Report

Procurement for Construction Industry

2020-JUN-WD-04

Introduction

Based on case study 2 "Procurement for Construction Industry" our group created Usecase diagram , Usecase scenarios , Class diagram , Sequence diagrams low fidelity and high fidelity wire frames.
In our diagrams we clearly mention the whole process of the system.

Site manager is the main user of this system and Suppliers, Procurement staff member and supervisor are stakeholders of this system.Through this system Site manager able to control the procurement of goods directly or independently.Only the Site manager can raise purchase orders.

Individual Contribution

Name	ID Number	Contribution
M.H.M Amjad Hafiz	IT18216592	• Class diagram • Final report
R Keerrthiga	IT18218336	• Usecase diagram • Usecase scenarios
P.Y.K Chandrasiri	IT18204780	• High fidelity UI wire frames • Low fidelity UI wire frames
U.G.R.M Wijewardhana	IT18230048	• Sequence diagrams

Usecase diagrams
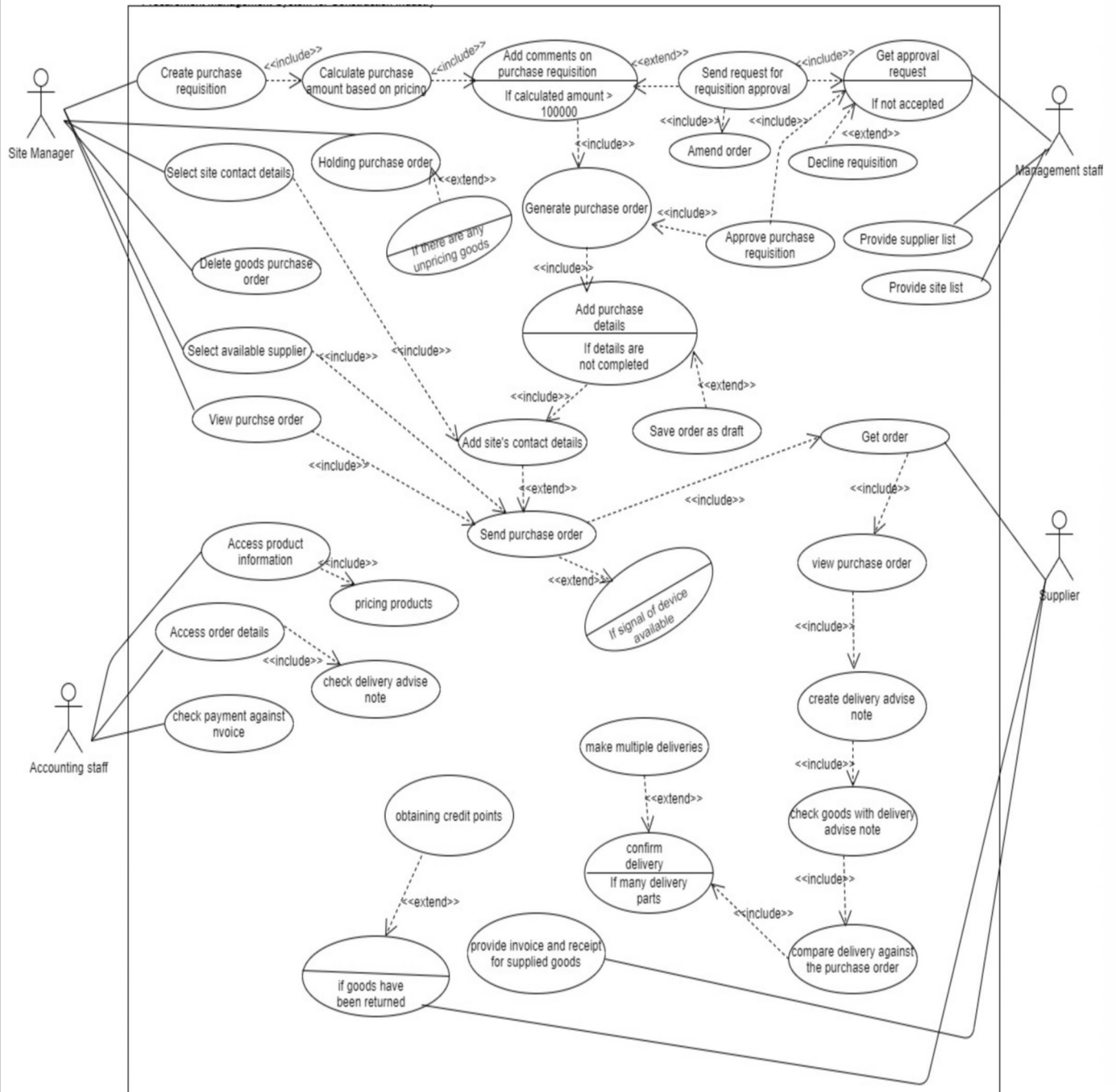
Assumptions Related to the Use Case Diagram

- Users do their works in the Procurement Management System after the valid login.
- Supplier gets order details by an e-mail.
- Invoices and receipts are given manually (Printed receipt and invoice).
- Status of the purchase order is updated by the user of the system.

Usecase scenarios

Usecase scenario : 01

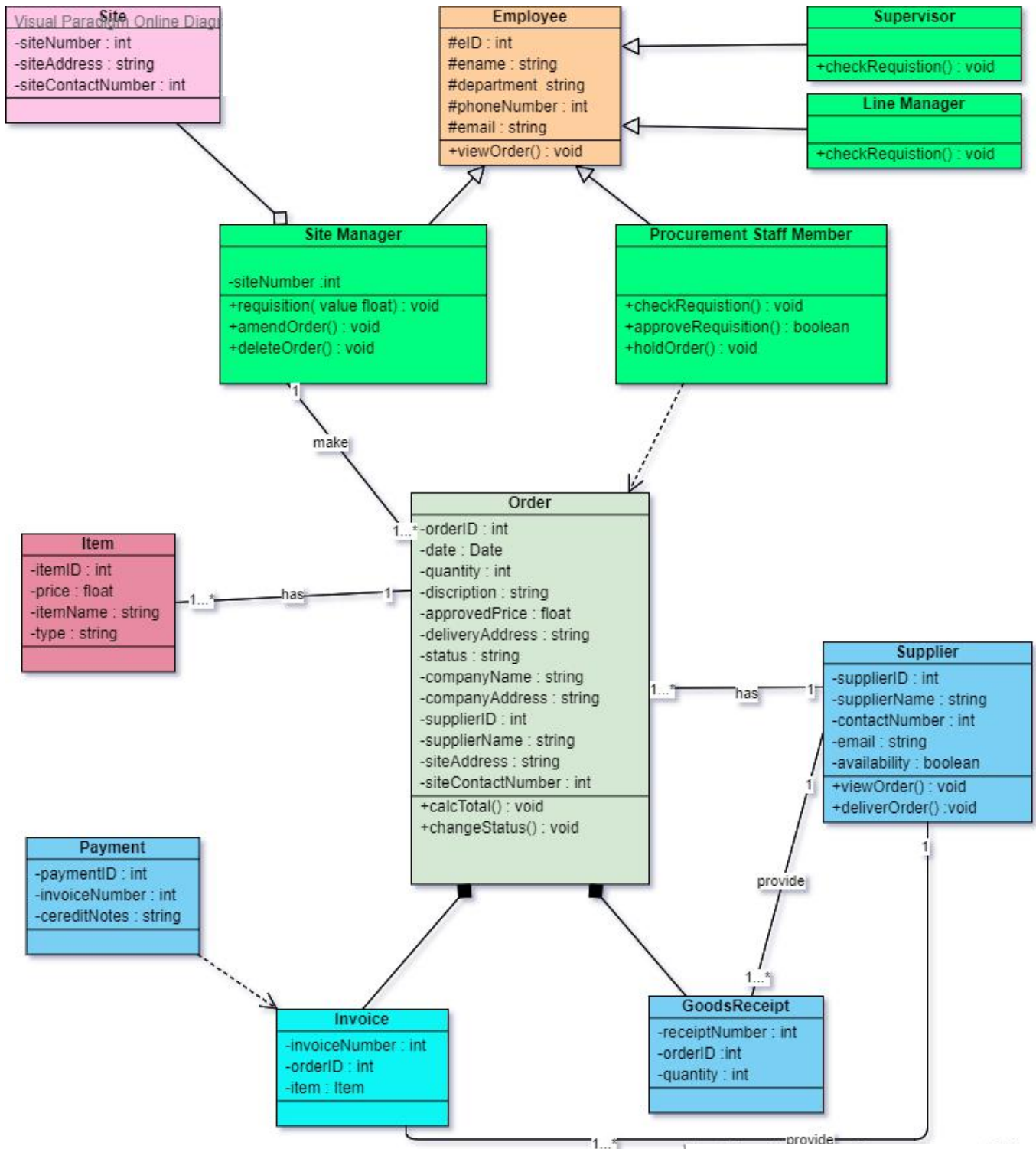| ID:	01	
Use Case:	Make purchase order.	
Short Description:	Creating purchase requisition to get approval for place order from management staff.	
Primary Actor:	Site manager	
Preconditions:	Calculated purchase amount should be greater than 100, 000.00	
Post conditions:	Get purchase requisition approval from management staff.	
Main Flow:	**Steps**	
	01.	Create purchase requisition.
	02.	Calculate purchase amount.
	03.	Check the calculated amount with limited amount.
	04.	Send request for requisition approval.
	05.	Get purchase requisition approval.
	06.	Select available supplier..
	07.	Place order.
	08.	Add site contact details.
	09.	Send purchase order.
Alternative Flow(s):	**Steps**	
	01a.	Delete purchase order.
	04a.	Amending order.
	04b.	If requisition is not accepted, It will be declined by the management staff.
	07a.	View purchase order.
Exception Flow(s):	01.	Pricing products.

Usecase scenario : 02

ID:	02
Use Case:	Delivery of purchase order.
Short Description:	Sending delivery items to the customer.
Primary Actor:	Supplier
Preconditions:	Purchase order should be sent by the site manager.
Post conditions:	Delivery should be delivered to the customer with receipt and invoice.

Main Flow:	**Steps**	
	01.	Get purchase order.
	02.	View purchase order.
	03.	Create delivery advise note.
	04.	Check goods with delivery advise note.
	05.	Compare deliveries against the purchase order.
	06.	Make deliveries.
	07.	Provides invoices and receipts for supplied goods.
Alternative Flow(s):	**Steps**	
	06a.	If there are many parts in delivery, Make multiple deliveries.
Exception Flow(s):	01.	If goods have been returned, obtaining credit points.

Usecase scenario : 03

ID:	03	
Use Case:	Check payment details.	
Short Description:	Checking the payment details of the delivery using receipt.	
Primary Actor:	Accounting staff	
Preconditions:	Get invoices and receipt from suppliers.	
Post conditions:	Ensured invoices for goods.	
Main Flow:	**Steps**	
	01.	Get invoices for the goods.
	02.	Ensure the invoices for the goods.
	03.	Check the deliveries with invoice.
	04.	Check the payment details.
	05.	Confirm the payment details.
Alternative Flow(s):	**Steps**	
	02a.	Check the order of the reference in the invoice.
Exception Flow(s):	01.	Access product information.
	02.	Pricing products.

Class diagram

Site
- -siteNumber : int
- -siteAddress : string
- -siteContactNumber : int

Employee
- #eID : int
- #ename : string
- #department string
- #phoneNumber : int
- #email : string
- +viewOrder() : void

Supervisor
- +checkRequistion() : void

Line Manager
- +checkRequistion() : void

Site Manager
- -siteNumber :int
- +requisition(value float) : void
- +amendOrder() : void
- +deleteOrder() : void

Procurement Staff Member
- +checkRequistion() : void
- +approveRequisition() : boolean
- +holdOrder() : void

make

Order
- -orderID : int
- -date : Date
- -quantity : int
- -discription : string
- -approvedPrice : float
- -deliveryAddress : string
- -status : string
- -companyName : string
- -companyAddress : string
- -supplierID : int
- -supplierName : string
- -siteAddress : string
- -siteContactNumber : int
- +calcTotal() : void
- +changeStatus() : void

Item
- -itemID : int
- -price : float
- -itemName : string
- -type : string

has

Supplier
- -supplierID : int
- -supplierName : string
- -contactNumber : int
- -email : string
- -availability : boolean
- +viewOrder() : void
- +deliverOrder() :void

has

provide

Payment
- -paymentID : int
- -invoiceNumber : int
- -cereditNotes : string

Invoice
- -invoiceNumber : int
- -orderID : int
- -item : Item

GoodsReceipt
- -receiptNumber : int
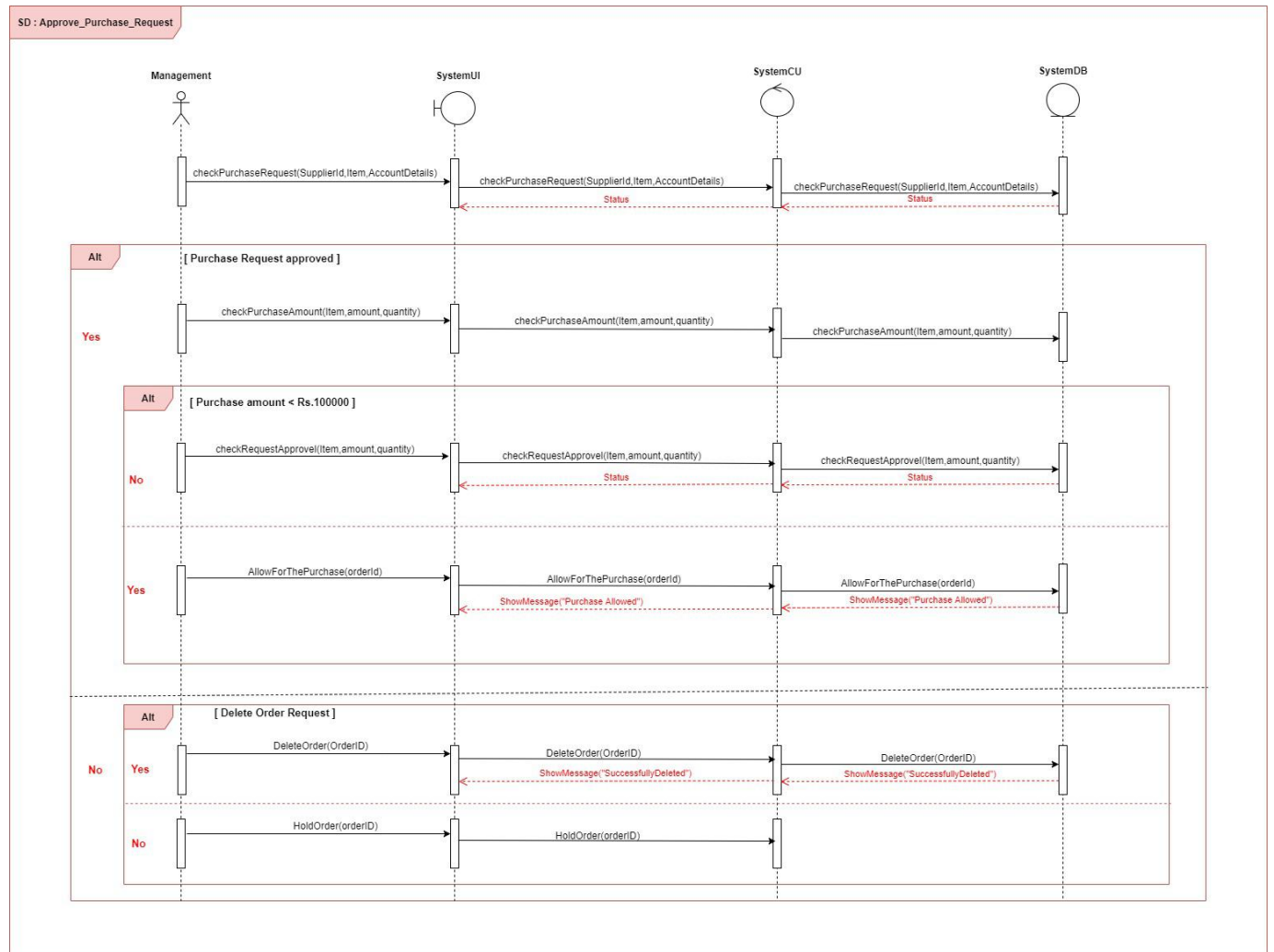- -orderID :int
- -quantity : int

provide

Assumptions Related to the class diagram

- A site can exist without a site manager.
- Access modifiers of attributes on Employee class are protected because Site manager,Procurement staff member, Line manager and Supervisor are employees.
- Goods Receipt and Invoices can not exist without a order.

Sequence diagrams
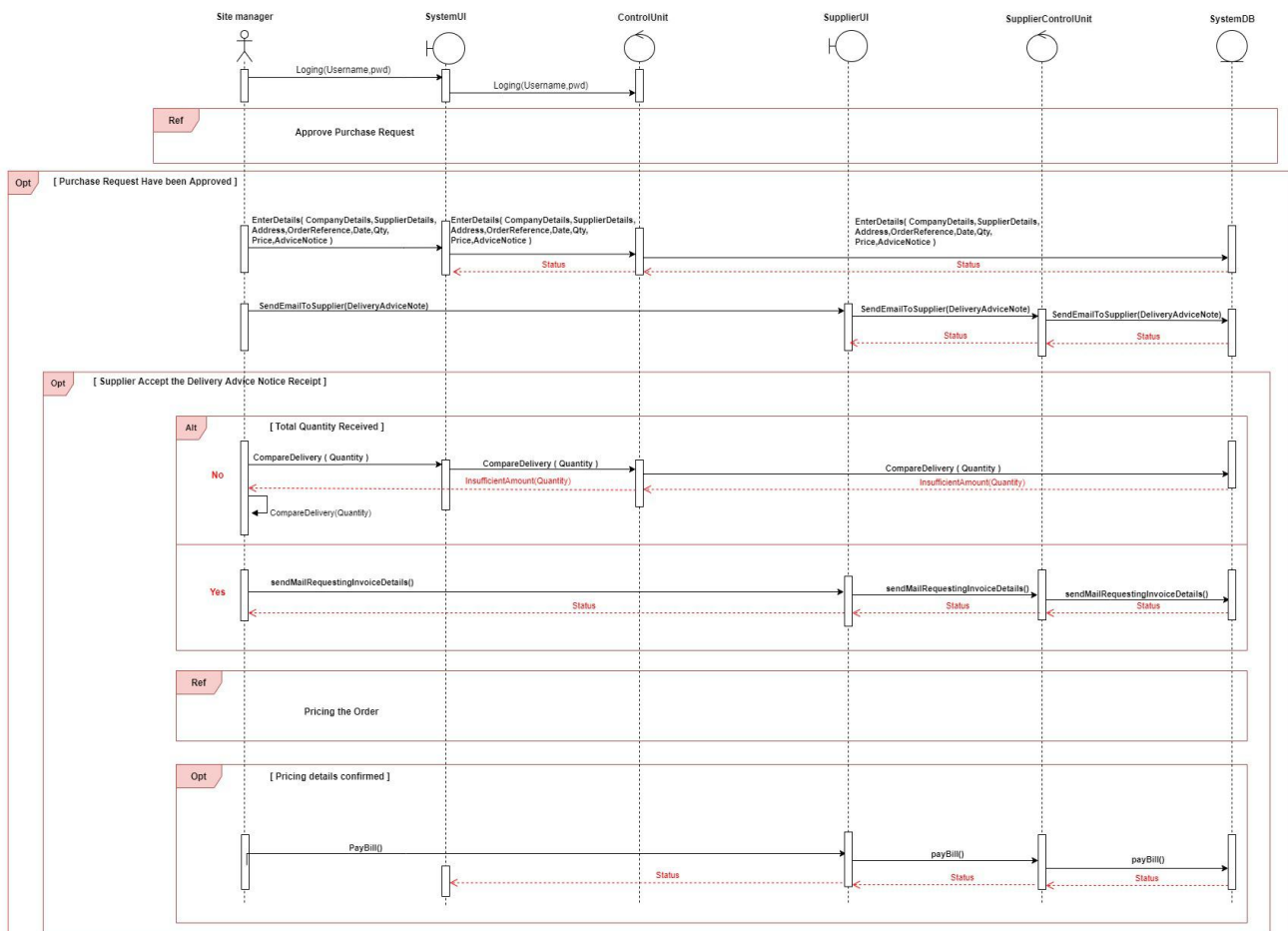
Sequence diagram for approve purchase request

SD : Approve_Purchase_Request

Management	SystemUI	SystemCU	SystemDB

checkPurchaseRequest(SupplierId,Item,AccountDetails) → checkPurchaseRequest(SupplierId,Item,AccountDetails) → checkPurchaseRequest(SupplierId,Item,AccountDetails)
Status ← Status

Alt [Purchase Request approved]

Yes
checkPurchaseAmount(Item,amount,quantity) → checkPurchaseAmount(Item,amount,quantity) → checkPurchaseAmount(Item,amount,quantity)

Alt [Purchase amount < Rs.100000]

No
checkRequestApprovel(Item,amount,quantity) → checkRequestApprovel(Item,amount,quantity) → checkRequestApprovel(Item,amount,quantity)
Status ← Status

Yes
AllowForThePurchase(orderId) → AllowForThePurchase(orderId) → AllowForThePurchase(orderId)
ShowMessage("Purchase Allowed") ← ShowMessage("Purchase Allowed")

Alt [Delete Order Request]

No **Yes**
DeleteOrder(OrderID) → DeleteOrder(OrderID) → DeleteOrder(OrderID)
ShowMessage("SuccessfullyDeleted") ← ShowMessage("SuccessfullyDeleted")

No
HoldOrder(orderID) → HoldOrder(orderID)

10

Assumptions Related to the Sequence diagram for approve purchase request

- Management checks the suppliers and product items details. Here the Management checks the limitations according to the organizational policies.
- When the purchase request approved by the management, the system checks the purchasing amount.
- System allows to hold the purchase requests which have been rejected by the management. Or system allows to delete the order details through the system.

Sequence diagram for create purchase order

Assumptions Related to the Sequence diagram for create purchase order

- When the purchase request approved by the Management, the site manager can enter the order details along with the delivery advice receipt.
- Then the site manager sends an Email to the approved supplier through the system along with the delivery advice note.
- After receiving the order, Site manager can send mail to the relevant suppliers to get the invoices details.
- Then the accounting staff will compare the products with delivery advice notice and also confirm the pricing details.

Sequence diagram for pricing the order
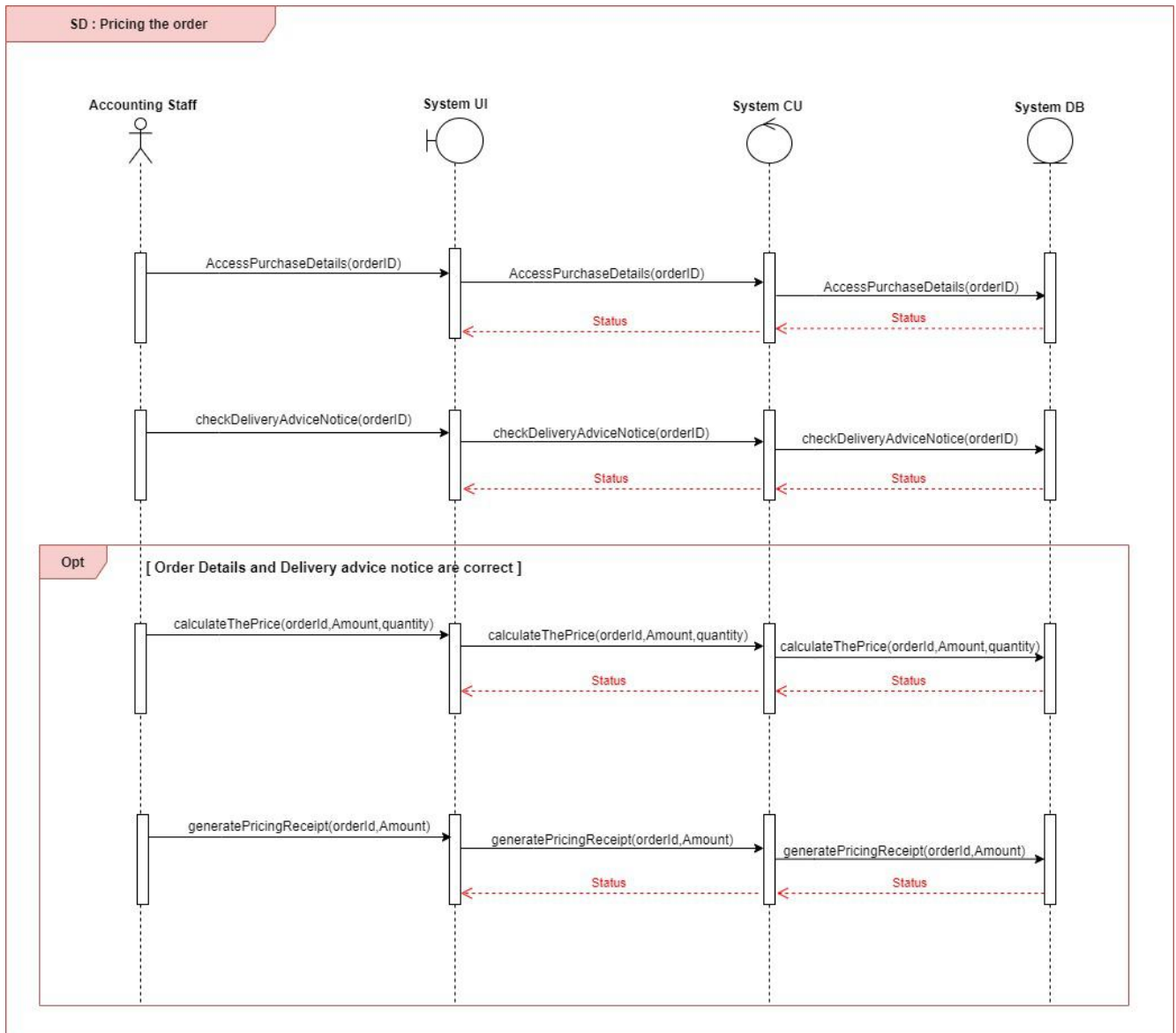
Assumptions Related to the Sequence for pricing the order

- Accounting staff Checks the Order details and purchase details along with the delivery advice notice.
- If every detail are correct, they Calculate the prices list according to the product details which already included in the delivery advice notice. And generate the pricing receipt.

UI Wire frames

High fidelity wire frames

Through this page, user can place edit, view and print Purchase order information.

This is the lower part of the Purchase order page. In here, the orders will be displayed in a table.
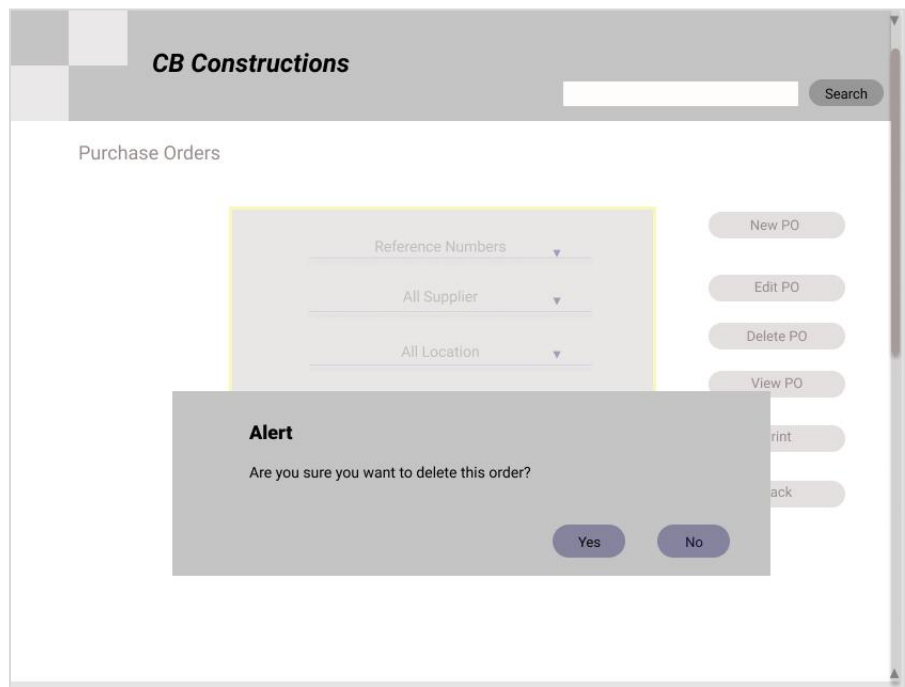
These kind of alerts will be shown when you deleting, approving or rejecting something.
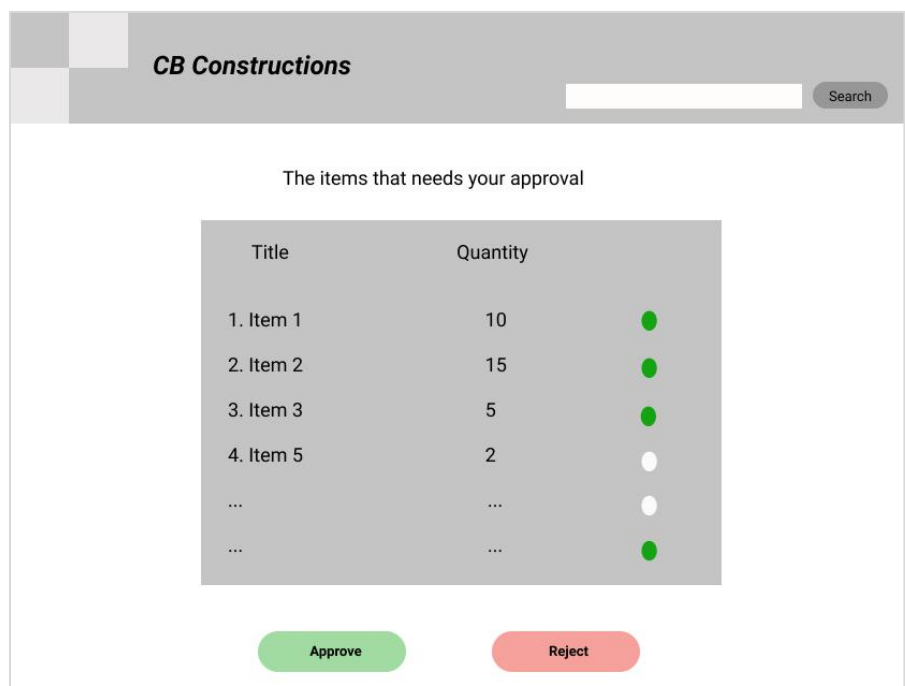
Site manager needs to take approval for the orders before they are placed. This is the page that used to give that approval by a senior staff member.

CB Constructions

New Purchase Order

Supplier		Product	
Order number		Description	
Ref number		Quantity	
Status		Net amount	
Order date		Invoice adress	
Due date			

Submit **Edit** **Back**

This is the page user can place a new order.

CB Constructions

Order Details

Order Reference	2
Invoice number	2001
Supplier ID	15
Supplier name	GOOD Suppliers
Status	Pending
Amount (LKR)	10000

Confirm

User can view details relevant to a particular order through this page.

Low fidelity wire frames

User need to sign up at first of all, to use the system.

This is the home page of the CB construction system. Though this user can access to the pages they need.

Assumptions Related to the UI Wire frames

- User first has to login to the system to use it.
- When the site manager places a new order, it will be sent t to get the approval from the senior staff.
- When it is approved, the status will be changed to 'Approved'. Then again site manager has to confirm the order, then an email will be sent to the relevant supplier and user has to change the status according to the supplier's reply.

  ex: If supplier confirmed the order, order status should be changed to pending.
- Supplier is not a user of the system.
- When order gets the approval from the senior staff member, status will be changed to 'Approved'. Otherwise, it will be changed to 'Declined'.