**An Order Management System Using Force.com**

Abstract:

Lately some business employees are affable in outside sales use specialized technical gadgets and specifically use them to manage orders. Unfortunately, there are number of inadequacies to such approaches and can be very pricey to stay up-to-date and retain the trend. The greatest concern of all business managers is to take advantage of latest technology platforms to convert overall business schemes, productivity, and information accessibility. In this paper, we have written a report on the app “MyBusiness” we developed for order management system to deliver emergency medical supplies during COVID-19 pandemic. Our main objective was to acquire an integrated platform using the cloud architecture of salesforce to be able to accelerate to every part of the system. The diligence of this report is to provide brief idea about the our MyBusiness App we built. In this app we have five objects i.e. Customers, Orders, Items, Suppliers and Payment. Each Objects have been secured with Validation Rules, Workflow Rules and Time-Based Workflow. Again, there is a role hierarchy for company where we have created profiles and assigned roles linked to these profiles to the users. Profiles are given authorizations correspondingly and are authenticated with Tab Level and Object Level Security.

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*Section 1*

***Introduction Section: This section should address the following:***

The COVID-19 outbreak has led to an intense and drastic shortage of essential medical supplies, such as protective mask, hand sanitizers, diagnostics, personal protective equipment, and other necessary supplies. Visualizing the urgency, X pharmaceutical ltd asked us to develop a suitable application by utilizing the Force.com cloud computing architecture. Likewise, we have developed an online Order-Management System “**MyBusiness**” for delivering emergency medical supplies during COVID-19

The system will include a collection of medical resources applicable for health professionals, health care managers, aged care providers and pathology providers. It will align inventories and orders across multiple channels, handle shipping schedules and order management. The stakeholders are:

* Customers,
* Suppliers,
* Sales manager,
* Supply Chain Manager,
* Customer Relationship Officer,
* Accounts Manager,
* CEO
* CIO

**Case Study & Use Cases**

Prior to this application, the organization used to control the workflow and documentation via a manual registry system. It was both time and energy consuming due to offline communication. In the light of this pandemic, a robust system like this will prove to be the most effective solution.

* Customers will be registered in the system with their name, address, and phone number.
* A new item will be enlisted by providing the item name and price
* New orders are going to be placed with the information of delivery type, quantity, item picked from a list, customer name, order placing date and contact information
* Along with the order, online payment will instigate upon checkout selection, which will prompt the user to specify payment type, date, corresponding order ID, currency and amount.
* The system will also have suppliers, who will register with their name, email, address and specify the item they are going to supply. Suppliers will supply globally obtained COVID-19 critical supplies that are currently facing limited market conditions.
* CEO and Customer Relationship Officer will have authority to approve or delete any customers (Object-level security); Enlisted customers will only be able to see each other’s name (tab-level security).
* Orders will be approved by the account manager.
* Supply Chain manager will handle responsibilities regarding approval of suppliers and monitor the supply chain process (Object-level security). Supply chain manager will not see any information regarding customers (tab-level security)
* Sales manager is in charge for moderating order and payments, as well as make sales or analytical reports
* Payment for the corresponding order will be checked upon by the Accounts Manager
* When an order has been placed with successful payment, a message will be sent to notify the account that an order is awaiting to be approved.
* There will be a customer notification system which will have the customer object fields for each customer’s record. In addition, there will be a **customer\_notified** field, which will have a default value set to “No”. When a customer receives an authorization confirmation mail, the system will automatically set the **customer\_notified** field to “Yes”. The customer will be a registered member of the system.
* When a new order will be created, **the order\_status** field of Order object will be set to default value “New”
* There will be an email alert sent to the Customer to inform them that their order has been placed. The **order\_status** field will be set to “Existing”
* A task will be created for the Account Manager to approve the payment and order to process the order for delivery
* There is a time-based workflow enabled which makes sure that after two days have passed, the account manager receives a reminder message for payment authorization and to initiate delivery within the next 24 hours

**Background of Sales Force- The Paas Platform**

In order to build apps that fits well exclusive in business requirements or its customers, organizations necessitate something that is adaptable, accessible and ascendable. Salesforce is one of Platform-as-a-service platform which has boosted many enterprises to change from a product support ideal to one where the consumer falls as fundamental key. Providing a reliable customer centric service proficiency to customers all over the world had been made easy-going by Salesforce. There are various reasons which made Salesforce the world’s leading CRM; it is faster and feasible from anyplace with very up-to-date information which supports in building more discerning pronouncements, customer information and relations are in single place which aids to make it simpler in tracking and moving the deal quicker. As Salesforce being one of the inventive companies after CRM platform, employees can effortlessly access it over the Internet without any difficulty to buy infrastructure to set up or manage. It is extremely convenient to login and get to work with comprehensive approach to put customers at the center of everything we do. Main object of Salesforce is to satisfy the customers. From sales and marketing to customer service as well as to make existing customer connection greater and to advance new customer relationship rapidly, it is highly effective to comprehend and enrich whole of these features of customer edge. In one hand, it instantaneously simplifies and automates business process and in other hand it is cheaper, easier, faster and better. Salesforce as Platform-as-a-service, lets a company’s sales, marketing and support teams to work in sync and see important sales and consumer records in depth, delivering them up to create new customers and improved service to remaining ones.

*Section 2*

***(a) System Modelling:***

a) Data Model for the PaaS Application: **MyBusiness**



**Figure:** The schema of the MyBusiness Application

This schema precisely presents the model for the MyBusiness application where it shows the five objects:

* **Order**
* **Item**
* **Customer**
* **Payment**
* **Supplier**

The diagram is achieved from the schema builder service and displays the fields of the object, the relationships among them and the data types of each field. E.g. Order-Item is a master detail relationship and Order-Payment is a lookup relationship. Inside the Order object, we have a data type of picklist inside the field “Delivery Type” and the field “Item” which is a required field.

***(b) Work-Flow Diagram:***

Figure: Work-flow diagram of the order management system

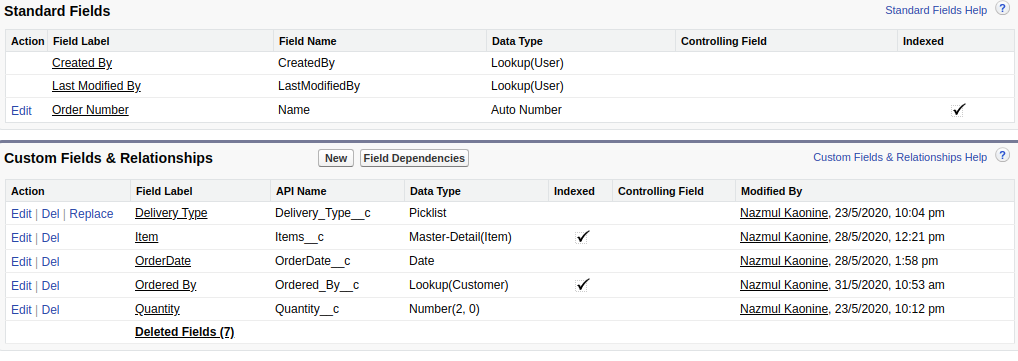
The entire Workflow of the Order Management Application, rules and critical employee tasks have been shown in the above diagram. The flow chart was made using Lucidchart (www.lucidchart.com).

***(c) System Screen & Diagrams by each member:***

*Nazmul Kaonine*

**Orders:**

*Object & Fields:*



*Key Fields:*

**Order Number:** The unique identifier for each order made by a customer which is a standard field with auto number data type.

**Delivery Type:** This is a picklist of Express or Standard deliveries.

**Order Date:** A date field corresponding to the date the order was made.

**Quantity:** A number field that will only support up to 99 units being ordered.

*Relationships:*

**Order-Item:** This is a master-detail relationship. Inside the orders interface, the item field can be opened to choose the item being ordered from a picklist. Thus, item is the master object and order is the detail object as without items, there can be no orders made.

**Order-Customer:** This is a lookup relationship denoted by the field ‘Orderedby’. Inside the orders interface, a customer name can be selected.

*Validation Rules:*

**Quantity\_NOT\_zero:** This rule simply validates that the quantity of items ordered cannot be 0.



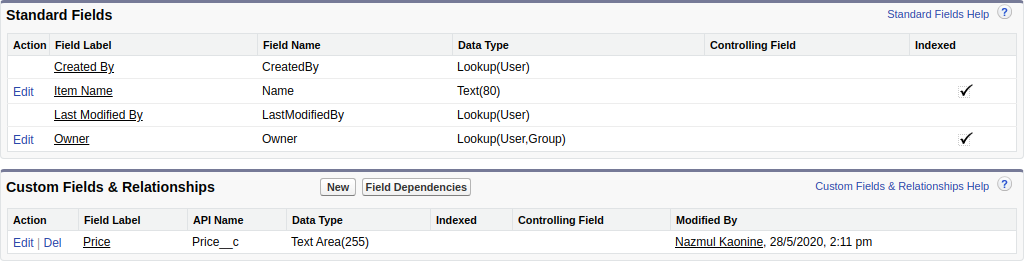
**Date\_NOT\_future:** The order creation date cannot be in future so; it raises an error.



*Nazmul Kaonine*

**Items:**

*Object & Fields:*



*Key Fields:*

**Item Name:** The unique identifier for each item that is a text field.

**Price:** This is a text area field containing the price of the item.

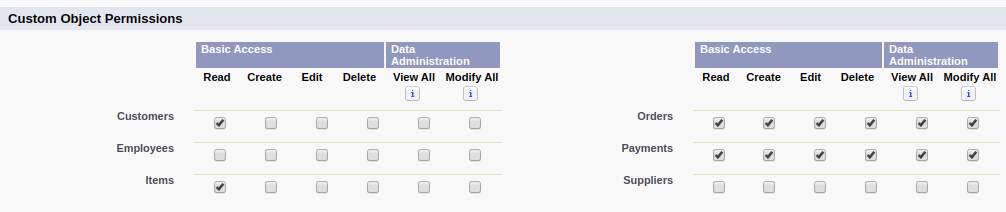
*Validation Rules:*

**Price\_GREATERTHAN\_10:** This rule ensures that the price of every item is greater than AUD 10.

**Security:**

*Sales Manager*

Object-Level Security:



The sales manager can modify and create all orders and payment object level tasks such as read/ create/ edit/ delete. Closely related objects such as customers and items are only read-only.

*Nazmul Kaonine*

Tab-Level Security:



The sales manager will have sales related tabs such as orders and items on top of his/her page. Lesser important tabs such as payments and customers will be available when the user chooses to view all tabs. Unrelated tabs such as supplier of the items and employee details are kept hidden.

**Organization-wide default:**

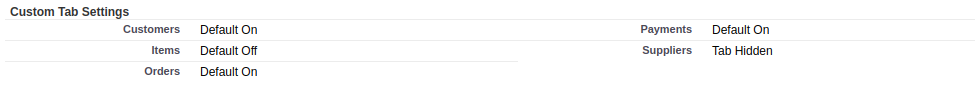


The Item object being the parent object, controls order. The item object has the most restricted user: Customer Relationship Officer who may need to read the records and view the item price but has no need to modify it. Therefore, Public Read Only is used. Also, access has been granted using hierarchies.

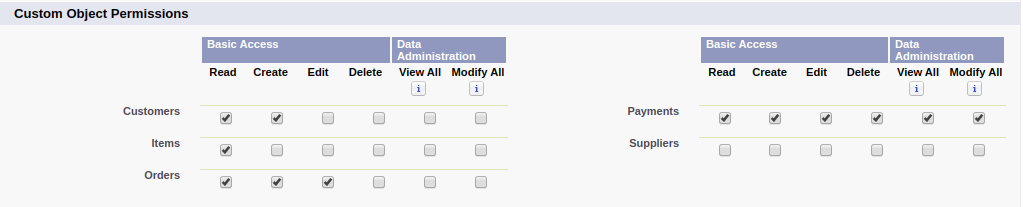
**Profiles & Users:**



The Accounts Manager has access to the MyBusiness App.



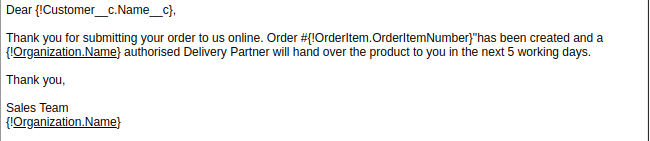
This role has Payments, Orders and Customers as priority tabs. If needed, items can also be accessed but supplier info is kept hidden.



The role of the Accounts manager is to approve orders after checking payments. Therefore, the role must have access to all payment options, can read customer data to verify distinct customer, to read Items being ordered and the order details as well. The role does not require editing current customer information or items and the deletion of orders. The deletion of orders is only to be handled by the Sales Manager.

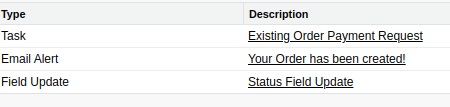
*Nazmul Kaonine*

**Email Notification:**

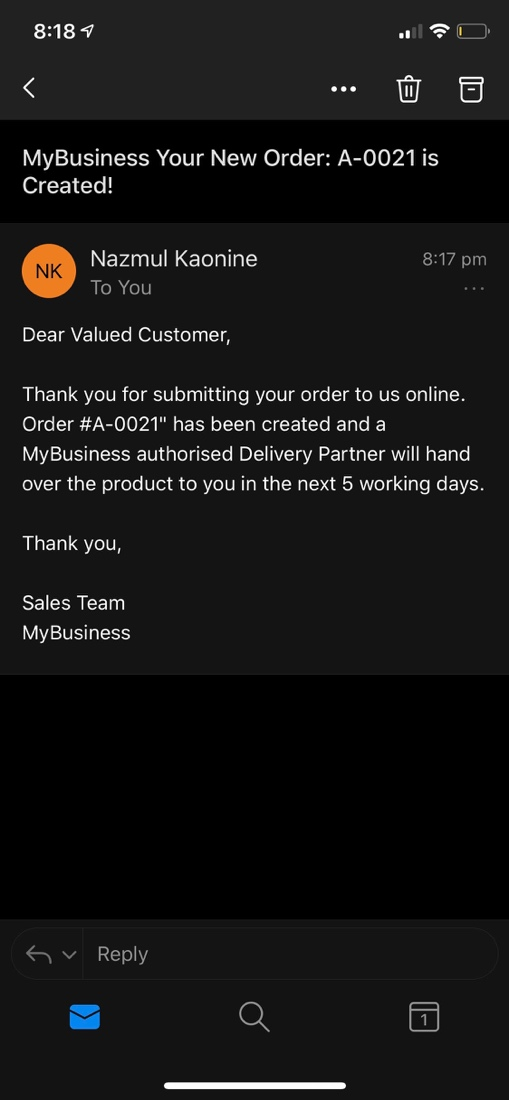


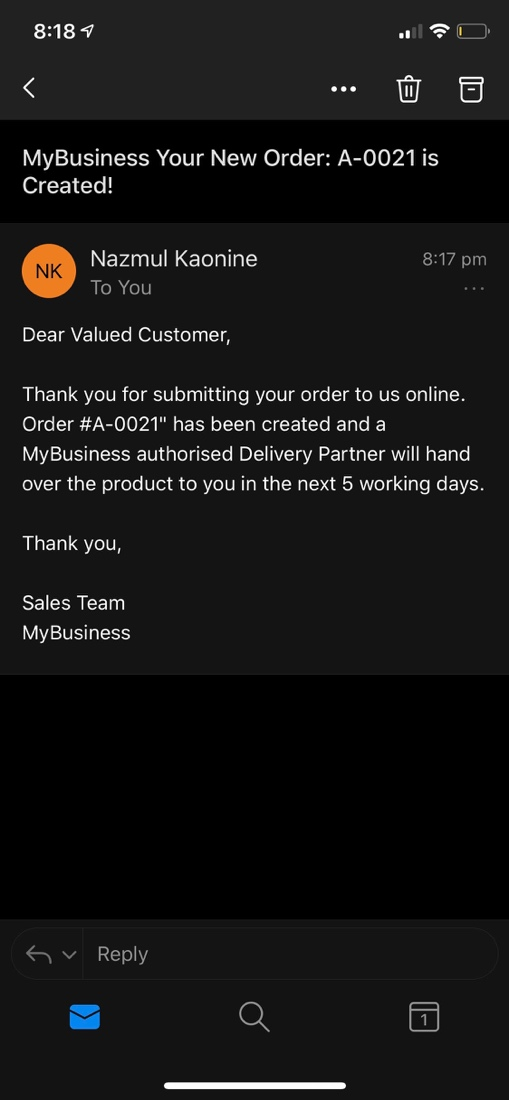
The sample Email Template to the customer for Order Creation.

**Workflow Rules:**



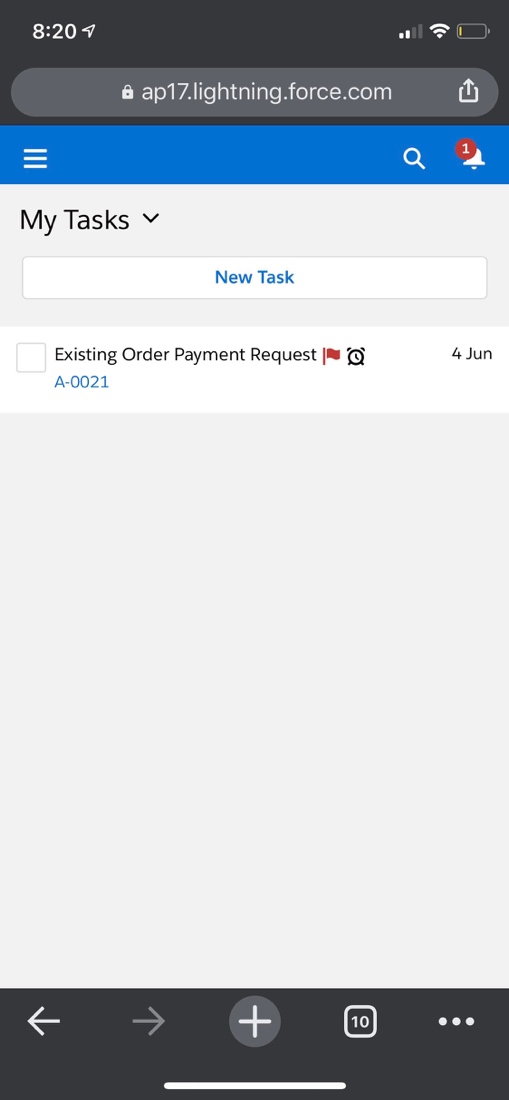
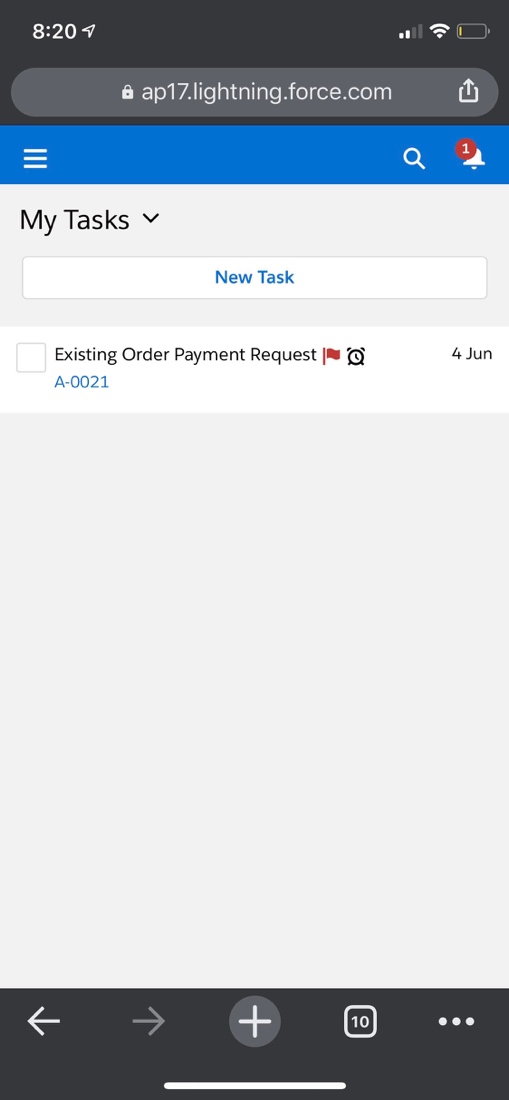
Step 1: Whenever an order is created and the Order Status criteria is “New”, these rules updates the Order Status field from New to Existing.





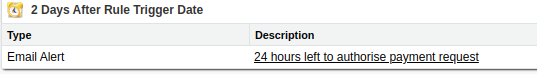
Step 2: An Email confirmation is sent to the Customer’s Email.

*Nazmul Kaonine*



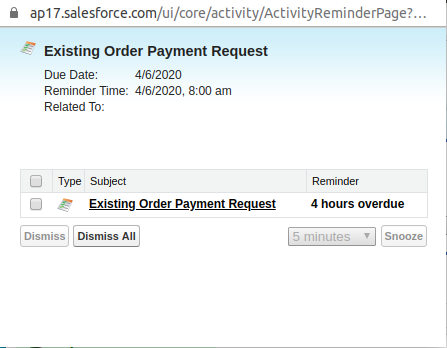
Step 3: A task is created for the Account Manager to authorize the order for delivery.

**Time-based Workflow:**

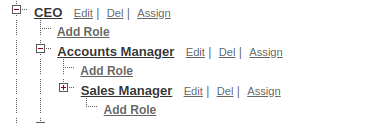


After 2 days have passed, the account manager will receive a reminder for payment authorization and to initiate delivery within the next 24 hours.A screenshot of a cell phone

Description automatically generated



**Role Hierarchy: Accounts Manager, Sales Manager, CIO**



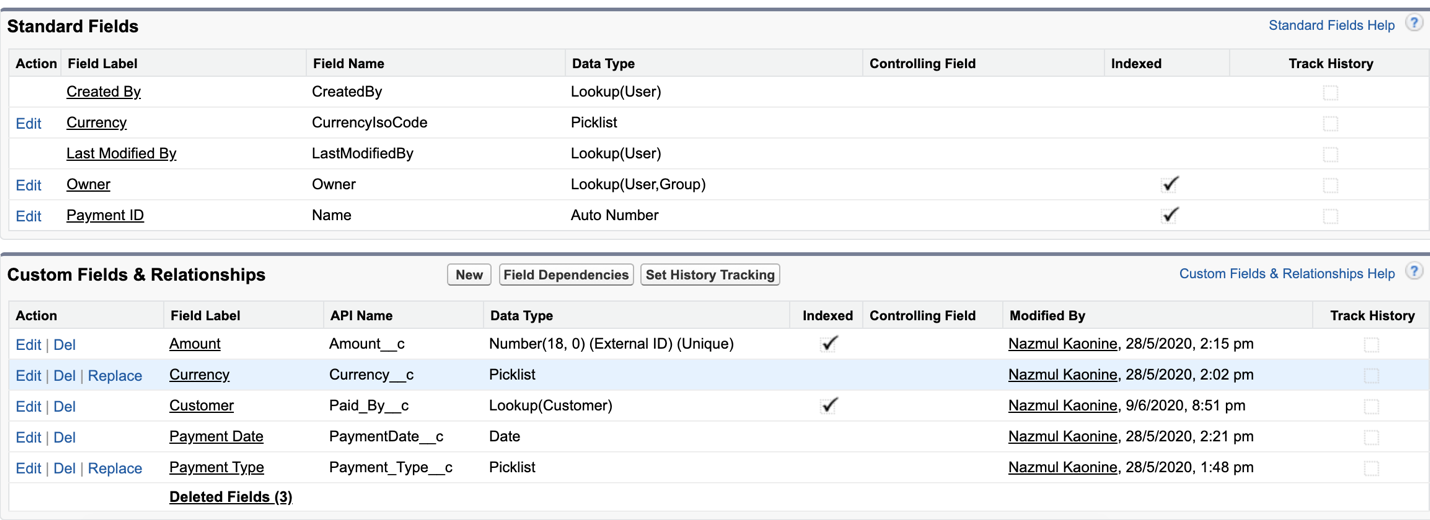
Role hierarchy affects access to records to the organization’s users. Since the objects above have been ticked as grant access using hierarchies, the system automatically grants access to all data to the role above the record owner. CEO and CIO are in the same level in the hierarchy. Accounts manager is directly below the CEO so all accessible data by the Accounts manager is also accessible by the CEO. Same rule applies for the Accounts manager and the sales manager.

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*Pretty Shrestha*

**Payment**

**Object and fields:**



**Key Fields:**

***Payment Type***: This is a picklist field which defines the method of payment such as bank transfer, Credit pay, Master Card etc.

***Payment Date***: This field is required to process to finalize the order and will be a record for future reference to keep track of.

***Amount***: This field will show the total amount that needs to be paid.

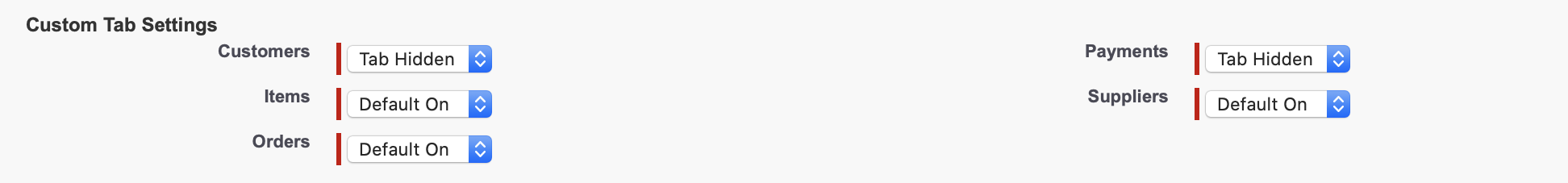
***Currency***: Another picklist to choose the currency to process payment if the customer is outside Australia.

**Relationship**

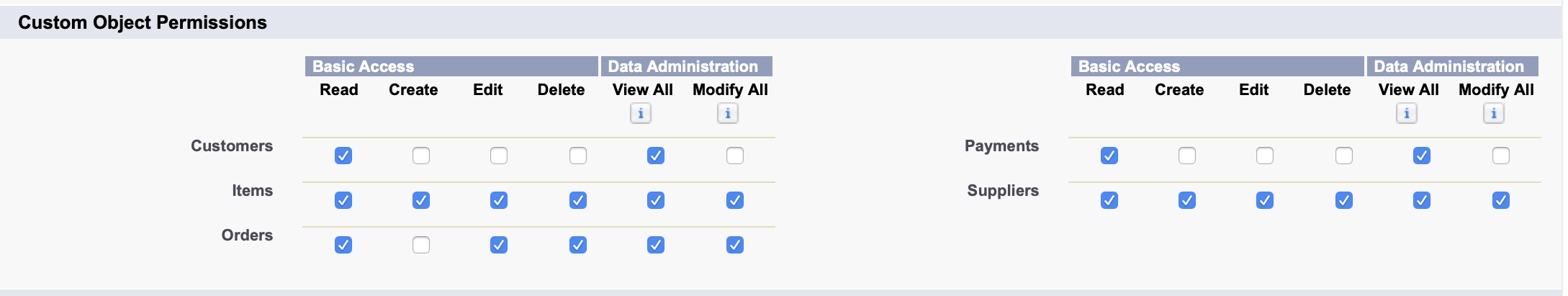
***Payment-Customer:*** This is a look-up relationship. Before confirming the payment, customers can look-up for the customer name to proceed with the payment.

**Security (*Supply Chain Manager*)**

**Tab-Level Security:** Supply chain manager can see Items, Orders and Suppliers tab. Customers and Payments are not necessary to be shown for suppliers. So, while logged in as supplier, you can only see those three tabs with default on.



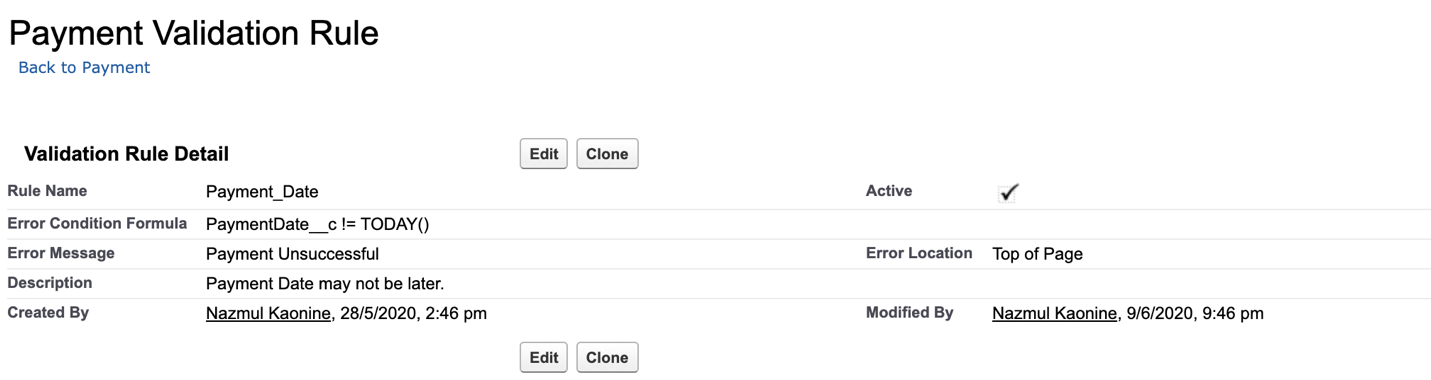
**Object-Level Security:** Suppliers have permission to view Customer and Payment details nonetheless, they do not have authorization to alter any of these objects. For Orders, suppliers can view, edit and cancel or remove but they cannot generate. They have full permission on Items and Suppliers tabs.



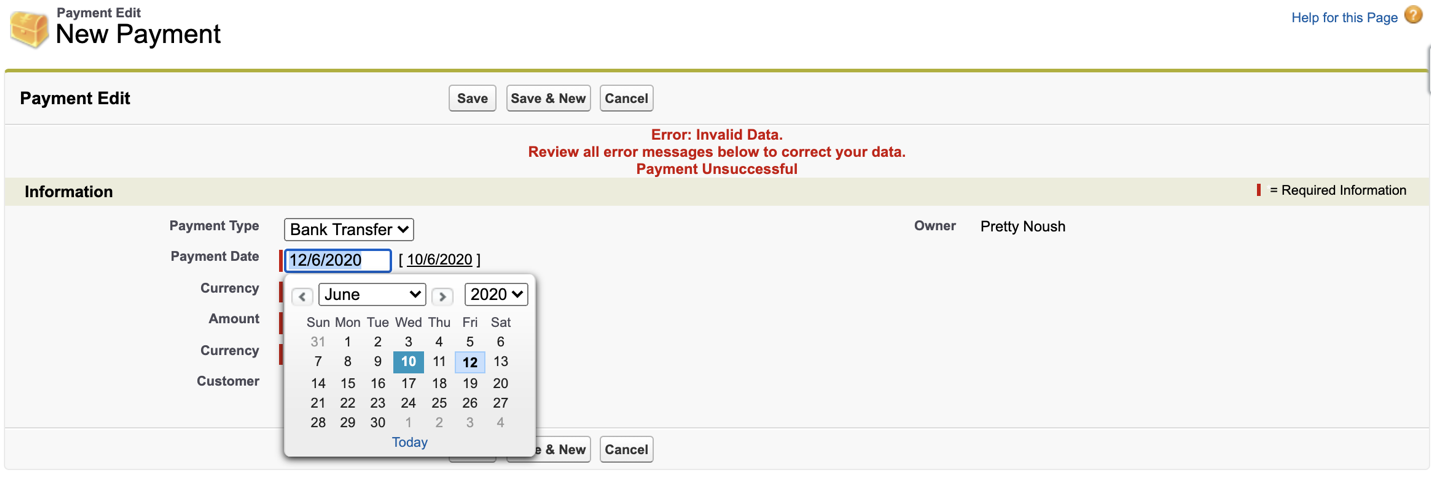
*Pretty Shrestha*

**Validation Rules**

Validation rules applied for Payment Date as in the screen shots Fig. Rule 1 and Fig. Rule 2 below. The process of payment of is immediate after a customer choose items and places order. Before finalizing the order and process delivery, all the dues need to be clear as well the order ID should match otherwise it will prompt an error message “Payment Unsuccessful”.



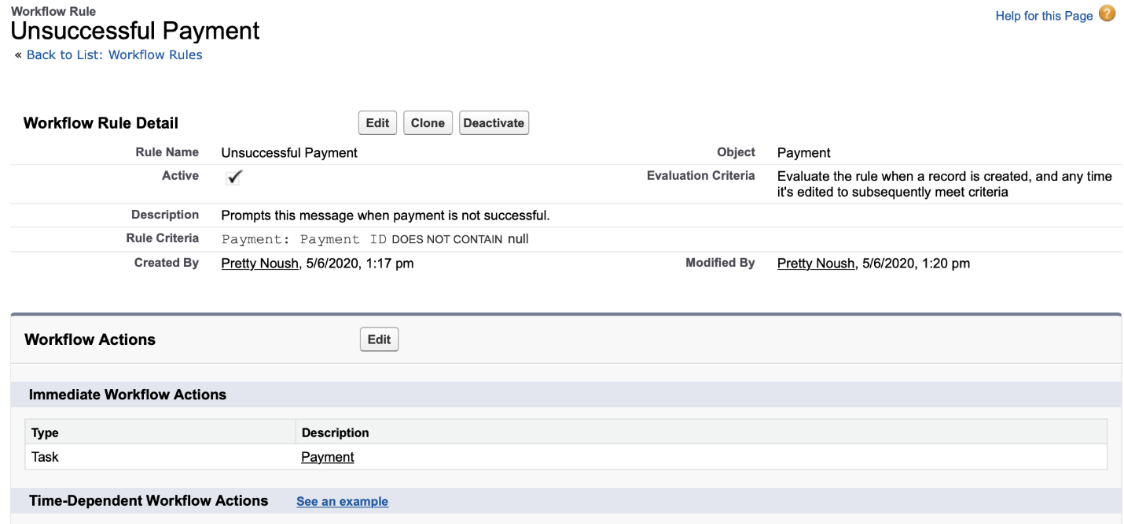
*Fig. Rule 1*



*Fig. Rule 2*

**Workflow Rule**

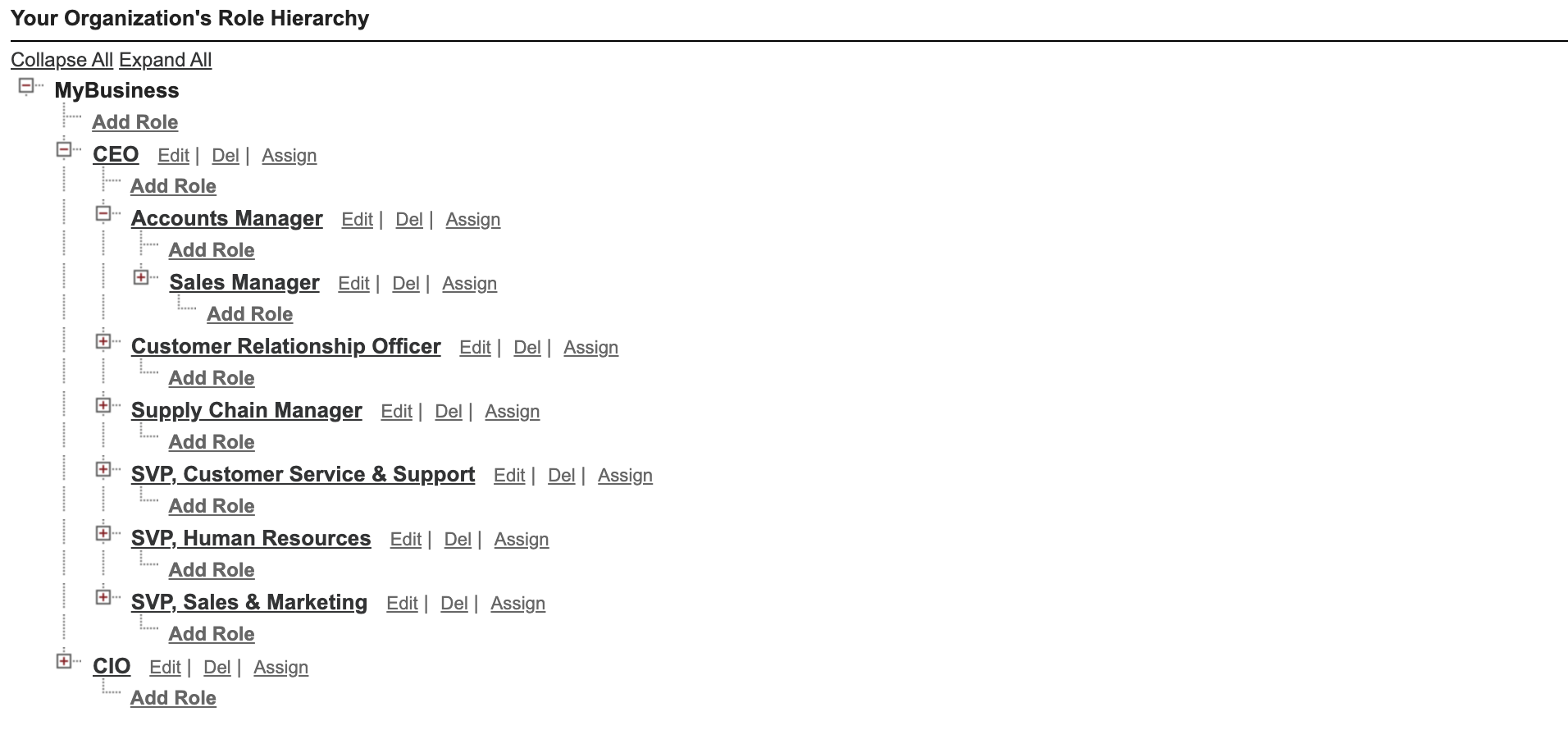
If the payment is unsuccessful, it will trigger a message to accounts manager as “Unsuccessful Payment” as a prompt message.



*Fig. Workflow Rule for Payment*

**Role Hierarchy:**

Our company’s app has following role hierarchy. CEO and CIO both remain on top and has no one to report. They have equal access on all Objects. Accounts manager, Customer Relationship Officer and Supply Chain Manager directly report to CEO. Account manager has sales manager reporting him.

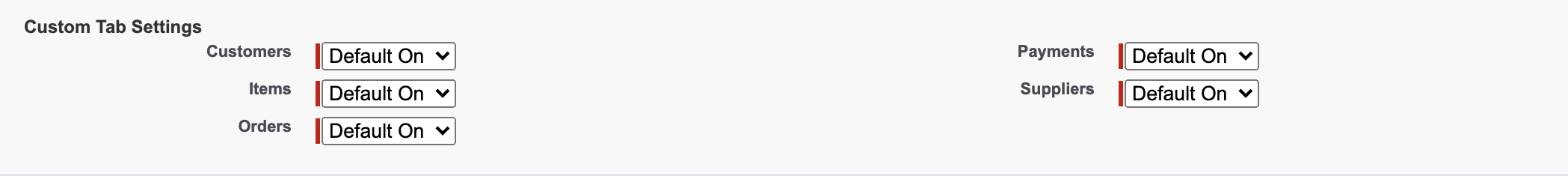


**Profile and users:**

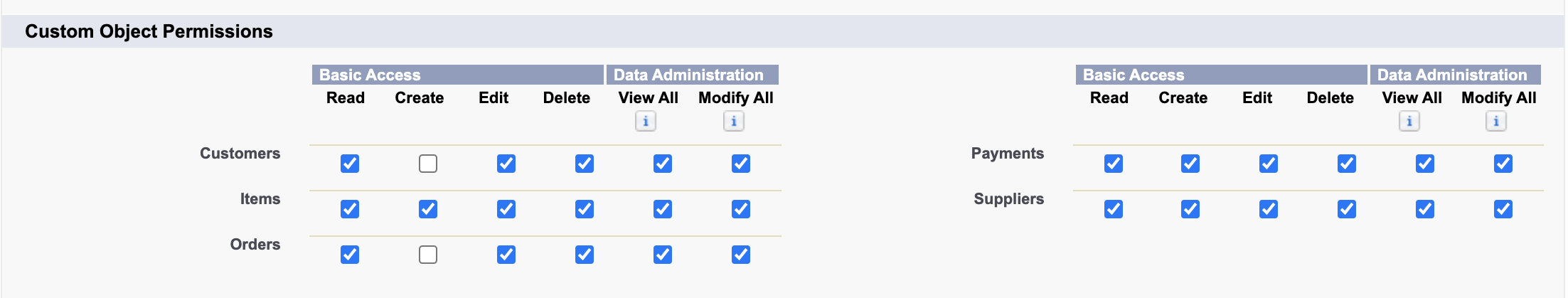
**CEO:**

CEO is the head of the company. CEO has no one to report. He has other employee as Accounts manager, Customer-Relationship Manager and Supply Chain Manager reporting him directly.

**Tab Level Security:** The screenshot below is to show the Tab Level Security that is applied for CEO profile which is privilege to its users.



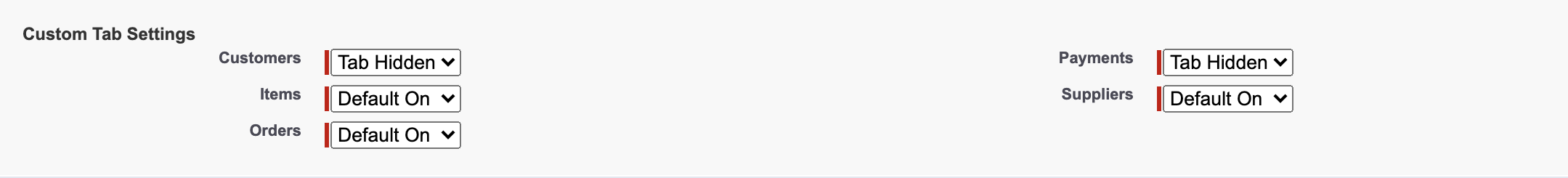
**Object Level Security:** User with CEO profile has following Object Level Security. This user profile has full permission granted in Objects Items, Payments, and Suppliers. But for Objects, Customers and Orders, except for creating new customers and orders, this profile user gets access to read, edit and delete.



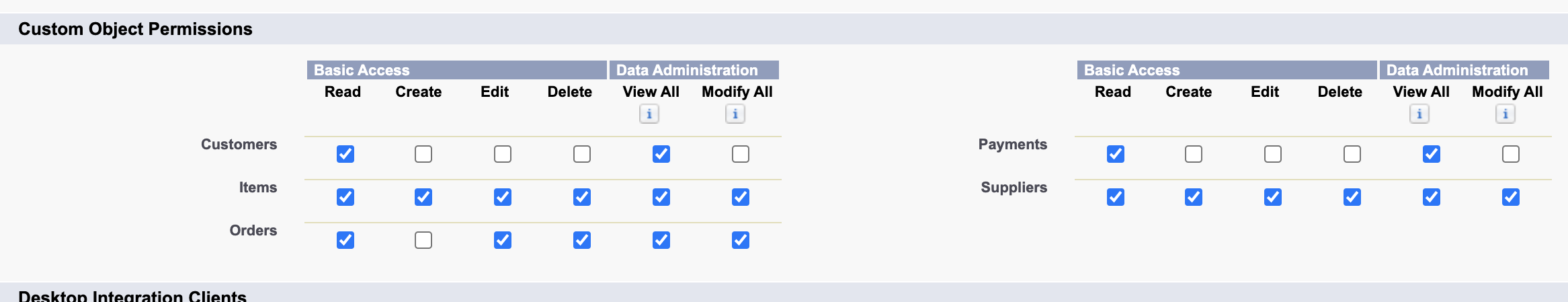
**Supply Chain and Logistics Manager**

Supply Chain and Logistics manager will be directly reporting to CEO of the company. The Tab Level Security and Object level Security for this role has been defined as in the screenshots below. This role has been assigned to the profile MyBusiness Employee.

**Tab Level Security:** This user is granted permission to see only Items, Orders and Suppliers Tab. Payments and Customers Tab will be hidden.



**Object Level Security:** User assigned to this profile have full permission on Items and Suppliers. They cannot generate new orders but can make specific changes like read, edit and delete.

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*Noshin Islam*

**Customers**:

Customers are the main stakeholder of the system and will be placing order for the necessary medical supplies.

A screenshot of a computer

Description automatically generated

**Standard and Custom fields:**

**Customer ID:** Every time a new customer is registered, an unique will be generated automatically and assigned to that user

**Name:** Customers will have to provide a valid name. The field type is Test area with maximum capacity 255 letters.

**Email address:** Customers will have to provide their valid email address for communication. The field is defined as an Email Data type which will always check if the format is acceptable or not.

**Mailing address:** Authentic mailing address for delivering the products. This is also type Text Area(255)

**Phone number:** Customers will also give their phone number to be contacted when needed. The data type is Number to check if it’s acceptable or not.

*Noshin Islam*

**Customer Tab View**

A screenshot of a cell phone

Description automatically generated

**Validation Rules:**

A screenshot of a social media post

Description automatically generated

**Valid\_Name:** Customers name can not contain any special characters or numerical value. Only letters between a-z, A-Z is acceptable.

A screenshot of a cell phone

Description automatically generated

*Noshin Islam*

**Supplier:**

Suppliers are the stakeholders in the system who will keep the economy growth by providing medical supplies in the inventory system.

A screenshot of a computer

Description automatically generated

**Standard and Custom fields:**

**SupplierID:** Every time a new supplier is registered, a unique ID will be generated automatically and assigned to that user

**Name:** Suppliers will have to provide a valid name. The field type is Test area with maximum capacity 255 letters.

**Email address:** Suppliers will have to provide their valid email address for communication. The field is defined as an Email Data type which will always check if the format is acceptable or not.

**Mailing address:** Authentic mailing address for delivering the products. This is also type Text Area(255)

**Phone number:** Suppliers will also give their phone number to be contacted when needed. The data type is Number to check if it is acceptable or not.

**SuppliedItem:** Suppliers will have a lookup relationship with Item and thus they will have an option to choose the item they are going to provide.

**Relationships***:*

**Supplier-Item:**Supplier and Item object will have a lookup relationship.Inside the Supplier interface, a supplier can select the items they can provide.

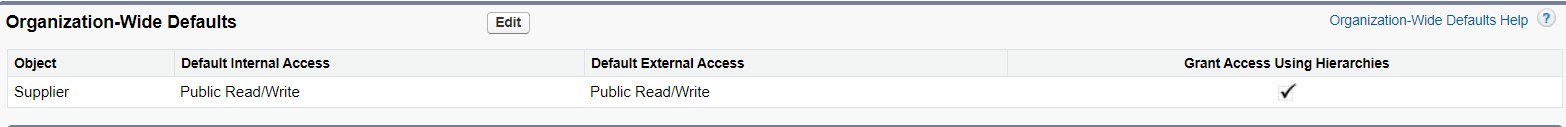
*Noshin Islam*

**Supplier Tab View**

A screenshot of a cell phone

Description automatically generated

**Organization wide default:**



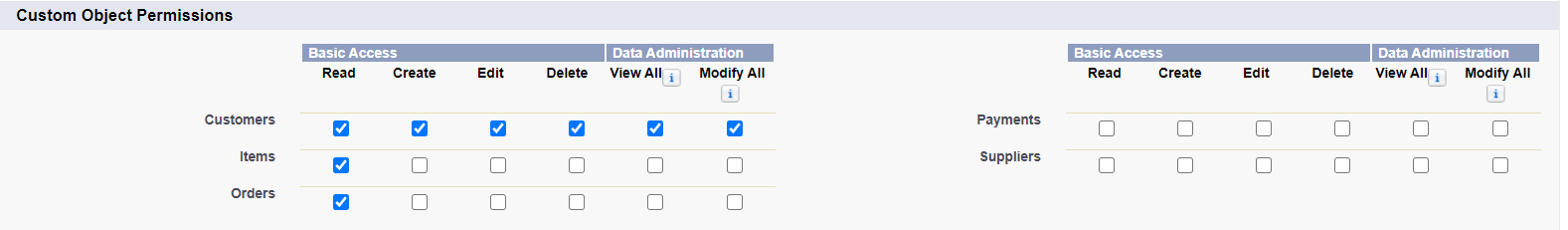
The suppliers object has the most restricted users as customers, who will not be seeing any records regarding suppliers, whereas supply chain manager, CEO needs to see the records and edit it when needed. The Organization Wide Default access of Suppliers object has been set to public read/write only. The access has been further modified using profiles and role hierarchy.

**Customer Relations officer:**

Preserving a positive customer relationship across the platform is integral to the success of business and its financial outcome. Customer Relationship Officer is assigned the profile Customer-Relationship and will play the role of maintaining Customer Relationship. There is one user assigned to it and the top priority is to handle customer data by reading and editing it when necessary. The user can also read order and payment data to verify with customers in the application but will be restricted to access suppliers tab.

UserID: [simon.wichman@salesforce.com](mailto:simon.wichman@salesforce.com)

Password: Force@1234



A screenshot of a social media post

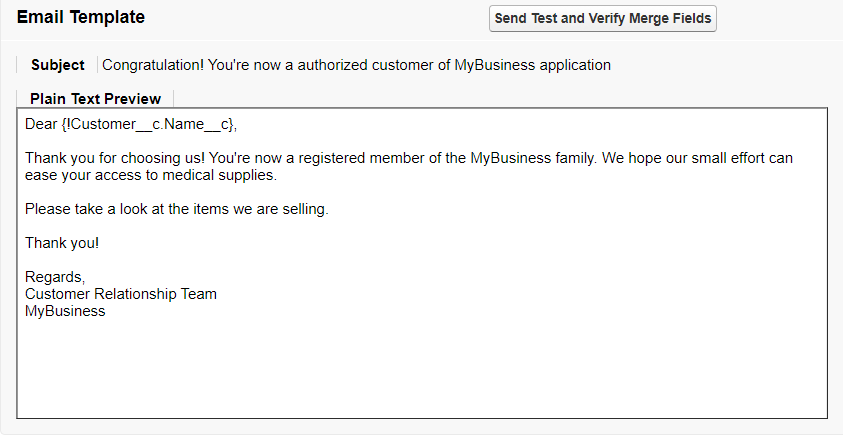
Description automatically generated

**Email Notification**

Customer object has a notification system. There is a custom field **customer\_notified** which has a default value of “No” set in the system. There will be an email notification sent to the customers email address to inform them of the authorization success.

Email Notification template:

A screenshot of a cell phone

Description automatically generated

Workflow Rule: **Customer Authorization Confirmation**

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Description automatically generated

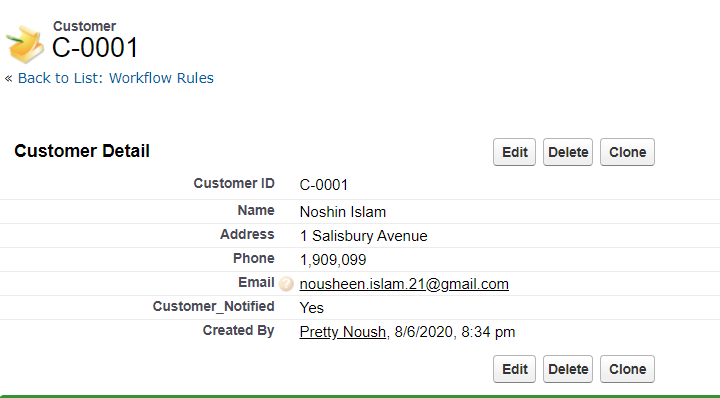
**Step 1:** When a new customer is created, the **customer\_notified** field is set to “No” and by activating the workflow rule **Customer Authorization Confirmation**, there will be some tasks triggered by rule.

**Step 2:** An email alert will be sent to the customer’s email address confirming their registration process.

A screenshot of a social media post

Description automatically generated

**Step 3:** Customer\_Notified field will be updated to “Yes”



*Section 3*

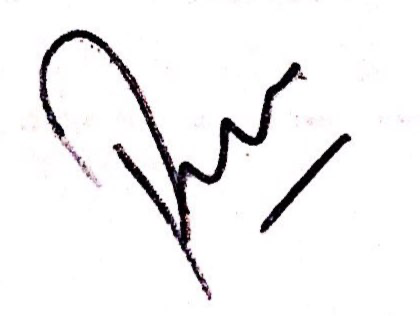
***Contribution of each group member:***

**Contribution**

As a group, we organized face-to-face team meetings early even during these troublesome times by maintaining social distancing. During this time, the idea of the app was selected and built thereby. Therefore, the group has equally contributed to each aspect of the assignment. We initially divided the objects between each other e.g. Nazmul made “Orders, Items”, Noshin made “Customers, Suppliers” and Pretty made “Payments” and helped design the role hierarchy. Other aspects were added to each of the object such as tabs, security, profiles, roles, workflow rules and alerts. Whenever faced with a problem, we have discussed amongst each other and came up with a solution in an efficient manner. In this way, we have all learned from each other and therefore all three of us have knowledge about every element of the app. The groupwork was smooth and organized and all team members were contributing to their utmost potential to make the project stand up.

**All members in the group has contributed equally.**

Nazmul Kaonine Noshin Islam Pretty Shrestha



***Conclusion and Future work Section:***

Platform-as-a-Service is an innovative model of cloud computing, instigated to propose easy-going, low cost ad nimble application development. This paper outlines the business aspect, trends and evolution of Platform-as-a-Service technology and the fundamental objective is to highlight these practices and recommend better development. There are 5 objects executed with three Look-Up relationship with one Master-Detail relationship. Workflow rules for email notification while creating application has been implemented so customers will receive an email saying your order has been created. Order process will be finalized once the payment is done. When the payment is incorrect, error message will be shown as pop-up message to state that the payment has been unsuccessful both in customer and administration side. We have used Time-based flow to check if an email notification has been sent through to our customer. Overall, our understanding with the foundational PaaS was extremely constructive and resembled that extended on our project. Nevertheless, according to our experience technology and applications still have several approaches to go before all possibilities can be accomplished. Like few other renowned companies created new markets through web browser, PaaS advises a quicker, more cost-effective prototype for application development and distribution. Here, in our case, order management is not just about processing the orders, but the main goal is to satisfy our clients with assimilating the techniques that influence the experience of post-purchase and making that obtainable and comprehensible to all the shareholders in a distinct combined platform. This has all been soothed with PaaS that is inspiring a new era of mass improvement and business dexterity.

In future, clients using PaaS will experience deeper levels of abstractions. At the high rate for factual economic benefits PaaS is projected to revolutionize the development field through proposing simplicity to non-programmers and people from non-technical experience to design the latest software applications. To prevent our PaaS application from being out-of-date, we will approach with enhanced solutions. We will create one tap and go system for payment process in future instead for customer finding their order details before processing payment. When the items needed to be re-stocked, we will create something like smart sensor to let our suppliers know that we are low in our stocked items. Instead of customer filling in all the details to reorder, customers we will launch easier way to find their records just my typing their name in search field. In regards with our organization’s future, we will be working on mounting store turnover by modifying the “Click and Collect” to boost store traffic. For more compact improvements, software requirements will be defined and absorbed by business spontaneously and rationally. Business stakeholders, to standardize and keep their quality software, will make use of PaaS. PaaS provider in prospect will grasp the major market shares, which will extend more language support, automated development techniques, non-platform-lock in development environment, QoS (Quality of Services), security and cost-effective as the most significant service. The fundamental example of PaaS revolution is container-based technology with more simplicity and low resource utilization. Nonetheless, little security concerns are still around but future of PaaS is much associated with container supported technology.

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(ii) Future further implementation of this PaaS application, and other areas within the organization where PaaS implementations could be done (along with rationale) References being cited in the body of the report can be books, journals, conference articles or news articles).

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