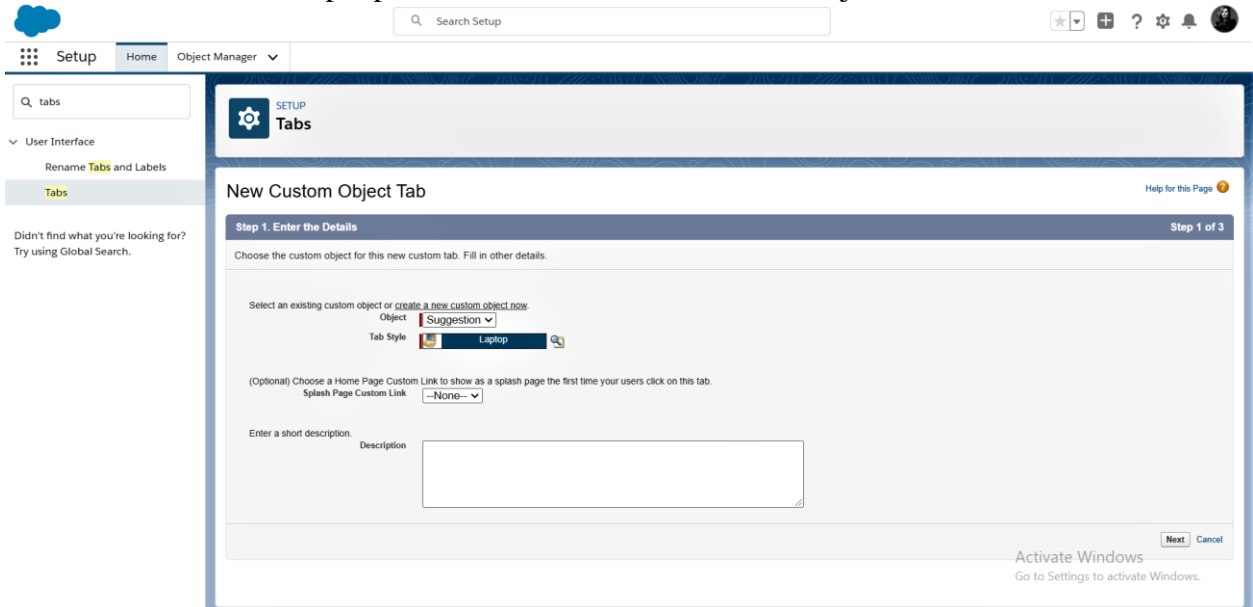


Figure 11: Suggestion custom object

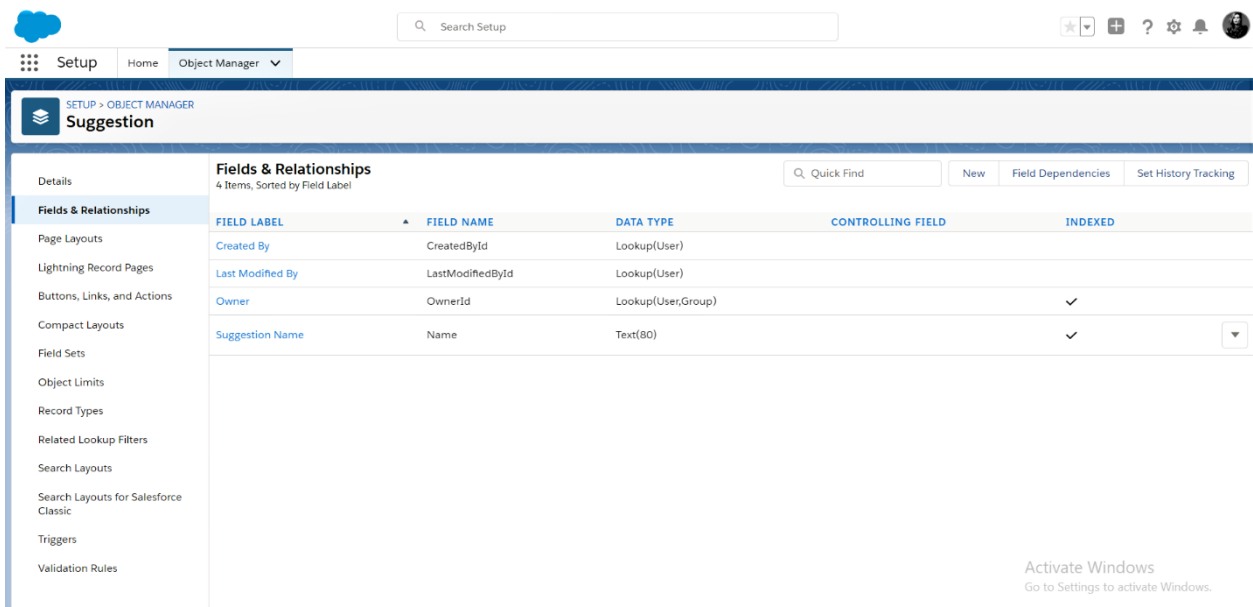
#### Step 2: Create new custom object tab.

- From setup, open tabs and create a new custom object tab.



**Figure12: New custom object tab**

**Step 3: Add Custom Fields:** By default, custom object has some standard fields on it. We need to add more fields to store relevant information about each suggestion. Fields can store many types of data.



**Figure 13: Custom Fields**

1. **Add a Description Field:** This field is used by employees when they explain their suggestion.

The screenshot shows the Salesforce Setup interface for configuring a new field on the 'Suggestion' object. The page is titled 'Step 2. Enter the details' and is part of a 4-step process. The left sidebar shows the 'Fields & Relationships' section. The main form contains the following fields and options:

- Field Label:** Suggestion Description
- Length:** 32,768 (Max 131,072)
- # Visible Lines:** 3
- Field Name:** Suggestion\_Description
- Description:** (Empty text area)
- Help Text:** Please enter as much detail around this suggestion so we clearly understand your idea.
- Default Value:** Show Formula Editor

At the bottom right, there is an 'Activate Windows' watermark and navigation buttons: Previous, Next, and Cancel.

Figure 14: Add a Description Field

2. **Add a Category Field:** This field helps us categorize each suggestion. It also makes it easier for us to report on what types of suggestions we get the most.

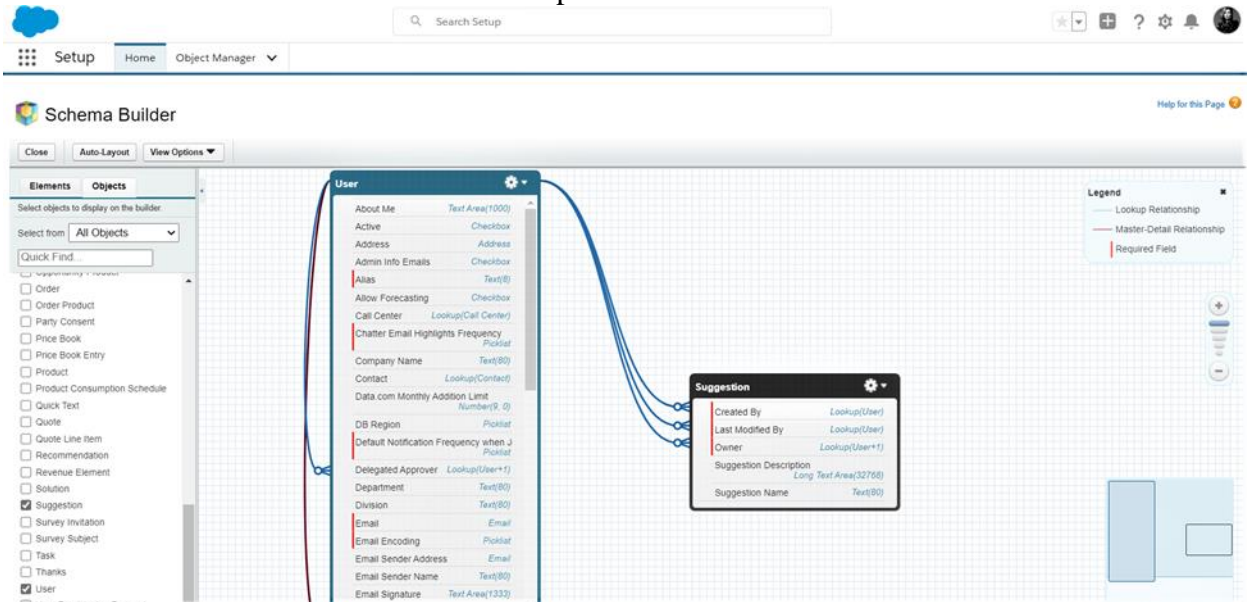
The screenshot shows the Salesforce Setup interface for configuring a new category field on the 'Suggestion' object. The page is titled 'Step 2. Enter the details' and is part of a 4-step process. The left sidebar shows the 'Fields & Relationships' section. The main form contains the following fields and options:

- Field Label:** Suggestion Category
- Values:**  Enter values, with each value separated by a new line. The text area contains: Customer Service, Employee Services, Facilities/IT, Kitchen Snacks, Other.
- Field Name:** Suggestion\_Category
- Description:** (Empty text area)
- Help Text:** (Empty text area)
- Required:**  Always require a value in this field in order to save a record.
- Default Value:** Show Formula Editor

At the bottom right, there is an 'Activate Windows' watermark and navigation buttons: Previous, Next, and Cancel.

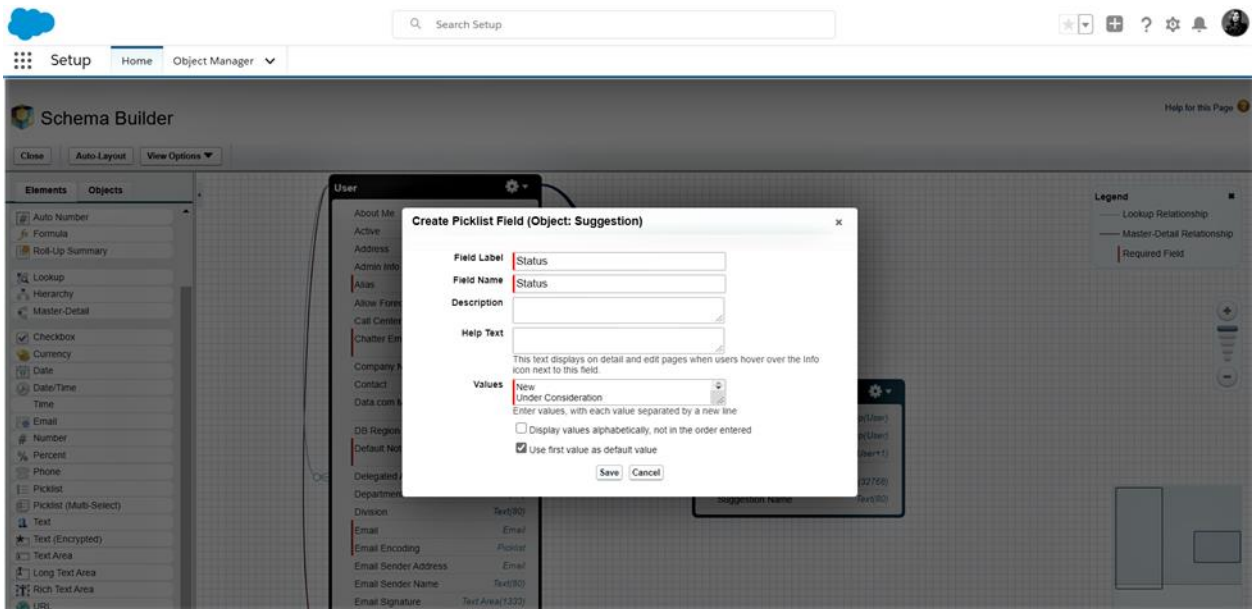
Figure 15: Add a Category Field

- 3. Viewing Objects in Schema Builder:** Schema Builder provides an environment to add new objects, custom fields, and relationships to your Salesforce database. It also eliminates the need to click from page to page to add a new custom field to an object or to find the details of a relationship.



**Figure 16: Viewing Objects in Schema Builder**

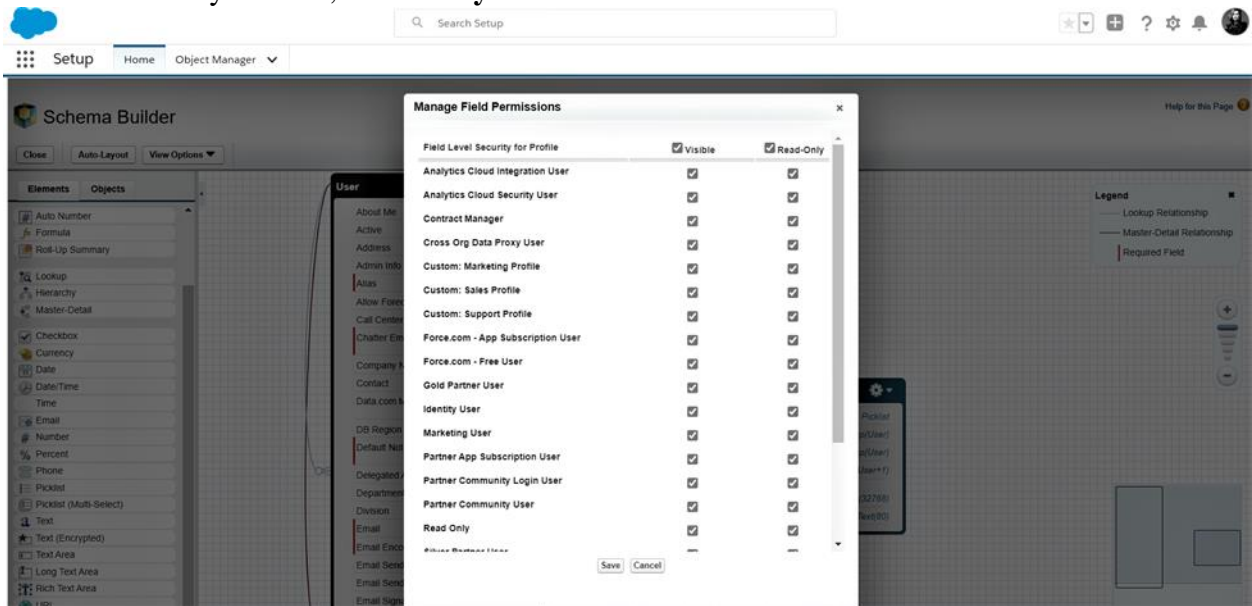
- 4. Add a Status Field:** This field helps track the status of the suggestion. It is also a way for the suggestor to know what is going on with their suggestion. This field will have unique security protocols in that only admins can change the status.



**Figure 17: Add a Status Field**

We can now update Status field security. While still in the Schema Builder, right-click the **Status** field that we just added to the Suggestion object. Click **Manage Field Permissions**.

Select **Read-Only** checkbox at the top of the column to make this field read only for all users. In the Read-Only column, deselect **System Administrator** then click **Save**.



**Figure 18: Manage Field Permissions.**

- 5. Add a Date Field:** This field helps track when the Suggestion was Implemented. It's also important because we reference this field in the formula field we create in a later



exercise. This field will have unique security protocols in that only admins can change the date.

Similarly change the field level security for the date field as status field.

**3.2 Modify the User Experience:** We can modify the user experience to make sure that employees have a great experience logging their Suggestions by arranging the fields in a usable manner, bringing the most important fields to their attention, and making common tasks easy to do. Changing the UI for the browser and mobile pages involves modifying the Suggestion object's page layout. We also modify the Suggestion object's compact layout, which changes only the mobile app UI. Finally, we add a Global Action to make it easy for employees to add suggestions wherever they are in the Salesforce app in both the browser and the mobile app.

**Modify the Page Layout:** Go to Suggestion object under object manager and open the page layout of Suggestion object. Now we can edit the page layout. We can scroll the status and implemented date to the information section in suggestion.

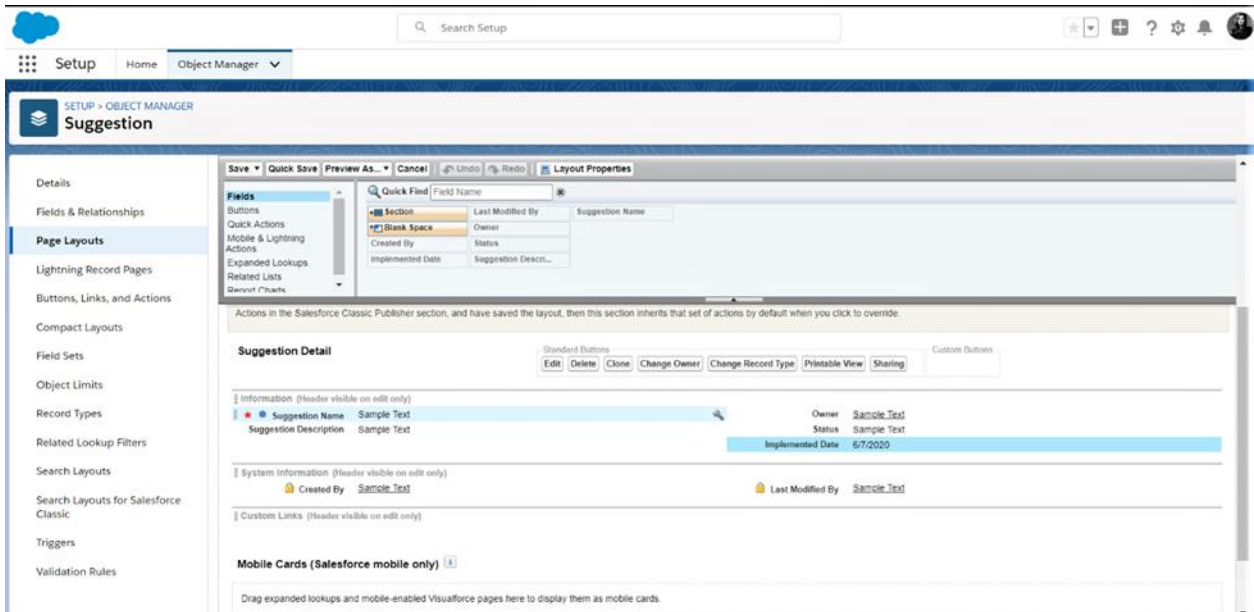
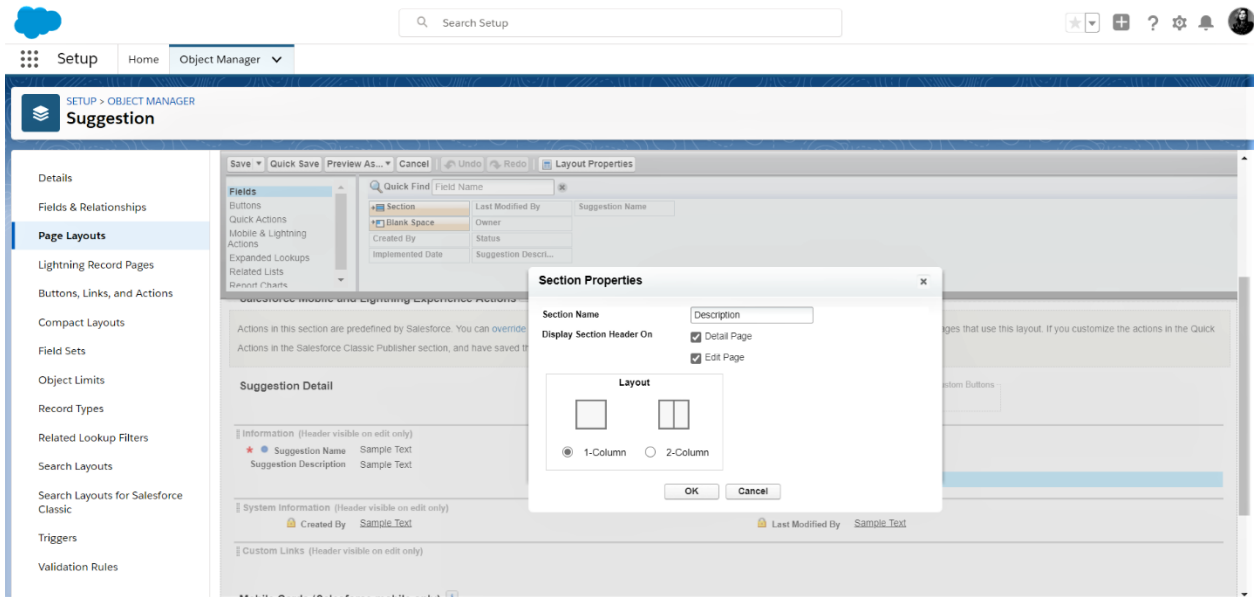


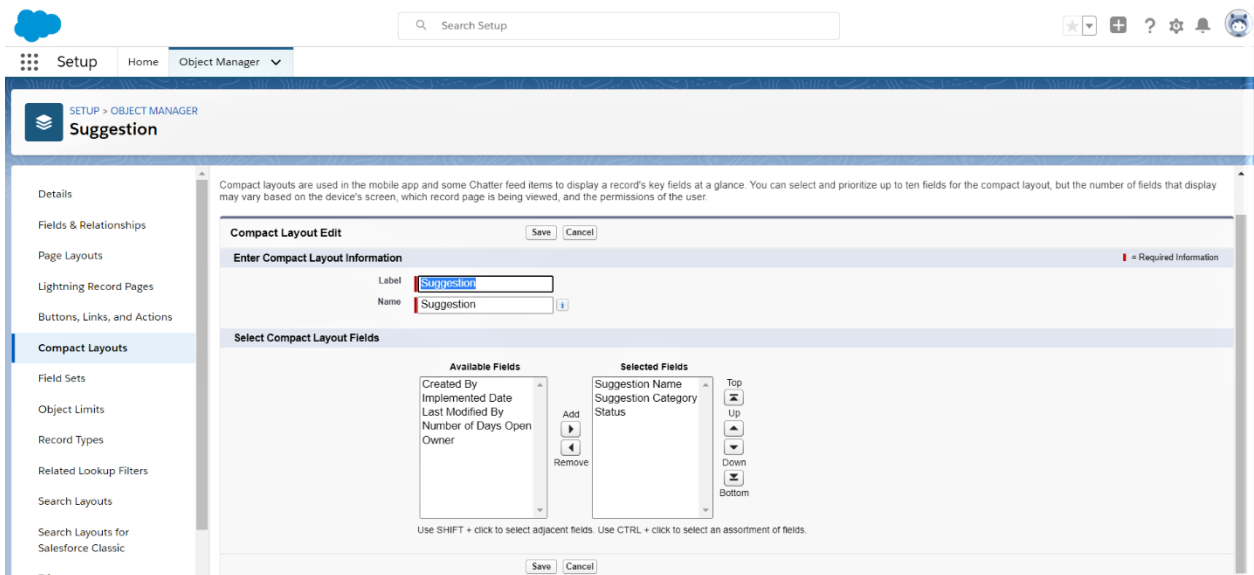
Figure 19: Modify the Page Layout

Add a Description section



**Figure 20: A new Description section**

**Add a Compact Layout:** Mobile app users can now see the Status and Implemented Date fields, but with a small screen size, it's useful to display important fields at the top of the screen. For custom objects, the Name field displays at the top by default. To add the other fields, you modify the compact layout.



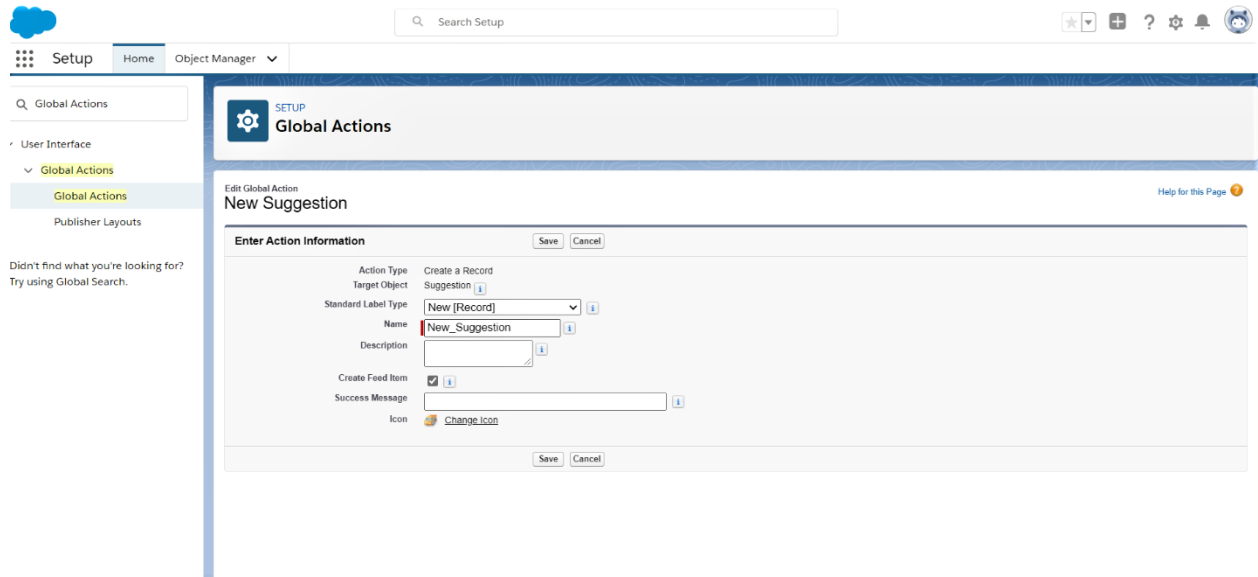
**Figure 21: Add a Compact Layout**

**3.3 Add a Global Action:** Things are looking pretty good, but from talking to employees about how they work, we've found that they think of suggestions while they're doing other

tasks and don't want to leave what they are doing to submit a suggestion. For example, if an employee is entering a contact name and thinks of a customer service suggestion, the employee has to do the following to enter a suggestion.

- Navigate to the Suggestion object
- Click New and Fill in the suggestion information and then save.
- Navigate back to the contact record and Try to remember what they were doing!

We want to make it easier for employees by reducing the number of clicks and keeping them in context. You can do this with a Global Action.



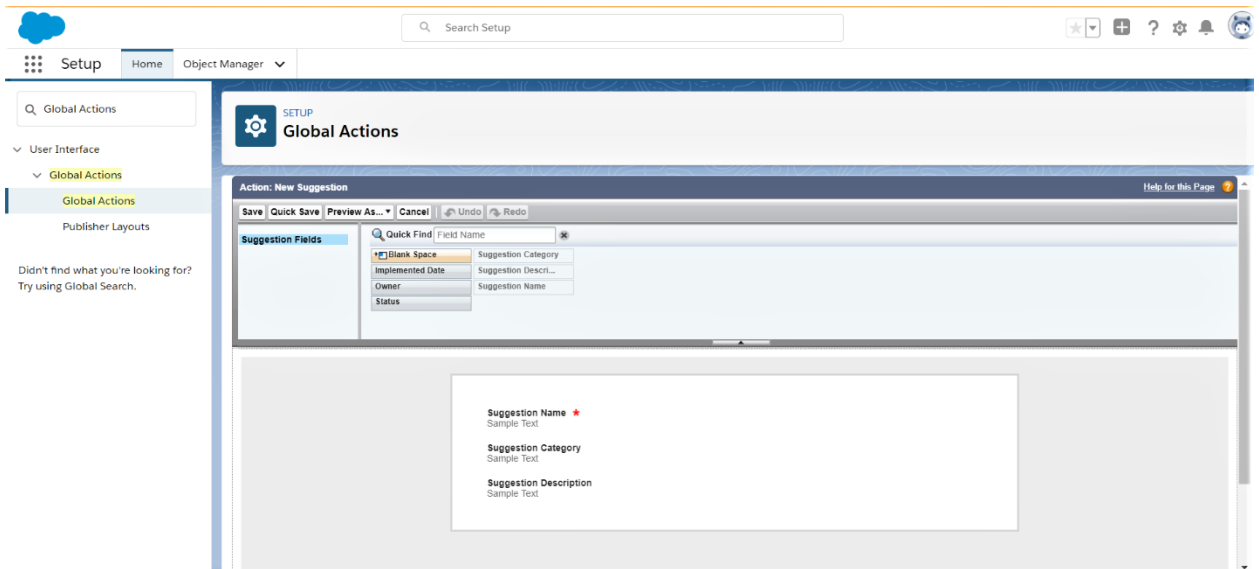
The screenshot shows the Salesforce Setup interface for configuring a Global Action. The page title is 'Global Actions' and the sub-page is 'New Suggestion'. The 'Enter Action Information' section contains the following fields:

- Action Type: Create a Record
- Target Object: Suggestion
- Standard Label Type: New [Record]
- Name: New\_Suggestion
- Description: (empty text box)
- Create Feed Item:
- Success Message: (empty text box)
- Icon: Change Icon

Buttons for 'Save' and 'Cancel' are present at the top and bottom of the form.

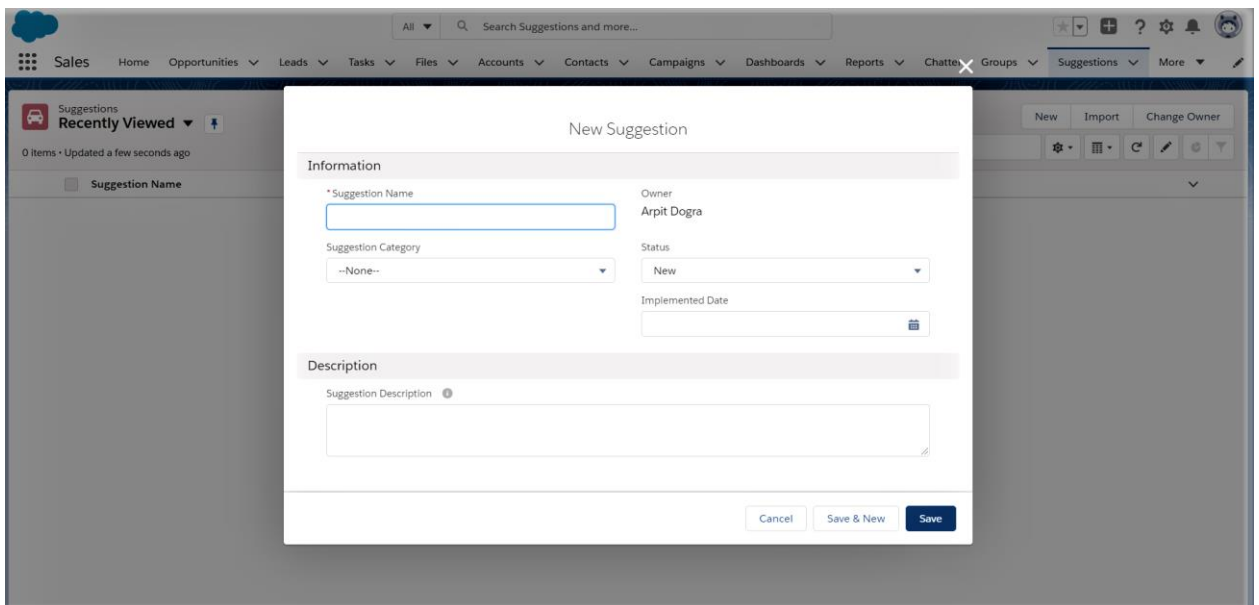
**Figure 22: Add a Global Action**

Drag **Suggestion Category** and **Suggestion Description** onto the New Suggestion layout so that employees can enter those values when creating a suggestion.



**Figure 28: Rearrange Global Actions**

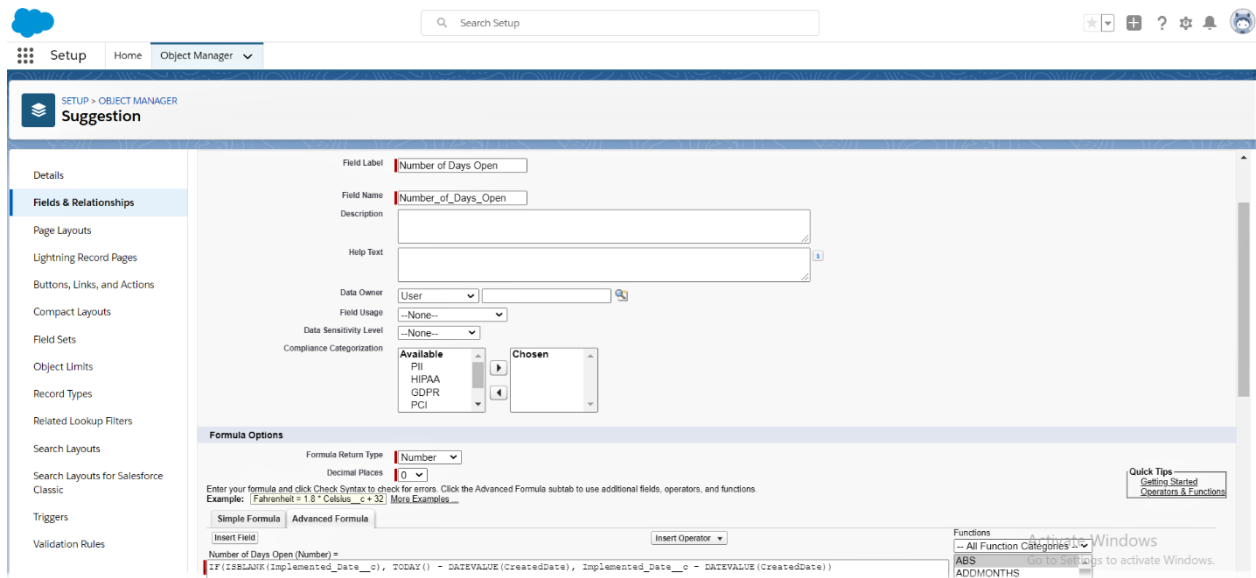
We created a new action, but users can't see it yet. So we have to publish the layout from the publisher layouts



**Figure 29: User Interface of app**

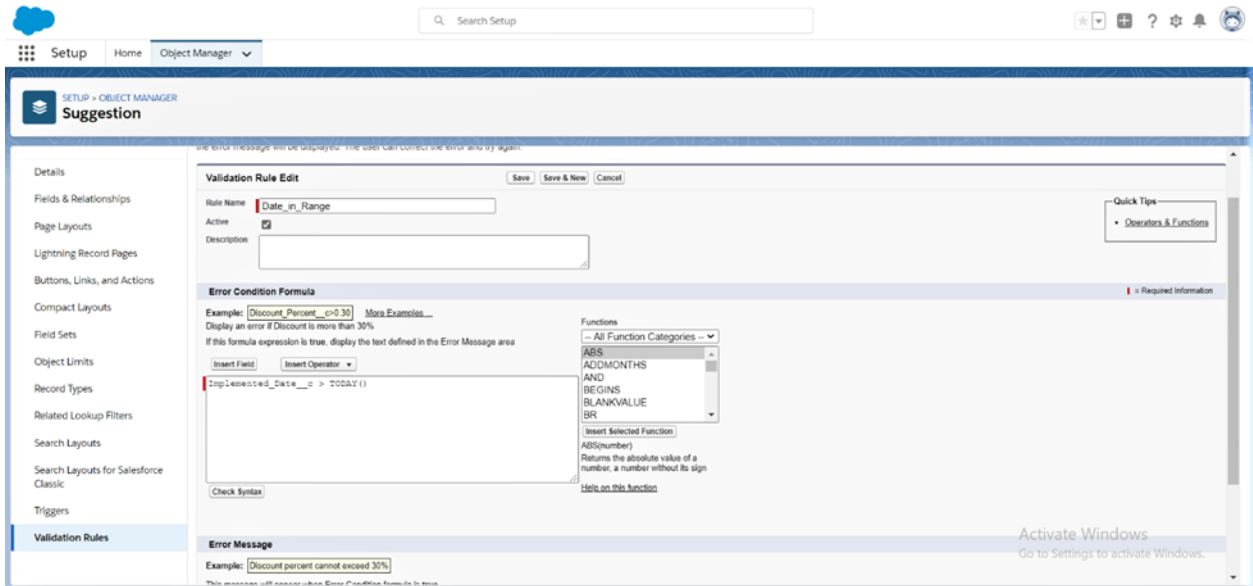
**Add Business Logic:** So far, our app lets employees securely enter and view data about suggestions on a browser or a mobile device but let's make the platform work a little harder for us so that our users don't have to.

**Add a Formula Field:** A formula field gets its value from other expressions, or values, saving us a lot of time. Add a formula field to calculate the number of days from suggestion creation to implementation



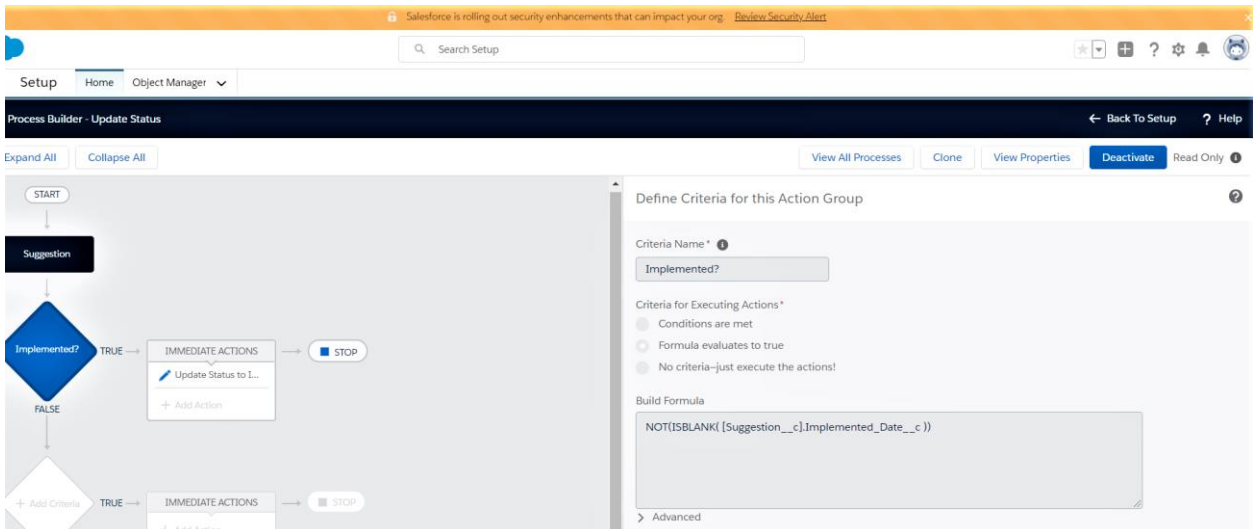
**Figure 210: Add a Formula Field**

**Add a Validation Rule:** Formulas are also used to ensure data quality and enforce business rules. Employees cannot predict the future, so let's create a validation rule to make sure that they don't enter implementation dates that haven't happened yet. With validation rules, we define the condition for "bad" data. When the system evaluates the rule, it blocks the user from saving the data if the condition is true.



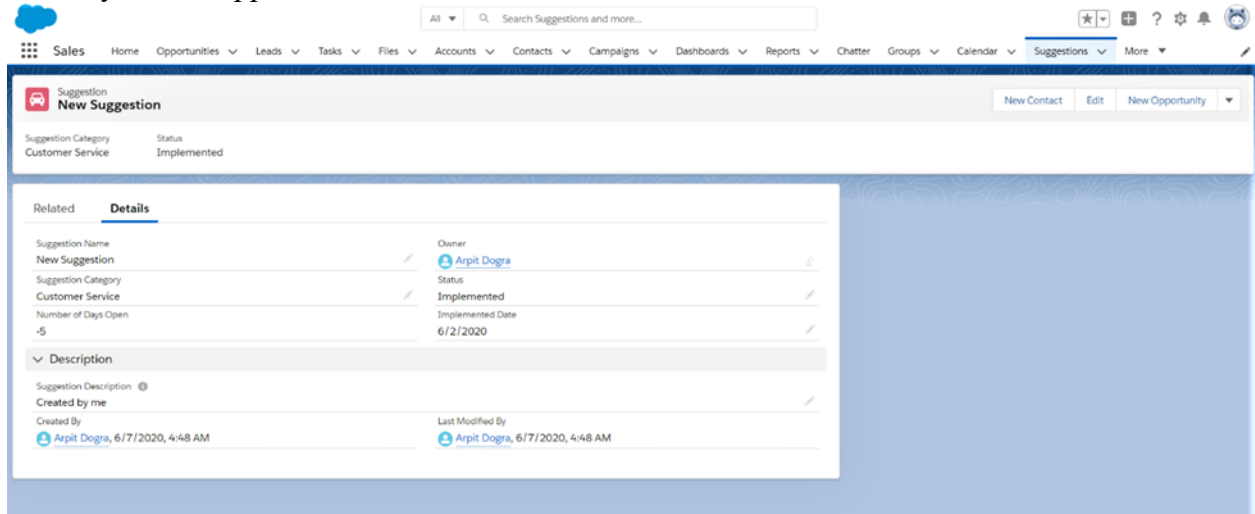
**Figure 211: Add a Validation Rule**

**Add a Field Update Using Process Builder:** Formulas are also useful when automating business processes. We can make it easy on the person who has to act on all the suggestions by saving them some time. When a user adds an implemented date, let's update the status automatically to Implemented.



**Figure 212: Add a Field Update**

Let's try out the app now.



**Figure 213: Suggestion Details**

**3.4 Reports:** The Suggestion Box app we tend to created includes a Reports, wherever you'll be able to produce, edit, and run reports. These options build Associate in Nursing app a lot of helpful by providing the business with valuable insights.

In its simplest type, a report can be a list of similar looking records (like opportunities or accounts) that meet the standards we tend to outline. However, reports are way more than easy lists. to induce the info, you would like, we will filter, group, and do mathematics on records. we will even show them diagrammatically in a very chart.

Reports are stored in folders. Report folders confirm however reports are accessed, and who will access them to look at, edit, or manage. Folders are often public, hidden, or shared. we tend to management who has access to the contents of the folder supported roles, permissions, public teams, territories, and license varieties. we will build a folder on the market to your entire organization, or build it non-public in order that solely the owner has access.

**3.4.1 Create a Tabular Report:** We are able to create a easy tabular record to show the quantity of hints acquired and the fame of each one. A tabular report affords statistics in easy rows and columns, similar to a spreadsheet. We are able to use it to show column summaries, like sum, common, most, and minimum.

The screenshot shows the Salesforce Suggestion Box interface. At the top, there is a search bar and navigation tabs for Suggestion Box, Suggestions, Reports, and Dashboards. Below this, the report title is "Status of Open Suggestions" with a "SUGGESTIONS" sub-tab. A toolbar contains buttons for "Got Feedback?", "Add Chart", "Save & Run", "Save", "Close", and "Run".

The left sidebar is titled "Fields" and contains sections for "Groups" and "Columns". The "Columns" section is highlighted with a red box and contains an "Add column..." search box, also highlighted with a red box. Below the search box, three columns are listed: "Suggestion: Suggestion Name", "Status", and "# Number of Days Open".

The main table displays the following data:

Suggestion: Suggestion Name	Status	Number of Days Open
1 Soy Milk	In Progress	11
2 Locker Rooms	Under Consideration	4
3 Almond Milk	New	2
4		17

**Figure 214: Tabular Report**

The screenshot shows a Salesforce report titled "Status of Open Suggestions". At the top, there is a "REPORT" icon and a "Switch to Enhanced Run Page (Beta)" button. Below this, summary statistics are displayed: "Total Records: 3" and "Total Number of Days Open: 17".

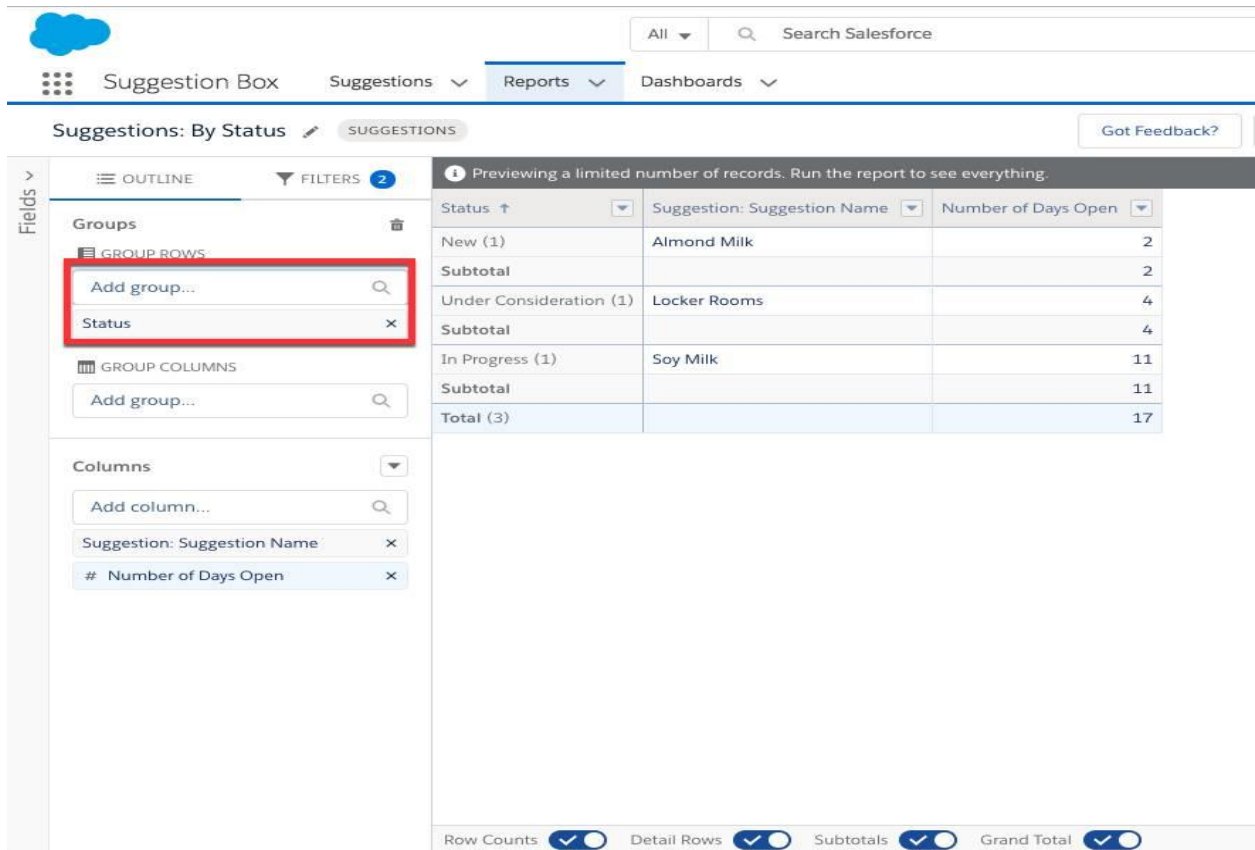
The main table displays the following data:

SUGGESTION: SUGGESTION NAME	STATUS	NUMBER OF DAYS OPEN
Soy Milk	In Progress	11
Locker Rooms	Under Consideration	4
Almond Milk	New	2
Grand Total (3 records)		17

**Figure 15: Report of open suggestions**

**3.4.2 Create a Summary Report and a Report Chart:** We can give customers a visual way to apprehend the facts on your file. Tabular reports don't consist of charts, so we can reproduction the report and make a summary report. Then, we are able to upload a chart.





**Figure 16: Summary Report**

**3.5 Dashboards:** The suggestion container app we created consists of a dashboards tab, in which you may create, edit, and run dashboards. Those features make an app more useful by means of imparting the enterprise with treasured insights.

A dashboard is a visible show of key metrics and traits for facts in your org. The connection among a dashboard component and file is 1:1; for every dashboard factor, there may be a unmarried supply report. However, you may use the equal file in multiple dashboard components on a single dashboard (for instance, use the identical file in both a bar chart and pie chart). You could show a couple of dashboard components on a unmarried dashboard web page, developing a powerful visible show and a way to eat multiple reports that often have a common theme, like income overall performance or customer service.

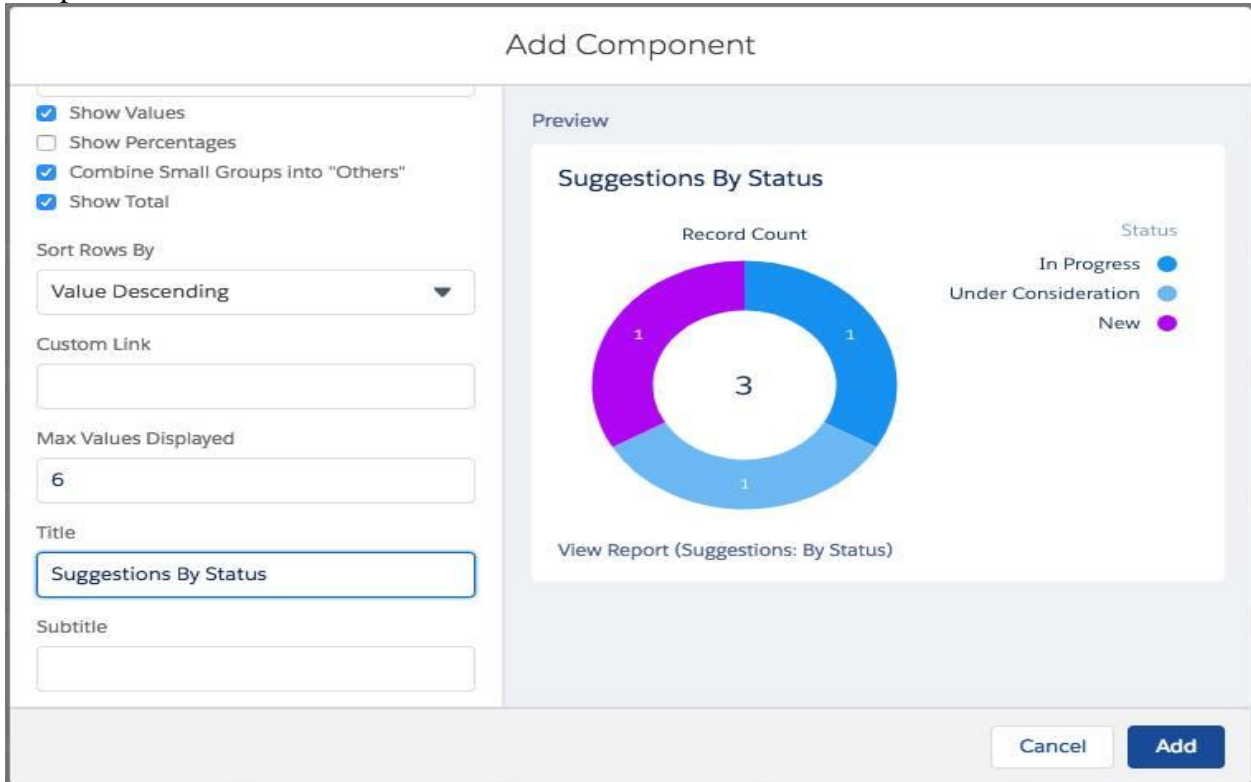
Like reports, dashboards are stored in folders, which control who has access. If you have access to a folder, you can view its dashboards. However, to view the dashboard components, you need access to the underlying reports as well.

Each dashboard has a walking user, whose safety settings decide which statistics to display in a dashboard. If the strolling consumer is a selected consumer, all dashboard viewers see information primarily based on the safety settings of that user—regardless of their very own

personal Protection settings. For this reason, you'll want to select the jogging user accurately, in order no longer to open up too much visibility.

Dynamic dashboards are dashboards that the running person is consistently the logged-in shopper. This way, everybody sees the dashboard in step along with his or her personal get right of entry to degree.

**3.5.1 Create a Dashboard:** Dashboards in salesforce are like a dashboard on your vehicle, displaying you crucial statistics at a glance. Dashboards are powered through report components.



**Figure 17: Dashboard**

## Chapter - 4

# Performance Analysis

A software performance process determines the behavior of an application in terms of responsiveness, stability, and scalability. It also helps measure the performance of an application under load, stress and other quality factors like configuration changes, sudden spikes in the load, and more. Salesforce is a proven platform for peak performance when dealing with big data, as well as the load with concurrent number of users on the application built. While there are many factors worth considering, our goal in this walkthrough is to evaluate runtime application response time and identify improvement in the areas of integration points and around CRUD operations using custom UI.

**4.1 Page Performance in Lightning Experience:** In Lightning Experience, pages are loaded on user's device progressively, component by component. Because components can contain subcomponents, which sometimes load after the parent component, it's not always simple to measure when a page has finished loading. We use a metric called "Experienced Page Time," or EPT, to express the page load time that end users experience. Salesforce defines EPT as the time when a page starts loading to the time when no activity has occurred for at least two frames (about 33 milliseconds). We need two extra frames to catch asynchronous activities, such as data transfer or user interaction. You'll learn more about EPTs in the next unit of this module.

### 4.1.1 Factors That Impact Lightning Experience Performance:

- Because the Lightning Experience pages load progressively on the client, it's sensitive to the performance of your user's browser and device.
- Lightning Experience requires many web exchanges to render a page, as data moves between server and client, so it's sensitive to network latency.
- More complex pages with many custom fields or components are slower to render.

**4.2 How Performance Is Measured:** Experienced Page Time (EPT) is how Salesforce measures the response time it takes to download and display the entire content of a webpage in a browser window. In other words, measuring EPT is really about ensuring your users get the best user experience possible.

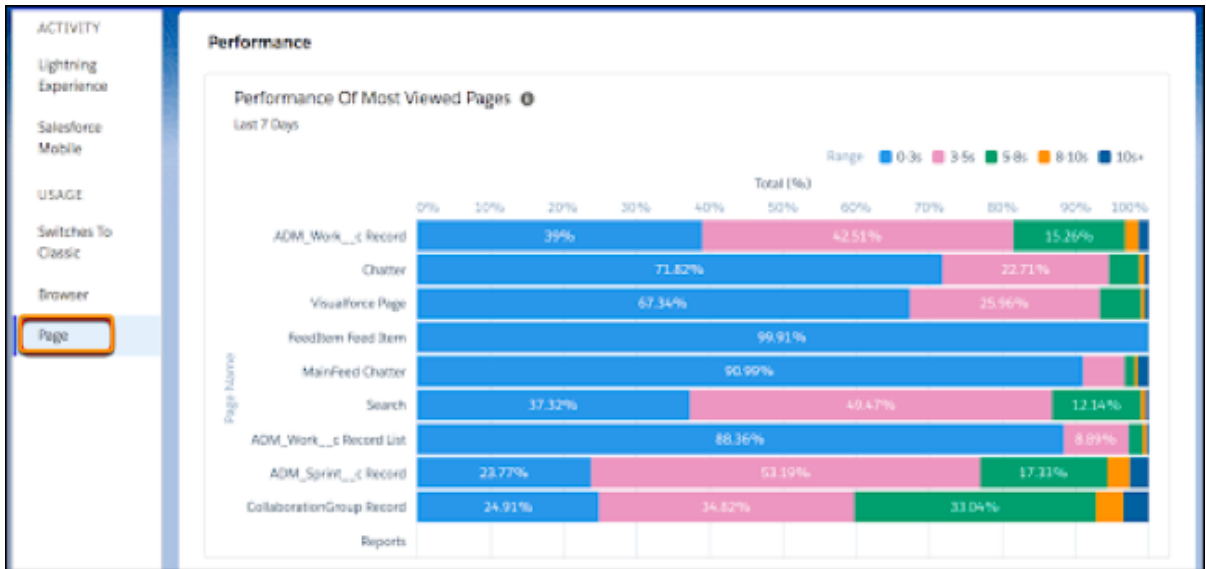
### This is why Salesforce offers four ways to measure EPT.

- Lightning Experience: Add an EPT counter to Lightning Experience.
- Lightning Usage App: View aggregated page and browser performance.
- Custom Reports: Build custom reports using Lightning Usage App objects.
- Event Monitoring: Use event types to monitor performance.

**4.2.1 Use the Lightning Usage App to Measure EPT:** If you're an admin, you probably know that the Lightning Usage App is a great way to track adoption and usage of Lightning Experience. But did you know that you can also use it to get an overall view of how your pages are performing?

To open the Lightning Usage App, click the App Launcher and search for Lightning Usage. Once it's open, you can use the Activity and Usage sections to dig into your data.

Let's say you want to see how your org's most viewed pages are performing. To do this, simply click **Page** in the Activity section and review the graph. In the example below, you can see that Feed Items and Chatter pages load quickly, while work records load more slowly.



**Figure 318: Page Performance**

**4.2.2 Monitor Performance with Event Monitoring:** The last way to measure EPT is for those who have access to Event Monitoring. Event Monitoring is part of Salesforce Shield, and provides access to performance, security, and usage data for all the apps that you are examining.

**4.3 Optimize Lightning Experience Performance:** When we talk about network concerns, we are talking about the network conditions between the end user's device and the Salesforce instance. These conditions can be affected by something as simple as geographical distance, to factors as complex as degraded Transmission Control Protocol (TCP) performance due to latency issues between the client device and remotely-located web servers, or whether your users are using VPNs.

For example: Let's say we have a user from Asia accessing an instance that's hosted in Europe. When the user opens a Lightning Experience session, information has to travel back and forth between Asia and Europe a minimum of three times just to establish a secure session. Any subsequent action, like downloading a record or file, also needs to travel across continents. All this inter-continental travel can slow down Experienced Page Time and negatively affects user experience.

#### 4.3.1 Best Practices for Mitigating Network Issues:

- Measure latency, as well as download and upload speeds, using the Salesforce Speed test. For the fastest and most stable experience, a latency of 150ms or lower is recommended as well as a download speed of 3Mbps or higher.

- Use Akamai’s Content Delivery Network (CDN) to improve the first load time of static content by storing cached versions of resources in multiple geographic locations.

**4.4 Device Issues That Affect Page Performance:** We need to be able to help your users no matter what device they use to access Lightning Experience. Some of our users may be using a desktop computer; others may be using a tablet, mobile phone, or smartwatch.

The Lightning framework relies on the device’s available resources, such as processing power, memory, and even hard disk performance, to execute JavaScript and optimize rendering. As you might expect, a high-end desktop with all the bells and whistles will run Lightning Experience faster than a two-year-old phone that has seen better days.

#### **4.4.1 Best Practices for Mitigating Device Issues:**

- Find your devices’ Octane scores. An Octane score is a benchmark that measures a JavaScript engine's performance by running a series of automated tests. The higher the Octane score, the better the Lightning Experience performance will be. We can find the Octane score for a specific device by appending “speedtest.jsp” to your org’s domain.
- Make sure the device has enough RAM. For a stable experience, we recommend at least 8GB of RAM, with 3GB available for Salesforce browser tabs.

#### **4.5 Browser Issues That Affect Page Performance:**

Lightning Experience supports most browsers, but it runs faster in some browsers than others. For instance, Lightning Experience usually runs faster in Google Chrome than in Internet Explorer.

If you’re experiencing performance issues related to your browser, there are a number of requirements and recommendations that are shared across all browsers. These include making sure JavaScript, Cookies, and TLS are enabled. You should also check to see if you have the appropriate browser settings to display inline frames (iframes). Screen resolution can also impact performance; the minimum screen resolution for Salesforce features to run correctly is 1024 X 768.

#### **4.5.1 Best Practices for Mitigating Browser Issues:**

- Assess your browser processing capability using Octane.
- Upgrade to devices with more processing power and memory.
- Disable unneeded browser plug-ins and extensions.
- Make sure you are using the latest browser version and have installed any required patches.
- Restart your browser or device. Restarting browsers and client devices once a week can help.
- If you are an Internet Explorer user, look into using another browser.

**4.6 Salesforce Configuration Issues That Affect Page Performance:** Another factor that can impact EPT is how your Lightning pages are optimized and configured in Salesforce. As you might guess, a standard record page will load faster than a custom page with lots of fields, embedded Visualforce pages, or heavily customized components. Other configuration factors

could include using non-optimized Visualforce implementations or using Lightning Experience debug mode.

#### **4.6.1 Best Practices for Mitigating Salesforce Configuration Issues:**

- Optimize your Visualforce pages.
- Disable Lightning Experience debug mode.
- Reconfigure processing-intensive pages, such as pages with large number of fields, inefficient custom components, or complex page configurations.
- Use the Salesforce Lightning Inspector Chrome Extension to inspect component attributes and identify performance bottlenecks on a page.

## Chapter – 5

# CONCLUSION

**5.1 Conclusion:** I built a simple suggestions management app. I customized the user experience on the browser. Then, I added business logic with the formula language and process builder. This Suggestion app allows employees of a company to drop their suggestions based on their experience. Users can categorize their suggestions based on their suggestion type. Users can also show the status of the suggestion and give a description for their suggestion. The admin has the authority to either update, reject or reassign it to someone else based on the business needs.

**5.2 Future Scope:** Salesforce offers more than one version of their cloud platform like necessities, professional, business enterprise and unlimited – each of those salesforce variants geared closer to precise enterprise needs. Designed for small agencies to massive corporations, the crm is full of complete features that will help businesses to permit actual-time conversation, decorate purchaser stories, drive sales and make higher business selections. Now based on the dimensions of business enterprise we are able to improve our app garage capability, velocity and response time by choosing a exceptional salesforce version.

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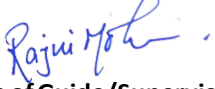
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