

ACCOUNTING APP

**JAVA DEVELOPER COURSE
GRADUATION PROJECT**

Last update : 3. 13. 2021

SCENARIO

- “**Company X**” needs a web based application to manage accounting tasks such as:
 - Sales,
 - Purchase,
 - Stock management,
 - Administrative operations.
- A Software Development Company “**Friday.Com**” provides such capabilities with a web based accounting application with yearly subscriptions.
- When **Company X** pays for this yearly subscription, an ADMIN username and password is provided, with the provided credentials ADMIN of **Company X** is able to create MANAGER and EMPLOYEE users and **Company X** can keep the track of accounting processes. Company Y, Z and many others might follow the same track for their needs as well.
- **Task:** You are a software developer working for “**Friday.Com**”.
 - Design a web based Accounting App for companies like “**Company X**” with capabilities defined in the following slides.



ACCOUNTING APP PROJECT DEFINITION

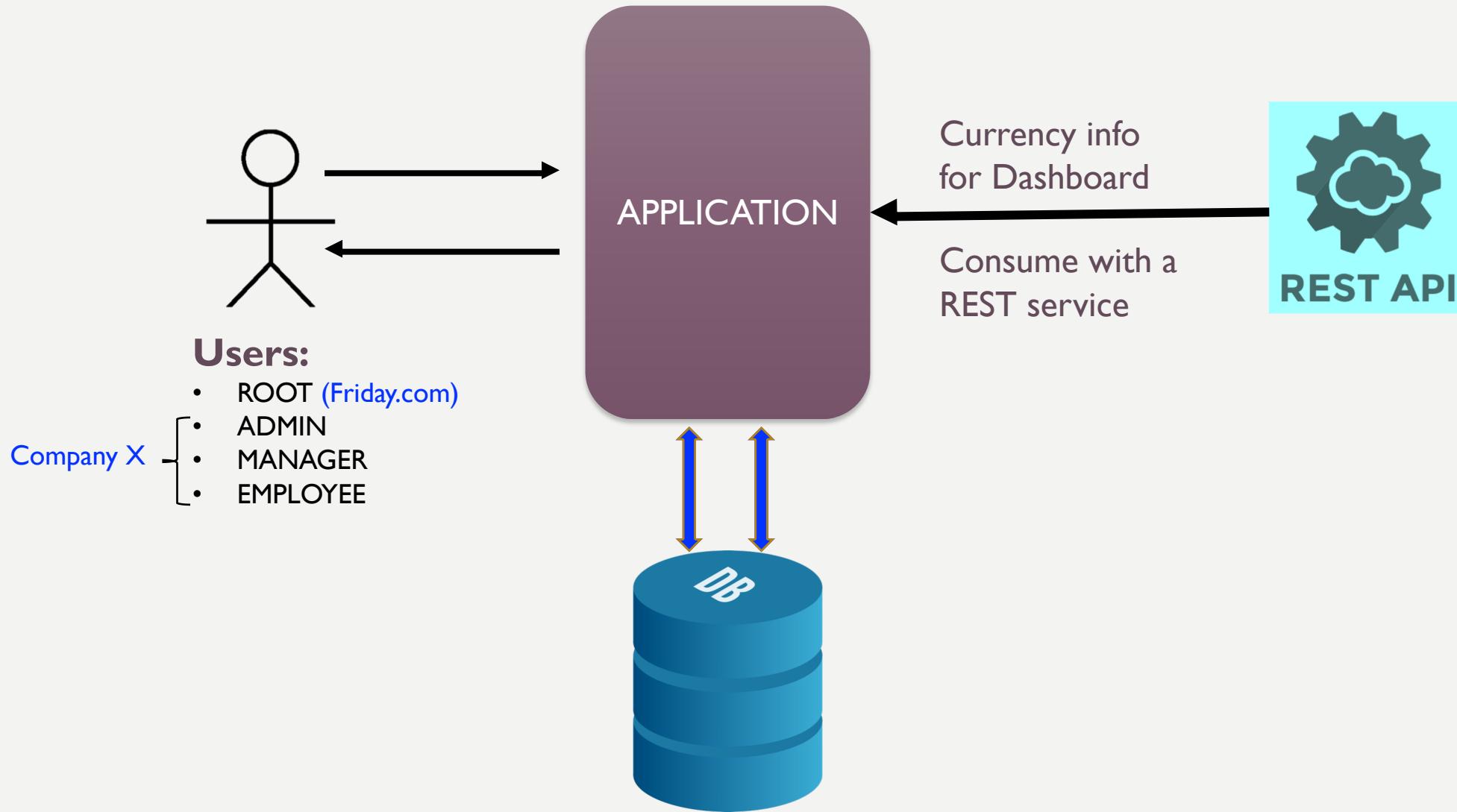
Purpose:

- In the market there is a need a ng **web-based accounting system**.
- This will be a **Software as a Service (SAAS)**.
- The accounting application will operate below main capabilities:
 - ❖ Create **products by category** and set **quantity of purchase and sale prices**
 - ❖ Create **invoices by their purpose** it may be **purchase invoice** or **sale invoice**
 - ❖ Generate **stock-based reports**
 - ❖ Create users with **ADMIN, MANAGER, EMPLOYEE** roles
 - ❖ Aforementioned processes will be managed for separate companies(X,Y,Z..)
 - ❖ **ROOT user (from “Friday.com”)** will **create companies** and **ADMIN user** for the companies.

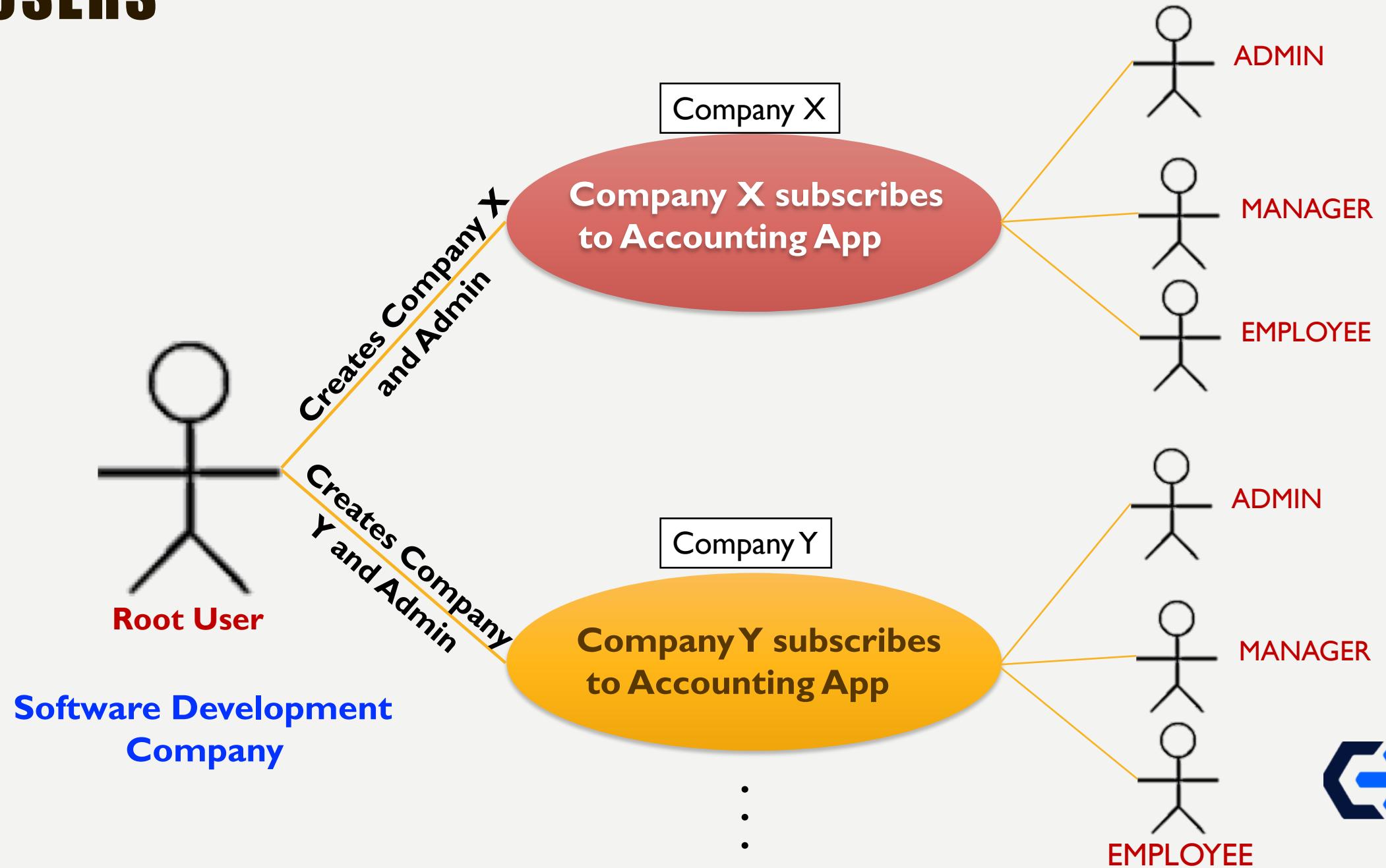


ACCOUNTING APP PROJECT DEFINITION

Application Architecture

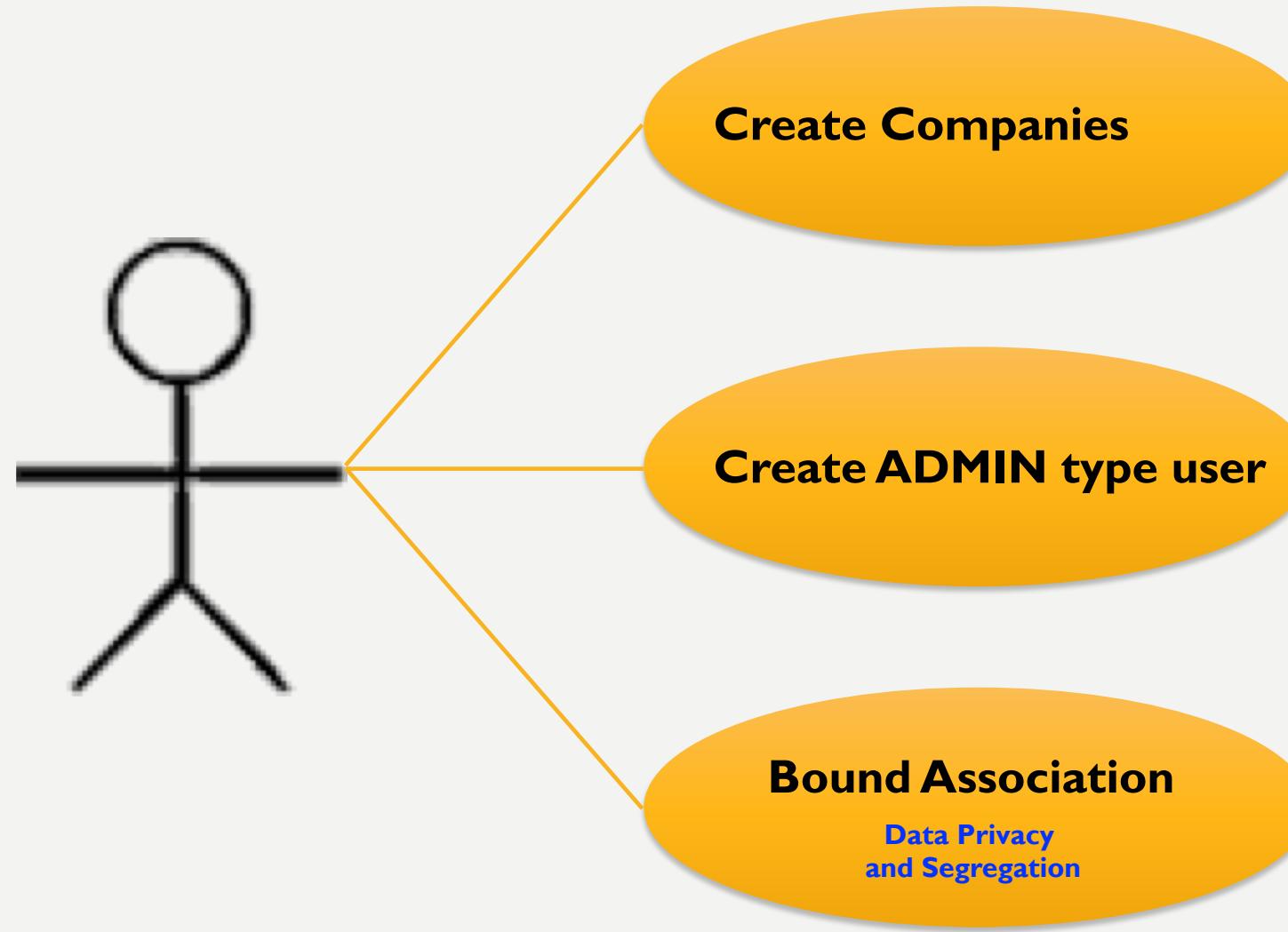


USERS



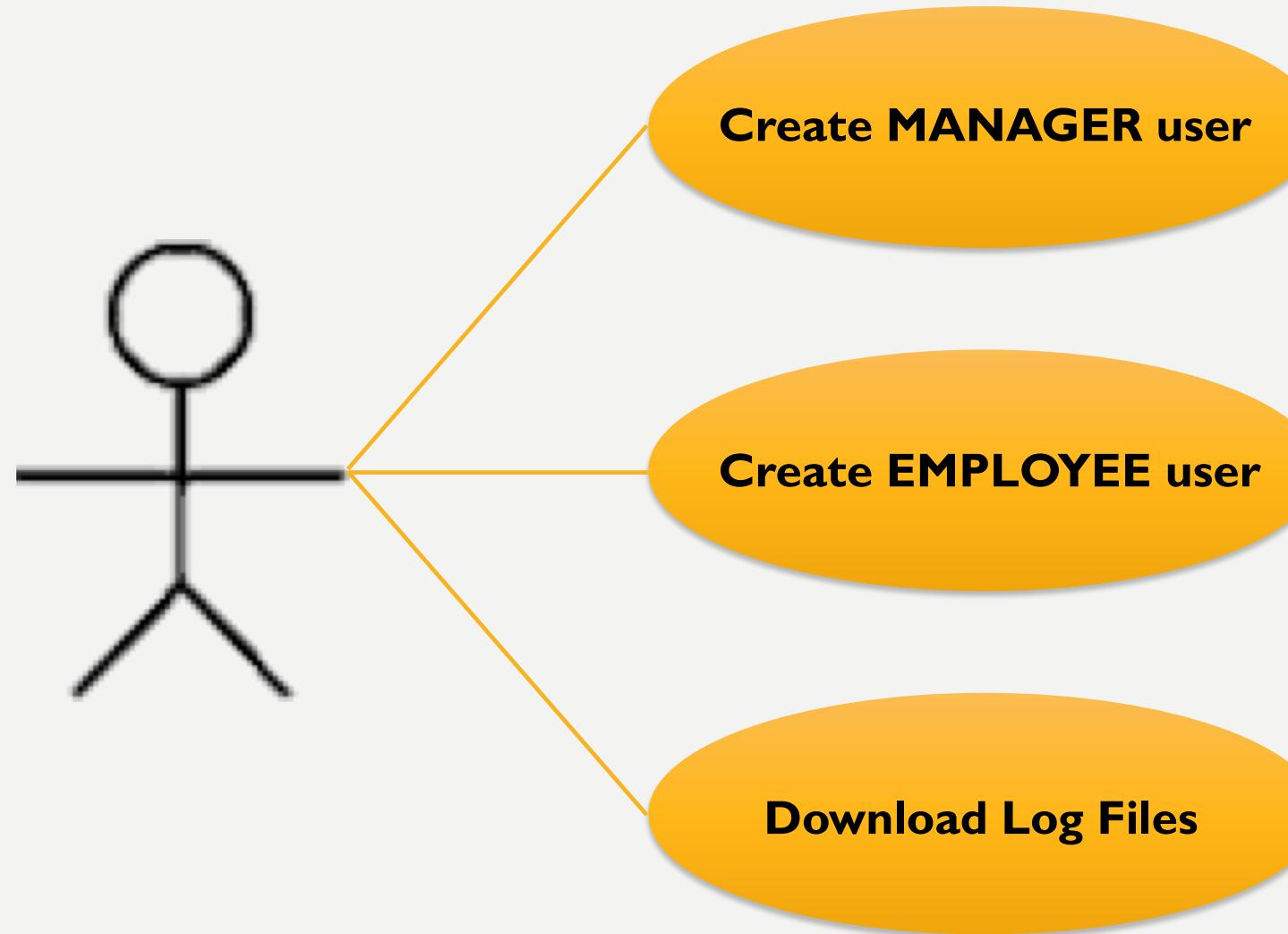
USERS

Root User



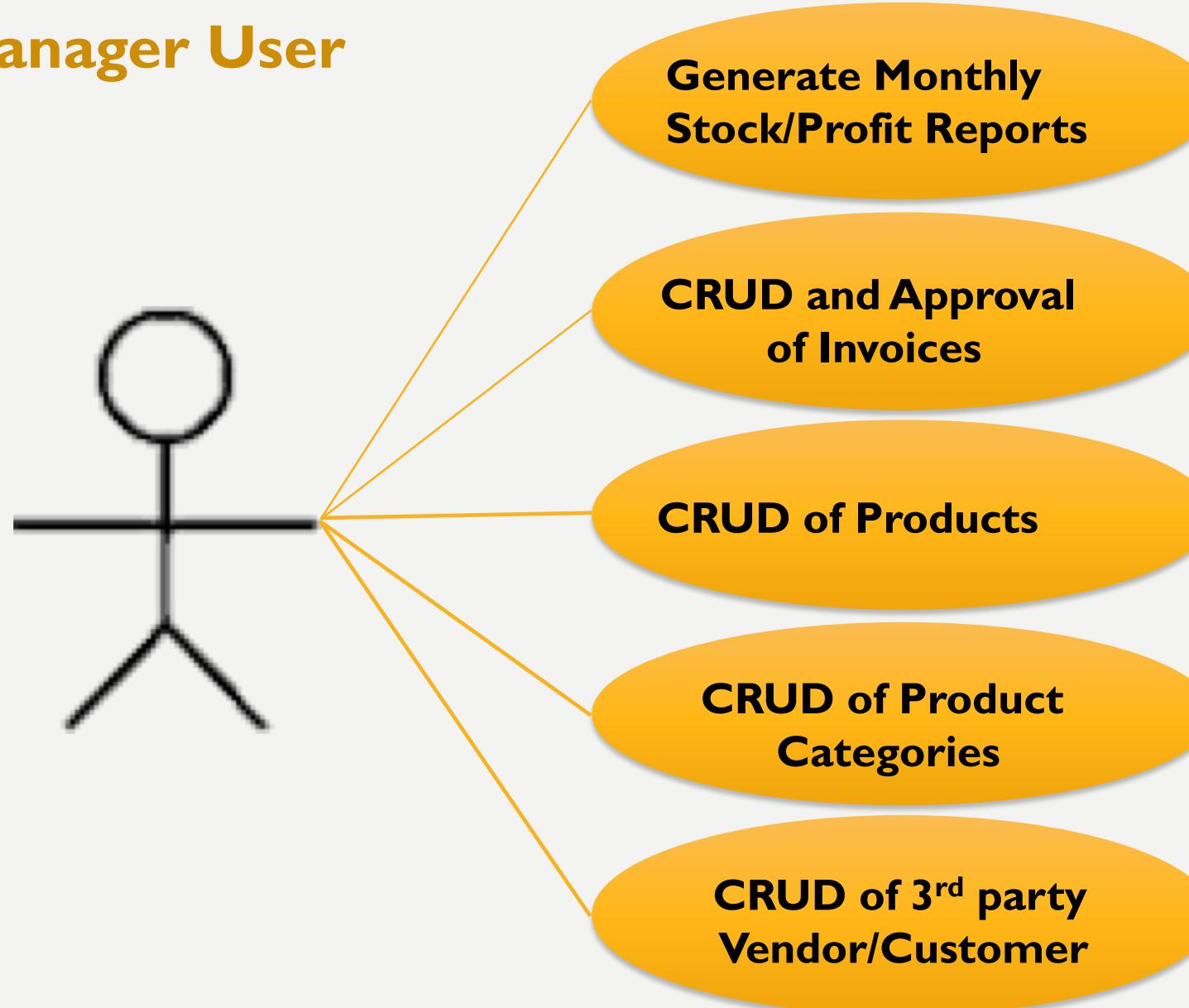
USERS

Admin User



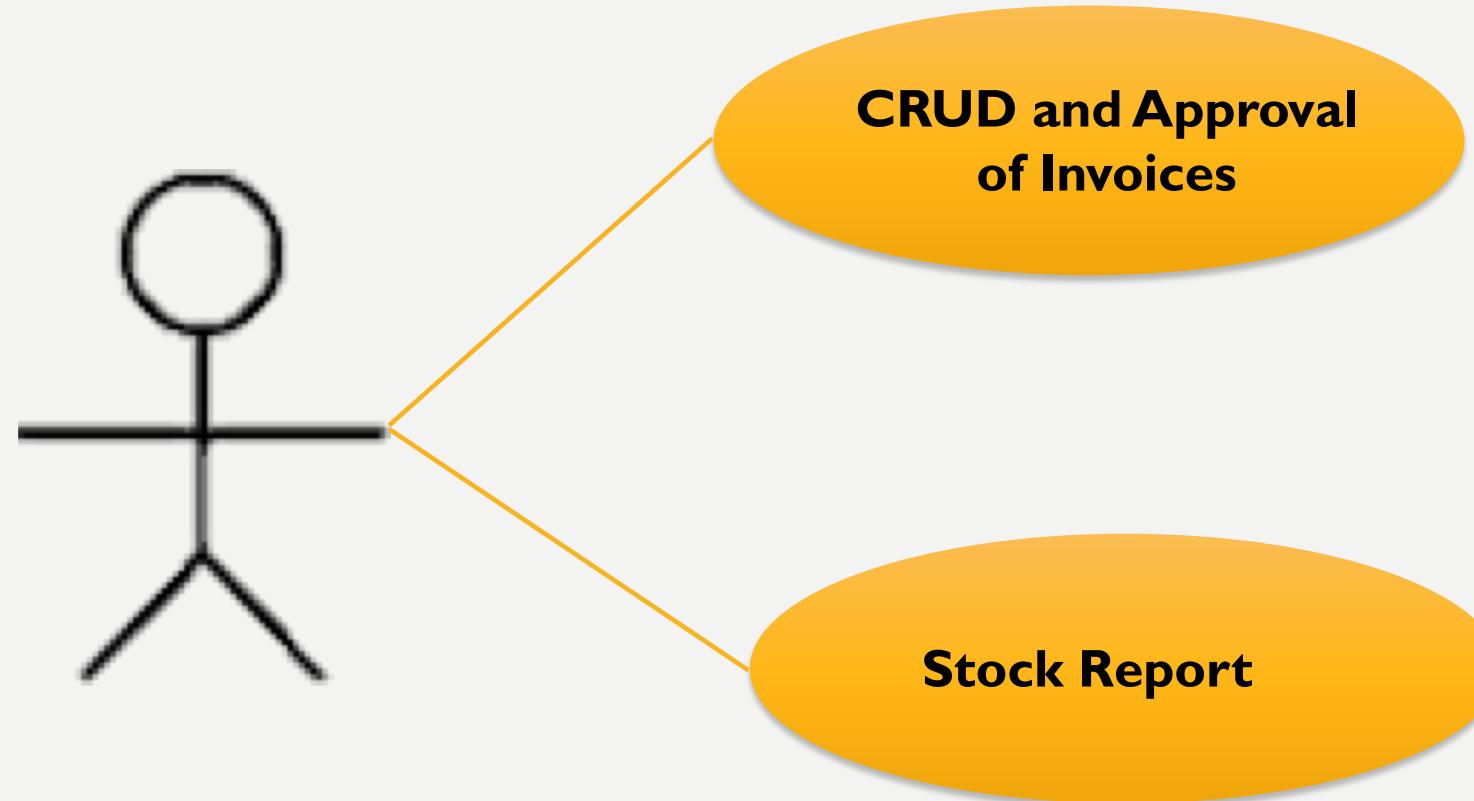
USERS

Manager User



USERS

Employee User



ACCOUNTING APP FEATURES

Primary Features

- Provide users directly create invoices and manage stocks
- There are two types of invoice;
 - Sell: Sales Invoice
 - Purchase: Purchase Invoice
- Invoice – Stock relation will be handled automatically. eg. If there purchase invoice has been completed stock qty should be increased automatically.
- For each product has its own tax info.
- There will be one main screen(Dashboard) where all users should land in there except ROOT user.
- ROOT user will land in Company List.



ACCOUNTING APP FEATURES

Primary Features

- Main dashboard should have below statistics by company
 - Total selling invoice count by current year
 - Purchasing invoice count by current year
 - Currency information. API detail will be provided.
 - 3rd party API will be consumed via WebClient. Base currency will be USD.
(<https://api.exchangeratesapi.io/>)
- Menu should be populated by user credentials.
- Each service should be logged using Log4j2 and daily base log file must be rolled.



ACCOUNTING APP FEATURES

Primary Features

- Total profit or loss should be calculated excluding tax
 - “unitPrice” of “InvoiceProduct” table will be considered sale/purchase base price for all invoice types.
- System should calculate profit & loss using above sales prices
 - **FIFO approach** should be used to calculate P&L.



HOW TO CALCULATE TOTAL PROFIT/LOSS

FIFO Approach:

	Inv Date	Product	Inv-Type	Qty	Price (\$)					
Income 1	1.02.2021	PC	Purchase	10	120					
	1.03.2021	PC	Purchase	20	100					
	1.04.2021	PC	Sell	15	150					
	1.05.2021	PC	Sell	10	200					
Total Profit/Loss = Income - Cost										
income 1:	15×150		2250							
cost 1:	$10 \times 120 + 5 \times 100$		-1700							
income 2:	10×200		2000							
cost 2:	10×100		-1000							
Total Profit/Loss = 1550										



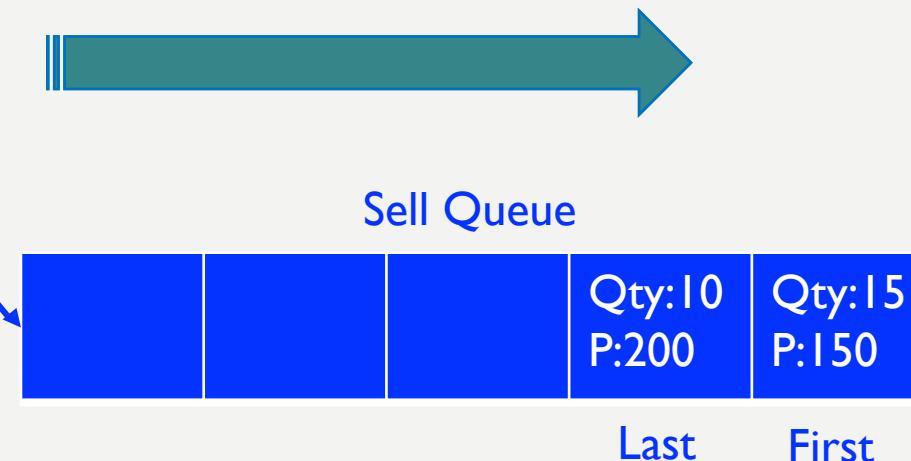
HOW TO CALCULATE TOTAL PROFIT/LOSS

FIFO Approach Data Structure:

Inv Date	Product	Inv-Type	Qty	Price (\$)
1.02.2021	PC	Purchase	10	120
1.03.2021	PC	Purchase	20	100
1.04.2021	PC	Sell	15	150
1.05.2021	PC	Sell	10	200

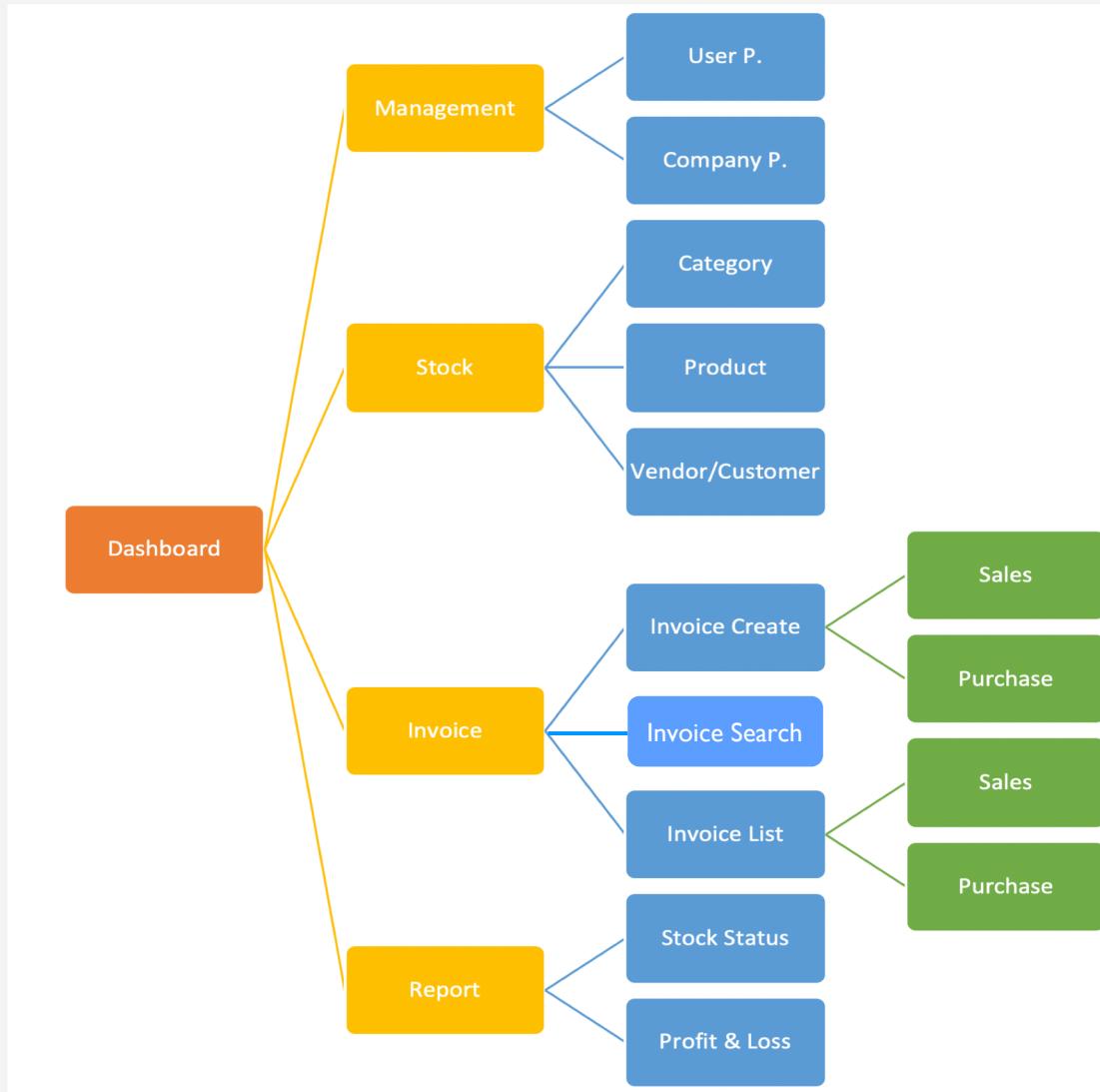


Income 1:	15x150	2250
	10x 120 + 5 x 100	
Cost 1:		-1700
Income 2:	10x 200	2000
Cost 2:	10 x 100	-1000
Total Profit/Loss =		1550



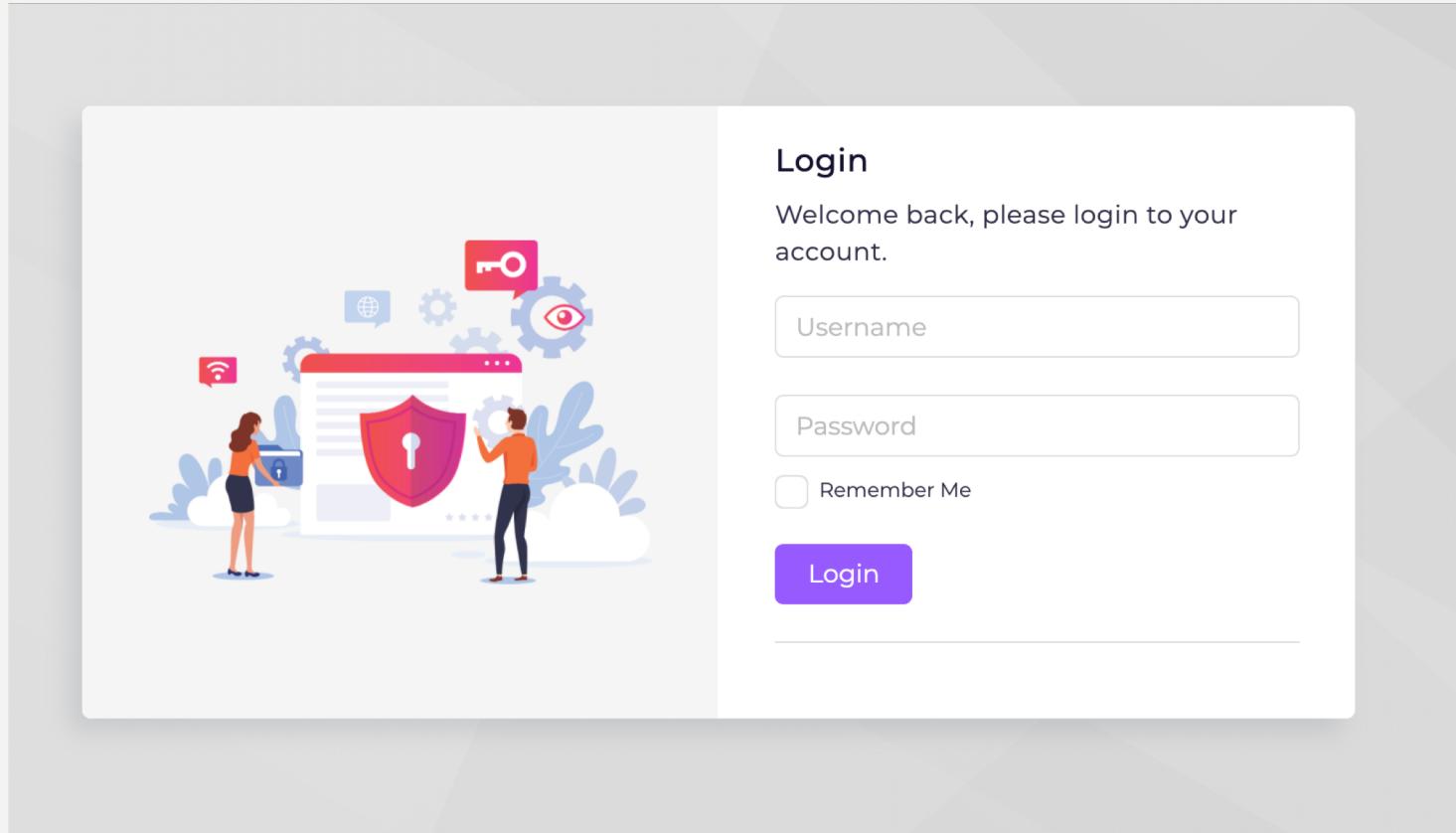
ACCOUNTING APP FEATURES

UI Design – Menu Design Tree



ACCOUNTING APP FEATURES

UI Design – Login Page



Just a Sample,
please come up with anything different!



ACCOUNTING APP FEATURES

UI Design – Dashboard – Main Page

The dashboard features four summary cards at the top:

- Total Cost:** \$15,678 (Total Cost) with a blue line chart.
- Total Tax:** \$2156 (Total Tax) with an orange line chart.
- Total Sales:** \$45,668 (Total Sales) with a purple line chart.
- Total Earning:** \$32,454 (Total Earning) with a green line chart.

Below the cards are two data tables:

- Invoices Cart:** A table showing the last three invoices with columns: Invoice Code, Date, Total Amount, and Type. The data is as follows:

Invoice Code	Date	Total Amount	Type
INV-001	2/12/2021	\$19.94	Sales
INV-002	2/12/2021	\$99.00	Purchase
INV-003	2/12/2021	\$299.00	Sales

A red box with a yellow arrow points to the "Last 3 invoices" section.

- Currency Exchange List:** A table showing exchange rates for Euro, British Pound, Canadian Dollar, and Indian Rupee. A red box with a yellow arrow points to the "Will be consumed from a REST API" section.

Annotations on the right side of the dashboard:

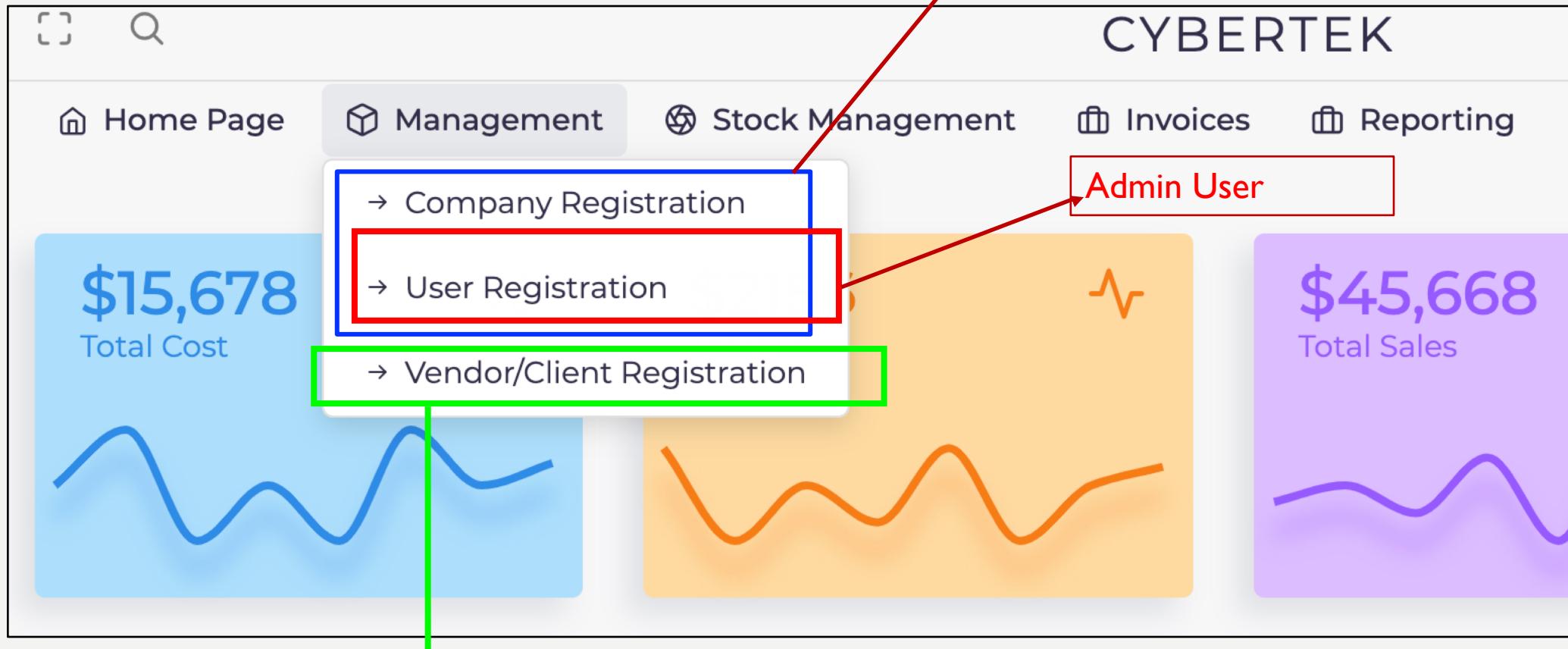
- A red box with a black arrow points to the top-right summary card: "Will be calculated on the fly. You will not keep this data on DB".
- A red box with a yellow arrow points to the bottom-right currency exchange table: "Will be consumed from a REST API".

Please come up with anything different!



ACCOUNTING APP FEATURES

UI Design – Management Menu



ACCOUNTING APP FEATURES

UI Design – Management/Company Registration

This page is where “ROOT user” lands in.

ID	Title	Representative	Email	Phone	Zip	State	Status	Edit
1	CyberTek LLC	rep	email@email.com	+19823642342	75074	OH	Active	
2	CrustyCloud LLC	Tolga Savaci	karaman@crustycloud.com	+19823642342	75074	OH	Active	
3	Dean Stanley Co	Morgan Freeman	info@deanstanley.com	+19846465323	43084	AL	Closed	

Company Registration- List Companies



ACCOUNTING APP FEATURES

UI Design – Management/Company Add

CYBERTEK

Home Page Management Stock Management Invoices Reporting

Company List

TITLE dean3004	STATE Select State
ZIP 43082	STATUS Select Status
ADDRESS 973 Polaris Crossing Way Westerville	REPRESENTATIVE Representative
E-MAIL deanstanley@gmail.com	PHONE 9734157843
ESTABLISHMENT DATE 02.02.2020	

Save Changes Cancel

Company Registration- Add Company



ACCOUNTING APP FEATURES

UI Design – Management/User Registration

ID	Firstname	Lastname	Email	Phone	Role	Corp	Status	Edit
1	Shaun	Freman	info@deanstanley.com	+1985647842	ADMIN	Dean Stanley Co	Active	
1	Shaun	Freman	info@deanstanley.com	+1985647842	ADMIN	Dean Stanley Co	Passive	
1	Shaun	Freman	info@deanstanley.com	+1985647842	ADMIN	Dean Stanley Co	Active	

Hint 1: Root user would only see ADMINs of companies !

Hint 2: If the company is deactivated then all users of that company should be disabled!



ACCOUNTING APP FEATURES

UI Design – Management/User Registration/Add

The screenshot shows a user registration form for a company named CYBERTEK. The form includes fields for Firstname, Lastname, Password, Phone, E-mail, Company, Role, and Status. Buttons at the bottom allow saving changes, deleting the company, or canceling the operation.

Navigation menu:

- Home Page
- Management
- Stock Management
- Invoices
- Reporting

User List button (highlighted in purple).

Form fields:

- FIRSTNAME: dean3004
- LASTNAME: Lastname
- PASSWORD: (redacted)
- PHONE: 9734157843
- E-MAIL: deanstanley@gmail.com
- COMPANY: Select Company
- ROLE: Select Role
- STATUS: Select Status

Action buttons:

- Save Changes
- Delete Company
- Cancel

User Registration- Add User

Hint: Only ROOT user will be able to assign company to a ADMIN user.



ACCOUNTING APP FEATURES

UI Design – Management/Client-Vendor Registration

CYBERTEK

Home Page Management Stock Management Invoices Reporting

+ Add Vendor/Client

ID	Company Name	Phone	Email	Type	ZipCode	Address	State	Status	Action
1	Active azure	+142356662	active@azure.com	VENDOR	3245324	TX	Auckland Hill 14	Active	
2	Bayou Tracking	+142356662	bayou@tracking.com	CLIENT	234245	PH	Chesterfield Industrial Park 26	Active	

Hint: List all Client/Vendors, active ones on top.

Hint: This page is for MANAGER type user.

Client/Vendor Registration



ACCOUNTING APP FEATURES

UI Design – Management/Client-Vendor Add/Update

The screenshot shows a client/vendor registration form. At the top right, the CYBERTEK logo is visible. Below it, a navigation bar includes links for Home Page, Management, Stock Management, Invoices, and Reporting. The 'Management' link is highlighted with a purple background. A secondary navigation bar below shows 'Vendor/Client List' in a purple box.

The main form fields are:

- NAME:** Bayou Tracking
- ZIPCODE:** 234245
- PHONE:** +142356662
- ADDRESS:** PH
- E-MAIL:** bayou@tracking.com
- STATE:** Chesterfield Industrial Park 26
- TYPE:** VENDOR CLIENT BOTH

At the bottom right are three buttons: Save Changes (purple), Delete (red), and Cancel (gray).

Client/Vendor Registration



ACCOUNTING APP FEATURES

UI Design – Stock Management Menu

The screenshot shows the CYBERTEK Accounting App interface. At the top, there is a navigation bar with icons for Home Page, Management, Stock Management (which is highlighted with a red box), Invoices, and Reporting. Below the navigation bar are three large cards: 'Total Cost' (\$15,678), 'Total Tax' (orange chart), and 'Total Sales' (\$45,668). A 'Stock Management' button at the bottom leads to a modal window titled 'Stock Management' with options for 'Products' and 'Category'. A red box highlights the 'Stock Management' button in the navigation bar, and another red box highlights the 'Stock Management' button in the modal window. A callout bubble points from the top red box to the word 'Manager/Employee can access'.

Manager/Employee can access

CYBERTEK

Stock Management

Products

Category

Total Cost

Total Tax

Total Sales

Invoices Cart

Stock Management

Currenc

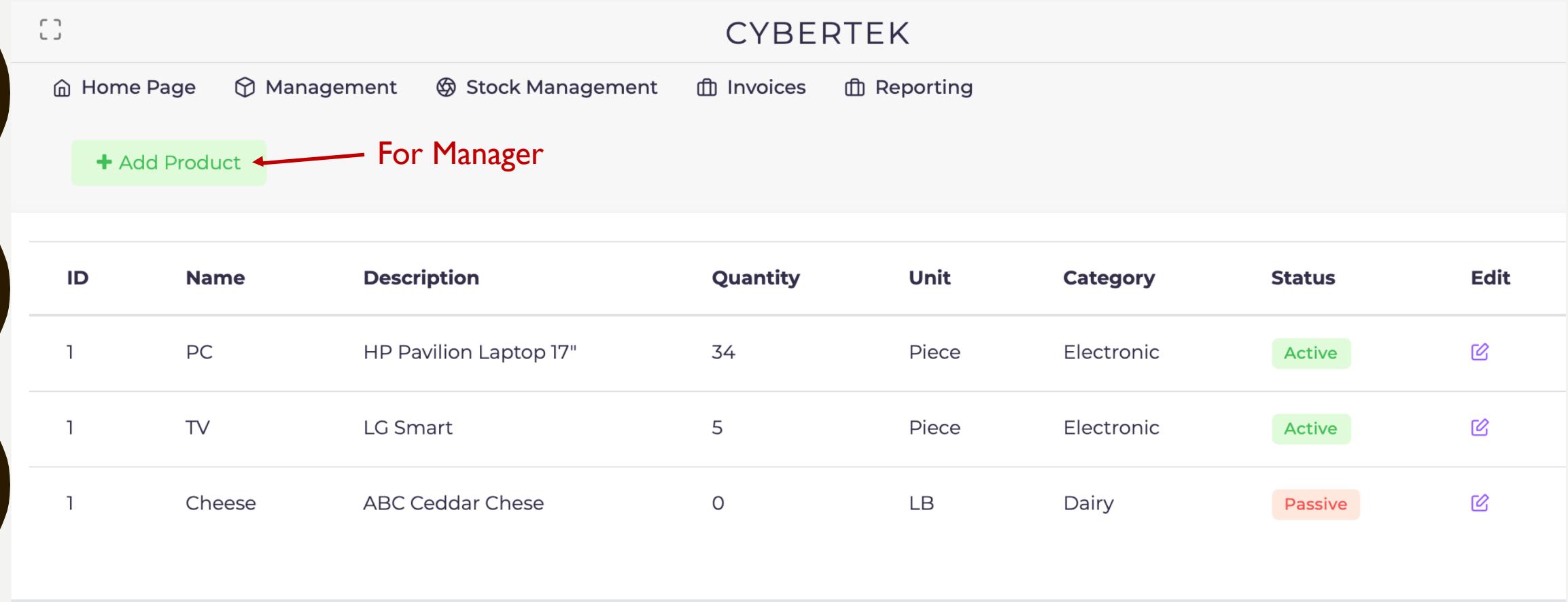
Time

Stock Management



ACCOUNTING APP FEATURES

UI Design – Stock Management/Products-List



For Manager

ID	Name	Description	Quantity	Unit	Category	Status	Edit
1	PC	HP Pavilion Laptop 17"	34	Piece	Electronic	Active	
1	TV	LG Smart	5	Piece	Electronic	Active	
1	Cheese	ABC Ceddar Chese	0	LB	Dairy	Passive	

Stock Management Products-List



ACCOUNTING APP FEATURES

UI Design – Stock Management/Products - Add

The screenshot shows a user interface for adding a new product. The top navigation bar includes links for Home Page, Management, Stock Management, Invoices, and Reporting. The Stock Management link is highlighted. The main title is "Stock Management/Products - Add". On the left, there is a "Product List" button. The form fields are as follows:

Name	Description
Apple	Lastname

Quantity	TAX
Quantity	Tax

Category	Unit
Select Category	Select Unit

Status
Select Status

At the bottom right are two buttons: "Create" (green) and "Cancel" (red).

Stock Management/Products-Add



ACCOUNTING APP FEATURES

UI Design – Stock Management/Category-List

The screenshot shows a web-based accounting application interface. At the top, there is a navigation bar with icons for Home Page, Management, Stock Management, Invoices, and Reporting. Below the navigation bar is a green button labeled '+ Add Product Category'. The main content area displays a table with columns for ID, Description, Status, and Edit. There are two rows in the table: one for 'Food' (Status: Active) and one for 'Electronic' (Status: Passive). Each row has an edit icon on the far right.

ID	Description	Status	Edit
1	Food	Active	
1	Electronic	Passive	

Stock Management/Category-List



ACCOUNTING APP FEATURES

UI Design – Stock Management/Category-Add

The screenshot shows a user interface for adding a product category. At the top right, there is a logo for CYBERTEK. Below the logo is a navigation bar with five items: Home Page, Management, Stock Management (which is highlighted with a blue background), Invoices, and Reporting. A purple button labeled "Product Category List" is also visible. The main form area has a title "DESCRIPTION" and a text input field containing the placeholder "Please Enter Category Description". At the bottom of the form are two buttons: "Save Changes" (purple) and "Cancel" (gray). The footer of the page also displays the title "Stock Management/Category-Add".

CYBERTEK

Home Page Management Stock Management Invoices Reporting

Product Category List

DESCRIPTION

Please Enter Category Description

Save Changes Cancel

Stock Management/Category-Add



ACCOUNTING APP FEATURES

UI Design – Invoices Menu

The screenshot displays a mobile application interface for accounting. At the top, there is a navigation bar with three items: "Home Page" (with a house icon), "Management" (with a cube icon), and "Stock Management" (with a gear icon). Below the navigation bar is a large blue rectangular area containing a blue line graph. The graph shows a fluctuating line with the value "\$15,678" labeled as "Total Cost" next to it. To the right of the graph is a percentage symbol (%). Below this section is a yellow rectangular area containing an orange line graph. The orange graph shows a fluctuating line with the value "\$21,456" labeled as "Total Revenue" next to it. To the right of the orange graph is a heart rate monitor icon. On the far right of the slide, there is a blue double-headed arrow icon.

The main content area features a card titled "Invoices" with a document icon. This card is highlighted with a red rounded rectangle. Inside the card, there are three menu options:

- Purchase Invoice
- Sales Invoice
- Invoice Search

A blue vertical arrow points from the "Invoices" card down to the orange line graph on the right side of the slide. Below the slide content, the text "MANAGER and EMPLOYEE" is displayed in blue capital letters.



ACCOUNTING APP FEATURES

UI Design – Invoices/Purchase Invoice - List

The screenshot shows a user interface for managing purchase invoices. At the top, there's a navigation bar with links for Home Page, Management, Stock Management, Invoices, and Reporting. Below the navigation is a green button labeled '+ Create Purchase Invoice'. The main area is a table with columns: Invoice No, Invoice Date, Vendor, Cost, Tax, Total, and Add Line Item. The table contains three rows of data:

Invoice No	Invoice Date	Vendor	Cost	Tax	Total	Add Line Item
P-INV-001	01.01.2021	Uline Farmer	1.100\$	110\$	1.210\$	⋮ Approve Delete
P-INV-002	01.01.2021	Uline Farmer	1.100\$	110\$	1.210\$	⋮ To Invoice
P-INV-003	01.01.2021	Uline Farmer	1.100\$	110\$	1.210\$	⋮ Approve Delete

**Approved Invoices cannot be changed or deleted.
For approved Invoices above mentioned buttons will be activated.**

Invoices/Purchase Invoice - List



ACCOUNTING APP FEATURES

UI Design – Invoices/Purchase Invoice - Create

Home Page Management Stock Management Invoices Reporting

Purchase Invoice List

INVOICE NO	INVOICE DATE		
P INV 001	01.01.2020		
VENDOR	PRODUCT	QUANTITY	PRICE
Acme Corp	Select Product	2	648

Add Item

Product	Price	Quantity	Total	Delete
PC	600\$	2	1.200\$	
PC	600\$	2	1.200\$	
PC	600\$	2	1.200\$	

Done Cancel

Invoices/Purchase Invoice - Create



ACCOUNTING APP FEATURES

UI Design – Invoices/Purchase Invoice – Add Line Item

Home Page Management Stock Management Invoices Reporting

Purchase Invoice List

INVOICE NO	INVOICE DATE		
P INV 001	01.01.2020		
VENDOR	PRODUCT	QUANTITY	PRICE
Acme Corp	Select Product	2	648

Add Item

Product	Price	Quantity	Total	Delete
PC	600\$	2	1.200\$	
PC	600\$	2	1.200\$	
PC	600\$	2	1.200\$	

Done Cancel

Invoices/Purchase Invoice – Add Line Item



ACCOUNTING APP – SAMPLE INVOICE

Invoice

Cybertek
4025 Oak Avenue,
VA, USA

INVOICE

INV-001001

Balance Due
\$12,000.00

Bill To

ACME Corp
Westerville, OH

Invoice Date : 06/05/2016

#	Item & Description	Qty	Price	Amount
1	Create PSD for mobile APP Simply dummy text of the printing and typesetting industry.	\$20.00/hr	120	\$2400.00
2	iOS Application Development Pellentesque maximus feugiat lorem at cursus.	\$25.00/hr	260	\$6500.00
3	WordPress Template Development Vestibulum euismod est eu elit convallis.	\$20.00/hr	300	\$6000.00

Total due

Sub Total	\$14,900.00
TAX (12%)	\$1,788.00
Total	\$16,688.00

Authorized person

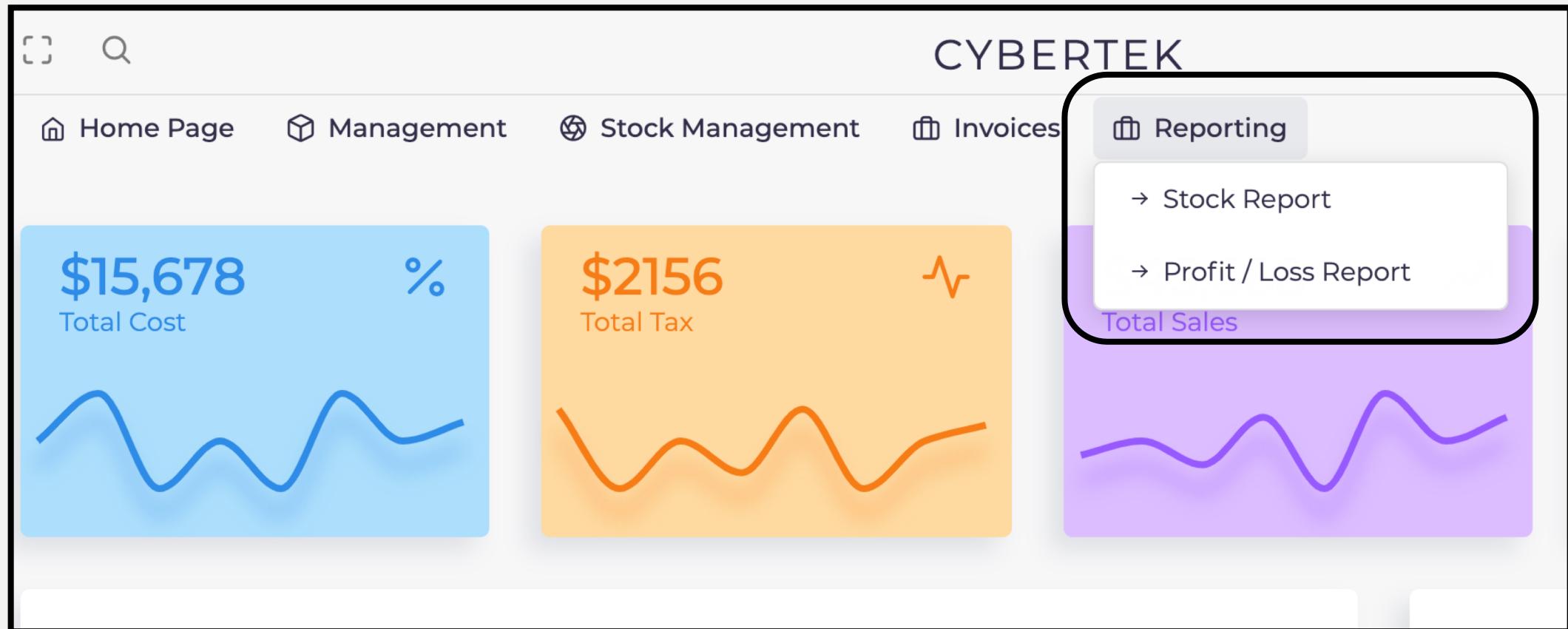
Amanda Orton
Managing Director

 Print Invoice



ACCOUNTING APP FEATURES

UI Design – Reporting Menu



Reporting



ACCOUNTING APP FEATURES

UI Design – Reporting/Stock Report

Home Page Management Stock Management Invoices Reporting

Stock Report

Report export

Copy CSV Excel PDF Print

Search:

PRODUCT	CATEGORY	QUANTITY
TV	Electronics	61

Showing 1 to 4 of 4 entries

Previous 1 Next

Reporting/ Stock Report



ACCOUNTING APP FEATURES

UI Design – Reporting/Profit-Loss

Home Page Management Stock Management Invoices Reporting

Profit Loss Report

Report export

Copy CSV Excel PDF Print

Search:

Month	Total Purchase	Total Tax	Total Cost	Total Sales	Profit/ Loss
Feb	1.000\$	120\$	1.120\$	2.220\$	1.100\$
Jan	1.000\$	120\$	1.120\$	2.220\$	1.100\$
Month	Total Purchase	Total Tax	Total Cost	Total Sales	Profit/ Loss

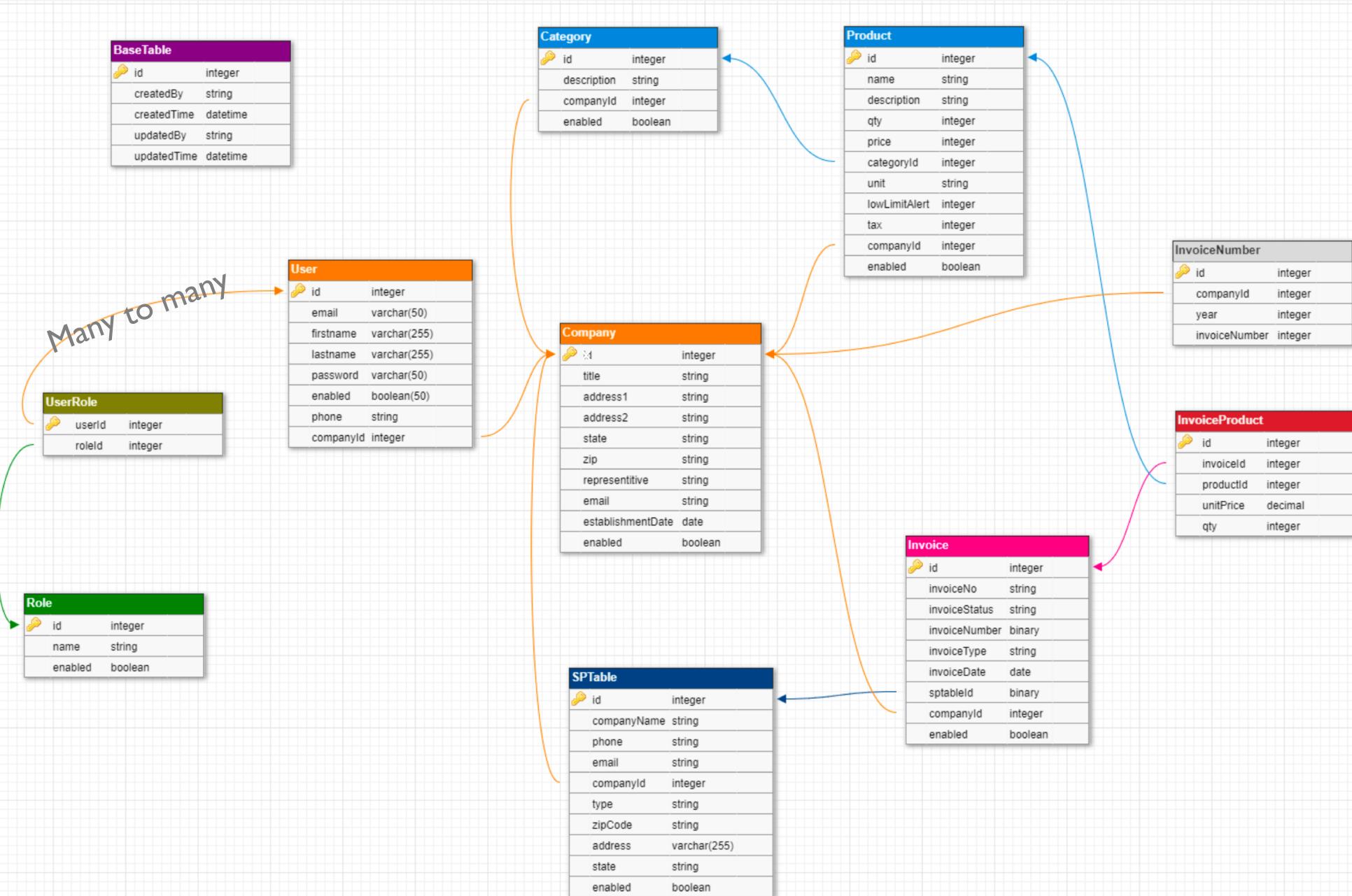
Showing 1 to 2 of 2 entries

Previous 1 Next

Reporting/ Profit-Loss Report



ACCOUNTING APP E-R DIAGRAM



SOFTWARE DEVELOPMENT PROCESS

First Step in Development Cycle ??



DEVELOPMENT PROCESS RECOMMENDED ROAD MAP

Start Here



Create Project with
an empty Postgres DB

Create Entity
/ Enums

Create DTOs
Needed

Create
Services / Repos

Create
Exceptions

Implement MVC
(UI-Controllers)

Create Mappers /
Converters

Create
Service Impls

Implement
Security

Implement REST
part

Implement
Calculations

Implement
AOP/Logging



OTHER ISSUES

- Graduation Project is designed to be developed individually. But if any student/students establish informal groups/teams and want to do it as a team, no problem.
- Java Team will not take any responsibility or role in establishing any group or picking up the team members.
- Any support for your team/individual :
 - Slack Channel for Questions
 - Slack Groups for Teams (On request)
 - Review and Q/A sessions for common questions. (As needed)
- If you think you need a self review just follow the road map and review the topic needed for that step then implement that step.
- Instructors : **Fatma, Liridon and Fatih** will be available for questions, please use Slack **#Graduation Project** Channel.



QUESTIONS?

