

Strategic ICT and eBusiness

Implementation

on

HOSPITAL MANAGEMENT SYSTEM

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School of Computing

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MSc Data Analytics – 2019 - 2020

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1. Background

1.1 Organisation background

A hospital is an institution based on health care where patients come for consultation and treatment for illness. This illness can be acute as well as chronic. People visit hospital for emergency treatment as well. A patient first visits a hospital where he is appointed to a doctor who is specialized for treating the respective ailment. At the appointment time, the patient visits the doctor for general consultation and for subsequent treatment. The doctor advises medicines and various tests in order to diagnose the disease. After consultation with doctor, the patient heads towards the pharmacy for buying medicines and to the pathology labs for performing the desired tests in the hospital.

A hospital provides following services:

- Consultation
- Diagnosis
- Treatment
- Vaccination
- Admitting a patient
- Emergency care
- Lab tests
- Surgery
- Medication

A hospital has following operational works:

- Transaction management
- Recording patient's information
- Generating invoice bills
- Maintaining logs
- Providing appointment
- Generating medical reports

All the above tasks are done manually either by a receptionist or by a member of the staff. While doing such operational works manually a lot of paper stuffs are required for a smooth flow. These papers must be handled carefully as it has a lot of critical data and information.

1.2 Marketplace participation

The organization is a part of healthcare industry. Healthcare industry is nothing but the collection of all the sectors which facilitates services ranging from treating patients to providing medicines along with rehabilitative and curative care. The healthcare industry is basically a synthesis of interdisciplinary teams. Healthcare industry is one of the fastest growing industry in the world and is one of the significant contributing industry towards the economic development of any country.

Healthcare industry basically consists of the following entities:

- Medical professionals such as doctors, nurses and pharmacist.
- Pharmaceutical manufacturers.
- Medical equipment manufacturers.
- Health insurance firms
- Public and private healthcare organizations such as World health organization.
- Medical researchers.
- Hospital and healthcare clinics.

Due to the technological advancements all around the globe, the health care industry has become a dynamic industry which is continuously changing with each year passing. Due to the advent of technology and digitization, healthcare industry has developed at an enormous pace. The diseases which seem to be incurable a few years ago are now possible to be cured within weeks.

When discussing about the future of healthcare, one thing always comes in mind is the data management within hospitals. Hospitals is the leading contributor towards the healthcare industry. In order to develop the healthcare industry, hospitals must be technology driven. So, new data management and technical aspects within the operational part of hospitals must be developed.

1.3 Scope

This project proposes a novel method to automate this process in order to implement a strategic management information system. This will help the hospital to automate its management system.

The following factors lies within the scope of the processes:

- Appointment bookings for patients
- Preparing case papers of the patients
- Information recording of patients
- Consultation of doctor
- Generating medical reports
- Administration operations management
- Information management
- Transaction management
- Inventory management
- Generating invoice bills
- Maintaining logs

The scope of the project is to design a system capable enough to automate the processes and tasks performed to run and manage a hospital. It will enhance the patient-doctor mappings in an efficient way. The end user will be a patient who will first register his/her details in the system. After successful registration, the system will validate the details and will enable the patient to access the timelines of every doctor in order to book an appointment. The patient will then be introduced to the doctor and then the necessary procedures will be performed and will be recorded in our system. After successful consultation and medical procedure, a billing invoice will be generated for the patient and the next visiting date will be booked if necessary. The patient will be then given a prescription of medicines advised by the doctor.

This architecture is developed on salesforce platform as a result of which the budget of an organization is reduced to a great extent. The proposed solution is cost effective and customer focused.

2. Infrastructure

2.1 Rationale for selecting the infrastructure

The proposed solution is based on Salesforce infrastructure which is a niche infrastructure for customer relationship management. The motivation behind opting for salesforce platform is to provide an enhanced enterprise resource planning based on an optimized customer relationship management. Following are the rationale for selecting the infrastructure:

- IMPROVISED INFORMATIONAL ORGANIZATION

Salesforce CRM allows you to store a vast amount of data of the customers. Due to the cloud infrastructure in the salesforce CRM access to the data is even more convenient. As a result of which less time will be wasted for clients and employees.

- CUSTOMER RELATIONSHIP MANAGEMENT FOR ENHANCED COMMUNICATION

Salesforce CRM provides platform as a service henceforth it becomes very easy to communicate detailed customer information by providing same high level of service. As a result, multiple clients can access the same customer data. Since CRM is a cloud infrastructure, it can be accessed from any device having an internet connection.

- BETTER CUSTOMER SERVICE

With CRM, the moment a customer contacts the organization, the representatives will quickly assist them with finding a solution. They do this by retrieving all available activity concerning preferences and history in order to assist them in finding a solution. With CRM, customer service becomes a cake walk.

- AUTOMATION OF DAILY TASK

For a process to run smoothly, a lot of smaller tasks must be performed simultaneously. With the advent of automation these tasks are taken care of. Salesforce CRM provides a platform to perform these smaller tasks. As a result, the employees will take care of customer interaction while the system will take care of these details.

2.2 Associated benefits of the infrastructure

- **COST EFFECTIVENESS**

Salesforce CRM provides platform as a service which results in reduction of costs to a greater extend. It also takes care of scalability and storage. All the hardware cost is now cut off. The client needs to pay only for the service. Salesforce CRM infrastructure for Hospital management system reduces a lot of manual work required for documentation. Hence the related operational costs are reduced.

- **ENHANCED EFFICIENCY**

Using the infrastructure as a service, Salesforce CRM will not only reduce the human intervention but will also reduce a lot of errors and increase the operational speed. As the operational speed increases, the efficiency of the system gets enhanced.

- **DATA SECURITY**

Salesforce CRM stores all the data on cloud infrastructure, keeping it safe and secured. The Hospital management system contains data of patients, doctors and medicines. So, a patient will be able to access only patient's data and cannot access doctor's data. Similarly, a doctor can access only doctor's data and cannot access patient's data. This mutual exclusiveness enhances data security.

- **FLEXIBILITY**

Due to the constant change in business demands, the infrastructure must be capable enough to adapt to the dynamic conditions. This is where Salesforce CRM stands out from the crowd. In Salesforce CRM, it is very easy to enhance the scalability by increasing the cloud storage capacity as per the business demand. As far as flexibility in hospital management system is concerned, the cloud infrastructure will provide a platform to the system in order to dynamically scale up the storage capacity based on the appointments booked by the patients.

- **DATA RECOVERY**

Salesforce CRM stores all the data on cloud infrastructure. Sometimes due to disaster there is always a risk of loss of data. In order to tackle such situations, nowadays businesses should be investing in data backup and recovery. Cloud-based Salesforce CRM provides a backup and recovery feature. For the hospital management system, the data will be stored in the cloud infrastructure and when a disaster happens the data of the patients and doctors can be retrieved from the cloud infrastructure.

2.3 Associated risks of the infrastructure

- **SERVICE OUTAGES**

Service outages is one of the biggest risk factor of cloud infrastructure. Since Salesforce CRM system is a cloud infrastructure and these require internet connection, so downtime can occur when the internet connection disrupts. Big businesses cannot afford the impacts of downtime as they involve multi billion dollars transactions.

- **VULNERABILITY**

Since cloud infrastructure is a public service therefore every component of such infrastructures is available online. It exposes the system to potential vulnerabilities. Because of these vulnerabilities the security policies of the infrastructure has to be regularly reviewed and upgraded.

- **PLATFORM DEPENDENCY**

It is very difficult for organizations to switch their services from one cloud infrastructure to another. Research is still going on for integrating services of one platform to another. So, there is always some kind of dependency of the infrastructure on its current platform.

- **SUPPLY CHAIN IS AFFECTED**

An organization and the cloud service provider both work under a contract having some set of rules to follow. In most of the cases, the cloud service provider outsources some part of its infrastructure from third party vendors. These vendors may not be in full compliance according to the contract signed between the cloud service provider and the organization. The organization must make sure that each and every component of supply chain has to be in full compliance with the contract. Since Salesforce CRM is based on cloud services, chances are that the supply chain might get compromised.

- **LACK OF CONTROL**

When an organization transfers its operations on the cloud infrastructure then there is a lack of control of the organization on the system. After transitioning the system on the cloud, the cloud service provider gains control on the system. The cloud provider charges the organization in order to access the features of the system. Chances are in rare cases the cloud service provider might hike the charges for the service. So, in order to use those system facilities, the organization is forced to pay the updated charges as various customers are using that service. Since salesforce CRM works on cloud platform, so using Salesforce CRM will result in lack of control.

3. System design

3.1 Process flow diagram

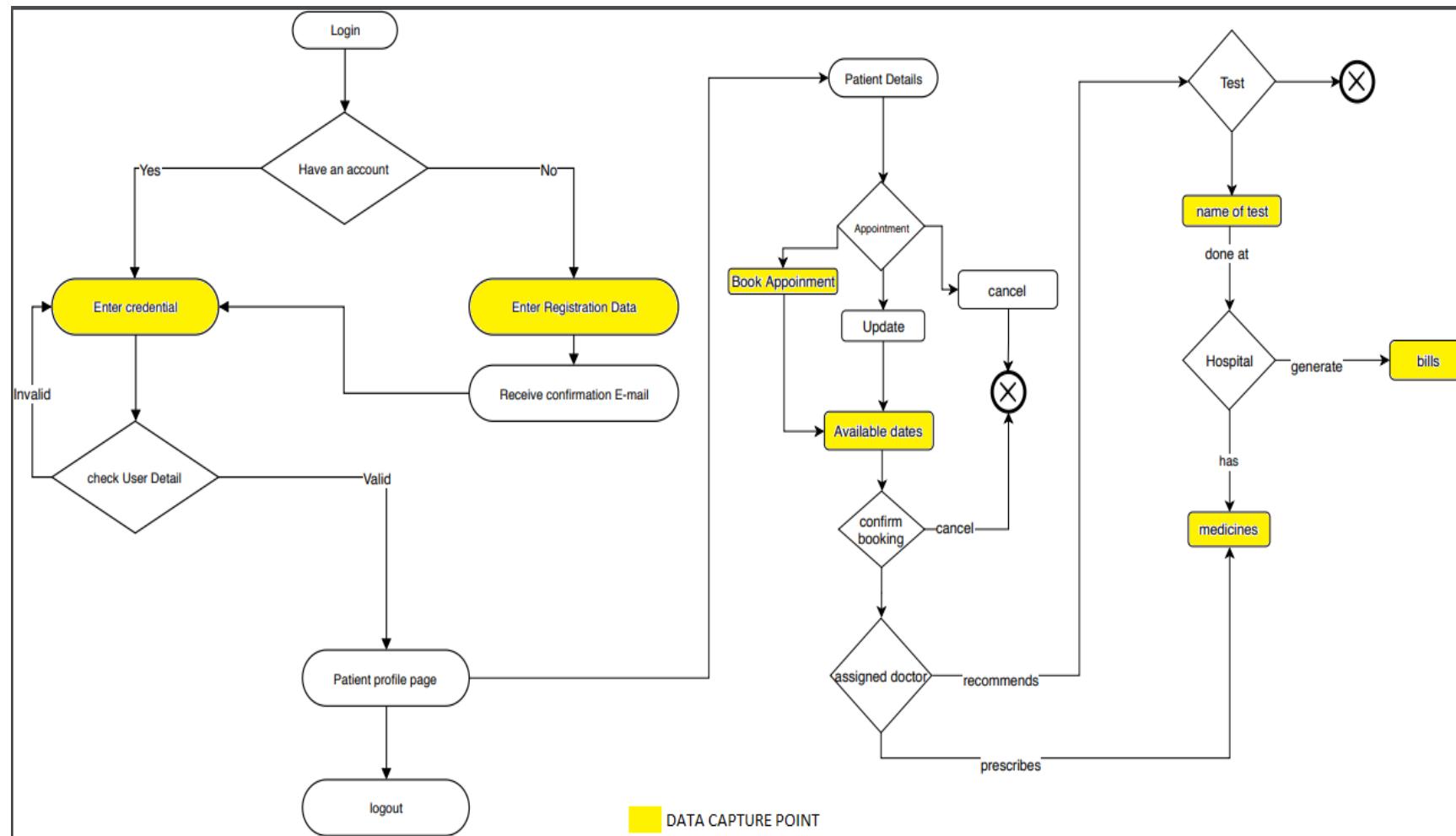


Figure 1: Process Flow Diagram of the system

Figure 1 shows the process flow diagram of the system. The data capture points are shown in yellow color in the process flow diagram. First and foremost, the patient will login to the system. After successful login, if the patient is a new patient then that patient has to register with the hospital first. For registration, the patient has to provide his/her complete details. After confirmation, the patient will now be able to see all the doctors along with their appointment times. Now the patient has to book an appointment according to the available time slot. The patient will then be introduced to the doctor and then the necessary procedures will be performed and will be recorded in our system. After successful consultation and medical procedure, a billing invoice will be generated for the patient and the next visiting date will be booked if necessary. The patient will be then given a prescription of medicines advised by the doctor. The patient has to purchase the medicines from the hospital.

3.2 Data capture points

The data capture points are shown in yellow color in the process flow diagram. The following table shows the data capture points:

DATA CAPTURE POINT	DATA
ENTER REGISTRATION DATA	Patient's complete information
ENTER CREDENTIALS	Patient's User ID and Password
BOOK APPOINTMENT	Details of the disease and selection from available doctors
AVAILABLE DATES	Appointment date selected by the patient
NAME OF THE TEST	Details of the tests advised by the doctor
MEDICINES	Details of the medicines prescribed by the doctor
BILLS	Details of the services availed by the patient

Table 1: Data capture points of the system

3.3 Analytics requirement

The hospital management system is a kind of information management system used to manage all the operation works in the hospital. The hospital needs to manage and analyze their day to day activities. In order to analyze their everyday operations, the hospital can

generate reports and dashboards in order to improvise their business model. With the help of reporting and daily dashboards the hospital can analyze if they are meeting their daily service level agreements.

Data visualization reports can be created to gain insights and trends about the incoming patients in order to enhance the facilities and services of the hospital. Volumetric and trend analysis can be performed on incoming patients so that the hospital can be in a better position to determine which medicines are preferable to the patients. Due to the analysis of the preferred medicines, the hospital can be in a better position to import the stocks of various medicines so that more patients would purchase the medicines. As a result of which the revenue of the hospital will increase. Due to the prescription of medicines from various specialist doctors, we can analyze the trend of the medicinal requirements in order to fulfil the treatment. As a result of which the more patients will be successfully cured thereby improving the reputation and market value of the hospital.

The hospital can use analytics for clinical decision making about the patient's appointment booking. With the help of visualization dashboards, we can determine which doctor has the highest number of booked appointments. As a result of which the hospital can analyze the inward flow of the patients in order to determine how many nurses and staff are required in the hospital. This will help to reduce the administrative cost because the human resources are always one of the significant contributing factors towards the administrative cost.

With the help of analytics, we can analyze the total profit earned by the hospital every day. This will help us to monitor the daily cash flow of the hospital. The inward cashflow of the hospital has a significant impact on the enhancements of various services and facilities to the patients. The more profit the hospital gets the better services the hospital can provide in terms of: medical equipment, drugs and medical research and development.

The key analytics requirements are:

- To identify which medicines are highly prescribed by the doctors.
- To identify the daily appointment counts and which doctor has the highest appointment count.
- To identify the total profit earned by the hospital.

Analytics is useful for hospital administrative roles as well. With the help of data analytics, the operational staff members can now make important decisions on how to spend and where to spend. Analytics also facilitates health information exchange of the patients in order to use the data in a variety of ways within the hospital.

3.4 Integrating customers

In our project (Hospital Management System) the role of the customer is played by the patient. The patient is the center of a hospital's activities. Every process that occurs in the hospital is in a way related directly or indirectly to the patient. We have attempted to create a hospital management system based on Salesforce CRM for our existing or prospective patients. Technological advancements like hospital management system makes the appointment booking process easier. The customer has the option to login or sign up if he is not registered before. After successfully signing in, he can view his patient profile page which has his basic details, he has the option to book or manage his appointments. He can book a new appointment from the available dates according to his convenience, he can also update his appointment dates if chooses to or cancel it if he is not able to visit the hospital. After he books an appointment successfully, a doctor is assigned to him based on his requirements. The doctor if required will prescribe a test to him or medicines depending upon the case. Now all these scenarios that happens when a patient visits a hospital is recorded online and is available for the patient to view for future references. That is, when the patient uses the online appointment booking system.

Since motto of a hospital is to serve patients. Our project "Hospital management system" aids the customer (patient) in easy appointment bookings, update or keep track of them. The medical history of the patient is maintained which can be easily accessed by the patient. The project integrates the patient with the hospital staff and this in turn saves a lot of time, they can book their appointments efficiently.

4. Database design

4.1 Entity relationship diagram

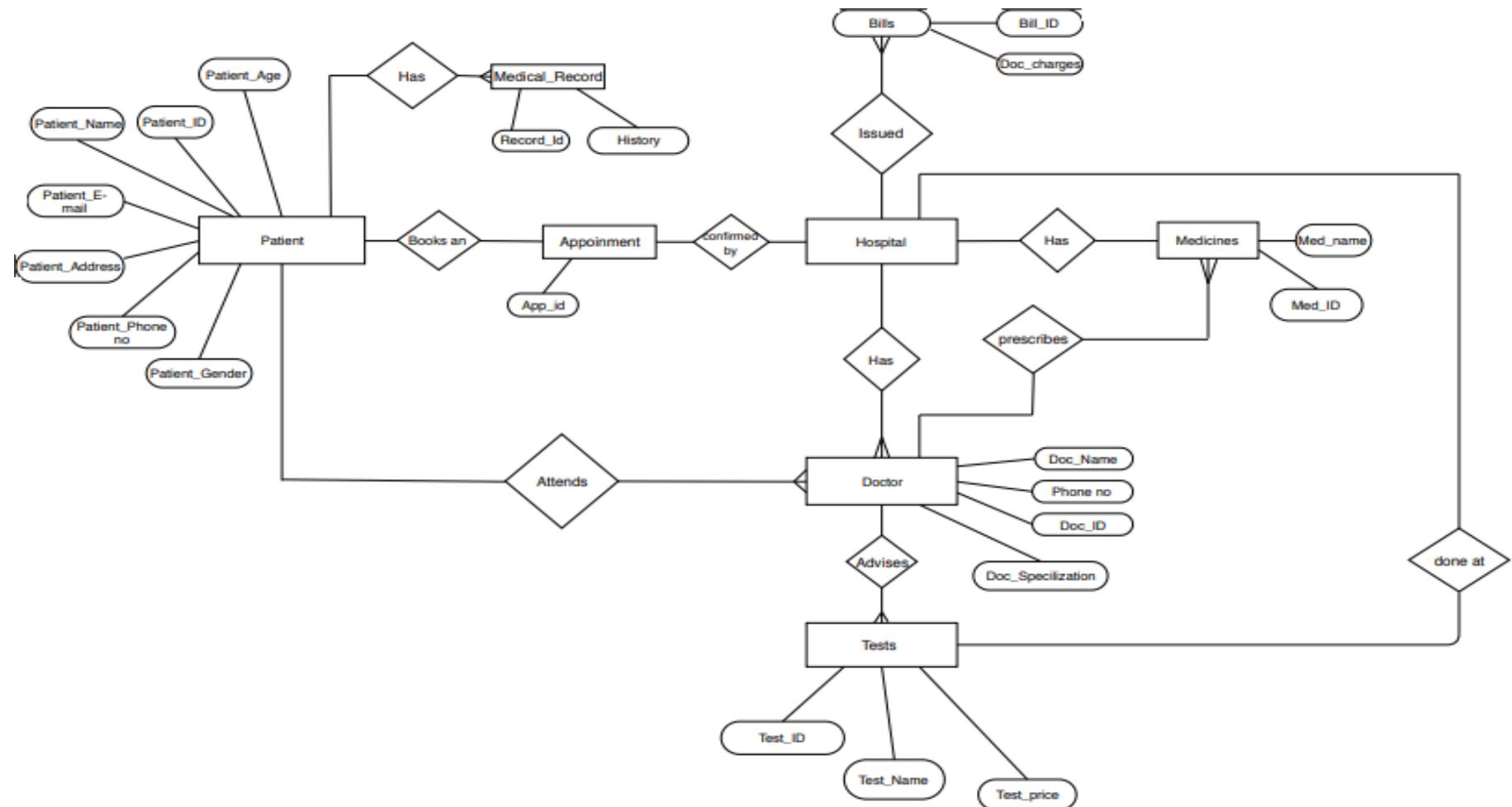


Figure 2: Entity relationship diagram of the system

4.2 Database diagram

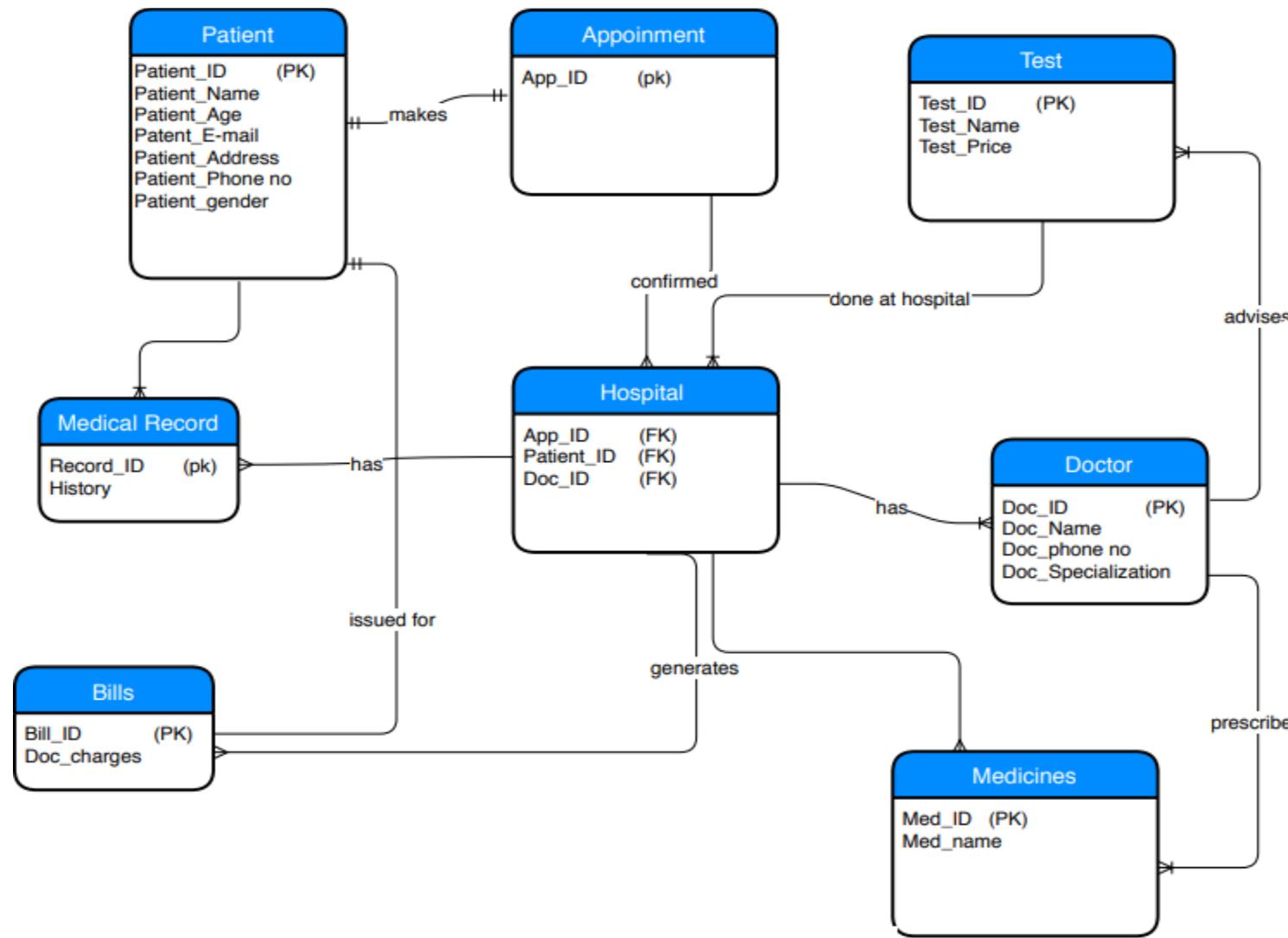


Figure 3: Database diagram of the system

4.3 Data Dictionary

FIELD NAME	DATA TYPE	DESCRIPTION
Patient_ID	Int	Unique ID of patient
Patient_Name	Varchar(20)	Name of the patient
Patient_Age	Int	Age of the patient
Patient_E-mail	Varchar(20)	Email address of the patient
Patient_Address	Varchar(20)	Home address of the patient
Patient_Phone_no	Int	Contact details of the patient
Patient_gender	Varchar(10)	Gender of the patient

Table 2: Patient Data dictionary

FIELD NAME	DATA TYPE	DESCRIPTION
App_ID	Int	Unique appointment ID
Patient_ID	Int	Unique patient ID
Doc_ID	Int	Unique doctor ID

Table 3: Hospital Data dictionary

FIELD NAME	DATA TYPE	DESCRIPTION
Doc_ID	Int	Unique id of doctor
Doc_Name	Varchar(20)	Name of the doctor
Doc_phone no	Int	Contact details of the doctor
Doc_Specialization	Varchar(20)	Doctor's speciality

Table 4: Doctor Data dictionary

FIELD NAME	DATA TYPE	DESCRIPTION
Med_ID	Int	Unique id of medicine
Med_Name	Varchar(20)	Name of the medicine

Table 5: Medicine Data dictionary

FIELD NAME	DATA TYPE	DESCRIPTION
Test_ID	Int	Unique id of the test
Test_Name	Varchar(20)	Name of the test
Test_Price	Int	Cost of the test

Table 6: Test Data dictionary

FIELD NAME	DATA TYPE	DESCRIPTION
App_ID	Int	Unique id of the appointment

Table 7: Appointment Data dictionary

FIELD NAME	DATA TYPE	DESCRIPTION
Bill_ID	Int	Unique id of the generated bill
Doc_Charges	Int	Doctor's consultation charges

Table 8: Bill Data dictionary

5. Implementation of architecture

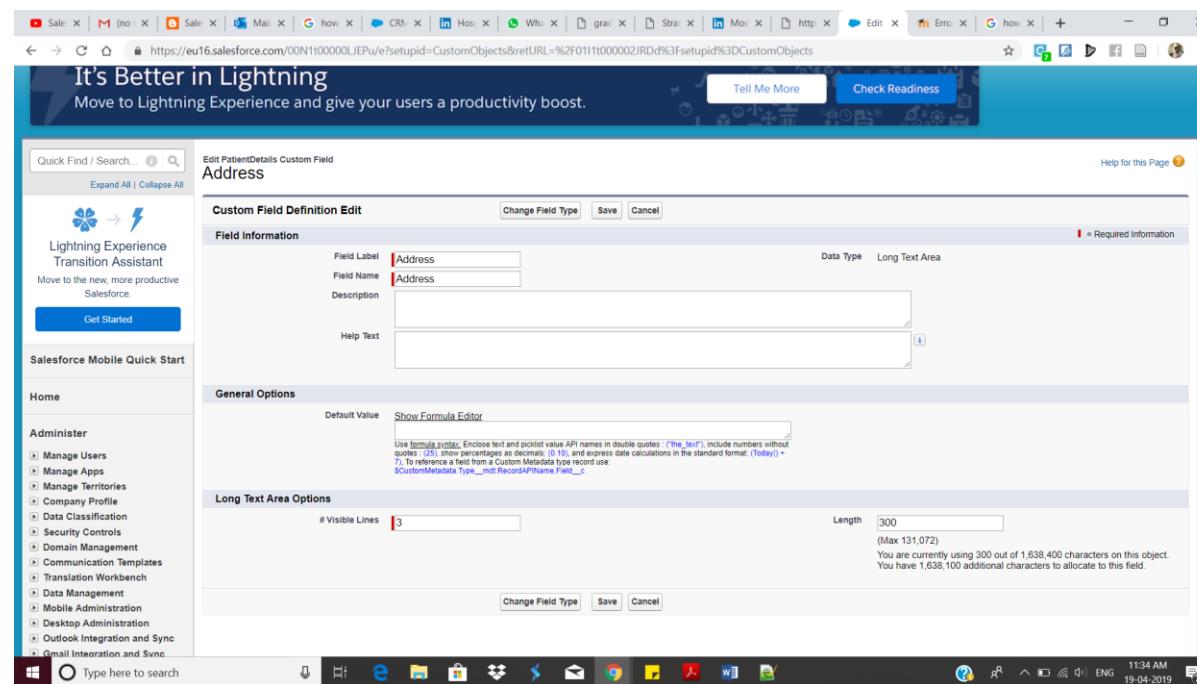
The custom objects and fields which were created are explained in this section along with screenshots.

The screenshot shows the Salesforce Lightning Experience interface. At the top, there's a banner that says "It's Better in Lightning" and "Move to Lightning Experience and give your users a productivity boost". Below the banner, the page title is "Custom Object PatientDetails". The main content area displays the "Custom Object Definition Detail" for the "PatientDetails" object. It shows the singular label "PatientDetails", plural label "Details of the Patient", object name "Patient", and API name "Patient__c". On the right, there are several checkboxes for configuration, such as "Enable Reports", "Track Activities", "Allow in Chatter Groups", "Allow Sharing", "Allow Bulk API Access", "Allow Streaming API Access", "Track Field History", "Deployment Status" (set to "Deployed"), "Allow Search" (checked), "Help Settings" (set to "Standard salesforce.com Help Window"), and "Modified By" (set to "Karthik Sundaresan, 18/04/2019 14:53"). Below this, there's a table titled "Standard Fields" with columns for Action, Field Label, Field Name, Data Type, Controlling Field, and Indexed. The table contains rows for Created By (Lookup(User)), Last Modified By (Lookup(User)), Owner (Lookup(User, Queue)), and Name (Text(80)). At the bottom, there's a section for "Custom Fields & Relationships" with tabs for New and Field Dependencies. The status bar at the bottom of the browser window shows "11:29 AM" and "19-04-2019".

Custom objects are in similarity close to standard objects but in this case we have an option to extend their function in relation to our application. Custom objects are used to store information that is received by the system.

Here we have created a custom object for Patient details. It includes information regarding patient name, patient id, email, gender, age, blood group, contact number etc. The standard fields stay the same.

ADDRESS FIELD:



In the above screenshot, we can see that a custom field is defined for Address. This guides the patient in filling out his/her address. Three lines are validated for filling up the information and a sufficient character limit of 300 is input. This would create our address field.

AGE FIELD:

The screenshot shows the 'Custom Field Definition Edit' page for a custom field named 'Age'. The 'Field Label' is set to 'Age' and the 'Field Name' is also 'Age'. The 'Formula Options' section indicates that the 'Formula Return Type' is 'Number' with 'Decimal Places' set to 2. The formula entered is: `(TODAY() - DOB__c) / 365.2425`. The page includes a sidebar with the 'Lightning Experience Transition Assistant' and a main menu with sections like Home, Administer, and Build.

AGE

Custom Field Definition Edit

Field Information

Field Label: Age

Field Name: Age

Description:

Help Text:

Formula Options

Formula Return Type: Number

Decimal Places: 2

Enter your formula and click Check Syntax to check for errors. Click the Advanced Formula subtab to use additional fields, operators, and functions.
Example: `(Fahrenheit = 1.8 * Celsius__c + 32)` [More Examples](#)

Simple Formula Advanced Formula

Select Field Type: Insert Field

PatientDetails -- Insert Merge Field --

Insert Operator

Age (Number) =
`(TODAY() - DOB__c) / 365.2425`

Lightning Experience Transition Assistant

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Get Started

Salesforce Mobile Quick Start

Home

Administer

- Manage Users
- Manage Apps
- Manage Territories
- Company Profile
- Data Classification
- Security Controls
- Domain Management
- Communication Templates
- Translation Workbench
- Data Management
- Mobile Administration
- Desktop Administration
- Outlook Integration and Sync
- Gmail Integration and Sync
- Email Administration
- Google Apps
- Analytics
- Data.com Administration

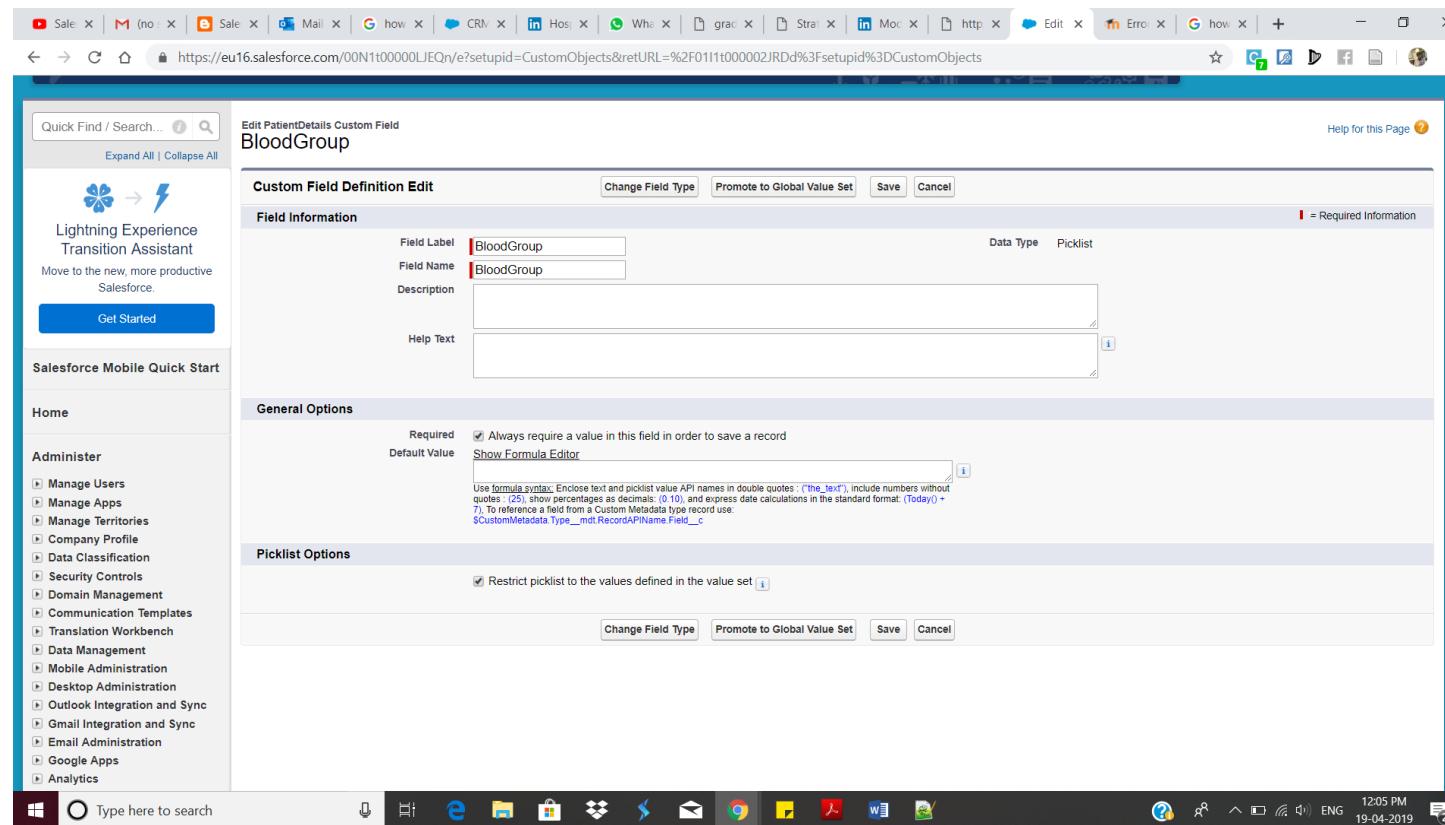
Build

Type here to search

12:04 PM 19-04-2019

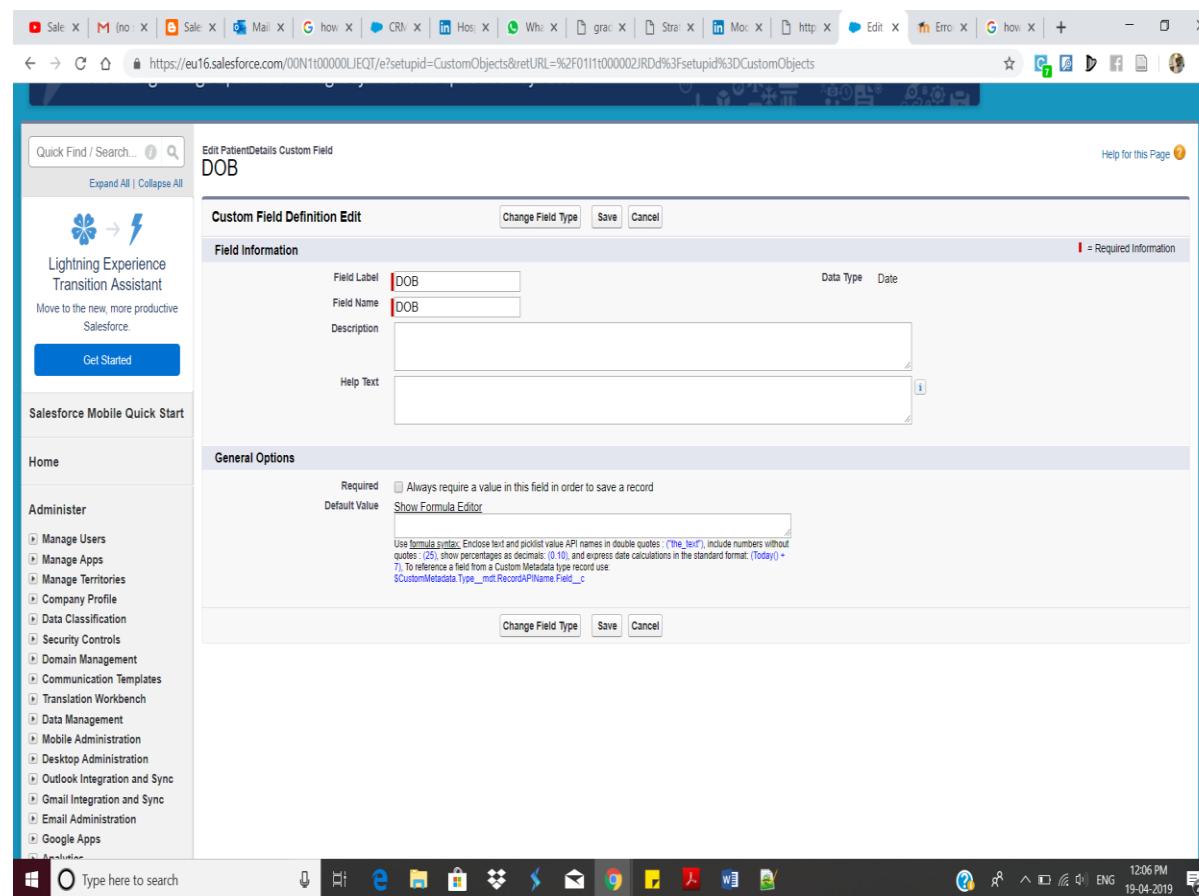
We can see from the screenshot above that how we created a field for patient's age. We have used formula options to enable to enter the age number and have limited the decimal numbers to two places. This entry will be merged with patient details and will appear alongside it.

BLOOD GROUP:



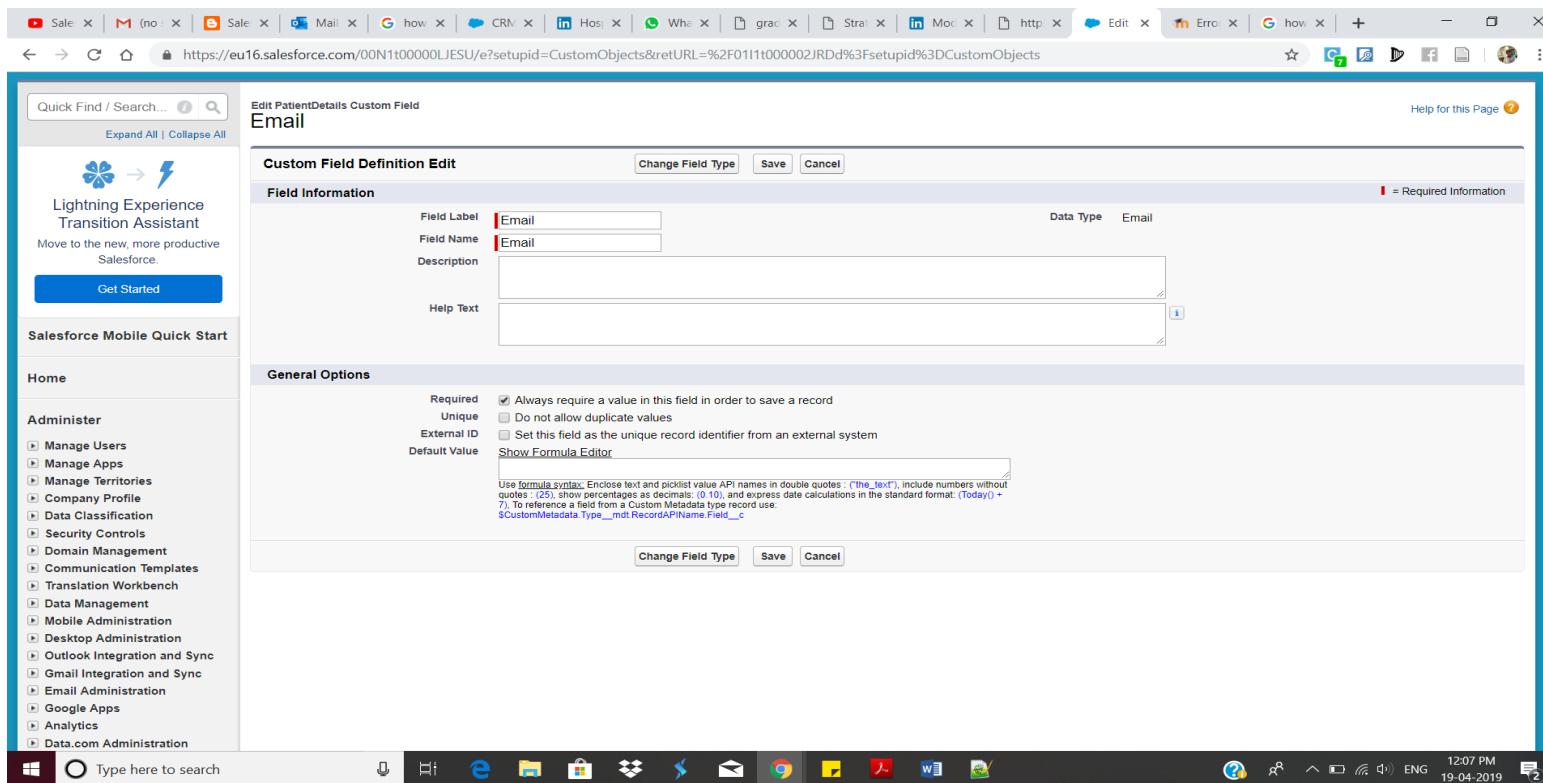
As seen in the screenshot above, the field name is Blood Group. This will be an information belonging to patient's details. It is seen in the picture that we have made it compulsory for a value to be entered in order to save the record because it is quite important to know the patient's blood group and have it in the system for reference.

DATE OF BIRTH FIELD:



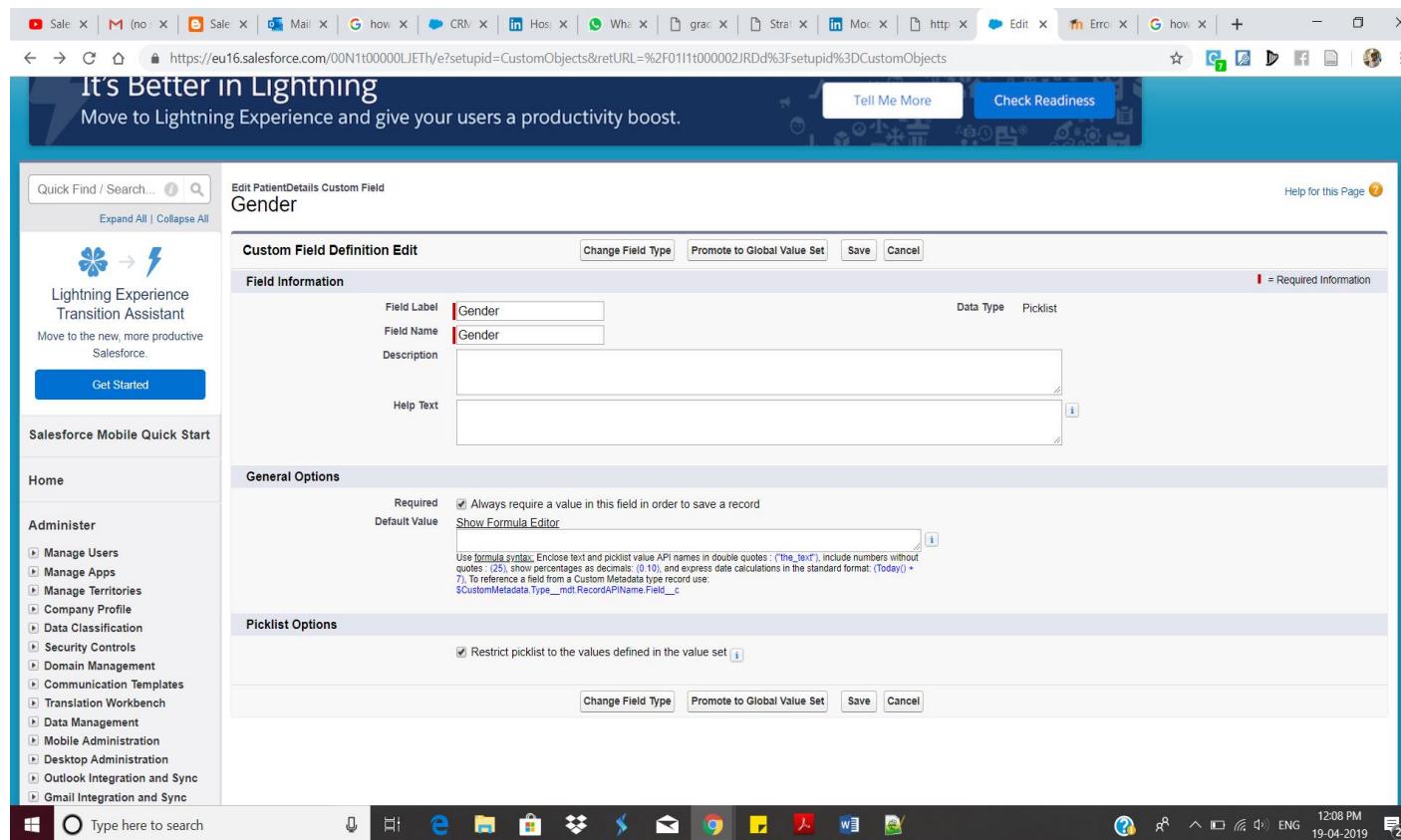
In this step, we create the custom field for date of birth. It is denoted by its DOB. The patient has the option to enter his/her date of birth in this particular section.

EMAIL SECTION:



The field created is that of email as seen in the screenshot above, we can see that an input in this field is made compulsory in order to proceed. It is done so because it is very important for the system have a record of the patient's email so that any notifications or important information regarding appointments or other details can be conveyed to the patient.

GENDER FIELD:



As seen in the screenshot, we define a field for input of information of a patient's gender. Like email and other such fields, even gender of a patient is a mandatory information that has to be shared with the hospital. It is made compulsory by marking it as required in general options. The value that can be entered can only be among that which is made available by the hospital

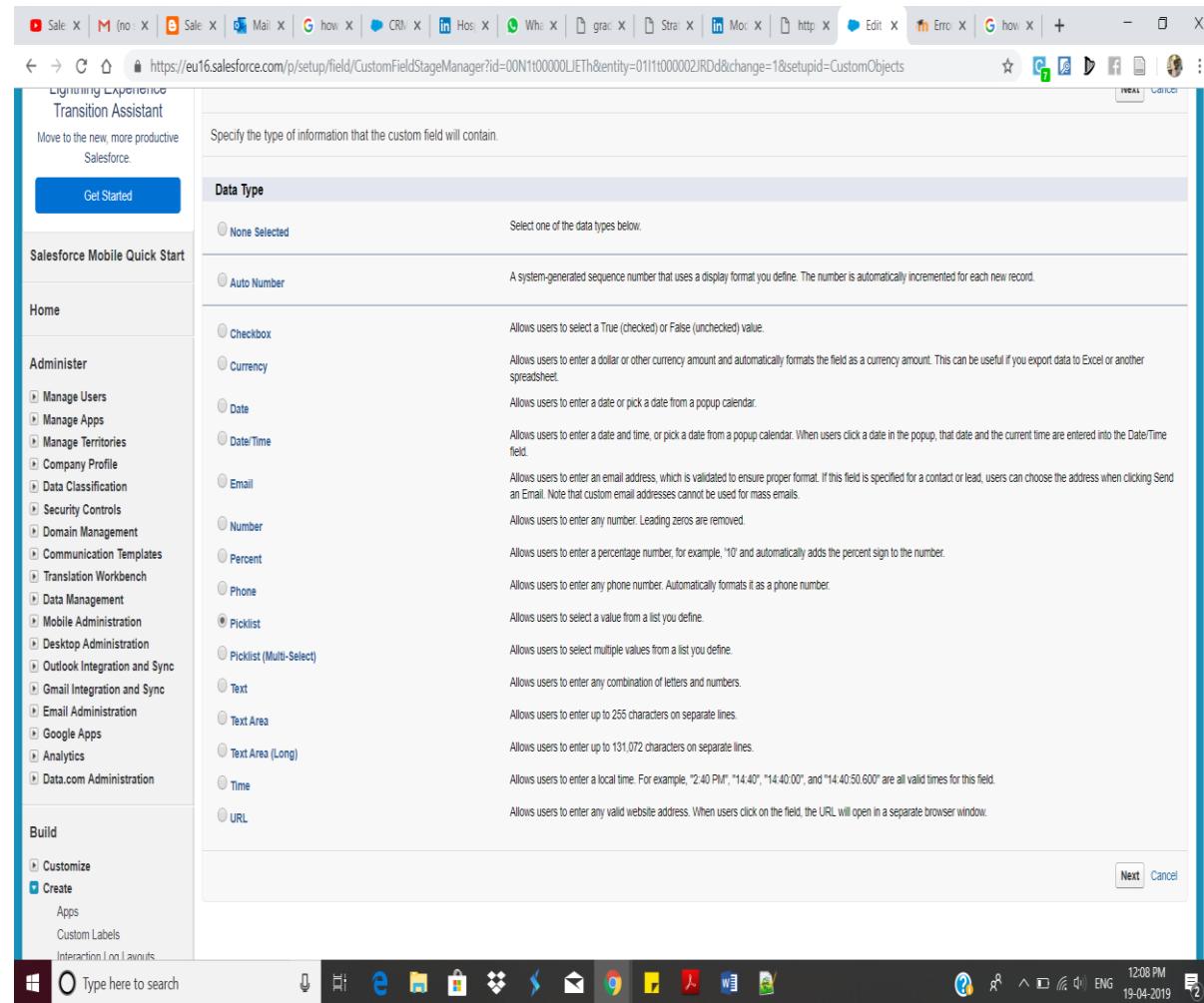
management system. This is done by enabling restrict picklist in the values defined in the value set under picklist options. The values made available are shown in the next screenshot.

The screenshot shows the Salesforce Setup interface for editing a custom field named 'Gender'. The page title is 'Edit PatientDetails Custom Field Gender'. The left sidebar includes the Lightning Experience Transition Assistant and a navigation menu with sections like Administer, Manage Users, Manage Apps, etc. The main content area is titled 'Step 2. Enter the details' (Step 2 of 3). It displays a table of picklist values:

Action	Values	API Name	Default	Chart Colors	Modified By
Edit Del	Male	Male	<input type="checkbox"/>	Assigned dynamically	Karthik Sundaresan, 18/04/2019 15:20
Edit Del	Female	Female	<input type="checkbox"/>	Assigned dynamically	Karthik Sundaresan, 18/04/2019 15:20
Edit Del	Other	Other	<input type="checkbox"/>	Assigned dynamically	Karthik Sundaresan, 18/04/2019 15:20

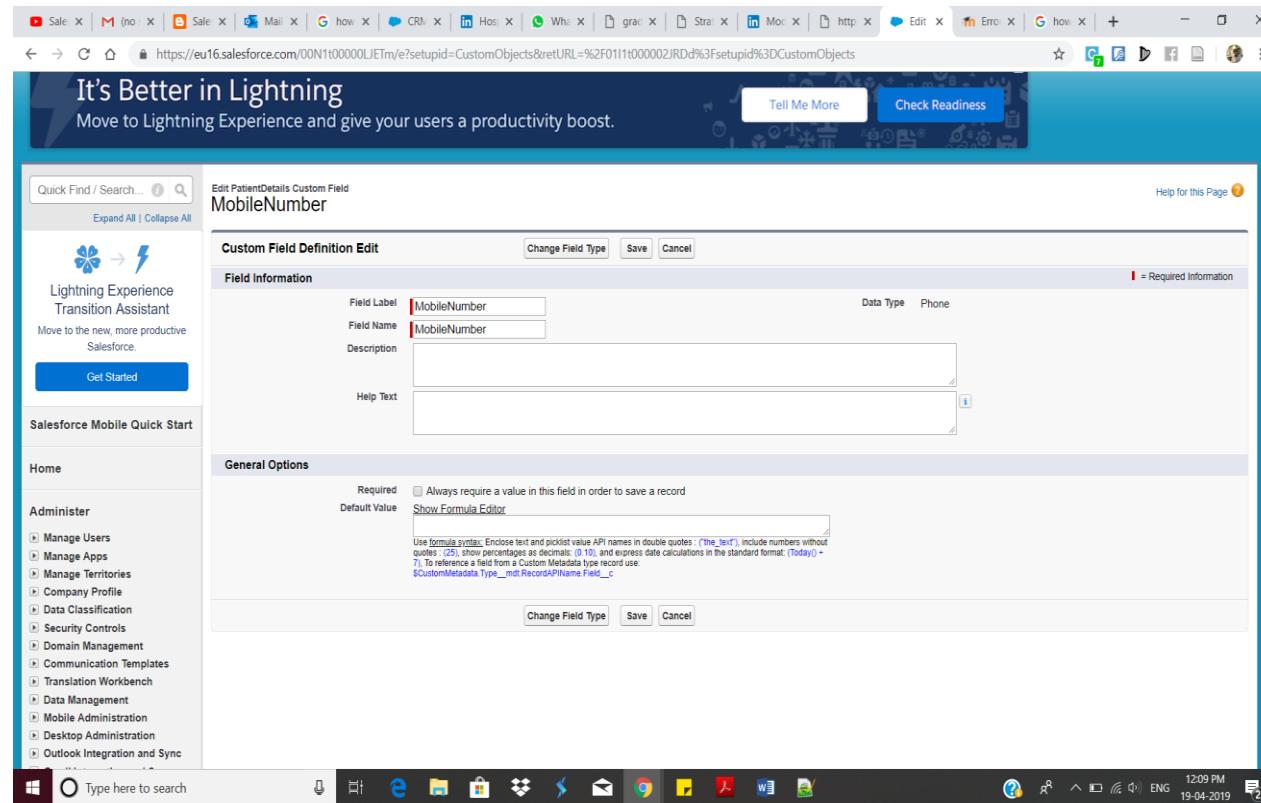
Below the table, there are fields for 'Field Name' (set to 'Gender'), 'Description', 'Help Text', and 'Required' (unchecked). A 'Default Value' section includes a 'Show Formula Editor' button and a note about formula syntax. The bottom of the page shows the Windows taskbar with various pinned icons.

The picklist values defined are male, female, other. Now the patient accordingly can choose only one of the options. This has been done to easily classify the gender of the patients. In the next screenshot we can see how the picklist data type was selected in order to select a gender.



We can see from the above screenshot that under data types, we selected the picklist options. Picklist type of data allows us to define values from which the customer in this case patient has a choice to select a value. This data type was perfect for defining gender field and so has been used for the same.

MOBILE NUMBER FIELD:



We have created here the custom field for mobile number of patient. It is not made a mandatory field as we already have the email id of the patient but it is left to the patient's decision to share. The field was created by clicking on Phone data type. By selecting this data type, it allows patients to enter numbers which will be treated as the patient's contact number. This process is shown in our next slide.

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Get Started

Salesforce Mobile Quick Start

Home

Administrator

- Manage Users
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- Manage Territories
- Company Profile
- Data Classification
- Security Controls
- Domain Management
- Communication Templates
- Translation Workbench
- Data Management
- Mobile Administration
- Desktop Administration
- Outlook Integration and Sync
- Gmail Integration and Sync
- Email Administration
- Google Apps
- Analytics
- Data.com Administration

Build

- Customize
- Create
- Apps

Type here to search

https://eu16.salesforce.com/p/setup/field/CustomFieldStageManager?id=00N1t00000LJETm&entity=011t000002JRDd&change=1&setupid=CustomObjects

Specify the type of information that the custom field will contain.

Data Type

None Selected Select one of the data types below.

Auto Number A system-generated sequence number that uses a display format you define. The number is automatically incremented for each new record.

Checkbox Allows users to select a True (checked) or False (unchecked) value.

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.

Date Allows users to enter a date or pick a date from a popup calendar.

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.

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.

Number Allows users to enter any number. Leading zeros are removed.

Percent Allows users to enter a percentage number, for example, *10* and automatically adds the percent sign to the number.

Phone Allows users to enter any phone number. Automatically formats it as a phone number.

Picklist Allows users to select a value from a list you define.

Picklist (Multi-Select) Allows users to select multiple values from a list you define.

Text Allows users to enter any combination of letters and numbers.

Text Area Allows users to enter up to 255 characters on separate lines.

Text Area (Long) Allows users to enter up to 131,072 characters on separate lines.

Time Allows users to enter a local time. For example, *2:40 PM*, *14:40*, *14:40:00*, and *14:40:50:600* are all valid times for this field.

URL Allows users to enter any valid website address. When users click on the field, the URL will open in a separate browser window.

Next Cancel

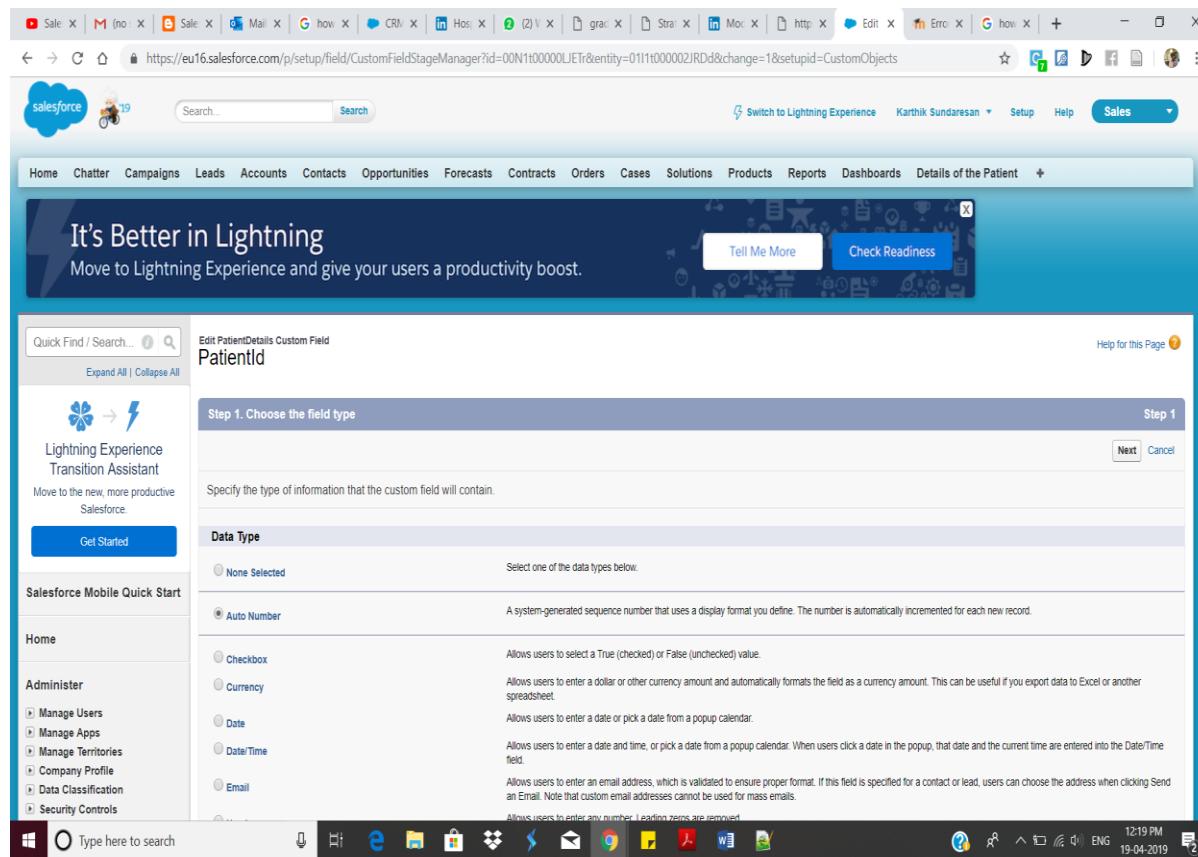
12:09 PM 19-04-2019

It is shown in our above screenshot that we have selected the Data type option of “ Phone ” for patients to enter their phone number. As previously mentioned before, By selecting this data field, we are able to process the number input by the patient as their phone number.

PATIENT ID:

The screenshot shows the 'Custom Field Definition Detail' page for a custom field named 'PatientId'. The page is titled 'PatientDetails Custom Field' and 'PatientId'. It includes tabs for 'Edit', 'Set Field-Level Security', and 'View Field Accessibility'. The 'Field Information' section displays details such as Field Label (PatientId), Field Name (PatientId), API Name (PatientId_c), Object Name (PatientDetails), Data Type (Auto Number), and Created By (Karthik Sundaresan, 18/04/2019 15:22). The 'General Options' section has an 'External ID' checkbox. The 'Auto Number Options' section includes a 'Display Format' dropdown. On the left, a sidebar lists various administrative and system management options like Manage Users, Manage Apps, and Analytics. The bottom of the screen shows the Windows taskbar with icons for File Explorer, Edge, Mail, Google Chrome, and others, along with system status indicators.

Here we can see that for every patient an unique patient id is generated. Like the name suggests, patient id is generated for the purpose of identification and also to match a patient to a specific treatment. It can be seen as a safety measure to ensure that a patient gets the correct treatment and medication. The next screenshot will explain the process of how the ID is auto-generated.



The above screenshot shows us how we are able to auto-generate a patient's id. The field type we chose is “Auto Number” . This enables the system to generate a sequence number and this number will carried forward in each report automatically.

PATIENT NAME FIELD:

The screenshot shows a Salesforce Admin Console window. At the top, there's a banner with the text "It's Better in Lightning" and "Move to Lightning Experience and give your users a productivity boost". Below the banner, the URL is https://eu16.salesforce.com/00N1t00000LJFVK/e?setupid=CustomObjects&retURL=%2F011t000002JRDd%3Fsetupid%3DCustomObjects. The main content area is titled "Edit PatientDetails Custom Field PatientName". The "Field Information" section contains the following fields: "Field Label" (PatientName), "Field Name" (PatientName), "Data Type" (Text Area), and "Description" and "Help Text" (both empty). Under "General Options", the "Required" checkbox is checked, and the "Default Value" field contains the formula "\$CustomMetadata.Type__md.RecordAPIName Field__c". The bottom right corner of the screen shows the Windows taskbar with the date and time (12:27 PM, 19-04-2019) and system icons.

We have created a field for filling up the name of the patient, this is the most basic information that is mandatory for the patient to enter and like other compulsory fields, we have made it as a required information by enabling the required field in the general options. This is the primary source for identification of the patient along with patient id.

The screenshot shows the Salesforce Lightning Experience Transition Assistant interface. On the left, there's a sidebar with various links like Home, Administer, and Sales. The main area is titled "Edit PatientDetails Custom Field" and "PatientName". It's currently on "Step 3. Establish field-level security" of 3. The page displays the following details:

Field Label	PatientName	Save
Data Type	Text Area	
Field Name	PatientName	
Description		

Below this, a section titled "Select the profiles to which you want to grant edit access to this field via field-level security. The field will be hidden from all profiles if you do not add it to field-level security." contains a table:

Field-Level Security for Profile	Visible	Read-Only
Analytics Cloud Integration User	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Analytics Cloud Security User	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Contract Manager	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Cross Org Data Proxy User	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Custom: Marketing Profile	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Custom: Sales Profile	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Custom: Support Profile	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Force.com - App Subscription User	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Force.com - Free User	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Gold Partner User	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Identity User	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Marketing User	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Partner App Subscription User	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Partner Community Login User	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Partner Community User	<input checked="" type="checkbox"/>	<input type="checkbox"/>

At the bottom, there's a Windows taskbar with icons for File Explorer, Edge, File, Mail, Google Chrome, Word, and Excel. The system tray shows the date (19-04-2019), time (12:44 PM), battery level (2%), and network status.

Here we have established security at field-level. We can see from the screenshot the security is made visible for a number of users like contract manager, Analytics cloud integration users , customer support users, marketing users, partner community users etc. We have selected whom we can give access to this information.

CUSTOM OBJECT FOR DOCTOR DETAILS:

The screenshot shows the Salesforce Lightning Experience interface. At the top, there's a banner with the text "It's Better in Lightning" and "Move to Lightning Experience and give your users a productivity boost". Below the banner, the page title is "Custom Object DoctorDetails". The main content area displays the "Custom Object Definition Detail" for the "DoctorDetails" object. The object details include:

Singular Label	DoctorDetails	Description
Plural Label	Details of the Doctors	Enable Reports <input type="checkbox"/>
Object Name	DoctorDetails	Track Activities <input type="checkbox"/>
API Name	DoctorDetails__c	Allow in Chatter Groups <input type="checkbox"/>
		Allow Sharing <input checked="" type="checkbox"/>
		Allow Bulk API Access <input checked="" type="checkbox"/>
		Allow Streaming API Access <input checked="" type="checkbox"/>
		Track Field History <input type="checkbox"/>
		Deployment Status Deployed
		Allow Search <input type="checkbox"/>
Created By	Karthik Sundaresan, 18/04/2019 15:25	Help Settings Standard salesforce.com Help Window
		Modified By Karthik Sundaresan, 19/04/2019 01:58

Below the object definition, there are sections for "Standard Fields" and "Custom Fields & Relationships". The "Standard Fields" section lists fields like Created By, Doctor Name, Last Modified By, and Owner. The "Custom Fields & Relationships" section is currently empty. The bottom of the screen shows the Windows taskbar with various pinned icons.

Previously, we created a custom object for patients where all the related fields which will contain information with regards to patients was created. Now we create a similar custom object for doctors. As the name of the custom object suggests, the Doctor Details consists of all information with respect to a doctor which include his name , ID , email , gender, phone number, specialization etc. The standard fields as usual stay the same.

DOCTOR NAME FIELD:

The screenshot shows the 'Edit DoctorDetails Custom Field' page in the Salesforce Lightning Experience. The field name is 'DoctorName'. The 'Field Label' and 'Field Name' are both set to 'DoctorName'. The 'Data Type' is 'Text'. Under 'General Options', the 'Required' checkbox is checked. Under 'Text Options', the 'Length' is set to 100. The page includes a sidebar with various administrative links like Manage Users, Manage Apps, and Data Management.

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- Data Management
- Mobile Administration
- Desktop Administration
- Outlook Integration and Sync
- Gmail Integration and Sync
- Email Administration
- Google Apps
- Analytics
- Data.com Administration

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https://eu16.salesforce.com/00N1t00000JFVA/e?setupId=CustomObjects&retURL=%2F00N1t00000JFVA%3FsetupId%3DCustomObjects

Edit DoctorDetails Custom Field
DoctorName

Help for this Page

Custom Field Definition Edit

Change Field Type Save Cancel

Field Information

Field Label: DoctorName

Field Name: DoctorName

Description:

Help Text:

Required

Always require a value in this field in order to save a record

Unique

Do not allow duplicate values

Treat "ABC" and "abc" as duplicate values (case insensitive)

Treat "ABC" and "abc" as different values (case sensitive)

External ID

Set this field as the unique record identifier from an external system

Default Value

Show Formula Editor

Use formula syntax: Enclose text and picklist value API names in double quotes : ("the_text"), include numbers without quotes : (25), show percentages as decimal : (0.10), and express date calculations in the standard format: (Today) + 7). To reference a field from a Custom Metadata type record use: \${CustomMetadataType__mdt.RecordAPIName.FieldName__c}

Text Options

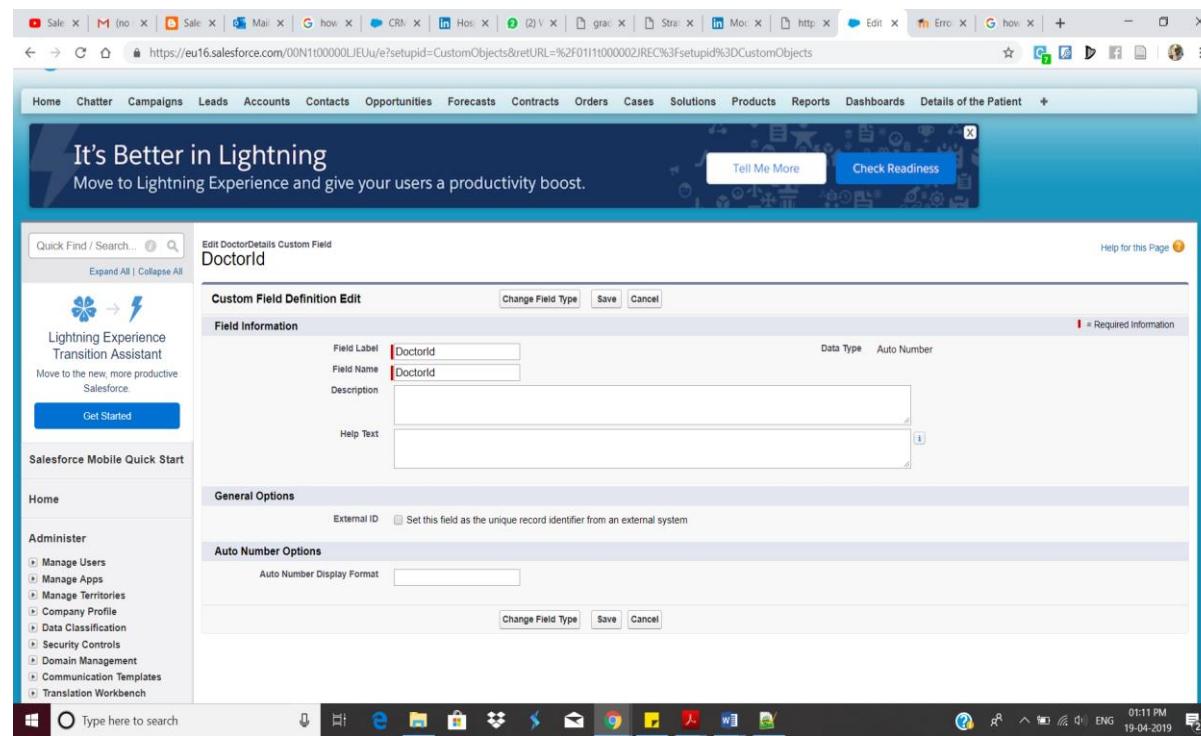
Length: 100

Change Field Type Save Cancel

01:14 PM 19-04-2019

As we can see from the screenshot, the custom field created is Doctor Name. It is the primary source of identification of doctor and hence is made mandatory by enabling the “ Required ” section in the general options. The length of the characters that can be input is set to a maximum of a 100 characters by entering the number 100 in the length section of the Text options.

DOCTOR ID:



Here we can see from the screenshot that an unique doctor id is generated for each doctor. Like the name suggests, doctor id is generated for the purpose of identification of doctors and also to make sure they are matched to the correct patients. If they are linked to a wrong case, it would waste a lot of time not to forget the complications it may create like delay in treatment to a patient or even worse a wrong treatment or medication provided to a patient.

The screenshot shows a browser window with multiple tabs open at the top, including links to YouTube, LinkedIn, and various Salesforce pages. The main content is the Salesforce Setup interface. At the top, there's a banner encouraging users to move to Lightning Experience. Below it, the page title is "Edit DoctorDetails Custom Field DoctorId". The left sidebar includes links for "Lightning Experience Transition Assistant", "Salesforce Mobile Quick Start", "Home", and "Administrator" (with sub-links for Manage Users, Manage Apps, Manage Territories, Company Profile, and Data Classification). The main form is titled "Step 1. Choose the field type" under "Data Type". It shows a list of options: "None Selected" (selected), "Auto Number", "Checkbox", "Currency", "Date", "DateTime", "Email", and "Text". Each option has a brief description. The status bar at the bottom shows system information like battery level, signal strength, and date/time.

It is the same method which was used to generate patient id. We have used the auto number feature in the data type to generate an unique id. This enables the system to generate a sequence number and this number will carried forward in each case automatically.

DOCTOR GENDER FIELD:

Sale | M (no) | Sale | Mail | how | CRM | Hos | (2) | grad | Stra | Moc | http | Doc | Err | how | +

https://eu16.salesforce.com/00N1t00000LJEU?setupid=CustomObjects

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- Mobile Administration
- Desktop Administration
- Outlook Integration and Sync
- Gmail Integration and Sync
- Email Administration
- Google Apps
- Analytics
- Data.com Administration

Build

- Customize
- Create

Validation Rules (0)

Custom Field Definition Detail

Edit **Set Field-Level Security** **View Field Accessibility**

Field Information

Field Label	Gender	Object Name	DoctorDetails
Field Name	Gender	Data Type	Picklist
API Name	Gender__c		
Description			
Help Text			
Created By	Karthik Sundaresan, 18/04/2019 15:33	Modified By	Karthik Sundaresan, 18/04/2019 15:33

General Options

Required	<input checked="" type="checkbox"/>
Default Value	[New]

Picklist Options

Restrict picklist to the values defined in the value set	<input checked="" type="checkbox"/>
Controlling Field	[New]

Field Dependencies

No dependencies defined.

Validation Rules

No validation rules defined.

Values

New Reorder Replace Printable View Chart Colors

Action	Values	API Name	Default	Chart Colors	Modified By
Edit Del Deactivate	Male	Male	<input type="checkbox"/>	Assigned dynamically	Karthik Sundaresan, 18/04/2019 15:33
Edit Del Deactivate	Female	Female	<input type="checkbox"/>	Assigned dynamically	Karthik Sundaresan, 18/04/2019 15:33
Edit Del Deactivate	Others	Others	<input type="checkbox"/>	Assigned dynamically	Karthik Sundaresan, 18/04/2019 15:33

Inactive Values

The above screenshot shows us how we define the field for creating input to define gender of the doctor. The gender of doctor is a mandatory field because it helps in identification. It is made compulsory by marking it as required in general options. The value that

can be entered can only be among that which is made available by the hospital management system. The values that is gender in this case are male, female and others.

This is done by enabling restrict picklist in the values defined in the value set under picklist options.

The screenshot shows the Salesforce Lightning Experience Transition Assistant interface. On the left, there's a sidebar with various administrative and build-related links. The main content area is titled "Step 1. Choose the field type". It asks to specify the type of information the custom field will contain. A list of data types is provided, each with a description:

- None Selected: Select one of the data types below.
- Auto Number: A system-generated sequence number that uses a display format you define. The number is automatically incremented for each new record.
- Checkbox: Allows users to select a True (checked) or False (unchecked) value.
- 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.
- Date: Allows users to enter a date or pick a date from a popup calendar.
- 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.
- 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.
- Number: Allows users to enter any number. Leading zeros are removed.
- Percent: Allows users to enter a percentage number, for example, '10' and automatically adds the percent sign to the number.
- Phone: Allows users to enter any phone number. Automatically formats it as a phone number.
- Picklist: Allows users to select a value from a list you define.
- Picklist (Multi-Select): Allows users to select multiple values from a list you define.
- Text: Allows users to enter any combination of letters and numbers.
- Text Area: Allows users to enter up to 255 characters on separate lines.
- Text Area (Long): Allows users to enter up to 131,072 characters on separate lines.
- Time: Allows users to enter a local time. For example, "2:40 PM", "14:40", "14:40:00", and "14:40:50.600" are all valid times for this field.
- URL: Allows users to enter any valid website address. When users click on the field, the URL will open in a separate browser window.

At the bottom right of the main content area are "Next" and "Cancel" buttons. The status bar at the bottom shows the date and time as 01:16 PM 19-04-2019, and the language as ENG.

We can see in the above picture that in choosing the type of field. We select picklist to define the values. By doing so, we only allow the doctor to select a value in this case type of gender from a list we define. By selecting this option, we make the process of declaring gender a simple task.

DOCTOR EMAIL:

The screenshot shows the Salesforce Lightning Experience interface. At the top, there's a banner with the text "It's Better in Lightning" and "Move to Lightning Experience and give your users a productivity boost". Below the banner, the page title is "Edit DoctorDetails Custom Field Email". The main content area is titled "Custom Field Definition Edit" and contains the following fields:

- Field Information**:
 - Field Label: Email
 - Field Name: Email
 - Description: (empty)
 - Help Text: (empty)
- General Options**:
 - Required: Always require a value in this field in order to save a record
 - Unique: Do not allow duplicate values
 - External ID: Set the field as the unique record identifier from an external system
 - Default Value: Show Formula Editor

At the bottom of the edit form, there are "Change Field Type", "Save", and "Cancel" buttons. The status bar at the bottom of the screen shows the Windows taskbar with various icons and the date/time as 01:15 PM 19-04-2019.

In this screenshot, we have defined a field for providing email of the doctor. We can notice that it is made a mandatory field by enabling the “ Required” box in the general options. The email of the doctor has to be feeded into the system because it would act as primary means of communication with the doctor, be it upcoming appointments or any other updates related to hospital operations. Hence, email is made a compulsory field and the doctor has to provide this information.

SPECIALIZATION FIELD:

The screenshot shows the 'Edit DoctorDetails Custom Field Specialization' page in the Salesforce Lightning Experience. The page is titled 'Custom Field Definition Edit'. The 'Field Information' section contains the following details:

- Field Label:** Specialization
- Field Name:** Specialization
- Description:** (empty)
- Help Text:** (empty)
- Data Type:** Picklist (Multi-Select)

The 'General Options' section includes:

- Required:** Always require a value in this field in order to save a record
- Default Value:** Show Formula Editor
- Formula:** Use formula syntax. Enclose text and picklist value API names in double quotes : ("the_text"), include numbers without quotes - (23), show percentage as decimals: (0.10), and express date calculations in the standard format: (Today() + 7). To reference a field from a Custom Metadata type record use: \$CustomMetadata.Type__mdt.RecordAPIName.Field__c

The 'Picklist (Multi-Select) Options' section includes:

- Restrict picklist to the values defined in the value set:**
- # Visible Lines:** 4

At the bottom of the page are 'Change Field Type', 'Promote to Global Value Set', 'Save', and 'Cancel' buttons.

In this field, we have created specialization for doctor. The doctor has to enter his field of specialization. The specializations are pre-defined using picklist (multi-select) options so that it the doctor can select the appropriate specialization which is applicable to him. This field is very important as based on illness or condition of patient, a specialization is matched and on this context the doctor is matched to the patient. A number of specializations are defined which we can see in our coming slides.

The screenshot shows a Salesforce custom field configuration page. The URL in the browser is <https://eu16.salesforce.com/p/setup/field/CustomFieldStageManager?id=00N1t00000LJEUq&entity=01I1t00000JREC&change=1&setupid=CustomObjects>. The page title is "Specify the type of information that the custom field will contain." On the left, there's a sidebar with "Lightning Experience Transition Assistant" and "Salesforce Mobile Quick Start". The main content area is titled "Data Type" and lists various options: None Selected, Auto Number, Checkbox, Currency, Date, Date/Time, Email, Number, Percent, Phone, Picklist, Picklist (Multi-Select), Text, Text Area, Text Area (Long), Time, and URL. Each option has a brief description. At the top right of the form are "Next" and "Cancel" buttons. The bottom right of the screen shows the Windows taskbar with the date and time (01:19 PM, 19-04-2019).

We have selected the picklist (Multi-Select) option. It allows the user in this case doctor to select multiple values from a list that we can create and define. This helps out the doctor in choosing multiple fields and he/she can easily enter the fields they fall under. The list of specialisations defined is available in our next screenshot.

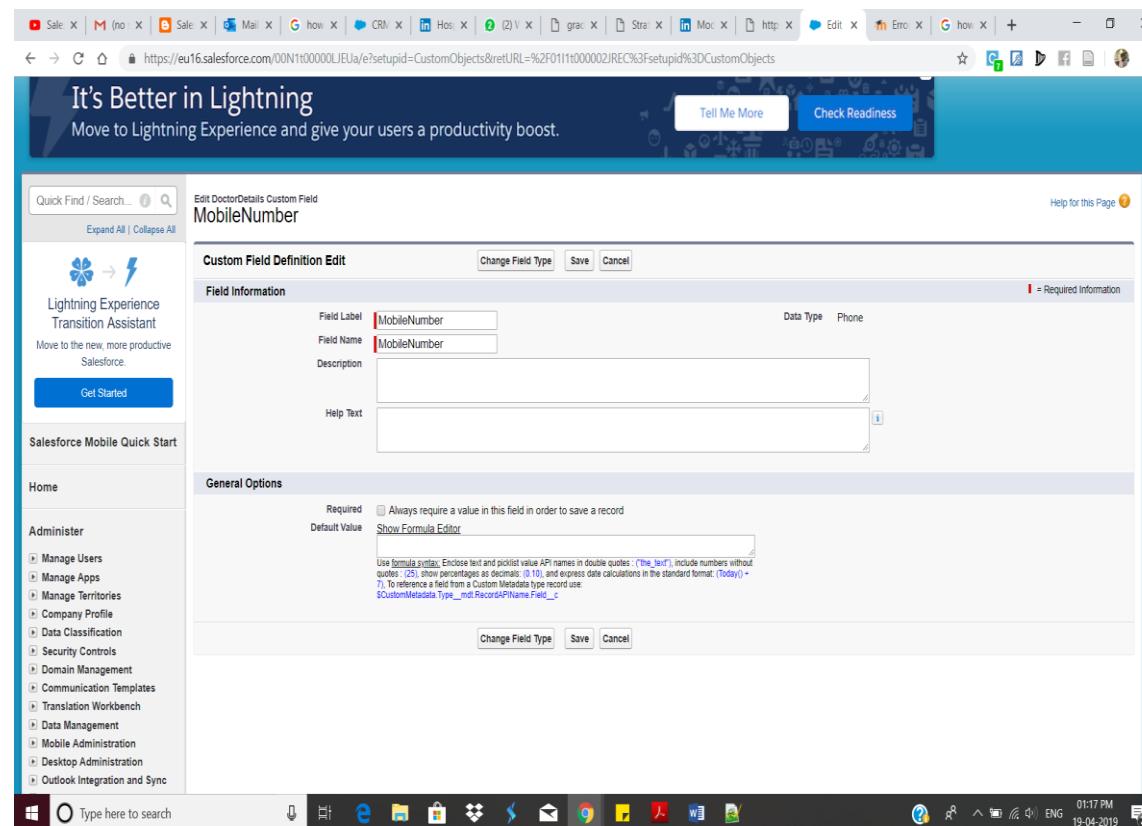
The screenshot shows a browser window with a tab bar at the top containing various links like Sale, Mail, CRM, Host, etc. The main content area is titled "It's Better in Lightning" and "Move to Lightning Experience and give your users a productivity boost." A sidebar on the left includes a "Lightning Experience Transition Assistant" section with a "Get Started" button, and a "Salesforce Mobile Quick Start" section with links for Home, Administer, and various management options. The main form is titled "Edit DoctorDetails Custom Field Specialization" and is on "Step 2 of 3". It has a "Field Label" set to "Specialization". Below the label is a table showing a list of picklist values:

Action	Values	API Name	Default	Modified By
Edit Del	Cardiologist	Cardiologist	<input type="checkbox"/>	Karthik Sundaresan, 18/04/2019 15:40
Edit Del	Diabetologist	Diabetologist	<input type="checkbox"/>	Karthik Sundaresan, 18/04/2019 15:40
Edit Del	Gasteroenterologist	Gasteroenterologist	<input type="checkbox"/>	Karthik Sundaresan, 18/04/2019 15:40
Edit Del	Gynacologist	Gynacologist	<input type="checkbox"/>	Karthik Sundaresan, 18/04/2019 15:40
Edit Del	Orthopedician	Orthopedician	<input type="checkbox"/>	Karthik Sundaresan, 18/04/2019 15:40
Edit Del	Neurologist	Neurologist	<input type="checkbox"/>	Karthik Sundaresan, 18/04/2019 15:40
Edit Del	Physician	Physician	<input type="checkbox"/>	Karthik Sundaresan, 18/04/2019 15:40
Edit Del	Dentist	Dentist	<input type="checkbox"/>	Karthik Sundaresan, 18/04/2019 15:40
Edit Del	Dermatologist	Dermatologist	<input type="checkbox"/>	Karthik Sundaresan, 18/04/2019 15:40

Below the table, there are settings for "Multi-select picklists are displayed in a scrolling box on edit pages.", "# Visible Lines" (set to 4), "Field Name" (set to "Specialization"), and "Description". The bottom status bar shows the Windows taskbar with icons for File Explorer, Edge, and other applications, along with system status indicators like battery level and network connection.

The specializations created are Cardiologist, Diabetologist, gastroenterologist, Gynacologist, Orthopedician, Neurologist, Physician, Dentist and Dermatologist. A total of nine specializations are added. This process of selection makes the process of selecting specialisations very simple and an easy task for the doctor.

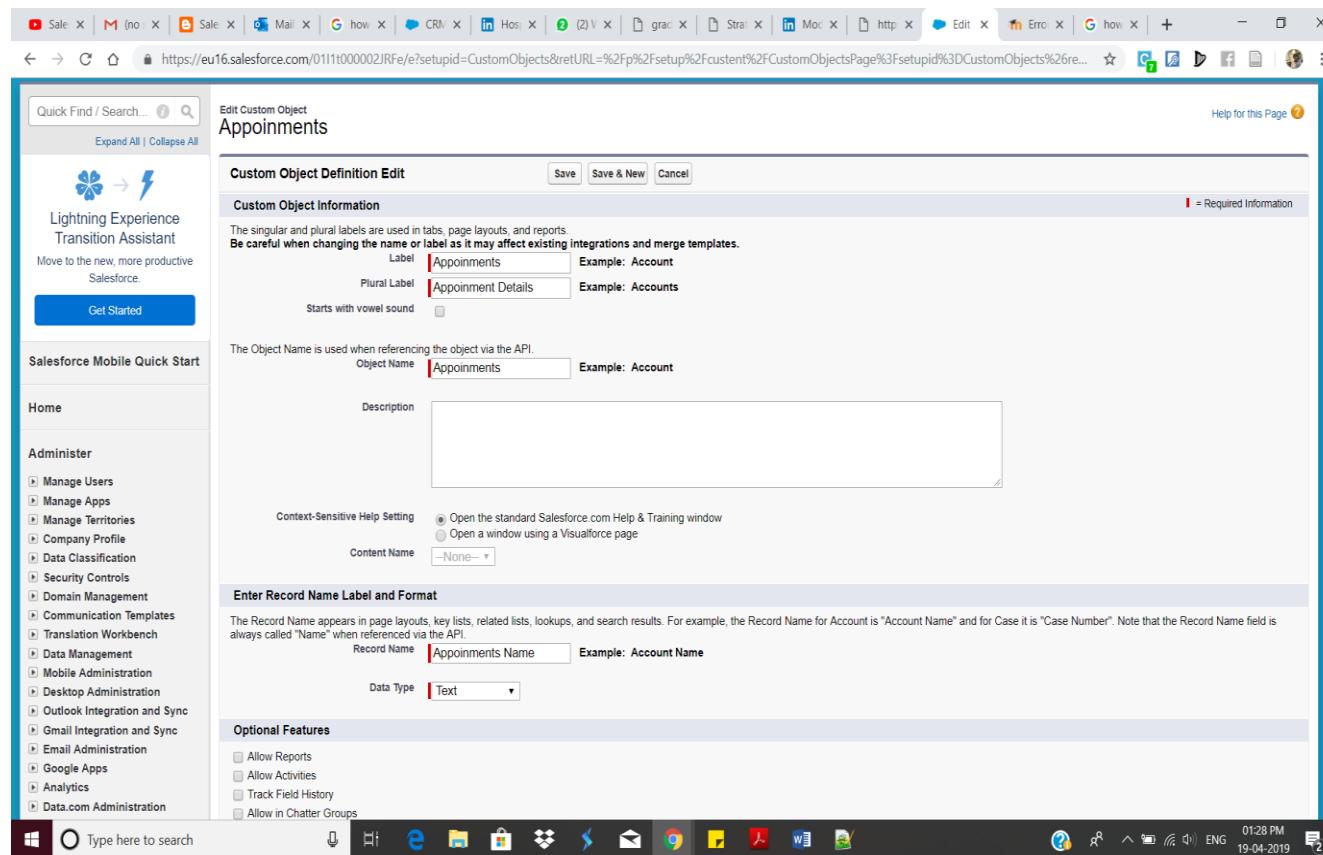
DOCTOR PHONE NUMBER FIELD:



We can see in this screenshot how a custom field is created to add the mobile contact number of doctor. It is not made compulsory as we have the email id of the doctor as the primary source of communication. This field was created by clicking on Phone data type. By selecting this data type, it permits doctors to enter numbers which will automatically be treated as the doctor's contact number.

APPOINTMENTS:

For managing appointments, we have created a custom field named “ Appointments ”.



Appointments are booked by patients at an available date according to their comfort. The object name in this case Appointments is used when we are referencing it through the API. The record name is set as Appointments Name. This name usually appears in lists such as key lists, related lists, and also in search results. The data type selected in this case is “Text”. This feature can enable us to enter characters in Record Name.

APPOINTMENT DATE:

The screenshot shows the Salesforce Custom Field Stage Manager interface. The URL in the browser is <https://eu16.salesforce.com/p/setup/field/CustomFieldStageManager?id=00N1t00000LJExl&entity=01I1t000002JRFe&change=1&setupid=CustomObjects>. The page title is "Edit Appointments Custom Field AppointmentDate".

The left sidebar includes the Lightning Experience Transition Assistant and the Salesforce Mobile Quick Start menu, which lists various administrative tasks like Manage Users, Manage Apps, and Google Apps.

The main content area is titled "Step 1. Choose the field type". It asks to specify the type of information the custom field will contain. The "Data Type" section shows a list of options with descriptions:

- None Selected: Select one of the data types below.
- Auto Number: A system-generated sequence number that uses a display format you define. The number is automatically incremented for each new record.
- Date: Allows users to enter a date or pick a date from a popup calendar.
- 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.
- 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.
- Number: Allows users to enter any number. Leading zeros are removed.
- Percent: Allows users to enter a percentage number, for example, '10' and automatically adds the percent sign to the number.
- Phone: Allows users to enter any phone number. Automatically formats it as a phone number.
- Picklist: Allows users to select a value from a list you define.
- Picklist (Multi-Select): Allows users to select multiple values from a list you define.
- Text: Allows users to enter any combination of letters and numbers.
- Text Area: Allows users to enter up to 255 characters on separate lines.

At the bottom right of the page are "Next" and "Cancel" buttons. The status bar at the bottom of the screen shows the date and time as 01:32 PM on 19-04-2019.

In this screenshot we can see that we have created a custom field named "AppointmentDate". This is created to guide the patient in booking appointments. The Data Type used is of Date, it allows users in this case the patient to enter a date or select a date from a calendar with pop-up feature.

The screenshot shows the 'Custom Field Definition Edit' page for a custom field named 'AppointmentDate'. The page is titled 'Edit Appointments Custom Field AppointmentDate'. The 'Field Information' section shows the field label as 'AppointmentDate' and the field name as 'AppointnmentDate'. The data type is set to 'Date'. The 'General Options' section includes a 'Required' checkbox (unchecked) and a 'Default Value' input field containing '\$CustomMetadata Type__mdt RecordAPIName Field__c'. A note below the default value field explains formula syntax. The page includes a 'Lightning Experience Transition Assistant' sidebar and a standard Windows taskbar at the bottom.

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Edit Appointments Custom Field **AppointmentDate**

Custom Field Definition Edit

Field Information

Field Label Data Type * = Required Information

Field Name

Description

Help Text

General Options

Required Always require a value in this field in order to save a record

Default Value
Use formula syntax. Enclose text and picklist value API names in double quotes: ("the_text"), include numbers without quotes (25), show percentages as decimals: (0.10), and express date calculations in the standard format: (Today() + 7). To reference a field from a Custom Metadata type record use:
\$CustomMetadata Type__mdt RecordAPIName Field__c

Type here to search

01:32 PM
19-04-2019

The field information can be seen in the above screenshot. The patient fills in the appointment date which will be stored in the system and the slot is reserved for the patient.

NEXT VISIT FIELD:

The screenshot shows the Salesforce Lightning Experience Transition Assistant. The URL in the browser is <https://eu16.salesforce.com/p/setup/field/CustomFieldStageManager?id=00N1t00000UJy1&entity=011t000002IRfj&change=1&setupid=CustomObjects>. The page title is "Edit Medications Custom Field" and the sub-page title is "NextVisit". The main content area is titled "Step 1. Choose the field type" and displays a list of data types. The "Date" option is selected. The status bar at the bottom right shows the time as 01:26 PM and the date as 19-04-2019.

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- Desktop Administration
- Outlook Integration and Sync
- Gmail Integration and Sync
- Email Administration
- Google Apps
- Analytics
- Data.com Administration

Edit Medications Custom Field
NextVisit

Step 1. Choose the field type

Specify the type of information that the custom field will contain.

Data Type

None Selected Select one of the data types below.

Auto Number A system-generated sequence number that uses a display format you define. The number is automatically incremented for each new record.

Checkbox Allows users to select a True (checked) or False (unchecked) value.

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.

Date Allows users to enter a date or pick a date from a popup calendar.

Data/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.

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.

Number Allows users to enter any number. Leading zeros are removed.

Percent Allows users to enter a percentage number, for example, "0" and automatically adds the percent sign to the number.

Phone Allows users to enter any phone number. Automatically formats it as a phone number.

Picklist Allows users to select a value from a list you define.

Picklist (Multi-Select) Allows users to select multiple values from a list you define.

Text Allows users to enter any combination of letters and numbers.

Text Area Allows users to enter up to 255 characters on separate lines.

Text Area (Long) Allows users to enter up to 131,072 characters on separate lines.

Time Allows users to enter a local time. For example, "2:40 PM", "14:40", "14:40:00", and "14:40:50:600" are all valid times for this field.

Next Cancel

Type here to search

01:26 PM 19-04-2019

After a consultation or treatment is complete, the doctor suggests if necessary another appointment for the patient. For feeding information related to this, we have created a custom field called Next Visit. " Date" is the Data Type used here. This feature permits us to enter a date or select one from a popup calendar. The field information is given in the next slide.

The screenshot shows the Salesforce Lightning Experience interface. At the top, there is a banner that says "It's Better in Lightning" and "Move to Lightning Experience and give your users a productivity boost". Below the banner, the URL is https://eu16.salesforce.com/00N1t00000LjEy1/e?setupid=CustomObjects&retURL=%2F011t00000JRF%3Fsetupid%3DCustomObjects. The main content area is titled "Edit Medications Custom Field NextVisit".

Field Information:

- Field Label: NextVisit
- Field Name: NextVisit
- Description: (empty)
- Help Text: (empty)
- Data Type: Date

General Options:

- Required: Always require a value in this field in order to save a record
- Default Value: Show Formula Editor
- Formula: \${CustomMetadata.Type__mtl.RecordAPIName.Field__c}

At the bottom of the page, there are "Change Field Type", "Save", and "Cancel" buttons.

The name of the field is “NextVisit”. The datatype been next visit, after a treatment or appointment is complete, the doctor if required suggests a follow-up consultation or diagnosis. He discusses the dates available with the patient and then books for a next visit by selecting the agreed upon date.

6. Management reports and dashboards

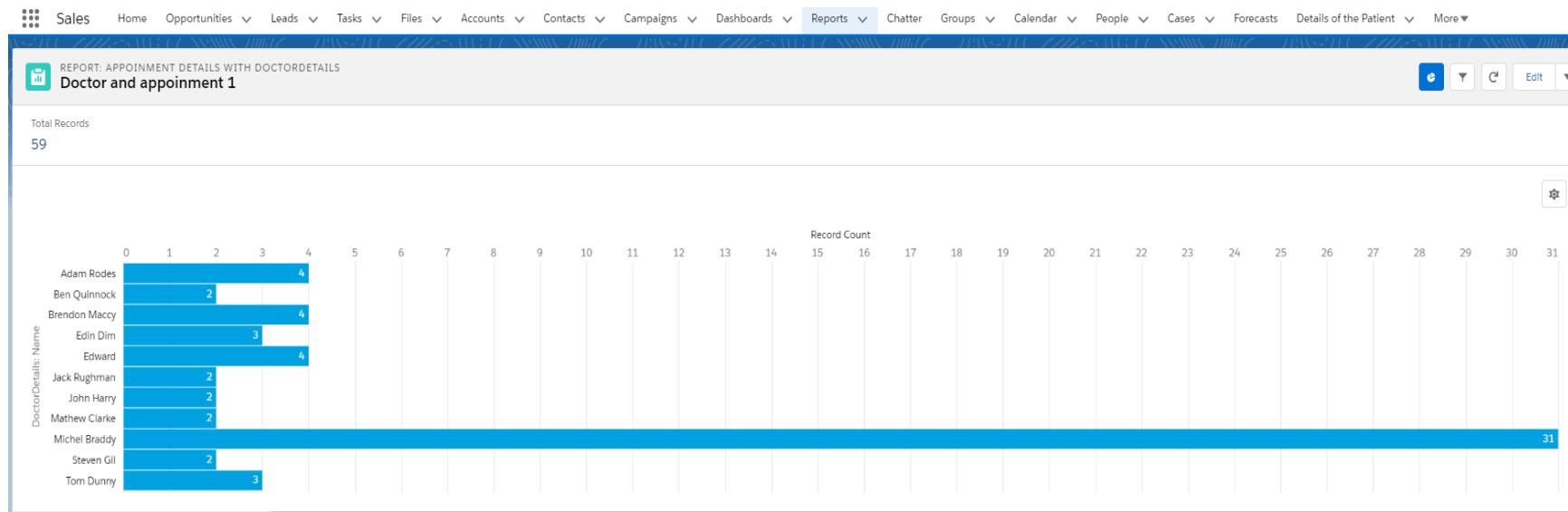
6.1 Report 1

The screenshot shows a CRM application interface with a top navigation bar featuring Sales, Home, Opportunities, Leads, Tasks, Files, and Accounts. Below the navigation is a report titled "REPORT: HOSPITAL WITH DOCTORDETAILS Hospital with DoctorDetails Report". The report includes a summary table with columns for Total Fees, Max Fee, and Min Fee, showing values of 970, 70.00, and 30.00 respectively. The main part of the report is a detailed table with columns for PatientDetails, DoctorDetails: Name, Fees, Medicines, Max Fee, and Min Fee. The table lists various patients and their associated doctors, fees, and medications.

Total Fees	Max Fee	Min Fee			
PatientDetails ↑	DoctorDetails: Name	Fees	Medicines	Max Fee	Min Fee
Amy Philips	Steven Gil	40	Losartan	-	-
CLAUDIA DITTMER	Mathew Clarke	70	Losartan	-	-
	Michel Braddy	50	Cymbalta	-	-
ERIC MULLER	Tom Dunny	50	Lorazepam	-	-
	Edward	40	Amoxicillin	-	-
Gilchrist	Tom Dunny	70	Xanax	-	-
Jessie Mathew	Brendon Maccy	40	Losartan	-	-
	Brendon Maccy	40	Cymbalta	-	-
John Myers	Adam Rodes	50	Xanax	-	-
Kelly Peter	Mathew Clarke	70	Clindamycin	-	-
Kevin	Brendon Maccy	30	Lexapro	-	-
Maria Jhones	Ben Quinnock	60	ramadol	-	-
Mathew James	Steven Gil	50	Codeine	-	-
Nancy Fernandes	Michel Braddy	50	Lorazepam	-	-
	Edward	60	Metoprolol	-	-
SmithJohn	Steven Gil	70	Naproxen	-	-
	Steven Gil	70	Lyrica	-	-
	Mathew Clarke	60	Losartan	-	-
Total		970		70.00	30.00

The above report indicates the medicines prescribed by the doctors. From the above report we observe that the medicine Losartan is the highest prescribed medicine which is prescribed on four different occasions. Due to the analysis of the preferred medicines, the hospital can be in a better position to import the stocks of those medicines which are highly prescribed by the doctors so that more patients would purchase these medicines. As a result of which the revenue of the hospital will increase. Due to the prescription of medicines from various specialist doctors, we can analyze the trend of the medicinal requirements in order to fulfil the treatment. As a result of which the more patients will be successfully cured thereby improving the reputation and market value of the hospital. This report is capable enough to meet our first analytics requirement. Along with the various medicine prescriptions, the doctor's fees is also included in the report. The fees is in euros. As seen from the report it is evident that the total fees collection from these set of doctors is 970 euros. The highest consultation fees charged by a doctor is 70 euros. The lowest consultation fees charged by a doctor is 30 euros. Although this report lays emphasis mainly on the medicines prescribed by the doctors along with the fees, but still we can also visualize the patients associated with each and every doctor.

6.2 Report 2



This report depicts the number of appointments of each and every doctor. As we can see that Dr. Michael Braddy has the highest number of appointments with the patients. Dr. Michael Braddy has total 31 appointments. Three doctors have total 4 appointments. Two doctors have total 3 appointments. Five doctors have total 2 appointments. From the above figure it is evident that there are total 59 appointments amongst 11 doctors. By referring the above report, the hospital is in a better position to analyze the inward flow of the patients in order to determine how many nurses and staff are required in the hospital. This will help to reduce the administrative cost because the human resources are always one of the significant contributing factors towards the administrative cost. This report is capable enough to meet our second analytics requirement.

6.3 Report 3

The screenshot shows a Salesforce report interface. At the top, there are navigation links: Sales, Home, Opportunities, and Leads. Below the header, the report title is "REPORT: HOSPITAL WITH PATIENTDETAILS sum Hospital with PatientDetails Repo". The report displays a table of patient fees.

Total Fees 1,932		
DoctorDetails	PatientDetails: Name	Fees
-	Paster	50
	Nancy Fernandes	50
	Rebeka Mary	70
	ERIC MULLER	64
	Marla Jhones	90
	NOAH PATEL	40
	Ricky Johnson	30
	Amy Phillips	50
	CLAUDIA DITTMER	78
	Callins Christiana	50
	Jesslie Mathew	44
	Yosil Muge	55
	Kelly Peter	30
	Kevin	88
	JohnBradew	23
	Mathew James	40
	SmithJohn	70
	Nick Jhones	40
Adam Rodes	John Myers	50
Ben Quinnoch	Marla Jhones	60
Brendon Macky	Jesslie Mathew	40
	Jesslie Mathew	40
	Kevin	30
	Nancy Fernandes	60
	ERIC MULLER	40

This report depicts the total profit generated in the hospital for one day. If we carefully observe the report we realize that this report indicates the fees paid by each and every individual patient in the hospital. This fees is not the consultation fees rather it is the fees paid by the patient towards hospital directly for the hospital's services and procedures. From the report it is evident that the total profit generated by the hospital in one day is 1932 euros. Maria Jhones has paid 90 euros which the highest to the hospital. This

report will help us to monitor the daily cash flow of the hospital. The inward cashflow of the hospital has a significant impact on the enhancements of various services and facilities to the patients. The more profit the hospital gets the better services the hospital can provide. This report is sufficient enough to meet our third analytics requirement.

6.4 Dashboard 1

Sales Home Opportunities Leads Tasks Files Accounts Contacts Campaigns Dashboards Reports Chi

aaa

+ Component

Doctors Fees & Preferred Medicine

DoctorDetails: Name ↑	Fees	Medicines
Adam Rodes	50	Xanax
Ben Quinnock	60	ramadol
Brendon Maccy	30	Lexapro
Brendon Maccy	40	Cymbalta
Brendon Maccy	40	Losartan
Edward	40	Amoxicillin
Edward	60	Metoprolol
Mathew Clarke	60	Losartan
Mathew Clarke	70	Clindamycin
Mathew Clarke	70	Losartan
Michel Braddy	50	Cymbalta
Michel Braddy	50	Lorazepam
Steven Gil	40	Losartan
Steven Gil	50	Codeine
Steven Gil	70	Lyrica
Steven Gil	70	Naproxen
Tom Dunny	70	Xanax
Tom Dunny	50	Lorazepam

[View Report \(Hospital with DoctorDetails Report\)](#)

Doctor and appointments

Record Count

A donut chart with a dark blue center and a ring divided into several segments of different colors (blue, purple, orange, red, green). The number '59' is displayed in the center of the chart.

[View Report \(Doctor and appointments\)](#)

DoctorDetails: Name

- Michel Braddy
- Adam Rodes
- Brendon Maccy
- Edward
- Edin Dim
- Tom Dunny
- Ben Quinnock
- Jack Rughman
- John Harry
- Mathew Clarke
- ...

Hospital Total Profit

1,932

[View Report \(sum Hospital with PatientDetails Report\)](#)

The above dashboard indicates the significant results of all the reports into a single frame in order to deduce a meaningful conclusion. The above dashboard signifies the following results:

- Doctor fees and preferred medicines.
- Doctors and appointments.
- Total profit earned by the hospital in a day.

From the above dashboard it is evident that Dr. Mathew Clarke charges the highest fees of 70 euros and his preferred medicines are Losartan and Clindamycin. Dr. Michael Braddy has the highest number of appointments and the total number of appointments in the hospital in one day is 59. The total profit earned by the hospital in one day is 1932 euros. This dashboard is capable enough to meet our all the three analytics requirement.

7. Web Integration

Our hospital management system salesforce CRM project is integrated into a web portal. With the help of this web portal implementation the patient will be able to access the services of the hospital right from the registration to in-voice billing. In order to implement this web portal, we have used visual force pages and APEX programming. Various interactive web pages are designed in order to capture data from the patient and to save it in the hospital database.

The first web page which the homepage of our system is the login page. In this page, the first time visitor needs to register himself/herself first in order to access to the services of the hospital. As far as existing patients are concerned, they just need to enter their Username and password in order to access the hospital services.



Toby medical care
Best medical services

Login Page

UserName

password

SUBMIT

Cancel

Register

This is the APEX code of the login page:

Visualforce Markup Version Settings

```
<apex:page standardController="Login__c" showheader="False">
    <apex:pagemessages></apex:pagemessages>
    <apex:stylesheet value="http://netdna.bootstrapcdn.com/twitter-bootstrap/2.3.2/css/bootstrap-combined.min.css"/>
    <apex:form>
        <apex:pageBlock>
            <apex:image url="{!!$Resource.Image}" width="300" height="200" style="margin-top:10px;"/>
            <div align="Center">
                <apex:outputText style="font-size:26px; color:black; "/><BR/>
            </div>
            <apex:pageBlockSection showHeader="true" title="Login Page" columns="1" collapsible="False">
                <apex:inputField value="{!!Login__c.UserName__c}" style="width:300px;height:25px;" Required="True"/>
                <apex:inputField value="{!!Login__c.password__c}" style="width:300px;height:25px;" Required="True"/>
            </apex:pageBlockSection>
            <div align="center">
                <tr>
                    <td>
                        <apex:commandbutton value="SUBMIT" action=" {!save} " />
                    </td>
                    <td>
                        <apex:commandbutton value="Cancel" action=" {!save} " />
                    </td>
                    <td>
                        <input type="button" value="Register" style="width:100px;height:30px" onclick="window.open('https://c.eu16.visual.force.com/apex/PatientDetails') " />
                    </td>
                </tr>
            </div>
        </apex:pageBlock>
    </apex:form>
</apex:page>
```

After clicking the register button, the new patient has to fill the following form in order to update his details in the hospital database.



Toby medical care
Best medical services

Personal Details of patient

Address	<input type="text"/>
BloodGroup	<input type="text" value="--None--"/>
PatientName	<input type="text"/>
DOB	<input type="text" value=" [20/04/2019]"/>
Email	<input type="text"/>
Gender	<input type="text" value="--None--"/>
MobileNumber	<input type="text"/>
PatientId	

SUBMIT **Cancel**

After clicking the SUBMIT button, the new patient details will be updated in the hospital database and a new patient ID will be generated.

This is the APEX code of the patient details form filling page:

Visualforce Markup Version Settings

```
<apex:page standardController="Patient__c" showheader="False">
    <apex:pagemessages />
    <apex:stylesheet value="http://netdna.bootstrapcdn.com/twitter-bootstrap/2.3.2/css/bootstrap-combined.min.css"/>

    <apex:form>
        <apex:pageBlock>
            <apex:image url="{!!$Resource.Image}" width="300" height="200" style="margin-top:10px;"/>
            <div align="Center">
                <apex:outputText style="font-size:26px; color:black; "/><BR/>
            </div>
            <apex:pageBlockSection showHeader="true" title="Personal Details of patient" columns="1" collapsible="False">
                <apex:inputField value="{!!Patient__c.Address__c}" style="width:300px;height:25px;" Required="False"/>
                <apex:inputField value="{!!Patient__c.BloodGroup__c}" style="width:300px;height:25px;" Required="True"/>
                <apex:inputField value="{!!Patient__c.PatientName__c}" style="width:300px;height:25px;" Required="True"/>
                <apex:inputField value="{!!Patient__c.DOB__c}" style="width:300px;height:25px;" Required="True"/>
                <apex:inputField value="{!!Patient__c.Email__c}" style="width:300px;height:25px;" Required="True"/>
                <apex:inputField value="{!!Patient__c.Gender__c}" style="width:300px;height:25px;" Required="True"/>
                <apex:inputField value="{!!Patient__c.MobileNumber__c}" style="width:300px;height:25px;" Required="True"/>
                <apex:inputField value="{!!Patient__c.PatientId__c}" style="width:300px;height:25px;" Required="True"/>
            </apex:pageBlockSection>
            <div align="center">
                <tr>
                    <td>
                        <apex:commandbutton value="SUBMIT" action="{!!save}"/>
                    </td>
                    <td>
                        <apex:commandbutton value="Cancel" action="{!!save}"/>
                    </td>
                </tr>
            </div>
        </apex:pageBlock>
    </apex:form>
</apex:page>
```

After successful registration and updation of patient details, the patient will now be able to book an appointment. In order to book an appointment, the patient has to fill the following form:



Toby medical care
Best medical services

Book Appointment

AppointmentDate	<input type="text"/> [20/04/2019]
DoctorDetails	<input type="text"/> 
PatientDetails	<input type="text"/> 

SUBMIT **Cancel**

In order to book an appointment, the patient has to choose the appointment date along with the doctor from a list of available doctors.

This is the APEX code of the appointment booking form:

Visualforce Markup Version Settings

```
<apex:page standardController="Appointments__c" showheader="False">
    <apex:pagemessages></apex:pagemessages>
    <apex:stylesheet value="http://netdna.bootstrapcdn.com/twitter-bootstrap/2.3.2/css/bootstrap-combined.min.css"/>
    <apex:form>
        <apex:pageBlock>
            <apex:image url="{!!$Resource.Image}" width="300" height="200" style="margin-top:10px;"/>
            <div align="Center">
                <apex:outputText style="font-size:26px; color:black; "/><BR/>
            </div>
            <apex:pageBlockSection showHeader="true" title="Book Appointment" columns="1" collapsible="False">
                <apex:inputField value="{!!Appointments__c.AppointmentDate__c}" style="width:300px;height:20px;" Required="False"/>
                <apex:inputField value="{!!Appointments__c.DoctorId__c}" style="width:300px;height:20px;" Required="True"/>
                <apex:inputField value="{!!Appointments__c.PatientId__c}" style="width:300px;height:20px;" Required="True"/>
            </apex:pageBlockSection>
            <div align="center">
                <tr>
                    <td>
                        <apex:commandbutton value="SUBMIT" action="{!!save}"/>
                    </td>
                    <td>
                        <apex:commandbutton value="Cancel" action="{!!save}"/>
                    </td>
                </tr>
            </div>
        </apex:pageBlock>
    </apex:form>
</apex:page>
```

After successful booking of appointment, the control pointer of this web portal goes towards the receptionist or the administrator of the hospital.

First and foremost the hospital administrator will update the details of a newly appointed doctor in the hospital. In order to do that, the hospital administrator has to fill the following form:

The screenshot shows a web-based form titled "Details of Doctors". At the top left is a logo for "Toby medical care" with the tagline "Best medical services". The form has a dark teal header bar. Below it, there are five input fields: "Specialization" (a dropdown menu currently showing "--None--"), "DoctorName", "MobileNumber", "Email", and "DoctorId". Each field has a red vertical line to its left. At the bottom right are two buttons: "SUBMIT" and "Cancel".

The hospital administrator has to fill the Doctor's name, Doctor's contact details and Doctor's specialization. After successfully submitting all the details, a doctor ID will be generated. After successful generation of the doctor ID, the details of the new doctor will get updated in the hospital database and will get reflected amongst the available doctors portal so that the patient while booking an appointment can see this doctor's availability.

This is the APEX code of the newly appointed doctor form:

Visualforce Markup Version Settings

```
<apex:page standardController="DoctorDetails__c" showheader="False">
    <apex:pagemessages />
    <apex:stylesheet value="http://netdna.bootstrapcdn.com/twitter-bootstrap/2.3.2/css/bootstrap-combined.min.css"/>

    <apex:form>
        <apex:pageBlock>
            <apex:image url="{!$Resource.Image}" width="300" height="200" style="margin-top:10px;"/>
            <div align="Center">
                <apex:outputText style="font-size:26px; color:Black; "/><br/>
            </div>
            <apex:pageBlockSection showHeader="true" title="Details of Doctors" columns="1" collapsible="False">
                <apex:inputField value="{!!DoctorDetails__c.Specialization__c}" style="width:300px;height:25px;" Required="False"/>
                <apex:inputField value="{!!DoctorDetails__c.DoctorName__c}" style="width:300px;height:25px;" Required="True"/>
                <apex:inputField value="{!!DoctorDetails__c.MobileNumber__c}" style="width:300px;height:25px;" Required="True"/>
                <apex:inputField value="{!!DoctorDetails__c.Email__c}" style="width:300px;height:25px;" Required="True"/>
                <apex:inputField value="{!!DoctorDetails__c.DoctorId__c}" style="width:300px;height:25px;" Required="True"/>
            </apex:pageBlockSection>

            <div align="center">
                <tr>
                    <td>
                        <apex:commandbutton value="SUBMIT" action="{!!save}"/>
                    </td>
                    <td>
                        <apex:commandbutton value="Cancel" action="{!!save}"/>
                    </td>
                </tr>
            </div>
        </apex:pageBlock>
    </apex:form>
</apex:page>
```

After successful registration of the newly appointed doctor, the patient will be able to book an appointment with that doctor. So, at the patients end the patient will come for consultation to doctor and after successful consultation, the doctor will prescribe some tests, medicines and procedures to the patient. A copy of these prescriptions will be handed over to the hospital administrator in order to generate the billing in-voice. For bill generation, the hospital administrator needs to fill the following form:

The screenshot shows a web-based form titled "Doctors Fees". At the top left is a logo for "Toby medical care" with the tagline "Best medical services". The main title "Doctors Fees" is displayed in a dark red header bar. Below the header, there are four input fields labeled "Bills", "Fees", "PatientDetails", and "Medicines", each with a small search icon to its right. At the bottom right are two buttons: "SUBMIT" and "Cancel".

The hospital administrator will enter doctor's fees, medicines and details of patient and doctor. After successfully clicking the submit button a final bill will be generated which will comprise of doctor fees and hospital charges.

After successful bill generation, the prescription along with the patient details and doctor details will be stored in the hospital database.

This is the APEX code of the bill generation form:

Visualforce Markup Version Settings

```
<apex:page standardController="Hospital__c" showheader="False">
    <apex:pagemessages />
    <apex:stylesheet value="http://netdna.bootstrapcdn.com/twitter-bootstrap/2.3.2/css/bootstrap-combined.min.css"/>

    <apex:form>
        <apex:pageBlock>
            <apex:image url="{!!$Resource.Image}" width="300" height="200" style="margin-top:10px;"/>
            <div align="Center">
                <apex:outputText style="font-size:26px; color:black; "/><BR/>
            </div>
            <apex:pageBlockSection showHeader="true" title="Doctors Fees" columns="1" collapsible="False">
                <apex:inputField value="{!!Hospital__c.Bills__c}" style="width:300px;height:25px;" Required="True"/>
                <apex:inputField value="{!!Hospital__c.Fees__c}" style="width:300px;height:25px;" Required="True"/>
                <apex:inputField value="{!!Hospital__c.PatientId__c}" style="width:300px;height:25px;" Required="True"/>
                <apex:inputField value="{!!Hospital__c.Medicines__c}" style="width:300px;height:25px;" Required="True"/>
                <apex:inputField value="{!!Hospital__c.DoctorDetails__c}" style="width:300px;height:25px;" Required="True"/>
            </apex:pageBlockSection>

            <div align="center">
                <tr>
                    <td>
                        <apex:commandbutton value="SUBMIT" action="={!save}" />
                    </td>
                    <td>
                        <apex:commandbutton value="Cancel" action="={!cancel}" />
                    </td>
                </tr>
            </div>
        </apex:pageBlock>
    </apex:form>
</apex:page>
```

If required, the patient has to revisit the doctor in order to perform further procedures or consultation. In this case, the hospital administrator will feed the next visit date of the patient in the hospital database by filling the following form:



Toby medical care
Best medical services

Next visit

Description	<input type="text"/>
DoctorDetails	<input type="text"/> 
NextVisit	<input type="text"/> [20/04/2019]
PatientDetails	<input type="text"/> 

SUBMIT **Cancel**

This is the APEX code of the next visit form:

Visualforce Markup Version Settings

```
<apex:page standardController="Medications__c" showheader="False">
    <apex:pagemessages></apex:pagemessages>
    <apex:stylesheet value="http://netdna.bootstrapcdn.com/twitter-bootstrap/2.3.2/css/bootstrap-combined.min.css"/>

    <apex:form>
        <apex:pageBlock>
            <apex:image url="{!!$Resource.Image}" width="300" height="200" style="margin-top:10px;"/>
            <div align="Center">
                <apex:outputtext style="font-size:26px; color:black; "/><BR/>
            </div>
            <apex:pageBlockSection showHeader="true" title="Next visit" columns="1" collapsible="False">
                <div align="Center">
                    <apex:inputField value="{!!Medications__c.Description__c}" style="width:300px;height:20px;" Required="False"/>
                    <apex:inputField value="{!!Medications__c.DoctorId__c}" style="width:300px;height:20px;" Required="True"/>
                    <apex:inputField value="{!!Medications__c.NextVisit__c}" style="width:300px;height:20px;" Required="True"/>
                    <apex:inputField value="{!!Medications__c.PatientId__c}" style="width:300px;height:20px;" Required="True"/>
                </div>
            </apex:pageBlockSection>

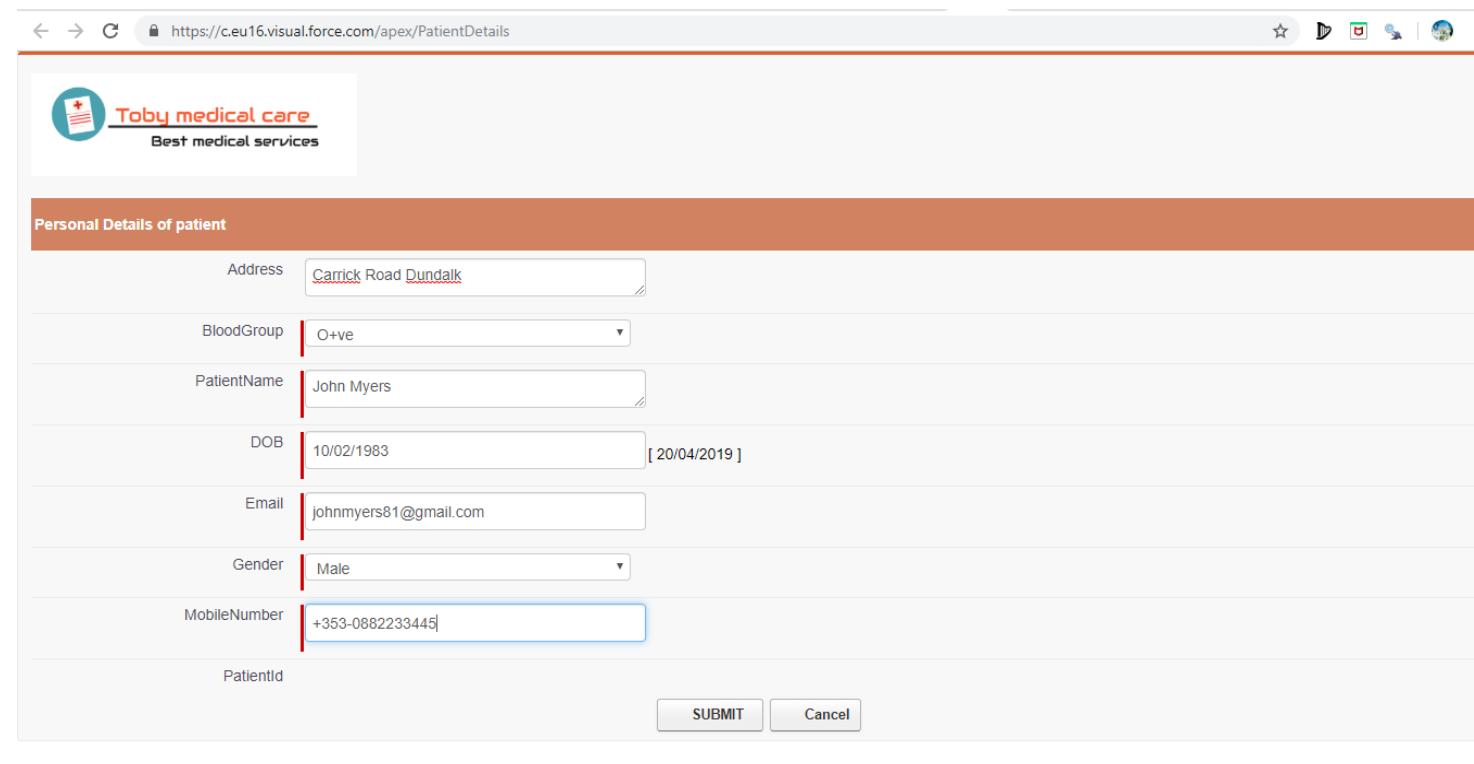
            <div align="center">
                <tr>
                    <td>
                        <apex:commandbutton value="SUBMIT" action="{!!save}"/>
                    </td>
                    <td>
                        <apex:commandbutton value="Cancel" action="{!!save}"/>
                    </td>
                </tr>
            </div>
        </apex:pageBlock>
    </apex:form>
</apex:page>
```

8. Test Data

For test data, data was feeded under Patient Details, Doctor Details and Appointments.

8.1 Patient Details

Patient details is the input place where the user in our case patient feeds information to the system about his basic details. The patient's details is added or also can be updated in this section. The patient feeds in basic information like his address, patient name, date of birth, email, gender, mobile number. In total, 25 patient details have been feeded to the system. The screenshot below shows us the process.



The screenshot shows a web browser window with the URL <https://ceu16.visual.force.com/apex/PatientDetails>. The page title is "Toby medical care" with the subtitle "Best medical services". The main content area is titled "Personal Details of patient". It contains the following form fields:

Field	Value
Address	Carrick Road Dundalk
BloodGroup	O+ve
PatientName	John Myers
DOB	10/02/1983 [20/04/2019]
Email	johnmyers81@gmail.com
Gender	Male
MobileNumber	+353-0882233445
PatientId	(empty)

At the bottom of the form are two buttons: "SUBMIT" and "Cancel".

PatientDetails Detail

Name	John Myers
Address	Carrick Road Dundalk
DOB	10/02/1983
BloodGroup	O+ve
Age	36.19
Email	johnmyers81@gmail.com
Gender	Male
MobileNumber	+353-0882233445
PatientId	7
PatientName	John Myers
Created By	Karthik Sundaresan, 19/04/2019 17:06
Last Modified By	Karthik Sundaresan, 19/04/2019 17:06

Notes & Attachments (0) | Appointment Details (0) | Details of Medical History (0)

Owner: Karthik Sundaresan [Change]

Recycle Bin

Notes & Attachments

Appointment Details

Details of Medical History

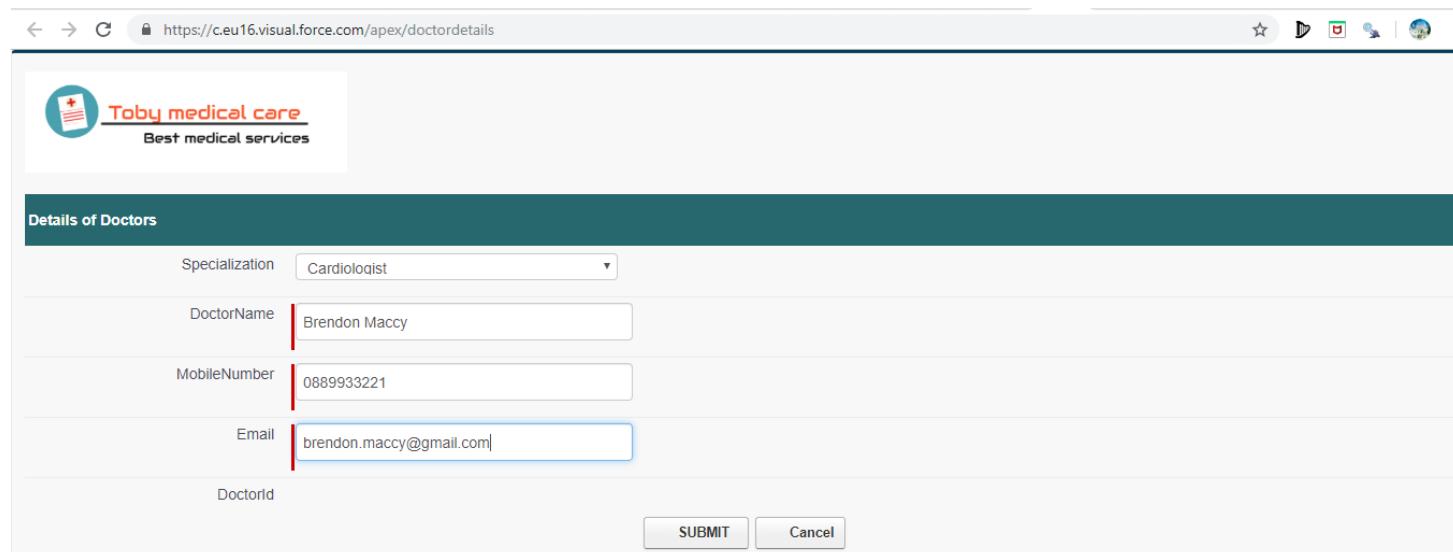
https://eu16.salesforce.com/a001t000009P66Q

Windows Taskbar: Type here to search, File, Edge, Google Chrome, Mail, Word, Excel, Powerpoint, etc.

The above screenshot depicts how the resultant data will be saved. We can see that all the fields have been feeded and the input information makes sense. The patient ID is auto-generated and is unique for each patient. In the next slide we will have a look at how other patient details were added.

8.2 Doctor Details

Next, we create details of the doctors in the hospital. We have added a total number of nine specializations and created a doctor for each specialization. There are 9 number of doctor's details that is fed to the system. The details about the Doctor that are entered are his specialization, name, mobile number and email. The doctor ID is an unique number that is auto-generated by the system. The resultant data that is stored is shown in the next system.



The screenshot shows a web browser window with a form for entering doctor details. The URL in the address bar is <https://c.eu16.visual.force.com/apex/doctordetails>. The page has a header with a logo and the text "Toby medical care" and "Best medical services". Below the header, there is a dark teal header bar with the text "Details of Doctors". The main form area contains the following fields:

Specialization	Cardiologist
DoctorName	Brendon Macky
MobileNumber	0889933221
Email	brendon.macky@gmail.com
DoctorId	(empty)

At the bottom of the form are two buttons: "SUBMIT" and "Cancel".

The screenshot shows a Salesforce Visualforce page titled "DoctorDetails" for a doctor named "Brendon Macky". The page includes a navigation bar with links like Home, Chatter, Campaigns, Leads, Accounts, Contacts, Opportunities, Forecasts, Contracts, Orders, Cases, Solutions, Products, Reports, Dashboards, and "Details of the Patient". A sidebar on the left lists recent items including Noah Patel, Eric Muller, Claudia Dittmer, Ricky Johnson, Jessie Mathew, Amy Philips, Collins Christiana, Rebeka Mary, Maria Jhones, and Yosil Muge. The main content area displays the doctor's details: Name (Brendon Macky), Email (brendon.macky@gmail.com), Gender, MobileNumber (088993221), DoctorId (101), Specialization (Cardiologist), and DoctorName (Brendon Macky). It also shows the creation date (Created By: Karthik Sundaresan, 19/04/2019 20:42) and last modified date (Last Modified By: Karthik Sundaresan, 19/04/2019 20:42). Below the main details, there are sections for "Appointment Details" and "Details of Medical History", both of which currently show "No records to display". At the bottom of the page, there are links for "Edit", "Delete", and "Clone". The footer contains copyright information and links to Privacy Statement, Security Statement, Terms of Use, and 508 Compliance.

We can see that all the details that was input into the system and submitted is reflecting now and can be viewed. The Doctor ID which was not input by the doctor has a value now, it proves that the system auto-generated it. All the relevant fields are seen and the information does make sense.

8.3 Appointment Details

We have created 59 appointments for our hospital management system project. Patient after providing his details and after successfully signed in books the appointment based on his condition and according to the available time slots of the specialist. The next process is that a resultant data is generated consisting of appointment details. Information regarding appointment date, partner details, appointment name is generated. The patient can update or cancel appointments by accessing this page.



The screenshot shows a web browser window with a red header bar containing the URL <https://c.eu16.visual.force.com/apex/bookappointment>. The main content area has a light gray background. At the top left is a logo for "Toby medical care" with the tagline "Best medical services". Below the logo is a red horizontal bar with the text "Book Appointment". The form consists of three input fields: "AppointmentDate" with the value "30/04/2019" and a note "[20/04/2019]", "DoctorDetails" with the value "Adam Rodes" and a magnifying glass icon, and "PatientDetails" with the value "Mathew James" and a magnifying glass icon. At the bottom right are two buttons: "SUBMIT" and "Cancel".

The screenshot shows a Salesforce Visualforce page titled "Appointments Detail" for record "a021t00000Axc7y". The page displays the following data:

Appointments Name	a021t00000Axc7y
AppointmentDate	30/04/2019
PatientDetails	Mathew James
DoctorDetails	Adam Rodes
Created By	Karthik Sundaresan, 20/04/2019 03:45
Last Modified By	Karthik Sundaresan, 20/04/2019 03:45

The page also includes a "Recent Items" sidebar and a "Recycle Bin" button at the bottom. The browser address bar shows the URL <https://eu16.salesforce.com/a021t00000Axc7y>.

The appointment details of another successfully booked appointment is shown above, the resultant data consists of appointment name, date and details of both patient and doctor. This information is stored for future reference for both patient and doctor.

9. Teamwork

Working on Strategic ICT and eBusiness Implementation project in a team has not just been a requirement for all of us, since it's a group project and each one of us have to do our bit. But it has been a learning experience. We didn't know each other personally when we made a team to make this project, although now it has made us good friends. From brainstorming in the NCI student's union about what topic has to be selected to proceed further to arguing in whatsapp group , we have been through it all be it arguments when to meet or who should be in charge of what task. Albeit eventually, we all put in equal dedication to complete this project. No matter what the conflict or discussion was about, in the end we made sure we respected one another's thoughts about how to go ahead and gave each other ample time to voice out opinions about how to proceed with the project work.

A whatsapp group was created the same day the four of us decided to form the group for this project. All of us were active in group discussions and when a suggestion of taking up " Hospital Management System " as our project was brought up, all of us were in terms with the topic and straight on went about having further talks about how can cover this topic and relate it to Strategic ICT and eBusiness Implementation. We also shared documents related to our work through NCI student mail and also through gmail regularly. The roles were equally split among each other, we discussed and recognized who is good at what and accordingly planned the work that has to be done. This did take some time but regular team meets and interaction did the trick. Meetings were usually at study room, or at times student's union where we would work for long hours and play a game of pool in between to freshen up our minds.

With the deadline nearby, we decided to meet in one of the groupmate's house every Sunday and work on the project. The creation of process flow diagram, implementation of architecture to visualization – each of us took in equal share of work and most of the work was completed in the presence of all groupmates so that should any doubt or confusion arise, we could assist one another and get going with the work. We always had a confidence that if something stops our work, we could rely on each and sort out the issue. The knowledge of using Salesforce has a major part in completing this project, but all of us agree that collaborating with one been another, active listening, and without the support of everyone in the team our project " Hospital Management System " would have completed.

Encryption
Messages to this group are secured with end-to-end encryption. Tap for more info.

4 participants

You
Be smart and start

+91 95002 11710 Group Admin
Real Failure is learn... ~Karthik Sundaresan S

Pranay Dublin
十人十色

Varun Dublin

Exit group

Report group

ICT project
Created by +91 95002 11710, 23/01/2...

required ? 20:29

+91 95002 11710 ~Karthik Sundaresan S
yup bro 20:29

Varun Dublin
Okay 20:29

Karthik... 20:39 ✓

+91 95002 11710 ~Karthik Sundaresan S
yup 20:40

Myself and pranay are coming at your home sharp at 10 o'clock 20:40 ✓

Varun you also come to karthiks home at 10 20:40 ✓

+91 95002 11710 ~Karthik Sundaresan S
ok 20:40

Varun Dublin
 20:41

+91 95002 11710 ~Karthik Sundaresan S

Type a message

10. References

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Salesforce: <https://www.salesforce.com/eu/>

Trailhead: <https://trailhead.salesforce.com/en/home>.

