



YASHODA HOSPITALS

YASHODA  
HOSPITALS

innovate

achieve

lead

# Lab consumption and Supply Chain Management By

**2018B1A20498P AYUSH TIWARI**

**2018B1A30860H ATHUL V**

**2018B5A80909G PRANJAL VYAS**

**2018A5PS0720H AARUSHI BHOMIA**



# INTRODUCTION

---

I recently had to get myself tested for Corona, the whole procedure of Corona slab test consisted of only 4 minutes,

but I had to go through sententious amounts of timing waiting around. It consisted of me walking around from one counter to another counter from one slip to another. Finally to receive a token number.

This went around for 4 hours.

The inefficiency of hospital management struck me there.

I was more scared of catching COVID-19 from the hospital waiting around to get tested for it.

The idea of automation and computing the whole process **a) Saves Time b) Saves Lives c) Saves Work**

Our P.S station work consisted of understanding how their Supply and Consumption Management System works, put in ideas to change their current model to make it more streamlined and efficient and to build a basic prototype to illustrate our idea.



# INTRODUCTION- General Overview

---

- ❖ **Supply chain management** is the management of the flow of goods and services and includes all processes that transform raw materials into final products.
- ❖ SCM represents an effort by suppliers to develop and implement supply chains that are as efficient and economical as possible.
- ❖ In healthcare, managing the supply chain is typically a very complex and fragmented process because a lot of components and stakeholders are involved in the system such as the laboratory, the purchase department, manufacturer, inventory controller, central pharmacy, regulatory agencies etc.
- ❖ Currently, Yashoda Hospitals are using a semi automated system fully based on microsoft excel, which is not efficient enough to handle such a composite and extensive process.

# AIM AND OBJECTIVE



## Design a blueprint

Understand the Yashoda supply chain and make a in-detail flowchart for the same.



## Selection process

Selecting the type of framework to work and also make a documentation of alternative solutions for automation



## Assigning Priority

With the help of mentor doing a qualitative analysis of each component and assign priority to most efficient functionality

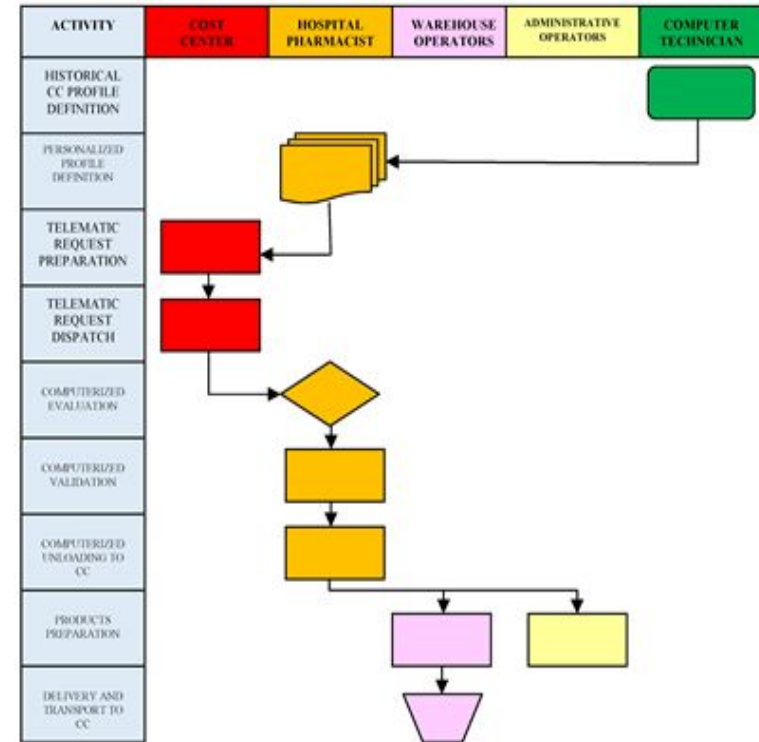
## Website Development

Deploy each component of the blueprint one by one slowly integrating the functionality by testing them

# IMPORTANCE OF AUTOMATED SYSTEM



- The right governance structure for SCM allows hospitals to maintain the balance between reducing costs and providing high-quality care. It requires that the SCM governance evolves to a collaborative approach involving all stakeholders, this collaboration requires the appropriate governance structure and processes.
- Automating and integrating IT systems will allow hospital to seamlessly link their supply chain processes. The centralized management requires that hospital in the network dialogue continuously with the warehouse, together with a flow of information.
- The right governance structure for SCM allows hospitals to maintain the balance between reducing costs and providing high-quality care. It requires that the SCM governance evolves to a collaborative approach involving all stakeholders, this collaboration requires the appropriate governance structure and processes.
- Automating and integrating IT systems will allow hospital to seamlessly link their supply chain processes. The centralized management requires that hospital in the network dialogue continuously with the warehouse, together with a flow of information.



# KEY COMPONENTS



01

LABS

- Sites for consumption
- Responsible for indent raising
- Most important part in process to automate

02

CENTRAL PHARMACY

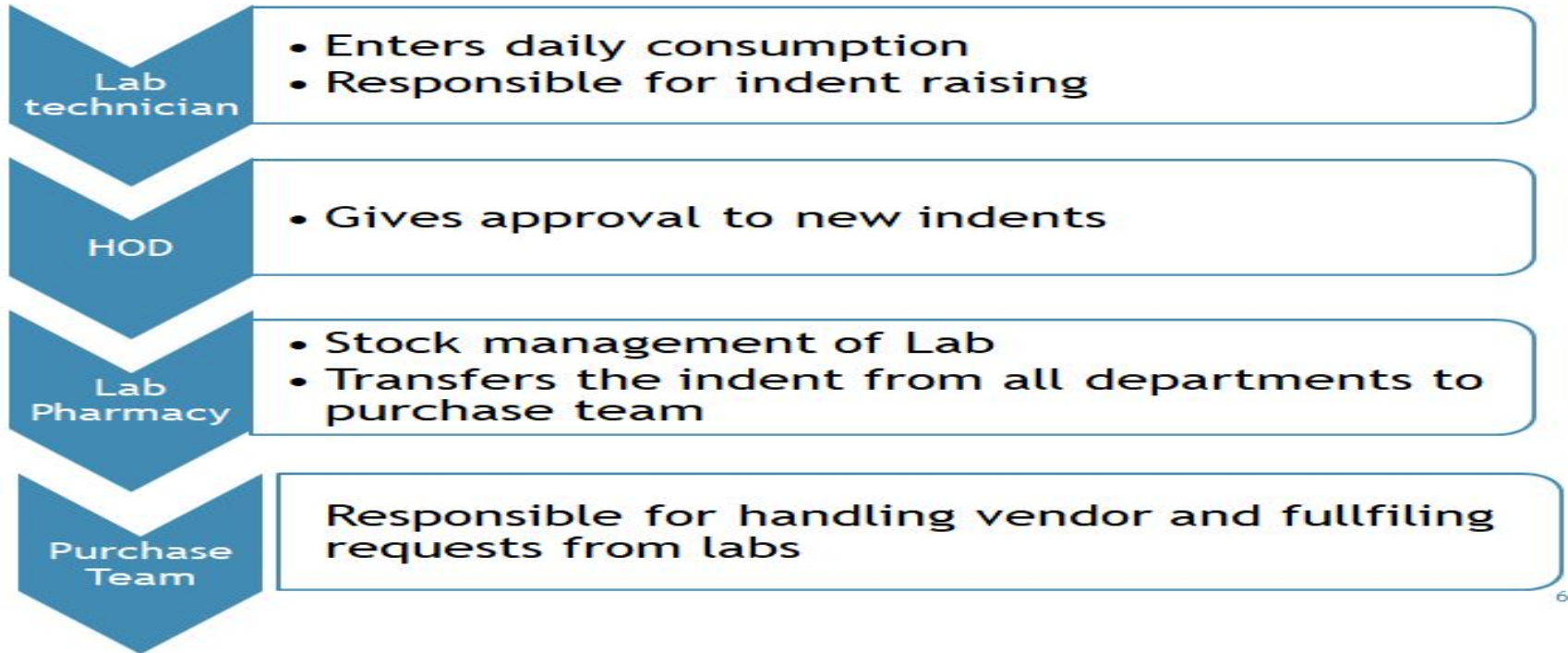
- Gives approval to indents in coordination with purchase team
- Receives order from vendor and checks any errors
- Informs purchase team to block payment if there is any problem with order

03

PURCHASE TEAM

- Handles the indents from all labs
- Selects Vendor and handles all the negotiations

# SIMPLIFIED LAB WORKING



# PROBLEMS WITH PRE EXISTING SYSTEM



Information flow  
through excel sheets:

Majority of the  
information flow is  
through mail and excel  
which makes the  
system slow

Work load on  
technician:

Technician has to  
check Each machine  
for daily consumption  
and manage a big excel  
sheet for each day

Efficiency and cost:

Since the system relies  
on approvals ,sending  
these excel and getting  
approval takes time  
which leads to further  
inefficiency and cost

Transparency and data  
handling:

Excel files in later  
phase can build up to  
15-20 Mb Size  
therefore the SYstems  
lags when working on  
them.



# ALTERNATIVE SOLUTIONS



## Commercially available Software

Commercially software include big companies like Oracle, SAP SCM. and JDA these provide different functionalities as modules directly to the consumer

- Very expensive in long term operations
- Suitable for big supply chains unlike yashoda
- Zero development cost and fast deployment
- Support from professional level developers

## Open source Development Software

Open source software already have a built in-code and template for the different functionalities which can be modified by the user to their needs. E.g. Apache ofbiz

- Cheap in Long term operations
- Less development time and staff required to handle
- Basic core functionalities are hectic to configure

## Building a platform from scratch

Using a web development platform like Django,PHP,bootstrap to build a platform with a team of developers

- Needs a professional Team to build and deploy the software
- Best alignment to company needs
- Privacy issues are taken care.

# Understanding Major Advantages of Django

---

- ❖ **Written in Python**
  - Easier for programmers to build web applications with clean, readable, and maintainable code by taking advantage of syntax rules of Python
- ❖ **Accelerates custom web application development**
  - The features provided by Django enable developers to build custom web applications rapidly according to varying business requirements. A large percentage of Python programmers even opt for Django when they have to meet both goals and deadlines.
- ❖ **Compatible with major operating systems and databases**
  - Django enhances the accessibility of web applications by supporting major operating systems like Windows, Linux and MacOS. At the same time, the ORM system provided by Django makes it easier for programmers to work with several widely used databases.

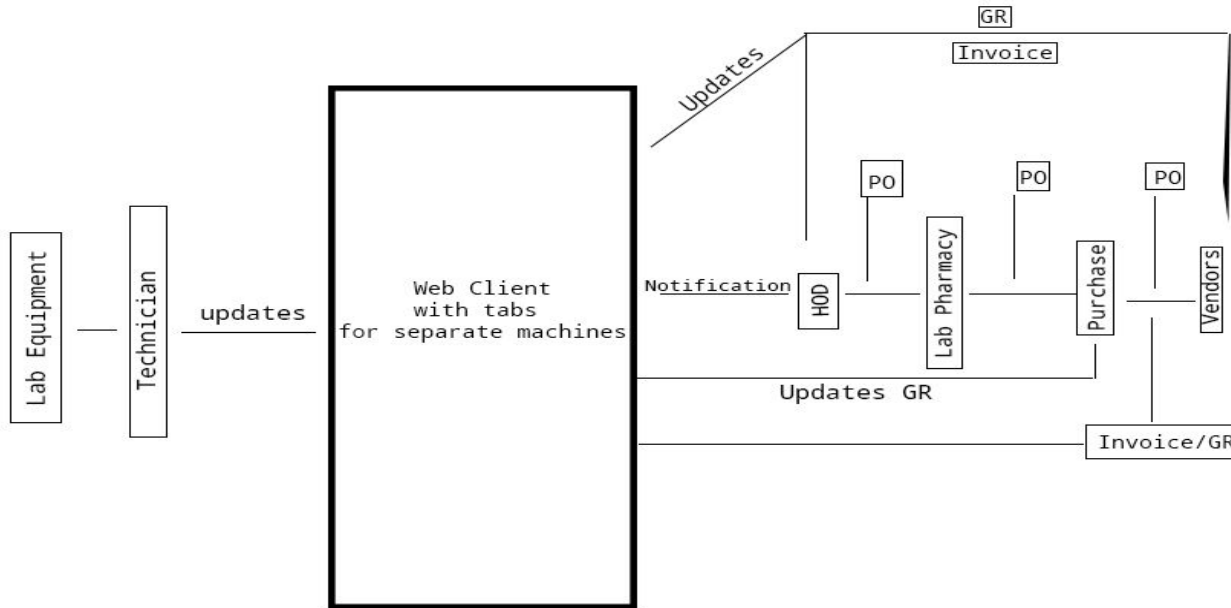


# Understanding Major Advantages of Django

---

- ❖ **Easy to extend and scale**
  - The Django Developers can easily customize, scale, and extend the web framework by making changes to its decoupled components. They even have option to unplug or replace these decoupled components according to precise requirements of individual projects
- ❖ **Supported by a large and active community**
  - As an open source web framework for Python, Django helps developers to reduce web application development cost significantly. But it is supported by a large and active community of developers. The members of the Django community update new plug-ins and code snippets regularly to simplify web application development.
- ❖ **Provides robust security features**
  - The built-in security features provided by Django help developers to protect the web applications from a variety of targeted security attacks – cross-site scripting, SQL injection and cross-site request forgery.

# METHODOLOGY -Work Flow



## Yashoda Hospital Lab Supply Management System


1. PO/Invoice/GR are all send by email to their respective.
2. The email can be automated by the web client.
3. Along with the email, notification of the above mentioned can be indicated in the web client user
4. Purchase, HOD, Vendors can all update the Invoice, GR, PO on a similar portal.
5. Technician can manually update the system, the client then automatically generates and sends the PO.
6. Client also does a three way tally of GR, Invoice and PO.

# PROTOTYPE



Yashoda Hospital Lab Consumption And Management [Home](#) [Logout](#)

\*Users are prompted  
by a login page



Yashoda Hospital

Email address

We'll share your email with anyone.

Password

☐ Sign me out

[Register](#)

[Forget Password ?](#)

# User Registration Portal

Two Types

a) Admin

b) Other

## Register

Full Name

Email address

We'll never share your email with anyone else.

Password

Re-enter Password

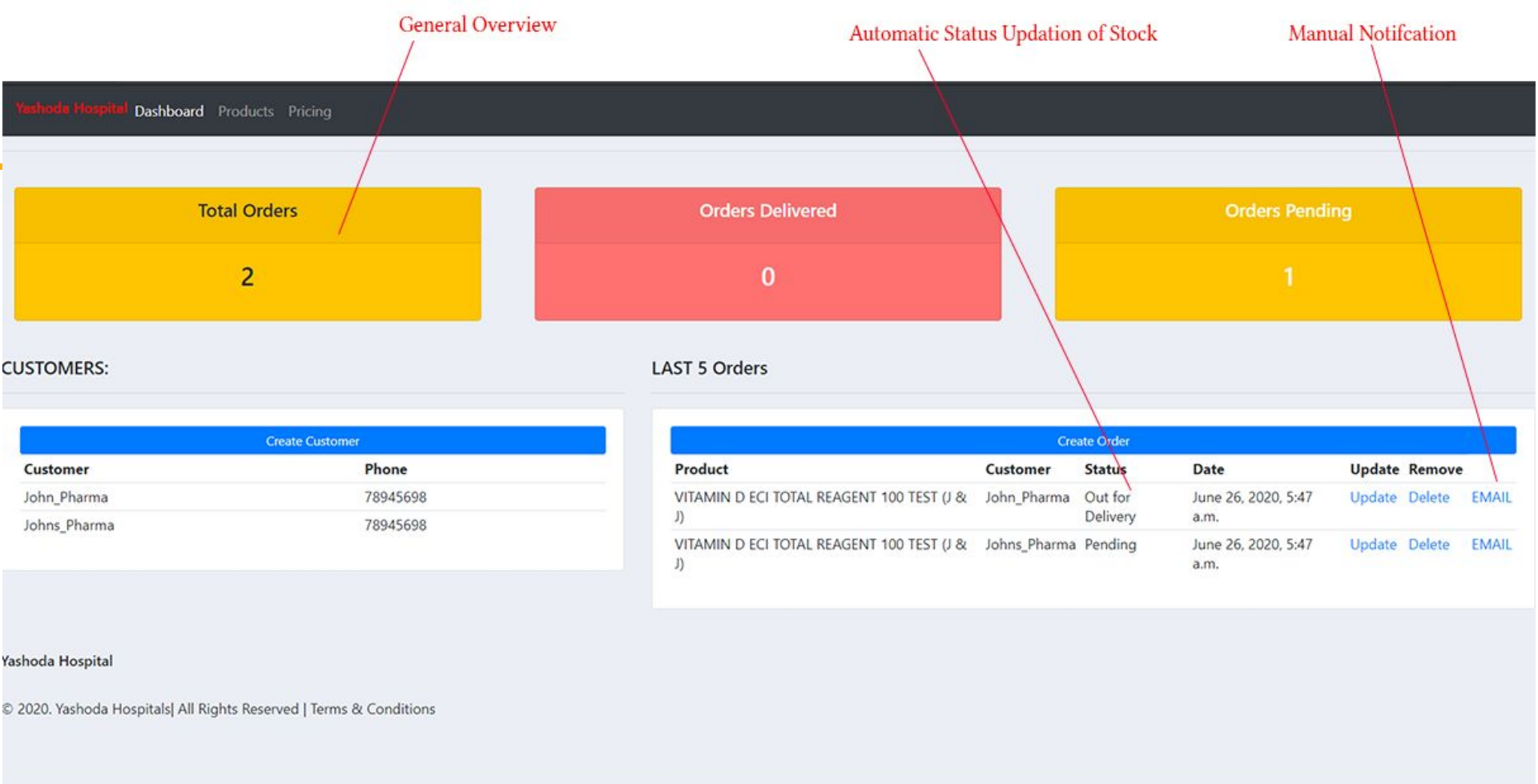
Usertype

Choose User Type

Choose User Type

Admin

Other



machine 1 + machine 2 + machine 3 +

Currently Viewing machine1

id	Product	quantity	Status		
1	Xylene	1000	Available	None	Edit
2	Ethanol	20	Not Avail	Issued	Edit
3	Toulene	0	Not Avail	Restocking	Edit
4	Sodium azide	1000	Available	None	Edit

Changing of Machine Tabs

Current Status of the Issue Raised

Current Status of the Stock



Type	<input type="text" value="Ethanol"/>
Quantity	<input type="text" value="20"/>
Status	<input type="text" value="Not Avail"/>
Issues	<input type="text" value="Issued"/>
<input type="button" value="Edit"/>	

Manual Update of the Current Status of the Stock in the machine

If the stock is below a certain limit it deploys certain notification and emails to the respective

# Pharmacy Output



Yashoda Hospital

Dashboard

Products

Pricing

Products

SNo	Code	Name	Department	Balance	Kit	Unit
1.0	MLVIT02	VITAMIN D ECI TOTAL REAGENT 100 TEST (J & J)	900.0	Bio-chemistry	900.0	100

Yashoda Hospital

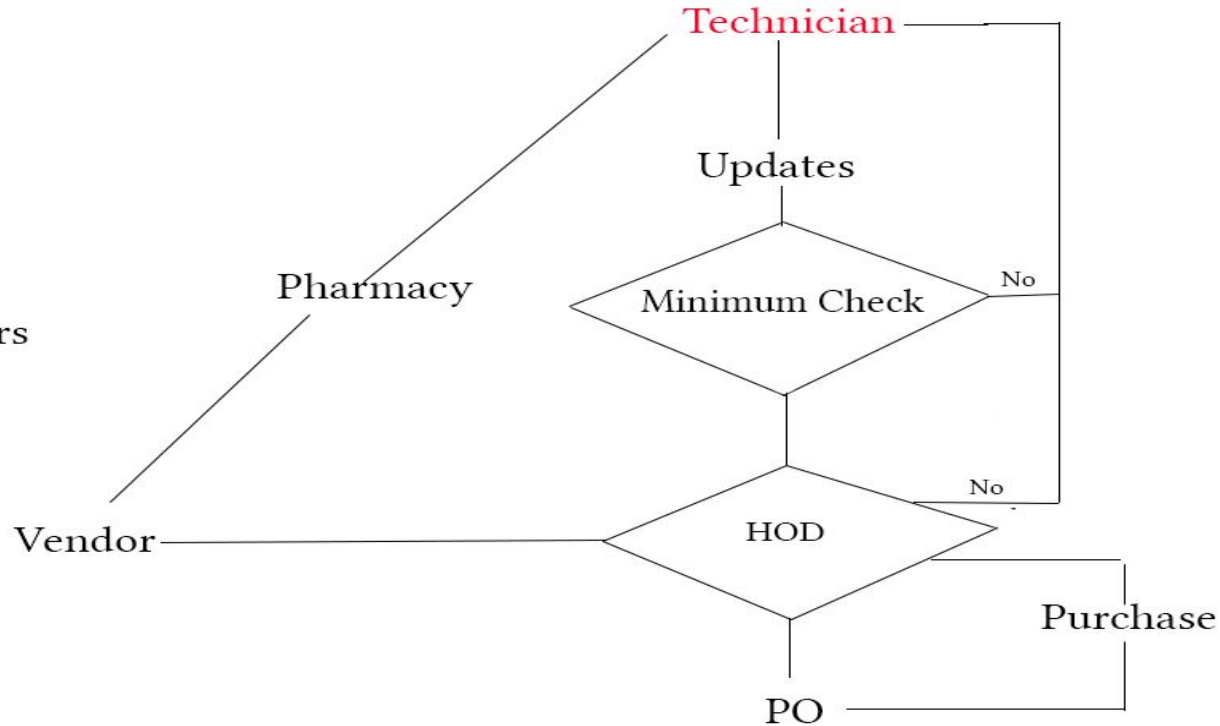
© 2020. Yashoda Hospitals| All Rights Reserved | Terms & Conditions

# PROTOTYPE Work Flow



**Users**  
Vendor  
Pharmacy - Lab  
HOD  
Purchase  
**technician**

**Activities**  
Inventory  
Dealing with Vendors  
Consumption



# MODEL DELIVERED



- ❖ Final web based system has the following components:
  - Total transfer of the existing excel sheet into the online platform
  - Labs will be able to maintain their records on an online database.
  - The Purchase and audit department can monitor all labs and central pharmacy in real-time
  - An Auto-generated mail communication will be done between each department to generate POs.
  - A three way checking system is to be implemented between the Vendor , Pharmacy and Purchase
  - An inventory where the labs can keep check on the stock as well as form a formal purchase request instantly and eliminate all the excel load by automated SQL database

# WORK FLOW



## Learning about the organization

see if they have a certain framework they work on or the liberty we have to decide our project project

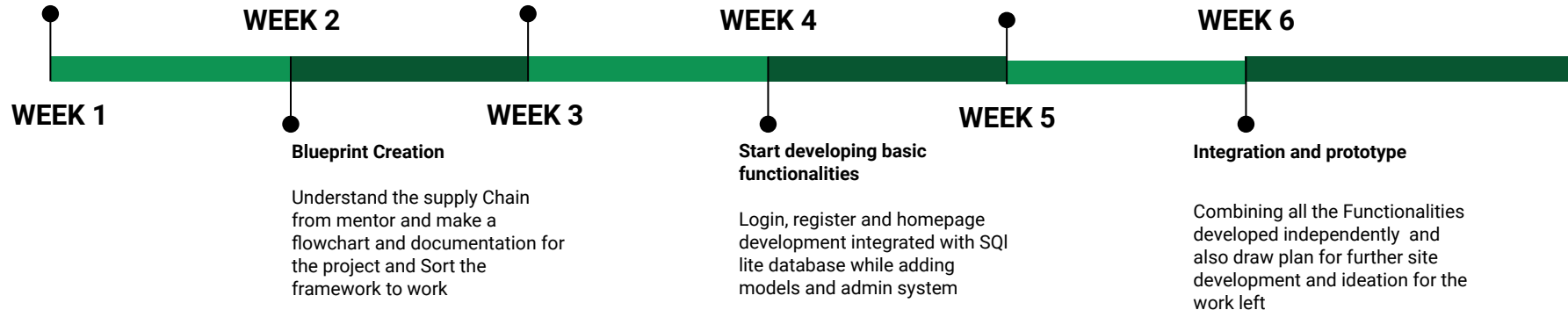
Sorting out various tools we ill need for the project

## Learning phase and Rough drafting

Started learning Django from online sources dedicating major part of week also drawing rough sketch for Lab system UI

## Finish Lab component deployment

Considering priority Lab functions like inventory management, automatic Mailing system are coded with UI



Active Discussions  
on the excel sheets  
used in the process.



# References Used



<https://drive.google.com/drive/folders/1VXPyBw6bI-AB1v0wJZOUuhhCHdc4TlC6?usp=sharing>

<https://docs.djangoproject.com/en/3.0/>

<https://devdocs.io/django/>

<https://www.w3schools.com/bootstrap/>

<https://getbootstrap.com/>

<https://github.com/twbs/bootstrap/>

<https://medium.com/@9cv9official/simple-excel-parsing-to-database-in-django-with-pyexcel-xls-and-pyexcel-xlsx-765aed49aaa9#:~:text=First%2C%20you%20need%20to%20make,previous%20section%20in%20models.py.&text=After%20that%2C%20make%20a%20simple%20view%20to%20upload%20your%20excel%20file.&text=Make%20sure%20you%20name%20the%20file%20input%20'files'.>

<https://data-flair.training/blogs/django-send-email/>