Daffodil International University

Department of Software Engineering, FSIT

SWE-431 Project / Thesis

Project Documentation

Garments ERP System (T&A And Planning)

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Acknowledgement

First of all, thanks to ALLAH, ALHAMDULILLAH because I am very much blessed as I have successfully reached towards the final semester. From the very beginning of my university life, I have learned a lot about software engineering as well as core computer science related knowledge from my course teachers. Moreover, they teach us ethics, morality and politeness.

It is a fortunate opportunity for me as a student of the Department of Software Engineering, one of the exalted academic cancers of the Science and Information Technology Faculty of the Daffodil international University, to express my deep feelings of gratitude to the department and to my honorable teachers and also to the department staff.

Besides, I am so much thankful to my parents that, I was always supported by them. They always prioritize my opinion and inspired me as well.

I am also so many grateful to my supervisor **Md. Habibur Rahman,** Senior Lecturer, Department of Software Engineering, FSIT. Daffodil International University, Dhaka, for his excellent guidance, inspiration, encouragement and also for allowing me to work with this project. It was not possible for me to complete my thesis paper successfully without his help.

Specially, I am very thankful to my friend, elder and younger brothers of our university who always appreciate me to my studies and my daily works for learning new ones.

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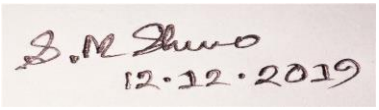
DECLARATION

We hereby declare that we have taken this thesis under the supervision of **Md. Habibur Rahman, Senior Lecturer, Department of Software Engineering, Daffodil International University**. We also declare that neither this project nor any part of this has been submitted elsewhere for award of any degree.



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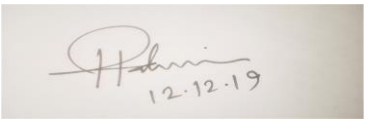

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Abstract

I have begun to build up this task from April. From the beginning of improvement of this task, it requests persevering, patients, persistency to meet the necessities of partners. After that I have proposed the structure. And afterward began to work.

Database assumes a fundamental job for any application programming. Thus this is the reason, I have planned the database outline having tables with appropriate relationship. From that point forward, I have arranged the UI and take their endorsement to proceed to the following part. It is to be said that, the interface of my application is straightforward and straightforward. In the wake of finishing that, I have begun to compose the center usefulness of the task.

Creating venture isn't end of all assignments really. There are some other significant assignments to perform. Furthermore, that is trying. It is otherwise called quality confirmation too. Nearly at each programming organization there are a quality confirmation group. Their fundamental duty is to discover the escape clauses or weakness of programming. In the event that there any bug stays before handover to the partners, there is a change to demolish the entire undertaking. So testing arrangement is significant. What's more, in the wake of building up the task, I have attempted to guarantee the nature of this undertaking.

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Chapter 1
Introduction

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1.1 Project Overview

Today we have computers with large computing power and almost every business is going to take the advantages of using those technologies. But nowadays digital certifications itself becomes an essential component for every business infrastructure. Because it provides security and it can identify every unique individual. Besides, it also provides confidential communications to the users.

Nowadays paperless calculation, documentation and communication enables people to access to everything by their unique identity like fingerprints or passwords. It has also successfully reduced the clutters of disorganization papers and calculations which may arrive from related purpose. Digital papers reduce the office space that required for business and gives more ability to access to information.

Management & integration all aspects of the business key functions including: order entry, sample, IE, inventory, merchandising, production & Finance are so much complex in manual way. Determination to achieve lower prices, better quality and quicker delivery is also difficult when people used to use manual ways.

Providing right information to the right people at the right time anywhere in the world, enabling peoples to improve productivity, enhance decision making capabilities and promote communication between co-workers, suppliers and buyers also so much difficult.

Reduce and eliminate duplicate work and automate operational tasks to save time & cost is impossible in manual ways. Standardization the manufacturing processes and improvement quality within multiple business units across the company was also very difficult.

These are some common scenario across the country. And the reality is that, no one from out of this universe would come to solve our problem. We need to solve our own problem using our own resources as well. And the initiatives should come from us.

For this, we are going to make a web based application on PC. By using this web application system, employees of any garments can be benefited as they would not face any hassles to make an order, planning for specific order, making inventory report for specific order or make a different order of inventory for specific order, making and generating reports and exporting information. Only merchandizer, planner, commercial officer and inventory manager able to make registration. Most importantly, taking order according to cost benefit calculation, planning for each order, manage inventory collections, commercial reports and import and export can be managed automatically. And the process would be done within a few while.

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1.2 Project Purpose

The main purpose of this project named "**GarmentsERP System**" is to make an automation system which might be helpful for millions of users from different garments by solving their few problems. Therefore, we are going to develop such a project.

1.2.1 Background

Suddenly we notice that, people from our country of different garments is facing a lot of problem at the time of their daily work. And there are a few options remaining to escape those problem. Thousands of people from different garments are being suffering. So considering that, we have brainstormed and thinking that our project is going to solve their problems.

1.2.2 Benefits & Beneficiaries

The module "T&A and Planning" of our applications would be beneficial for some point of view. Now, I am mentioning those

Below:

- Our system helps T&A and Planning manager to make registration easily
- It helps authenticated access to the system.
- It would be helpful for making T&A planning.
- It is helpful for determining the starting date, end date, submission date, and approval date in only T&A planning.
- It is also helpful for determining required machine numbers and working hour for knitting plan, dyeing plan, Trims and pps plan, Sewing plan, printing plan, packing plan, inspection & ex-factory plan.
- It helps T&A and planning manager to plan for an order within a moment
- This application makes authentication system for a garment so confidential data cannot be highlighted.
- Our app helps garments company to increase their business
- This app helps T&A and planning manager to find any order planning easily.
- The system also going to reduce unwanted problems
- Only authorized person can get access to the system.

I have also mentioned some benefits as well as beneficiaries. So, I think this application is very much helpful for users.

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1.2.3 Goals

The main scope of this project is to develop an application based on PC device. As more than 80% high level employees are using Windows operating based PC device, so we are targeting to implement our system firstly for computer users. Our proposed system has 5 modules.

This document is also aimed at specifying requirements of software to be developed but it can also be applied to assist in the selection relation between the different stakeholders. The standard can be used to create software requirements specifications directly or can be used as a model for defining the system requirements.

1.3 Stakeholders

There are six types of stakeholders in our total "GarmentsERP" system. Such as:

Buyer/Company	Buyer will order for his need, can know the each product cost and total cost of order, production completion estimated date, can get all reports too.
Merchandizer	Merchandizer makes each order. For each order he calculates cost benefit reports, deals with buyer and confirms order.
T&A and Planning manager	Planner can see each of the orders, yarn and fabric info and plans for each order in some sub works and generates report for each order. He can also generate daily work report too.
Inventory manager	Inventory manager can see all orders, calculate needed inventories and send request for inventory to commercial manager.
Commercial manager	Commercial manager can see all orders and needed inventory for each order to import from other companies. He will gather all information of the garment, each cost for production of each order, export info and bank info of buyer.
BGMEA	Planner, merchandizer, commercial manager will give report to BGMEA. And all deal for each order will be confirmed with the permission of BGMEA.
Banks	An order report of specific order and daily work report of this order will be sent to bank and bank will monitor daily work progress.

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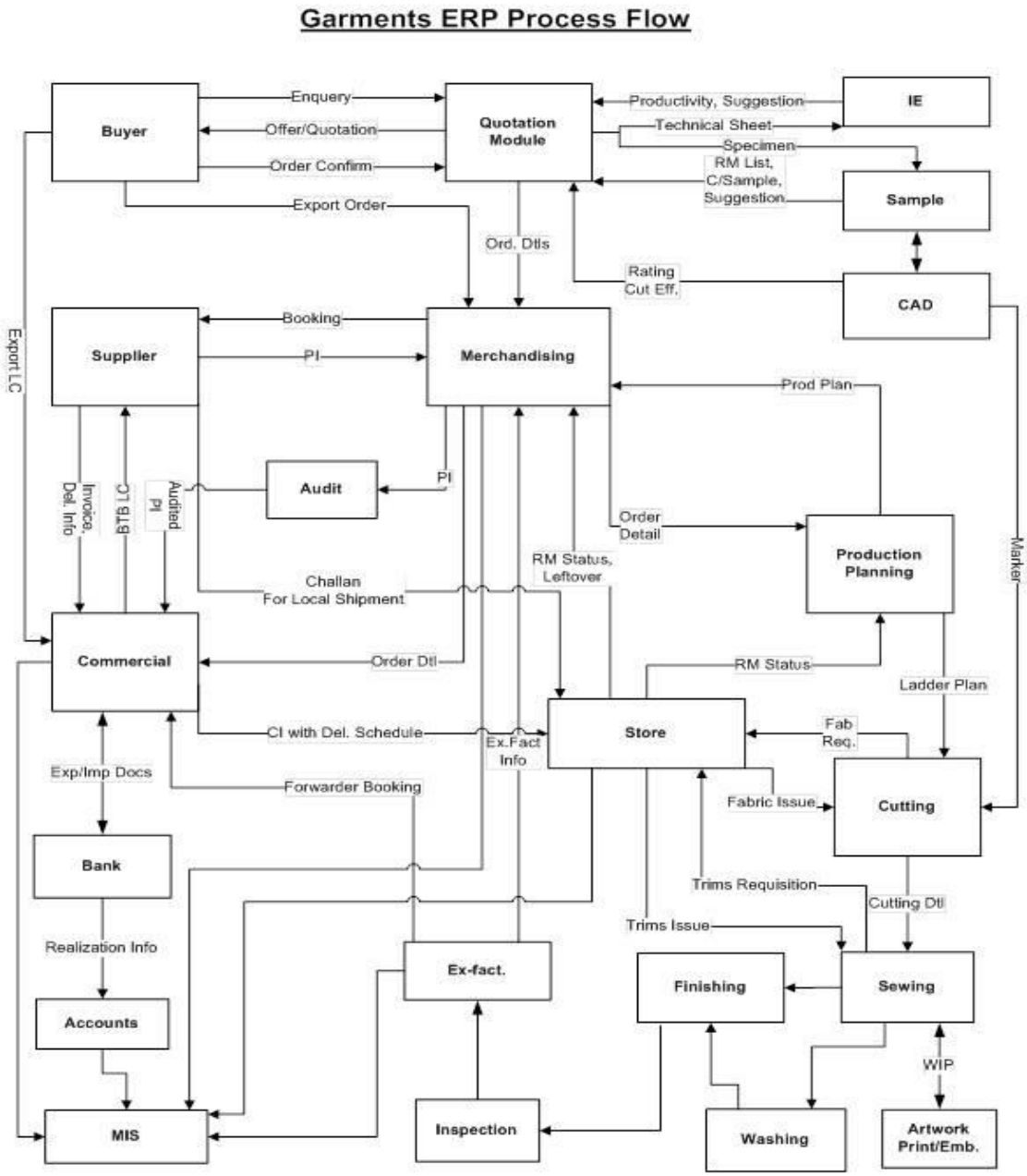
1.4 Proposed System Model (block diagram)



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1.5 Project Schedule

We need to prepare a scheduling plan to complete the project on time. It also refers to make communication with what task need to get done within timeframe.

1.5.1 Gantt Chart

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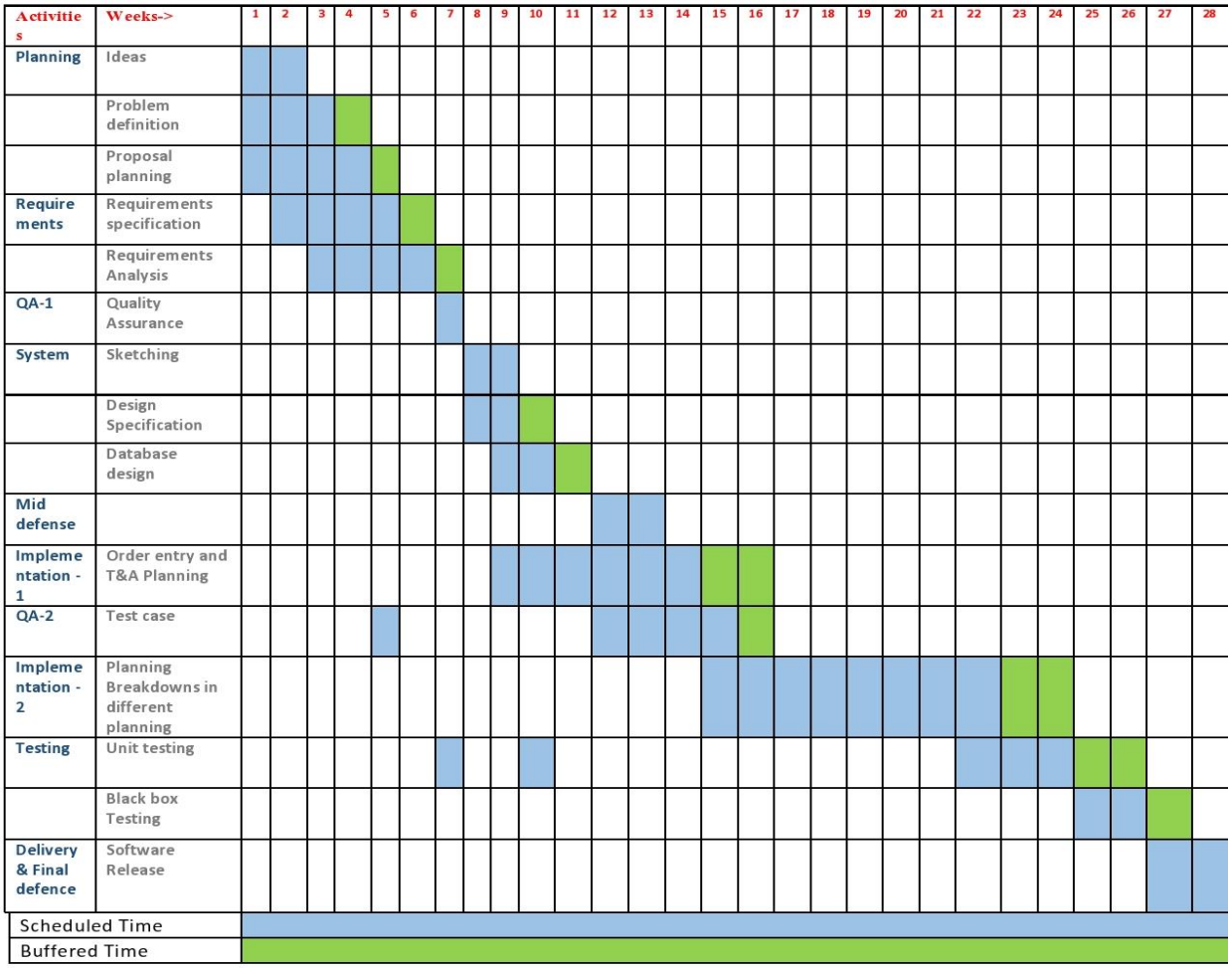

Figure 1.1: Gantt chart

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1.5.2 Release Plan or Milestone

Activities	Duration in week	Total week
Brainstorming	Week no. (1,2)	2
Problem identification	Week no. (1,2,3,4)	4
Requirement specification	Week no. (2,3,4,5)	4
Requirement analysis	Week no. (3,4,5,6)	4
Sketching	Week no. (8,9)	2
Design specification	Week no. (8,9)	2
Database design	Week no. (9,10)	2
Order entry and T&A and Planning	Week no. (9,10,11,12,13,14)	6
Quality assurance(1,2)	Week no. (7,12,13,14,15)	5
Test case	Week no. (12,13,14,15)	4
Impose case & demerits	Week no. (15,16,17,18,19,20,21,22)	8
Unit testing	Week no. (22,23,24)	3
Black-box testing	Week no. (25,26)	2
Software release	Week no. (27,28)	2

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Chapter 2

Software Requirement Specification

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2. Requirement Specification

The complete requirement specification based on the elicitation process is described in this section.

2.1 Functional Requirements:

Functional requirements refer to the functions which are mandatory to the system. Functional requirements must be able to perform on the software system. Every system must have some functional requirements. Now, we are going to mention functional requirements associating with our project.

2.1.1 T&A and planning manager manage account.

Requirements 1	**T&A and planning manager manage account.**
Description	Frist of all T&A and planning manager must log in to the system. In manual way any one can get the access to any of documents, file of each order's planning. But in our system only T&A and planning manager can get access through entering right username and password. For this T&A and planning manager must enter the user name and password to the login form and press sign in button. Again after doing his job he has to log out from the system so that no data can be stolen.
Stakeholders	T&A and Planning manager

2.1.2 T&A and Planning manager search for orders

Requirements 2	**T&A and planning manager search for orders.**
Description	After confirming an order by merchandiser T&A and planning manager needs to see all order information that he wants to see. For that reason in manual way planning manager collects the orders from merchandiser, then he finds the documents one by one. But in our system he can see using search option. He need to search order info by order ID.
Stakeholders	T&A and Planning manager

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2.1.3 T&A and planning manager plans for T&A

Requirements 3	**T&A and planning manager plans for T&A.**
Description	After confirming an order by merchandiser and searching specific order T&A and planning manager needs to plan for T&A. For that reason in manual way planning manager calculates required time for the orders. But in our system he can calculate require time and can put complete date for the order using calendar option. He need to search order info by order ID and select calculate plan. And then confirm the plan
Stakeholders	T&A and Planning manager

2.1.4 T&A and planning manager plans for knitting

Requirements 4	**T&A and planning manager plans for knitting.**
Description	After confirming a T&A for an order by Planning manager and searching specific order T&A and planning manager needs to plan for knitting. For that reason in manual way planning manager calculates required time for the orders, required machine for the order too. But in our system he can calculate require machine and time, can put complete date for the order using back-end code. He need to search order info by order ID, select and click plan now.
Stakeholders	T&A and Planning manager

2.1.5 T&A and planning manager plans for dyeing

Requirements 5	**T&A and planning manager plans for dyeing.**
Description	After confirming a knitting plan for an order by Planning manager and searching specific order T&A and planning manager needs to plan for dyeing. For that reason in manual way planning manager calculates required time for the orders, required machine for the order too. But in our system he can

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	calculate require machine and time, can put complete date for the order using back-end code. He need to search order info by order ID, select and click plan now.
Stakeholders	T&A and Planning manager

2.1.6 T&A and planning manager plans for trims and pps.

Requirements 6	**T&A and planning manager plans for trims and pps.**
Description	After confirming a dyeing plan for an order by Planning manager and searching specific order T&A and planning manager needs to plan for trims and pps plan. For that reason in manual way planning manager calculates required time for the orders, required machine for the order too. But in our system he can calculate require machine and time, can put complete date for the order using back-end code. He need to search order info by order ID, select and click plan now.
Stakeholders	T&A and Planning manager

2.1.7 T&A and planning manager plans for printing.

Requirements 7	**T&A and planning manager plans for printing.**
Description	After confirming a trims and pps plan for an order by Planning manager and searching specific order T&A and planning manager needs to plan for printing plan. For that reason in manual way planning manager calculates required time for the orders, required machine for the order too. But in our system he can calculate require machine and time, can put complete date for the order using back-end code. He need to search order info by order ID, select and click plan now.
Stakeholders	T&A and Planning manager

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2.1.8 T&A and planning manager plans for sewing.

Requirements 8	**T&A and planning manager plans for sewing.**
Description	After confirming a printing plan for an order by Planning manager and searching specific order T&A and planning manager needs to plan for sewing plan. For that reason in manual way planning manager calculates required time for the orders, required machine for the order too. But in our system he can calculate require machine and time, can put complete date for the order using back-end code. He need to search order info by order ID, select and click plan now.
Stakeholders	T&A and Planning manager

2.1.9 T&A and planning manager plans for packing.

Requirements 9	**T&A and planning manager plans for packing.**
Description	After confirming a sewing plan for an order by Planning manager and searching specific order planning manager needs to plan for packing plan. For that reason in manual way planning manager calculates required time for the orders, required machine for the order too. But in our system he can calculate require machine and time, can put complete date for the order using back-end code. He need to search order info by order ID, select and click plan now.
Stakeholders	T&A and Planning manager

2.1.10 T&A and planning manager plans for inspection and ex-factory.

Requirements 10	**T&A and planning manager plans for inspection and ex-factory.**

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Description	After confirming a packing plan for an order by Planning manager and searching specific order T&A and planning manager needs to plan for inspection and ex-factory plan. For that reason in manual way planning manager calculates required time for the orders, required machine for the order too. But in our system he can calculate require machine and time, can put complete date for the order using back-end code. He need to search order info by order ID, select and click plan now.
Stakeholders	T&A and Planning manager

2.1.11 T&A and planning manager generates report

Requirements 11	**T&A and planning manager generates report.**
Description	After confirming specific order's all planning T&A and planning-manager needs to generate order's all planning report. For that reason in manual way planning manager needs to plan all planning section and the planning report in paper and generate a report for a specific order. But in our system he should only go to each planning page, search by order and click report button. Then he will be given a report page there he can generate report by clicking print
Stakeholders	Planning manager, Bank, BGMEA

2.2 Data Requirements:

For defining data requirements , we need to build the model. For our application maximum data would be loaded from client/buyer and some from Organization's employees. And for that purpose we need to focus on some major points.

Such as:

- Types of entity of the system
- Quantity of order
- Data availability .
- Inventory

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- Quantity of data.
- Country's all garment's inventory elements.
- Availability of data

2.3 Performance Requirements:

It is very important to maintain performance of any software system. To ensure performance, we need to maintain some steps. Now, I will explain some perspective by which we are going to enhance the performance of our project.

2.3.1 Speed & Latency Requirements:

Speed and latency requirements must be ensured while retrieving data from the cloud server.

SLR-1	**Search result must be faster**
Description	When T&A and planning manager search for an order, knitting plan by order, dyeing plan by order, trims & pps plan, printing plan by order, sewing plan by order, packing plan by order, inspection & ex-factory plan by order then the search result must show Within seconds.
Stakeholders	Planning manager, Bank, BGMEA.

2.3.2 Precision or Accuracy Requirements:

Results that is to be shown to the end user is need to be accurate. Because, wrong information might be ruined the whole business process.

PAR-1	**Search result must be accurate**
Description	When T&A and planning manager search for an order, knitting plan by order, dyeing plan by order, trims & pps plan, printing plan by order, sewing plan by order, packing plan by order, inspection & ex-factory plan by order then the search result must show

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Stakeholders	T&A and planning manager, Bank, BGMEA.

2.3.3 Capacity Requirements:

The developed system by us must be capable to handle user data, provide accurate information , handling database , manage http request etc.

CR-1	**The system will handle thousands of data**
Description	The system need to handle data thousands of data every moment.
Stakeholders	T&A and planning manager, Bank, BGMEA.

2.4 Dependability Requirements:

The term dependability is measured based on four dimensions . Such as:

- Availability
- Reliability
- Safety
- Security

If we want to say that our application system is dependable then it must fulfil the four dimensions. But there are other tasks. Like there is no way to make mistakes or our system should have the ability to detect and then remove errors. Besides that, it is also very important to limit the damage which might be caused by system failure.

2.4.1 Reliability & Availability Requirements:

Now, I will mention requirements which is related to reliability and availability.

RAR-1	**The system must be available on 24 X 7**

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Description	Our system must be available all day long, every day in a week 1. The system must be updated regularly
Stakeholders	T&A and planning manager, Bank, BGMEA.

2.4.2 Robustness or Fault-Tolerance Requirements:

To ensure robustness and fault-tolerance facilities to the end users, it is urgent to ensure 0% crush. Moreover, it must show accurate results.

RFT-1	**The system handles planning manager access without system errors**
Description	Not more than 3 T&A and planning manager might hit our application system at a time. All their requests must be handled without any fault.
Stakeholders	T&A and Planning Manager

2.4.3 Safety-Critical Requirements:

There are no safety-critical requirements in our project.

2.5 Maintainability & Supportability Requirements:

It is very important to provide after service or support to the end users.

2.5.1 Maintainability Requirements:

Not available for this project .

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2.5.2 Supportability Requirements:

Supportability requirements may have related to some extends. Like:

- Testability
- Maintainability
- Configurability
- Serviceability
- Install ability

Our application meets all of the above requirements related to supportability.

2.6 Security Requirements:

Making system security as a requirement is very important. System security requirements should be its functional requirement. System security enforces security of an application system.

Functionality related to system security can either be directly tested or observed. Some security related requirements is given below:

- Logging in as T&A and planning manager.
- Logging out as T&A and planning manager.
- Handling encrypted passwords.

While accessing to the system, each and every module must provide a central authentication mechanism. There is also a process to prevent entering into the system by ensuring hashed password for the unauthenticated users.

2.6.1 Access Requirements:

For accessing to our application system, there remains some authentication and authorization techniques. And every module of our system will provide it. Now I will provide an explanation below.

AR-1	**Application provides security mechanism**
Description	Every module is designed in such a way that it only give access to the authorized and authenticated users.
Stakeholders	T&A and Planning Manager

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2.6.2 Integrity Requirements:

Integrity requirements refers to a security system which ensures an expectation of data quality. It also ensures that all data of the system would never be exposed to the malicious modification or accidental destruction. For that reason, we will store our user passwords as encrypted format which is impossible to decrypt. It is also called hashed password.

2.6.3 Privacy Requirements:

It is very important to ensure privacy of the system users. Privacy requirements enhances to protect stakeholder's privacy. In this way, all data or a partial part of data are going to be disclosed according to system's privacy policy. To ensure privacy, the central database should be protected by the anonymous. Planners permitted to get access to those data which are being associated by them or by the organization's employees which can be ensured by the T&A and planning manager log in system .

2.7 Usability and Human-Interaction Requirements:

The main target of developing any system is to make the system user friendly and easy to usable for the end users.

2.7.1 Ease of Use Requirements:

Our application is easy to use and also easily understandable.

EUR-1	**Application must be usable for the end users**
Description	This app is enough usable to the T&A and planning manager by which he can operate this system easily.
Stakeholders	T&A and planning manager

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2.7.2 Personalization and Internationalization Requirements:

There are not any personalization and internationalization requirements to our system. This maiden version of our application is only be operated by a specific Garment.

2.7.3 Understand ability and Politeness Requirements:

It is already said that the application which we are going to develop, is understandable enough. The system provides hints to users whether any error occurred or wrong. By reading those errors T&A and planning manager can be able to operate the system easily.

2.7.4 Accessibility Requirements:

Documentation are mainly two types. One is internal documentation which is generally written by the application engineers. It is prepared to make development life cycle easier for the system engineers or system analysts.

UDR-1	**The system engineer documentation**
Description	To develop our application named GarmentsERP, firstly we have make a system analysis team as well as documentation team.
Stakeholders	System analysts or software developers

2.7.5 User Documentation Requirements

Documentation are mainly two types. One is internal documentation which is generally written by the application engineers. It is prepared to make development life cycle easier for the system engineers or system analysts.

UDR-1	The system engineer documentation .
Description	To develop our application named GarmentsERP system, firstly we have make a system analysis team as well as documentation team.
Stakeholders	System analysts or software developers.

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2.7.6 Training Requirements:

Training requirements involved in after service of any application. It is very necessary to properly train up end users to the system so that they would be capable to operate easily. After launching the full package to the market, firstly we provide training to the different end users like T&A and planning manager, merchandiser, commercial manager, inventory manager.

2.8 Look and Feel Requirements:

Look and feel requirements mainly refers how the system will look like and how the user interface of our system will display to the users.

2.8.1 Appearance Requirements:

All user must know which input fields are required and which are not. For that reason, we will use labels for all input fields. Input fields might be text type, radio, checkbox etc.

AR-1	**Labels of mandatory fields must be bold**
Description	The mandatory field's label must be bold and all input fields must have placeholder to make it easier for the users.
Stakeholders	All users of the system

2.8.2 Style Requirements:

After keeping all contents, it is very essential to load style-sheet to the application. For web based system, extensive markup language or css is used. It is to be said that we are going to develop our system for web application. Style makes the system lucrative.

SR-1	The appearance must be controllable using stylesheet file.
Description	For web application style-sheet files are css. So, all stylesheet must be controllable by the css file.
Stakeholder	Software developer.

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2.9 Operational and Environmental Requirements:

Operational and environmental requirement refers to the capabilities, performance measurements, process, measurements of effectiveness, measurements of performance, measures of sustainability, measurements of technical performances etc.

2.9.1 Expected Physical Requirements:

There are no expected physical requirements in our system.

2.9.2 Requirements for Interfacing with Adjacent Systems:

There are no requirements for interfacing with adjacent system for our project. Because it is a desktop and web based system.

2.9.3 Release Requirements:

There are no specific release requirements in our system. Because it is a live project.

2.10 Legal Requirements:

Legal requirements normally refer to the terms and conditions or privacy policy of any organizations. The terms and condition of our application is that, no third party software or person are allowed to engage to use our data for their business purpose.

2.10.1 Compliance Requirements:

There are no specific compliance requirements for our system.

2.10.2 Standards Requirements:

As I said above there are no specific standards requirements for our system.

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Chapter 3
Requirement Analysis

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3.1 Use Case Diagram

We have use case diagram. And there are five actors. Each actor plays different role. And those are already indicated to this use case diagram. This diagram will clarify our system in brief.

Figure 3.1: Use Case diagram for "GarmentsERP(T&A and Planning)"

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3.2 Use Case Description

3.2.1 Manage account.

Use Case 1	**Manage account.**	
Goal	T&A and planning manager can log in to the system so that other person can't get access to the system and finally after doing his job he can log to from the system.	
Preconditions	• T&A and planning manager must open the system. • T&A and planning manager must go to the T&A and planning option.	
Success End Condition	• T&A and planning manager can login successfully. • T&A and planning manager can logout successfully.	
Failed End Condition	• T&A and planning manager can't login successfully. • T&A and planning manager can't logout successfully.	
Primary Actors: **Secondary Actors:**	T&A and planning manager System	
Trigger	T&A and planning manager must have a account for logging in.	
Description / Main Success Scenario	**Step**	**Action**
	1	T&A and planning manager clicks the T&A and planning option
	2	T&A and planning manager gets login form.
	3	T&A and planning manage enters right username password
	4	T&A and planning manager finally clicks sign in button.
	5	T&A and planning manager successfully logs in.
	6	T&A and planning manager clicks log out button and successfully logs out
Alternative Flows	**Step**	**Branching Action**
	1	T&A and planning manager doesn't clicks the T&A and planning option
	2	T&A and planning manager doesn't get login form.
	3	T&A and planning manage can't enter right username password

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3.2.2 Make T&A plan.

Use Case 2	Make T&A plan.	
Goal	T&A and planning manager can make T&A plan by calculating all dates and confirming that.	
Preconditions	• Merchandiser confirms an order and enter the data in database. • T&A and planning manager must go to the T&A option.	
Success End Condition	• T&A and planning manager can calculate all date successfully. • T&A and planning manager can plan T&A successfully.	
Failed End Condition	• T&A and planning manager can't calculate all date successfully. • T&A and planning manager can't plan T&A successfully.	
Primary Actors: **Secondary Actors:**	T&A and planning manager System	
Trigger	T&A and planning manager must have an unplanned order for planning.	
Description / Main Success Scenario	**Step**	**Action**
	1	T&A and planning manager clicks the T&A option
	2	T&A and planning manager search order by order ID.
	3	T&A and planning manager clicks calculate button for calculating all dates.
	4	T&A and planning manager finally clicks confirm button.
Alternative Flows	**Step**	**Branching Action**
	1	T&A and planning manager doesn't click the T&A option
	2	T&A and planning manager can't search order by order ID.
	3	T&A and planning manager can't click calculate button for calculating all dates.
	4	T&A and planning manager finally can't confirm T&A planning.

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3.2.3 Make Knitting plan.

Use Case 3	Make Knitting plan.	
Goal	T&A and planning manager can make Knitting plan.by calculating all dates and confirming that.	
Preconditions	• T&A and planning manager confirms an order's T&A planning. • T&A and planning manager must go to the knitting option.	
Success End Condition	• T&A and planning manager can calculate all machine info successfully. • T&A and planning manager can plan knitting plan successfully.	
Failed End Condition	• T&A and planning manager can't calculate all machine info successfully. • T&A and planning manager can't plan knitting plan successfully.	
Primary Actors: **Secondary Actors:**	T&A and planning manager System	
Trigger	T&A and planning manager must have an unplanned order for knitting planning.	
Description / Main Success Scenario	**Step**	**Action**
	1	T&A and planning manager clicks the knitting option
	2	T&A and planning manager search order by order ID.
	3	T&A and planning manager clicks plan now button for calculating all machine info.
	4	T&A and planning manager finally clicks plan now button for knitting plan
Alternative Flows	**Step**	**Branching Action**
	1	T&A and planning manager can't click the knitting option
	2	T&A and planning manager can't search order by order ID.
	3	T&A and planning manager can't click plan now button for calculating all machine info.
	4	T&A and planning manager finally can't click plan now button for knitting plan

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3.2.4 Make dyeing plan.

Use Case 4	Make Dyeing plan.	
Goal	T&A and planning manager can make Dyeing plan.by calculating all dates and confirming that.	
Preconditions	• T&A and planning manager confirms an order's T&A planning. • T&A and planning manager must go to the dyeing option.	
Success End Condition	• T&A and planning manager can calculate all machine info successfully. • T&A and planning manager can plan dyeing plan successfully.	
Failed End Condition	• T&A and planning manager can't calculate all machine info successfully. • T&A and planning manager can't plan dyeing plan successfully.	
Primary Actors: **Secondary Actors:**	T&A and planning manager System	
Trigger	T&A and planning manager must have an unplanned order for dyeing planning.	
Description / Main Success Scenario	**Step**	**Action**
	1	T&A and planning manager clicks the dyeing option
	2	T&A and planning manager search order by order ID.
	3	T&A and planning manager clicks plan now button for calculating all machine info.
	4	T&A and planning manager finally clicks plan now button for dyeing plan
Alternative Flows	**Step**	**Branching Action**
	1	T&A and planning manager can't click the dyeing option
	2	T&A and planning manager can't search order by order ID.
	3	T&A and planning manager can't click plan now button for calculating all machine info.
	4	T&A and planning manager finally can't click plan now button for dyeing plan

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3.2.5 Make trims and pps plan.

Use Case 5	Make Trims and pps plan.	
Goal	T&A and planning manager can make Trims and pps plan.by calculating all dates and confirming that.	
Preconditions	• T&A and planning manager confirms an order's T&A planning. • T&A and planning manager must go to the trims and pps option.	
Success End Condition	• T&A and planning manager can calculate all machine info successfully. • T&A and planning manager can plan trims and pps plan successfully.	
Failed End Condition	• T&A and planning manager can't calculate all machine info successfully. • T&A and planning manager can't plan trims and pps plan successfully.	
Primary Actors: **Secondary Actors:**	T&A and planning manager System	
Trigger	T&A and planning manager must have an unplanned order for trims and pps planning.	
Description / Main Success Scenario	**Step**	**Action**
	1	T&A and planning manager clicks the trims and pps option
	2	T&A and planning manager search order by order ID.
	3	T&A and planning manager clicks plan now button for calculating all machine info.
	4	T&A and planning manager finally clicks plan now button for trims and pps plan
Alternative Flows	**Step**	**Branching Action**
	1	T&A and planning manager can't click the trims and pps option
	2	T&A and planning manager can't search order by order ID.
	3	T&A and planning manager can't click plan now button for calculating all machine info.
	4	T&A and planning manager finally can't click plan now button for trims and pps plan

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3.2.6 Make printing plan.

Use Case 6	Make Printing plan.	
Goal	T&A and planning manager can make Printing plan.by calculating all dates and confirming that.	
Preconditions	• T&A and planning manager confirms an order's T&A planning. • T&A and planning manager must go to the printing option.	
Success End Condition	• T&A and planning manager can calculate all machine info successfully. • T&A and planning manager can plan printing plan successfully.	
Failed End Condition	• T&A and planning manager can't calculate all machine info successfully. • T&A and planning manager can't plan printing plan successfully.	
Primary Actors: **Secondary Actors:**	T&A and planning manager System	
Trigger	T&A and planning manager must have an unplanned order for printing planning.	
Description / Main Success Scenario	**Step**	**Action**
	1	T&A and planning manager clicks the printing option
	2	T&A and planning manager search order by order ID.
	3	T&A and planning manager clicks plan now button for calculating all machine info.
	4	T&A and planning manager finally clicks plan now button for printing plan
Alternative Flows	**Step**	**Branching Action**
	1	T&A and planning manager can't click the printing option
	2	T&A and planning manager can't search order by order ID.
	3	T&A and planning manager can't click plan now button for calculating all machine info.
	4	T&A and planning manager finally can't click plan now button for printing plan

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3.2.7 Make sewing plan.

Use Case 7	Make Sewing plan.	
Goal	T&A and planning manager can make Sewing plan.by calculating all dates and confirming that.	
Preconditions	• T&A and planning manager confirms an order's T&A planning. • T&A and planning manager must go to the sewing option.	
Success End Condition	• T&A and planning manager can calculate all machine info successfully. • T&A and planning manager can plan sewing plan successfully.	
Failed End Condition	• T&A and planning manager can't calculate all machine info successfully. • T&A and planning manager can't plan sewing plan successfully.	
Primary Actors: **Secondary Actors:**	T&A and planning manager System	
Trigger	T&A and planning manager must have an unplanned order for sewing planning.	
Description / Main Success Scenario	**Step**	**Action**
	1	T&A and planning manager clicks the sewing option
	2	T&A and planning manager search order by order ID.
	3	T&A and planning manager clicks plan now button for calculating all machine info.
	4	T&A and planning manager finally clicks plan now button for sewing plan
Alternative Flows	**Step**	**Branching Action**
	1	T&A and planning manager can't click the sewing option
	2	T&A and planning manager can't search order by order ID.
	3	T&A and planning manager can't click plan now button for calculating all machine info.
	4	T&A and planning manager finally can't click plan now button for sewing plan

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3.2.8 Make packing plan.

Use Case 8	Make Packing plan.	
Goal	T&A and planning manager can make Packing plan.by calculating all dates and confirming that.	
Preconditions	• T&A and planning manager confirms an order's T&A planning. • T&A and planning manager must go to the packing option.	
Success End Condition	• T&A and planning manager can calculate all machine info successfully. • T&A and planning manager can plan packing plan successfully.	
Failed End Condition	• T&A and planning manager can't calculate all machine info successfully. • T&A and planning manager can't plan packing plan successfully.	
Primary Actors: **Secondary Actors:**	T&A and planning manager System	
Trigger	T&A and planning manager must have an unplanned order for packing planning.	
Description / Main Success Scenario	**Step**	**Action**
	1	T&A and planning manager clicks the packing option
	2	T&A and planning manager search order by order ID.
	3	T&A and planning manager clicks plan now button for calculating all machine info.
	4	T&A and planning manager finally clicks plan now button for packing plan
Alternative Flows	**Step**	**Branching Action**
	1	T&A and planning manager can't click the packing option
	2	T&A and planning manager can't search order by order ID.
	3	T&A and planning manager can't click plan now button for calculating all machine info.
	4	T&A and planning manager finally can't click plan now button for packing plan

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3.2.9 Make inspection & ex-factory plan.

Use Case 9	Make Inspection & ex-factory plan.	
Goal	T&A and planning manager can make Inspection & ex-factory plan.by calculating all dates and confirming that.	
Preconditions	• T&A and planning manager confirms an order's T&A planning. • T&A and planning manager must go to the inspection & ex-factory option.	
Success End Condition	• T&A and planning manager can calculate all machine info successfully. • T&A and planning manager can plan inspection & ex-factory plan successfully.	
Failed End Condition	• T&A and planning manager can't calculate all machine info successfully. • T&A and planning manager can't plan inspection & ex-factory plan successfully.	
Primary Actors: **Secondary Actors:**	T&A and planning manager System	
Trigger	T&A and planning manager must have an unplanned order for inspection & ex-factory planning.	
Description / Main Success Scenario	**Step**	**Action**
	1	T&A and planning manager clicks the inspection & ex-factory option
	2	T&A and planning manager search order by order ID.
	3	T&A and planning manager clicks plan now button for calculating all machine info.
	4	T&A and planning manager finally clicks plan now button for inspection & ex-factory plan
Alternative Flows	**Step**	**Branching Action**
	1	T&A and planning manager can't click the inspection & ex-factory option
	2	T&A and planning manager can't search order by order ID.
	3	T&A and planning manager can't click plan now button for calculating all machine info.
	4	T&A and planning manager finally can't click plan now button for inspection & ex-factory plan

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3.2.10 Make cutting plan.

Use Case 10	Make Cutting plan.	
Goal	T&A and planning manager can make Cutting plan.by calculating all dates and confirming that.	
Preconditions	• T&A and planning manager confirms an order's T&A planning. • T&A and planning manager must go to the cutting option.	
Success End Condition	• T&A and planning manager can calculate all machine info successfully. • T&A and planning manager can plan cutting plan successfully.	
Failed End Condition	• T&A and planning manager can't calculate all machine info successfully. • T&A and planning manager can't plan cutting plan successfully.	
Primary Actors: **Secondary Actors:**	T&A and planning manager System	
Trigger	T&A and planning manager must have an unplanned order for cutting planning.	
Description / Main Success Scenario	**Step**	**Action**
	1	T&A and planning manager clicks the cutting option
	2	T&A and planning manager search order by order ID.
	3	T&A and planning manager clicks plan now button for calculating all machine info.
	4	T&A and planning manager finally clicks plan now button for cutting plan
Alternative Flows	**Step**	**Branching Action**
	1	T&A and planning manager can't click the cutting option
	2	T&A and planning manager can't search order by order ID.
	3	T&A and planning manager can't click plan now button for calculating all machine info.
	4	T&A and planning manager finally can't click plan now button for cutting plan

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3.2.11 Generate Report.

Use Case 11	Generate Report.
Goal	T&A and planning manager can generate report.by calculating all dates and confirming that.
Preconditions	• T&A and planning manager must go to the T&A option. • T&A and planning manager must go to the knitting option. • T&A and planning manager must go to the dyeing option. • T&A and planning manager must go to the trims and pps option. • T&A and planning manager must go to the cutting option. • T&A and planning manager must go to the printing option. • T&A and planning manager must go to the sewing option. • T&A and planning manager must go to the packing option. • T&A and planning manager must go to the inspection & ex-factory option. • T&A and planning manager must search order info by order ID.
Success End Condition	• T&A and planning manager can generate report. • T&A and planning manager can print T&A plan successfully. • T&A and planning manager can print knitting plan successfully. • T&A and planning manager can print dyeing plan successfully. • T&A and planning manager can print trims & pps plan successfully. • T&A and planning manager can print cutting plan successfully. • T&A and planning manager can print printing plan successfully. • T&A and planning manager can print sewing plan successfully. • T&A and planning manager can print packing plan successfully.

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	• T&A and planning manager can print inspection & ex-factory plan successfully.	
Failed End Condition	• T&A and planning manager can't generate report for all plans successfully. • T&A and planning manager can't print all plans successfully.	
Primary Actors: **Secondary Actors:**	T&A and planning manager System	
Trigger	T&A and planning manager must plan searched order successfully.	
Description / Main Success Scenario	**Step**	**Action**
	1	T&A and planning manager clicks report for all plans separately by searching in order to order ID.
	2	T&A and planning manager successfully print each report
Alternative Flows	**Step**	**Branching Action**
	1	T&A and planning manager can't click report for all plans separately by searching in order to order ID.
	2	T&A and planning manager can't successfully print each report

3.2 Activity Diagram

We have prepared some activity diagram according to our use case. These activity diagrams are properly referring the flow of the individual conditions of our project.

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3.3.1 Manage account.

For any system authorize access is very important. By this a user can secure his data and can avoid another unauthorized user to damage or update the saved data. For our system, T&A and planning manager must log in first for do his job. First he should click “T&A and planning” and enter user name and password.

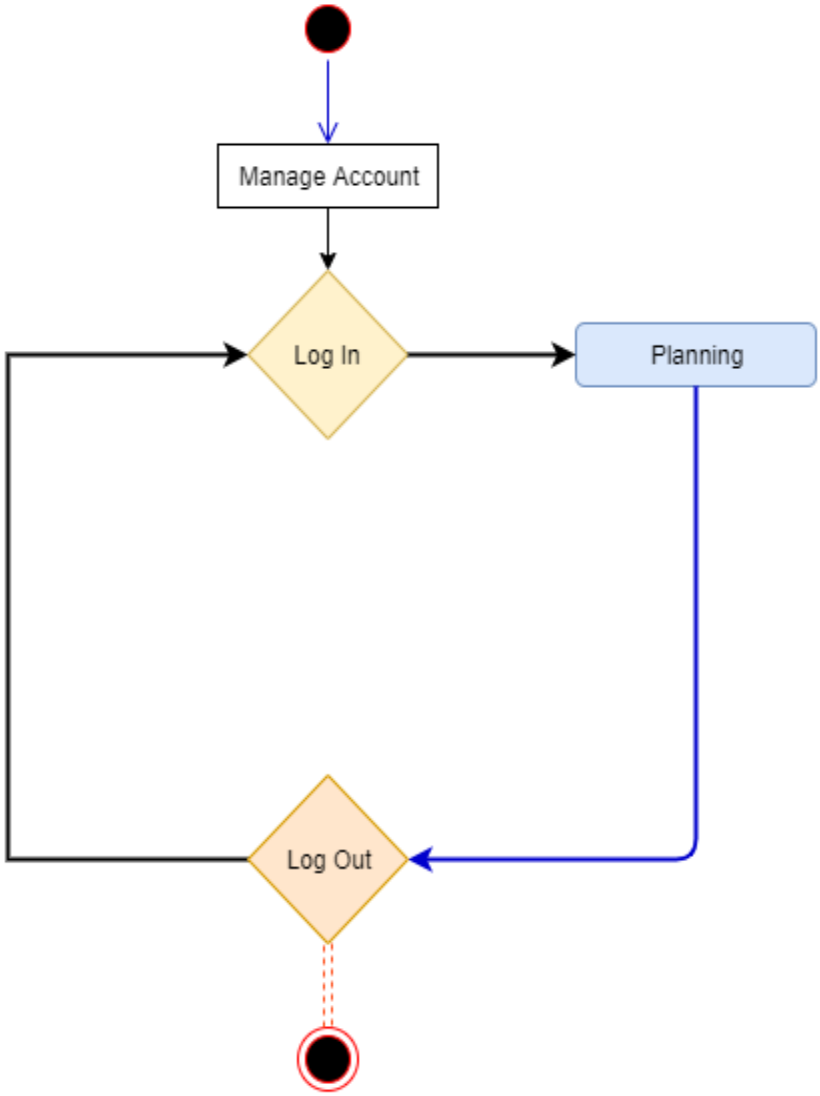

Figure 3.2: Activity diagram for Manage account

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3.3.2 Make T&A plan.

Secondly T&A and planning manager can create a plan for unplanned orders. For this T&A and planning manager should click “T&A” and search info by order id. Then he should click plan now button. After that, he should click “Calculate” button and finally click “Confirm” button for T&A planning.

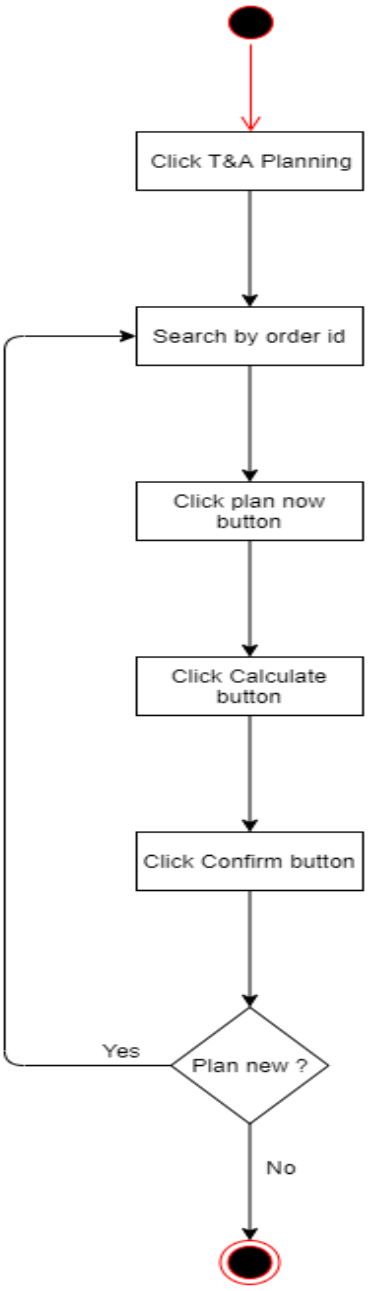

Figure 3.3: Activity diagram of Make T&A planning

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3.3.3 Make Knitting plan.

Thirdly T&A and planning manager can create a plan for unplanned orders. For this T&A and planning manager should click “Knitting Plan” and search info by order id. Then he should click plan now button. After that, he should click “Plan Now” button for T&A planning.

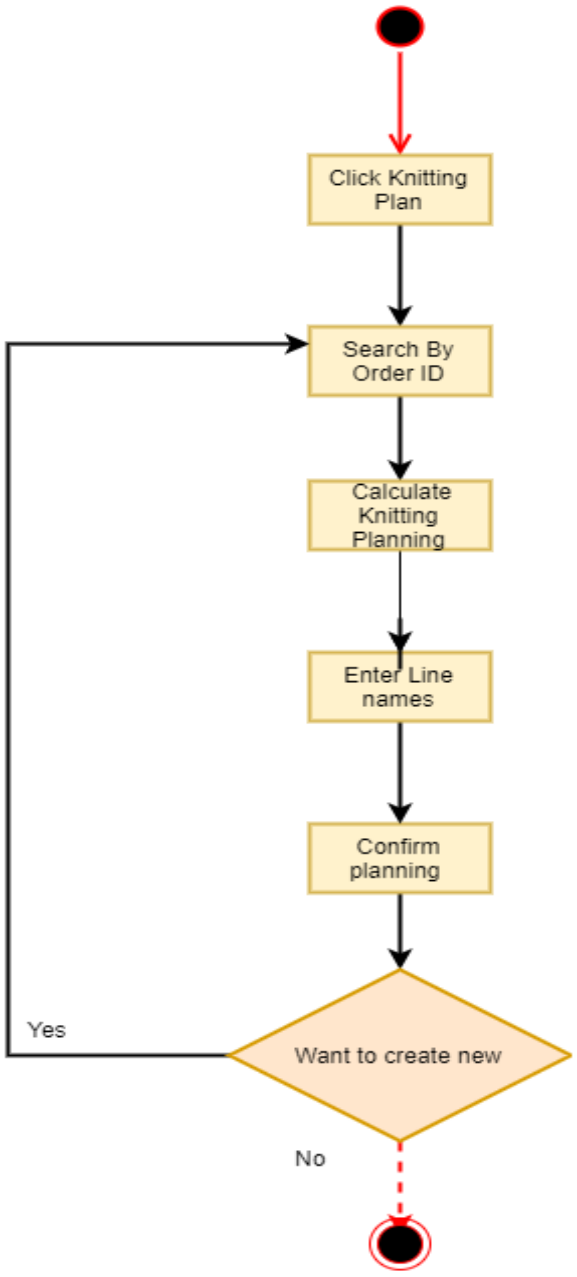

Figure 3.4: Activity diagram of Make Knitting planning

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3.3.4 Make dyeing plan.

Fourthly T&A and planning manager can create a plan for unplanned orders. For this T&A and planning manager should click “Dyeing Plan” and search info by order id. Then he should click plan now button. After that, he should click “Plan Now” button for T&A planning.

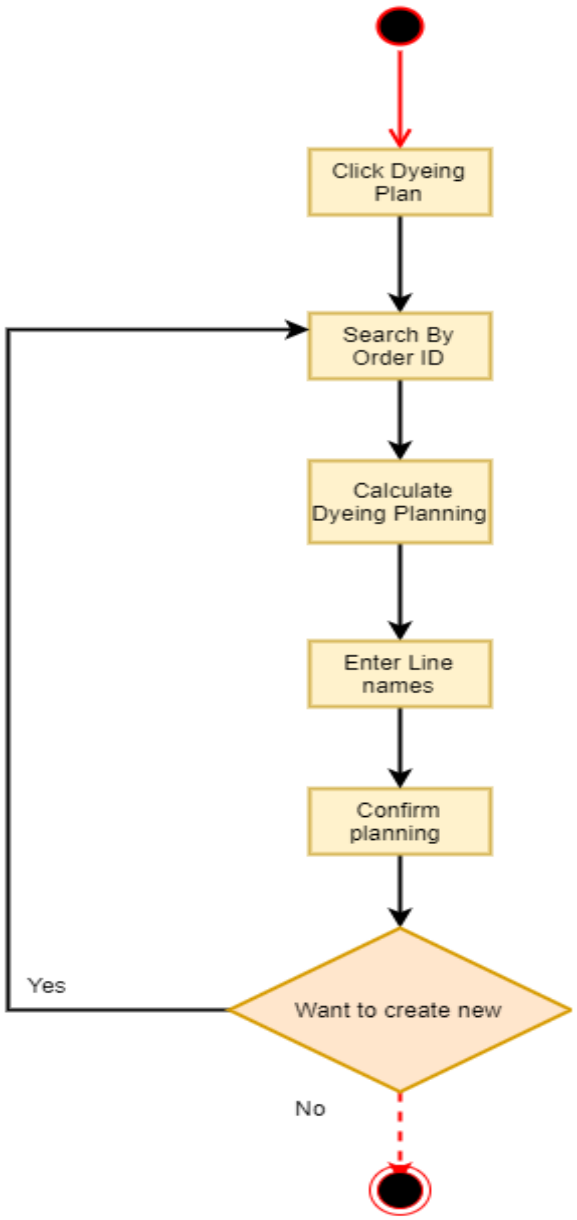

Figure 3.5: Activity diagram of Make Dyeing planning

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3.3.5 Make trims and pps plan.

T&A and planning manager can create a plan for unplanned orders. For this T&A and planning manager should click “Trims&PPS Plan” and search info by order id. Then he should click plan now button. After that, he should click “Plan Now” button for T&A planning.

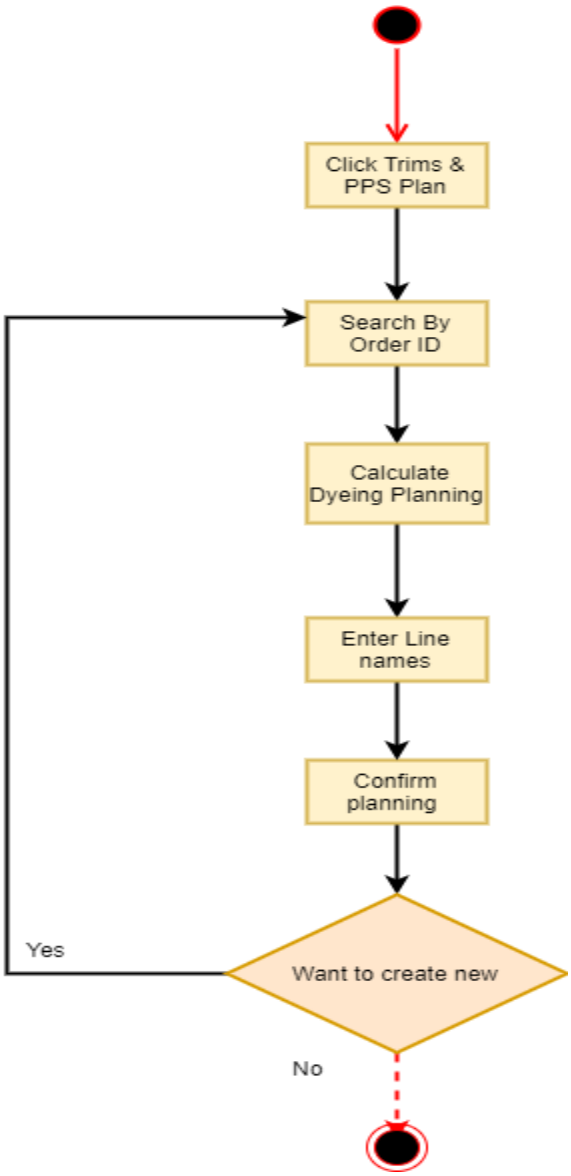

Figure 3.6: Activity diagram of Make Trims & PPS planning

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3.3.6 Make printing plan.

Then T&A and planning manager can create a plan for unplanned orders. For this T&A and planning manager should click “Printing Plan” and search info by order id. Then he should click plan now button. After that, he should click “Plan Now” button for T&A planning.

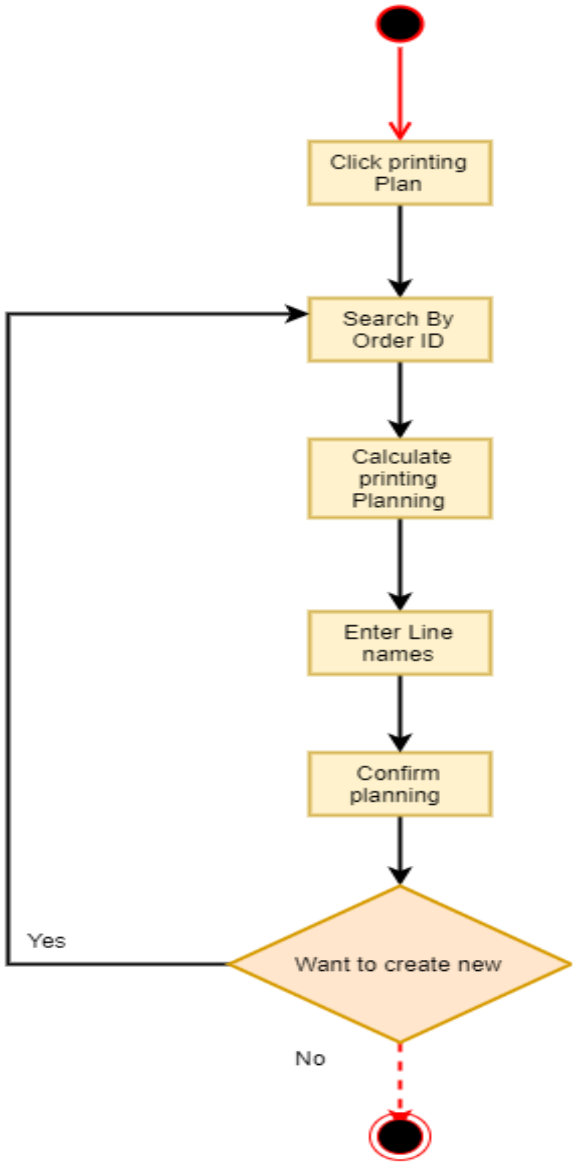

Figure 3.7: Activity diagram of Make Printing planning

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3.3.7 Make sewing plan.

Again T&A and planning manager can create a plan for unplanned orders. For this T&A and planning manager should click “Sewing Plan” and search info by order id. Then he should click plan now button. After that, he should click “Plan Now” button for T&A planning.

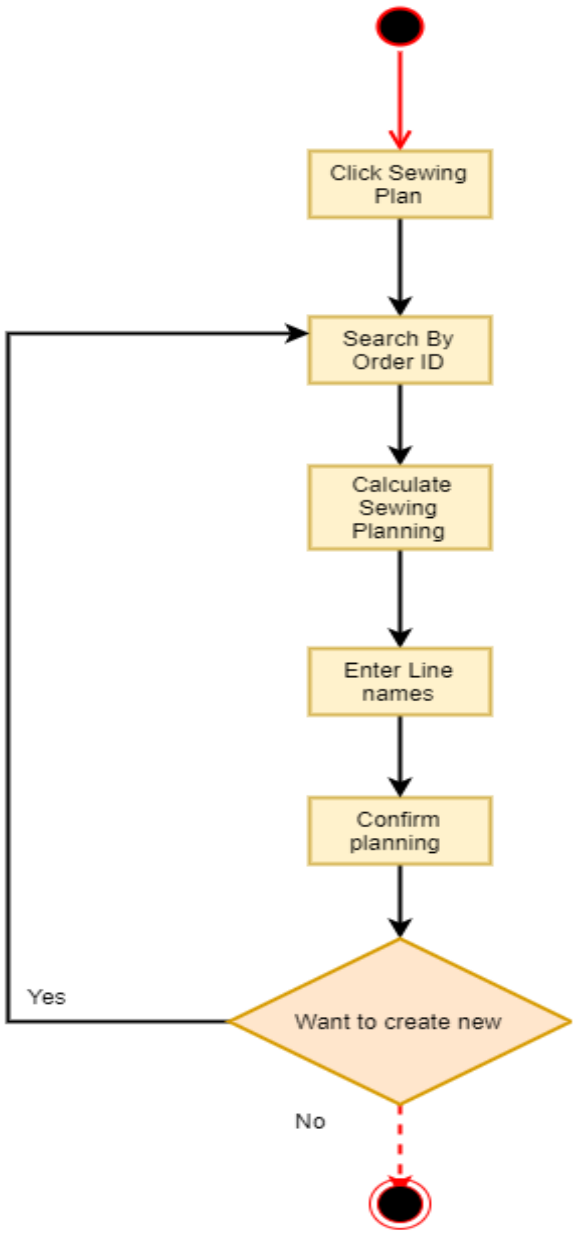

Figure 3.8: Activity diagram of Make Sewing planning

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3.3.8 Make packing plan.

Again T&A and planning manager can create a plan for unplanned orders. For this T&A and planning manager should click “Packing Plan” and search info by order id. Then he should click plan now button. After that, he should click “Plan Now” button for T&A planning.

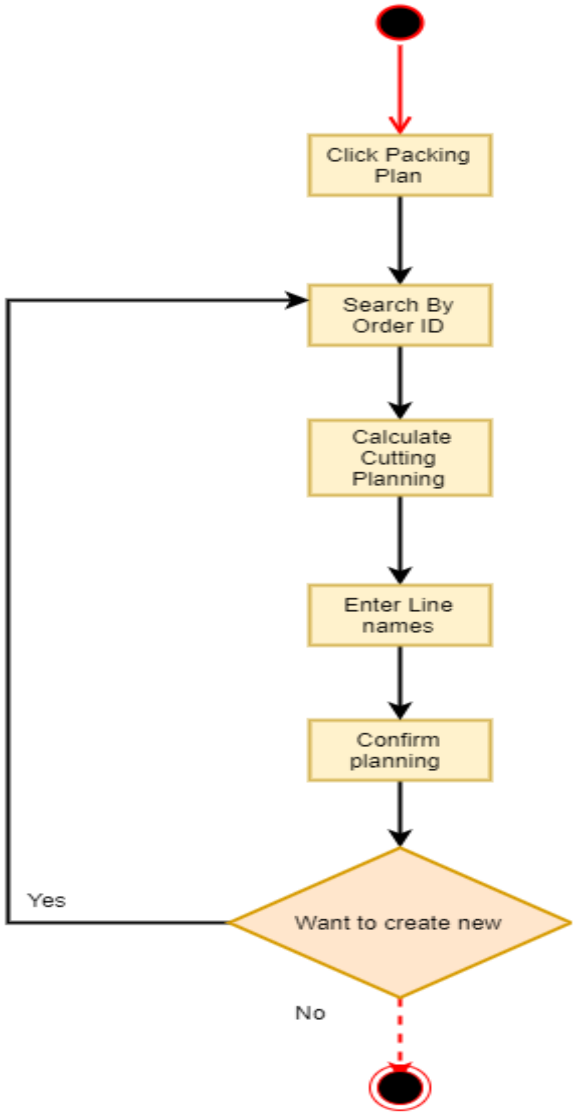

Figure 3.9: Activity diagram of Make Packing planning

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3.3.9 Make inspection & ex-factory plan.

Then T&A and planning manager can create a plan for unplanned orders. For this T&A and planning manager should click “Inspection&Ex-Factory Plan” and search info by order id. Then he should click plan now button. After that, he should click “Plan Now” button for T&A planning.

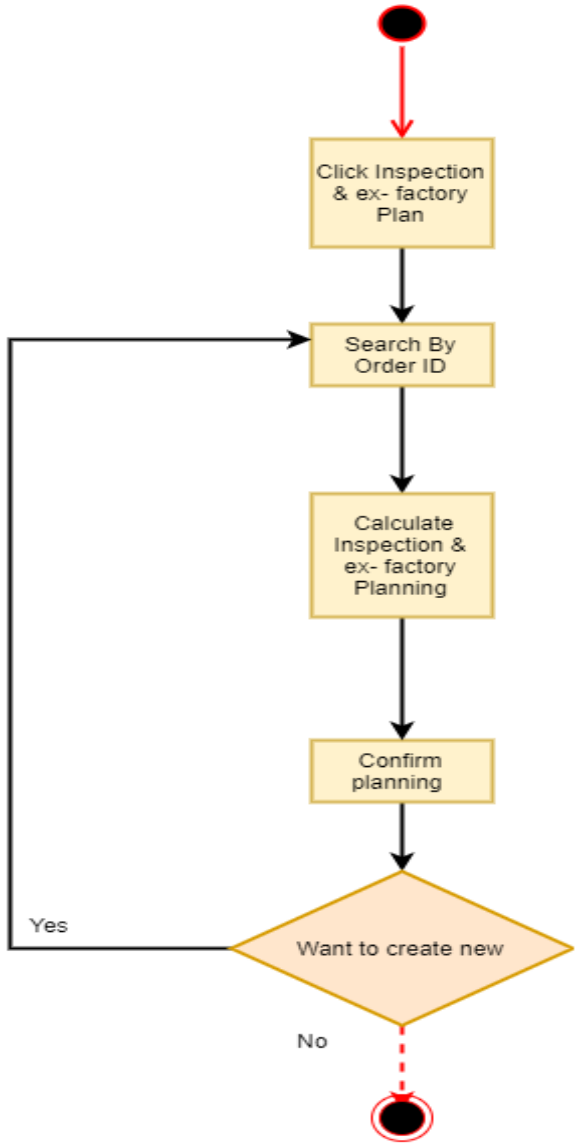

Figure 3.10: Activity diagram of Make Inspection & Ex-factory planning

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3.3.10 Make cutting plan.

Finally T&A and planning manager can create a plan for unplanned orders. For this T&A and planning manager should click “Cutting Plan” and search info by order id. Then he should click plan now button. After that, he should click “Plan Now” button for T&A planning.

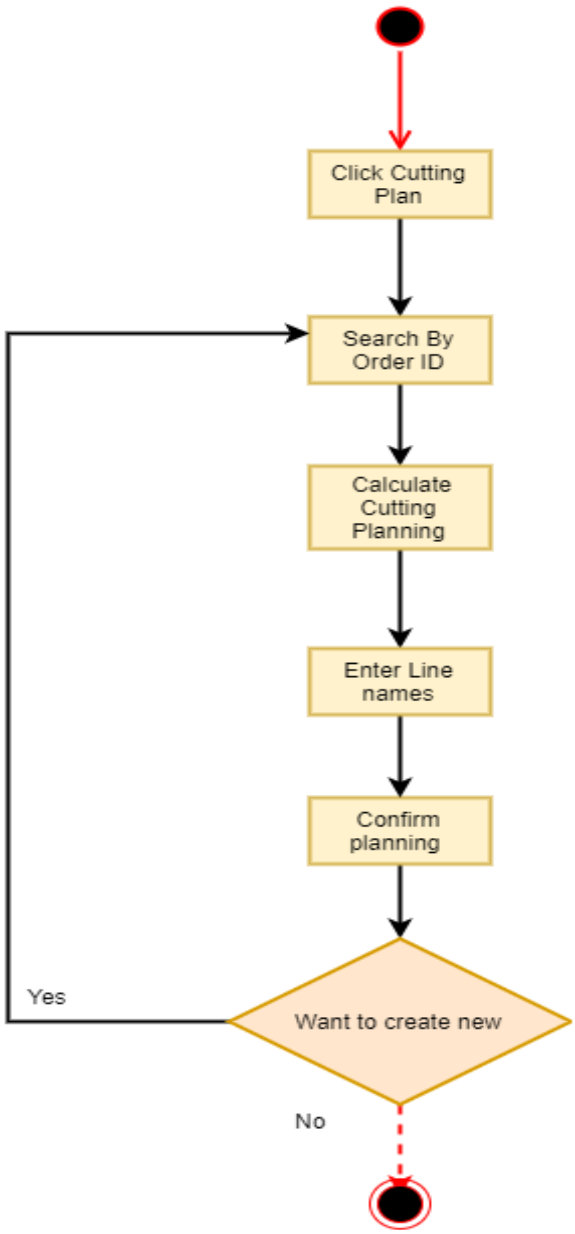

Figure 3.11: Activity diagram of Make Cutting planning

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3.3.11 Generate Report.

Now, T&A and planning manager can generate all plan reports for planned orders. For this T&A and planning manager should click “T&A Plan” or “Knitting Plan” or “Dyeing Plan” , “Trims&PPS Plan” or “Cutting Plan” or “Printing Plan” or “Sewing Plan” or “Packing Plan” or “Inspection&Ex-factory Plan” and search info by order id. Then he should click “Report” button. After that, he should click “Print” button.

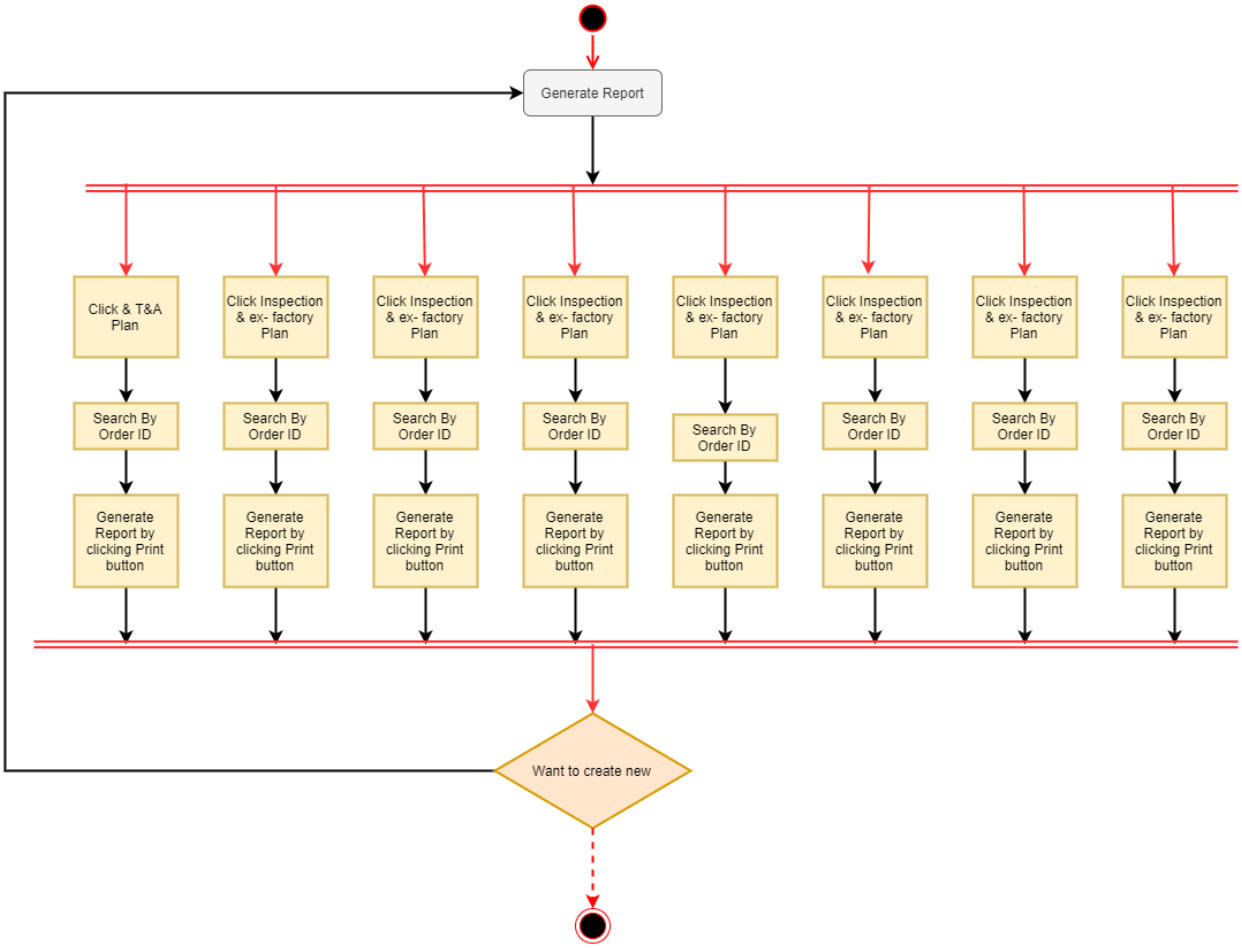

Figure 3.12: Activity diagram of Make Generate Report.

3.4 Sequence Diagram

Mainly sequence diagrams understand us how the data will be followed in any application. Now we are going to show some sequence diagrams.

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3.4.1 Manage account.

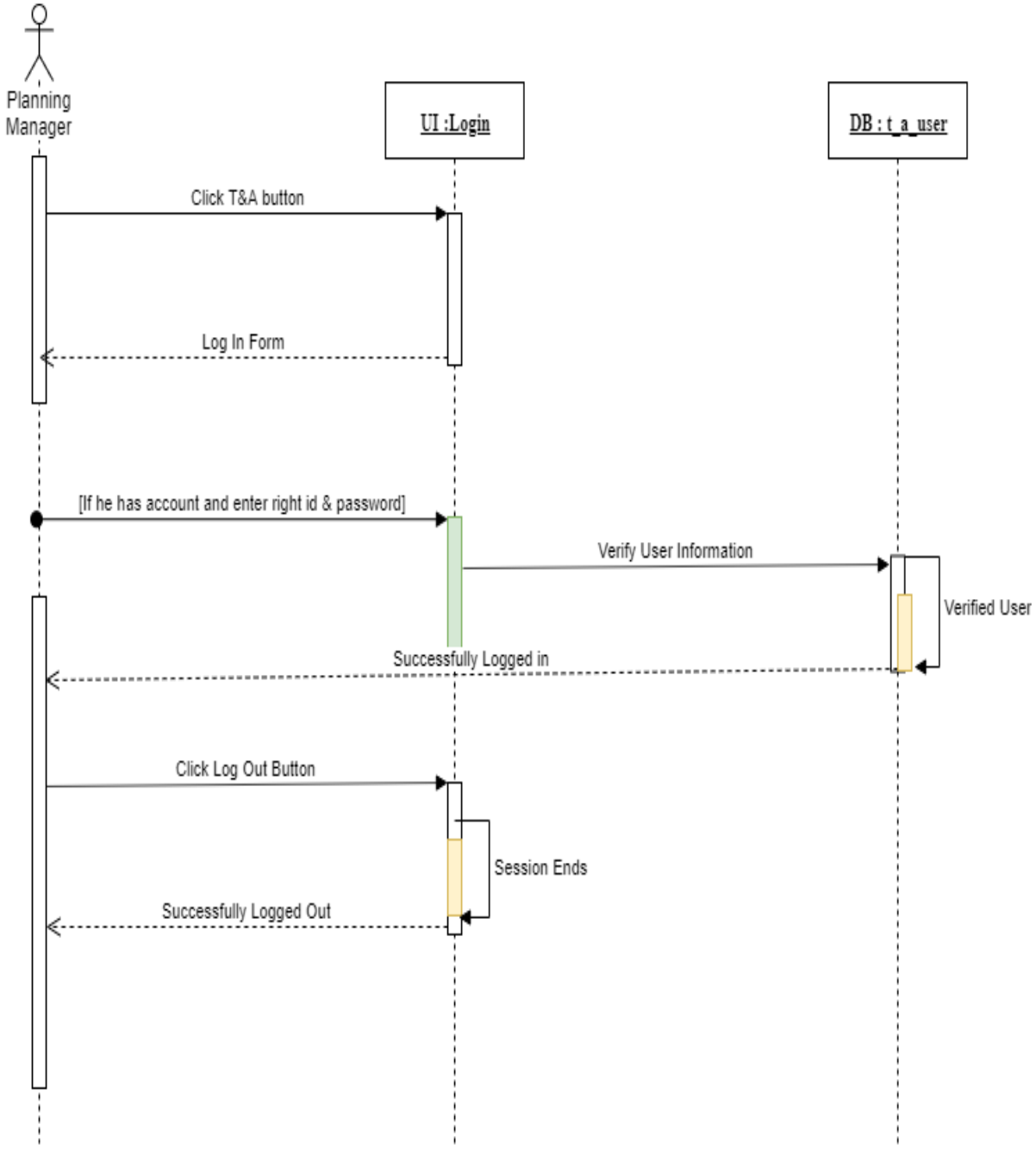

Figure 3.13: Sequence Diagram for Manage account

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3.4.2 Make T&A plan.

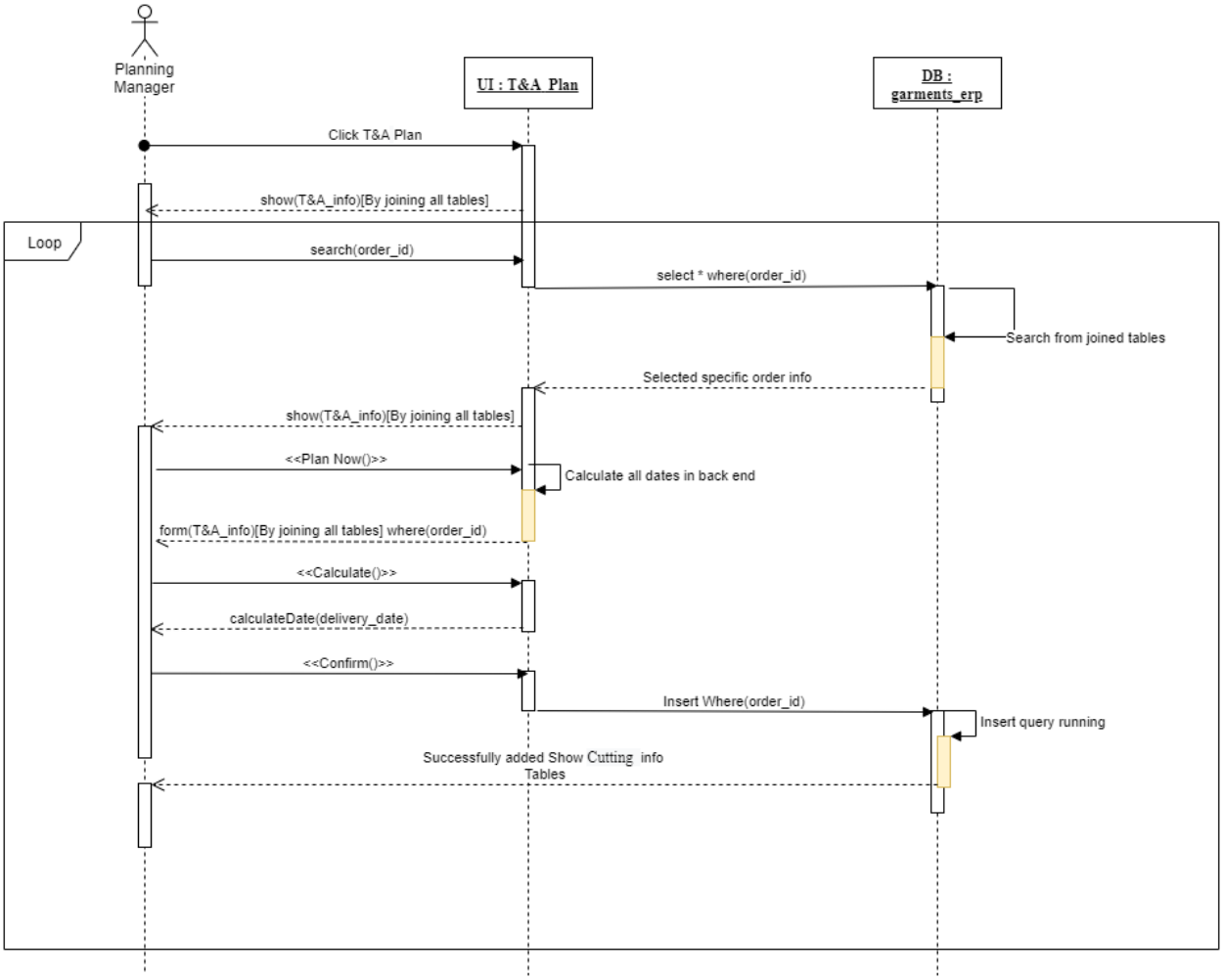

Figure 3.14: Sequence Diagram of Make T&A plan

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3.4.3 Make Knitting plan.

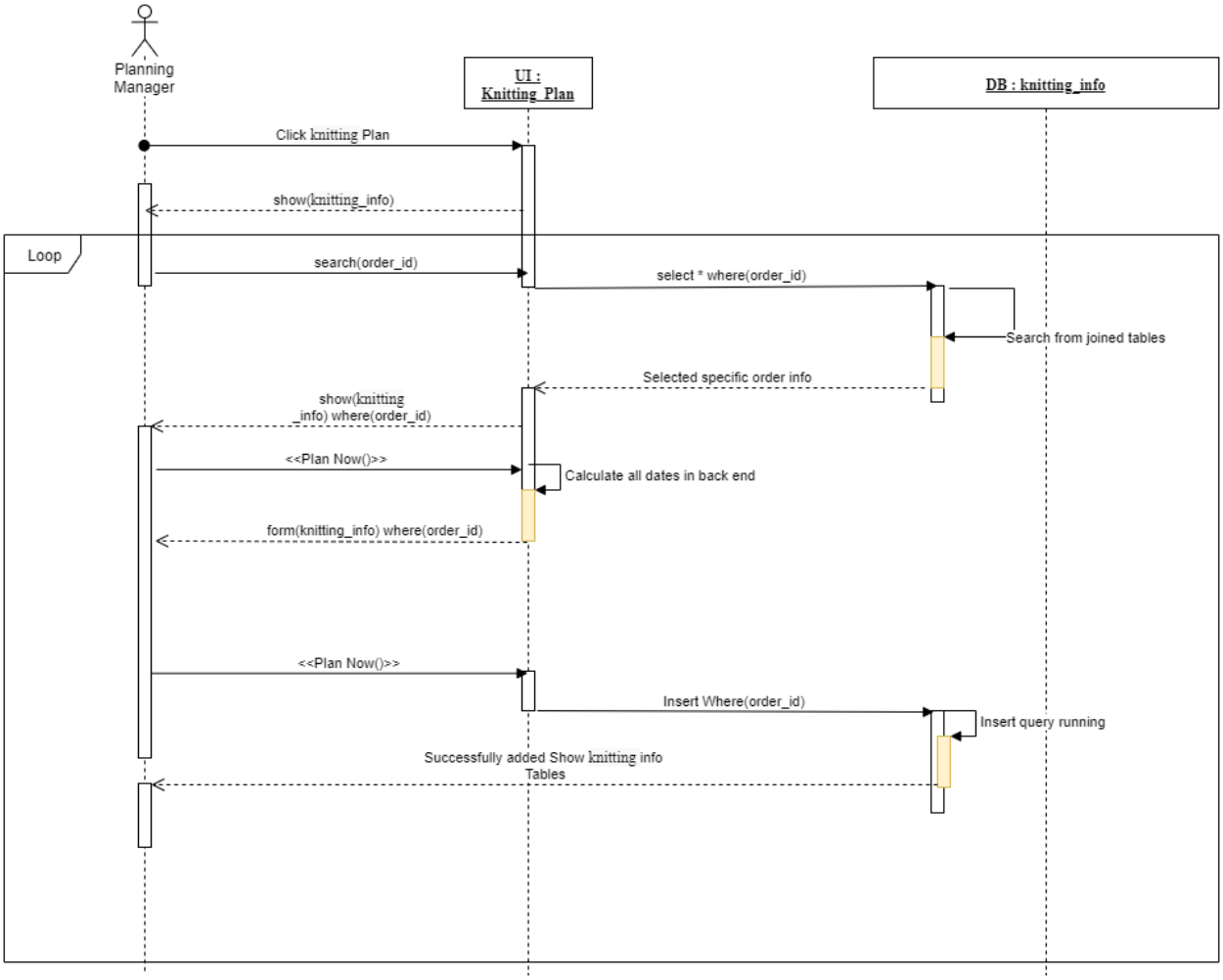

Figure 3.15: Sequence Diagram of Make Knitting plan

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3.4.4 Make dyeing plan.

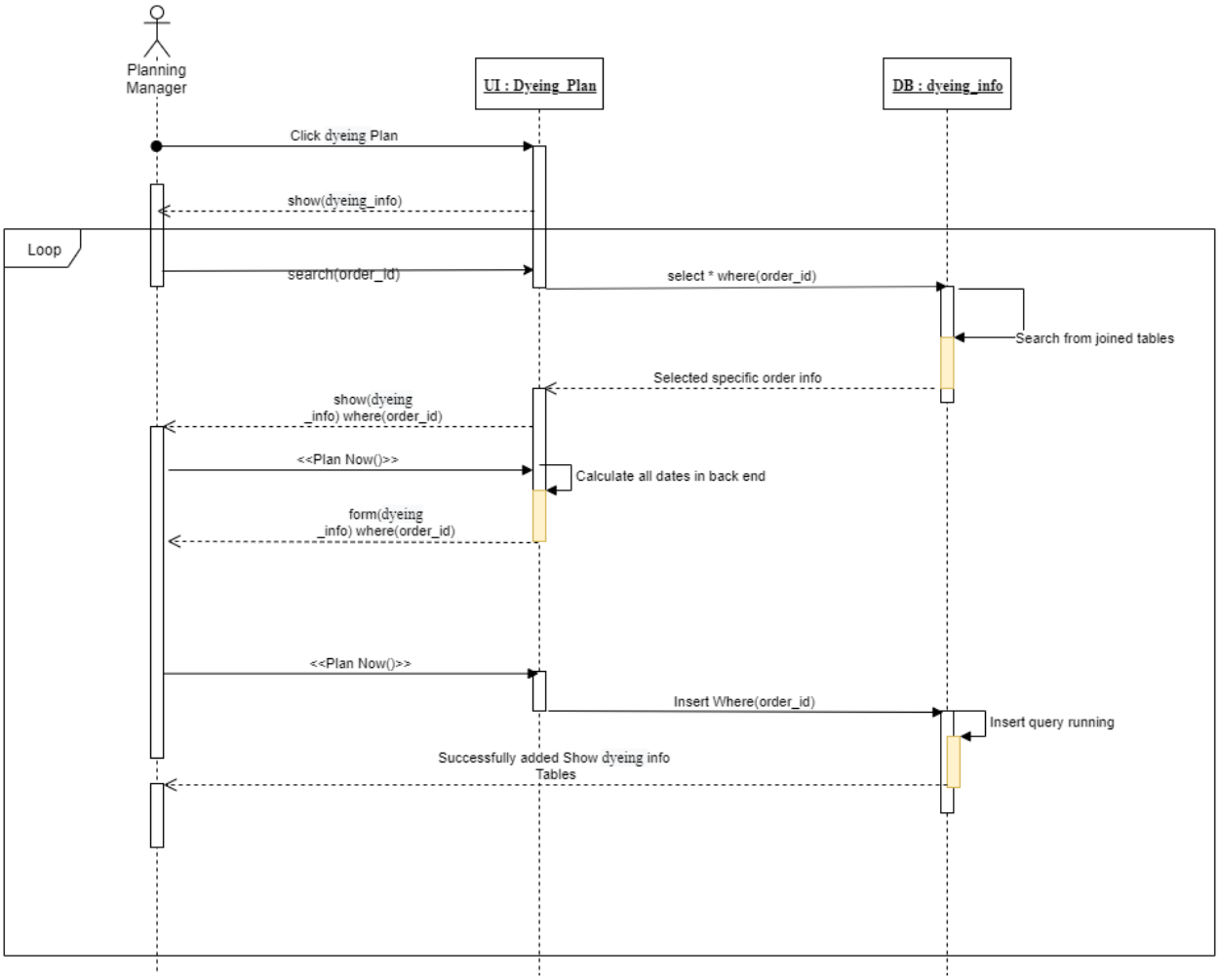

Figure 3.16: Sequence Diagram of Make Dyeing plan

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3.4.5 Make trims and pps plan.

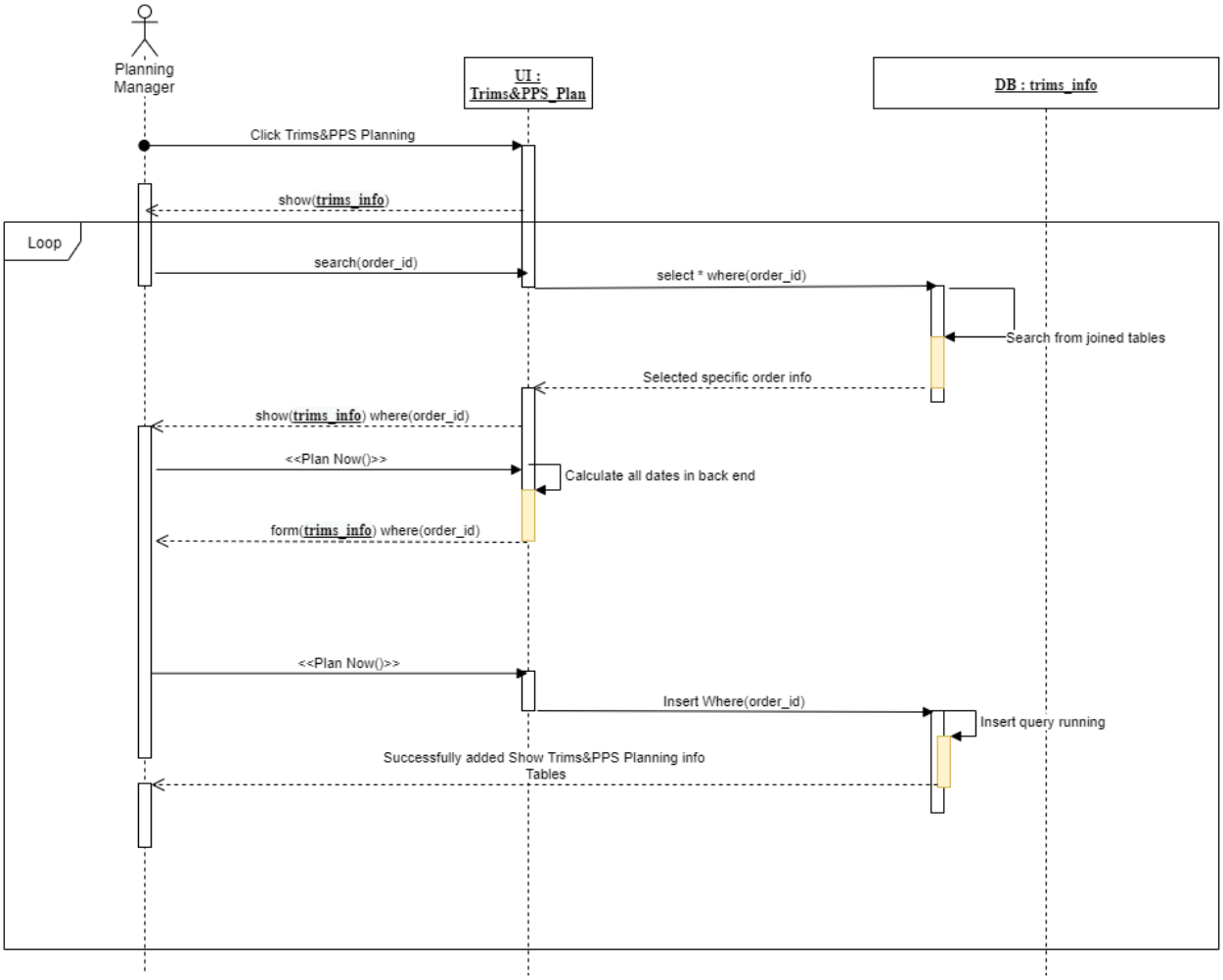

Figure 3.17: Sequence Diagram of Make Trims & PPS plan

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3.4.6 Make printing plan.

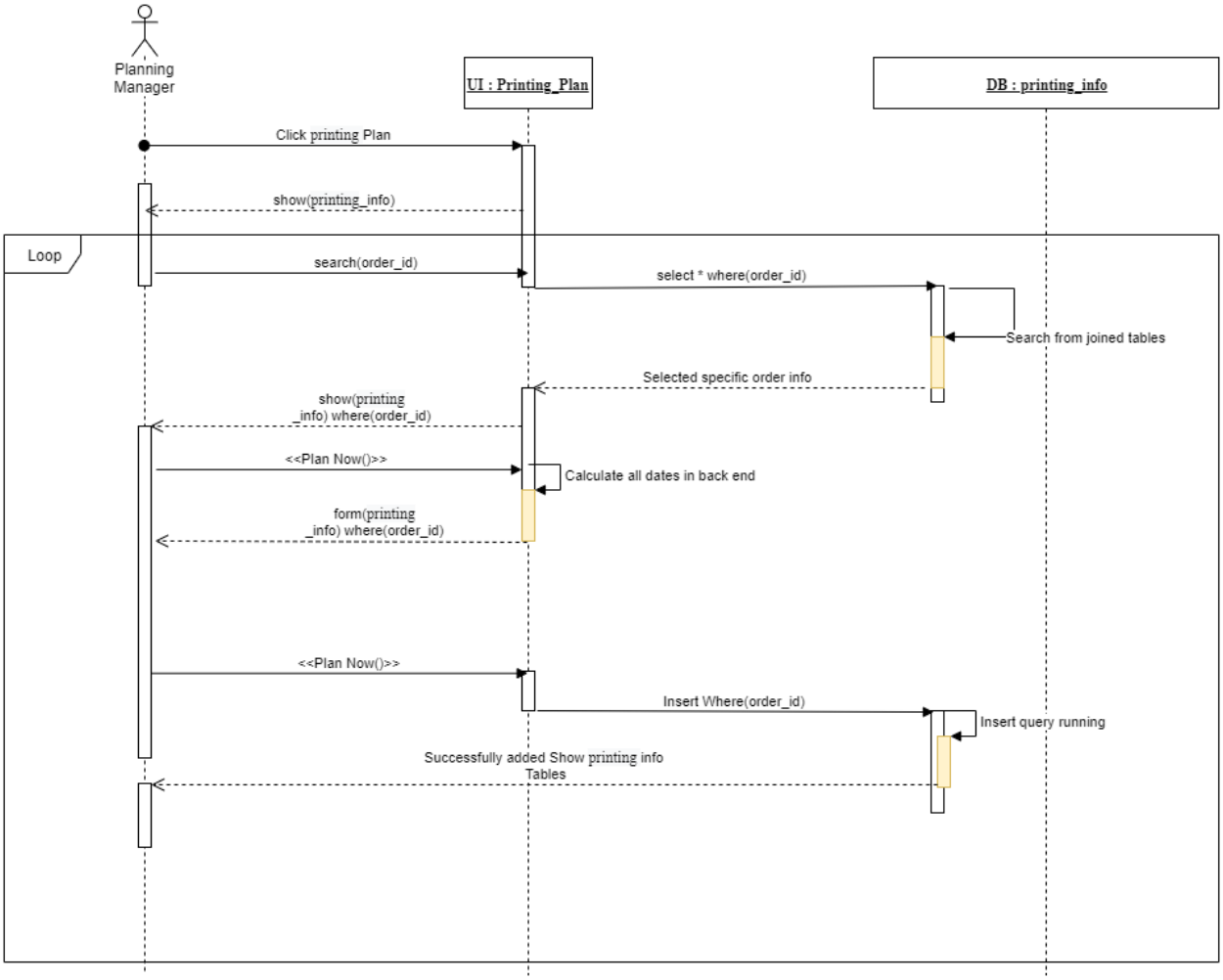

Figure 3.18: Sequence Diagram of Make Printing plan

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3.4.7 Make Cutting plan.

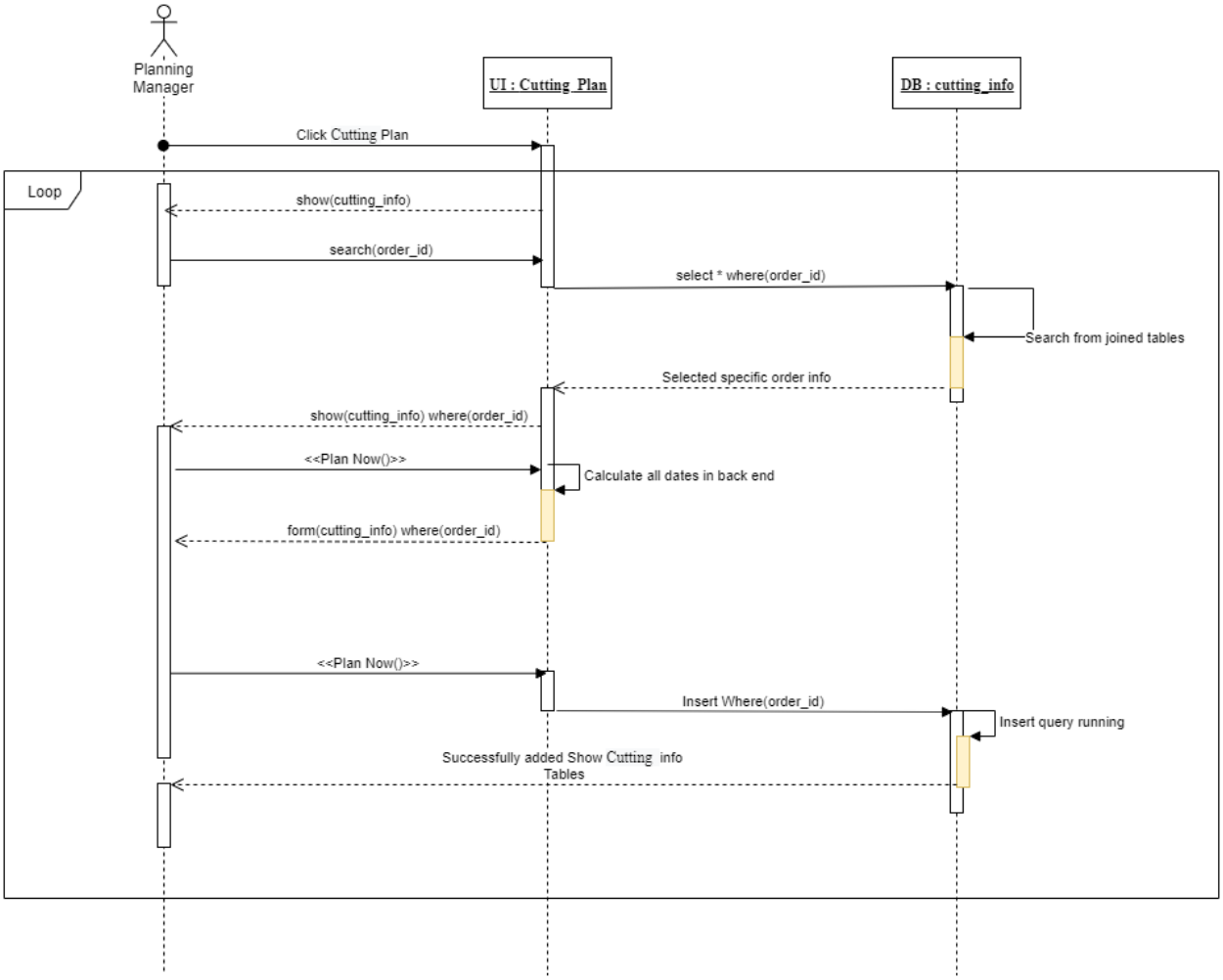

Figure 3.19: Sequence Diagram of Make Cutting plan

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3.4.8 Make sewing plan.

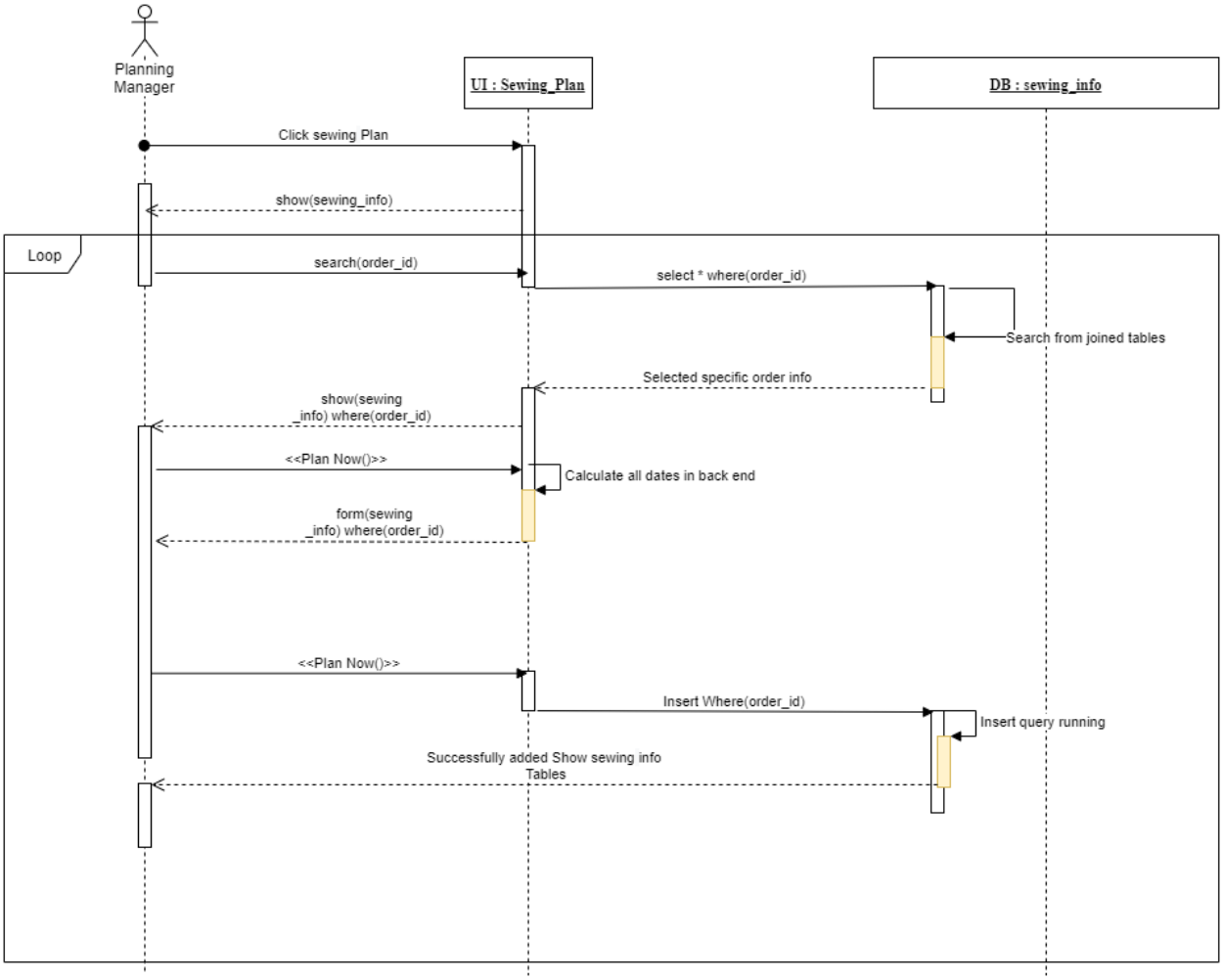

Figure 3.20: Sequence Diagram of Make Sewing plan

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3.4.9 Make packing plan.

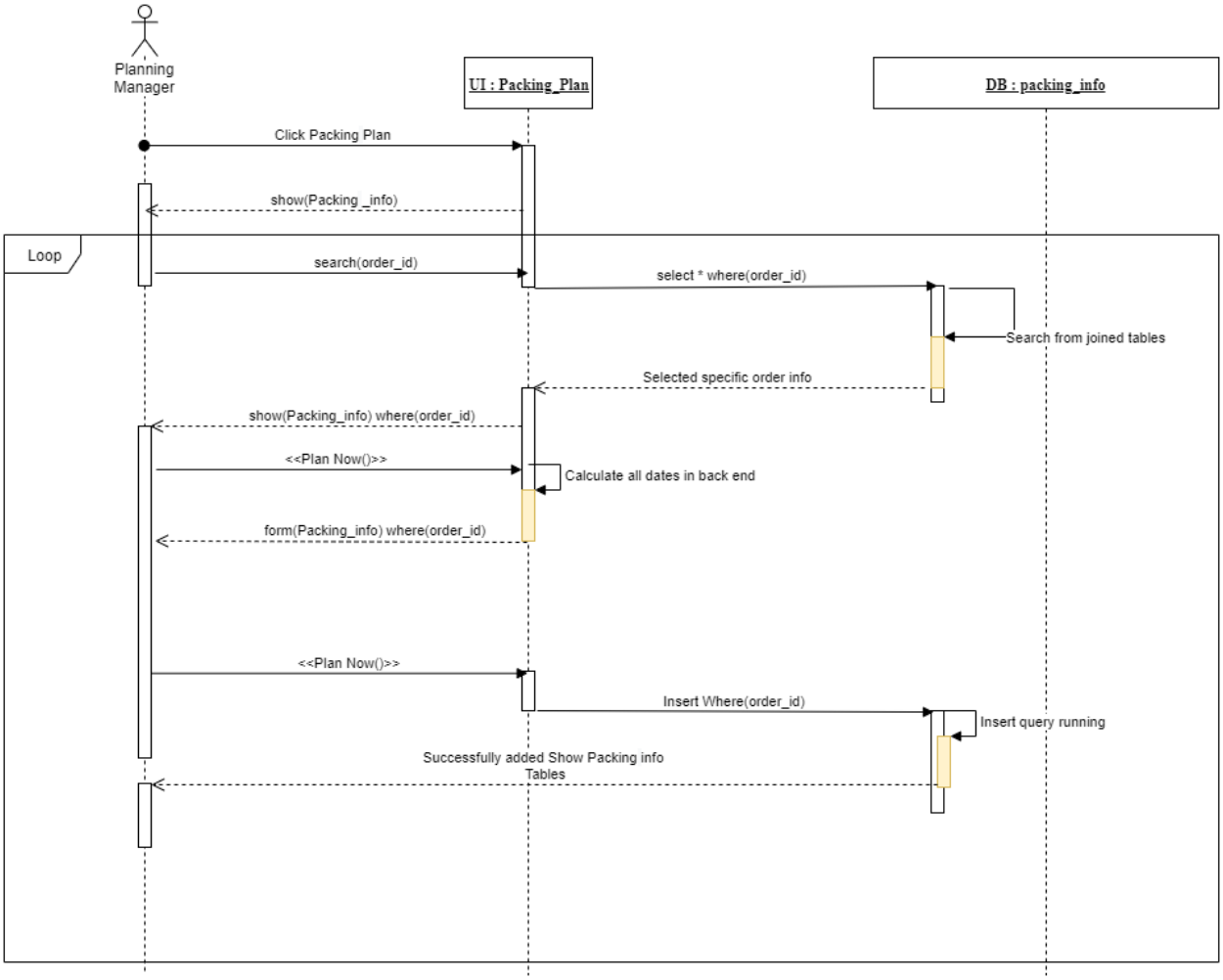

Figure 3.21: Sequence Diagram of Make Packing plan

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3.4.10 Make inspection & ex-factory plan.

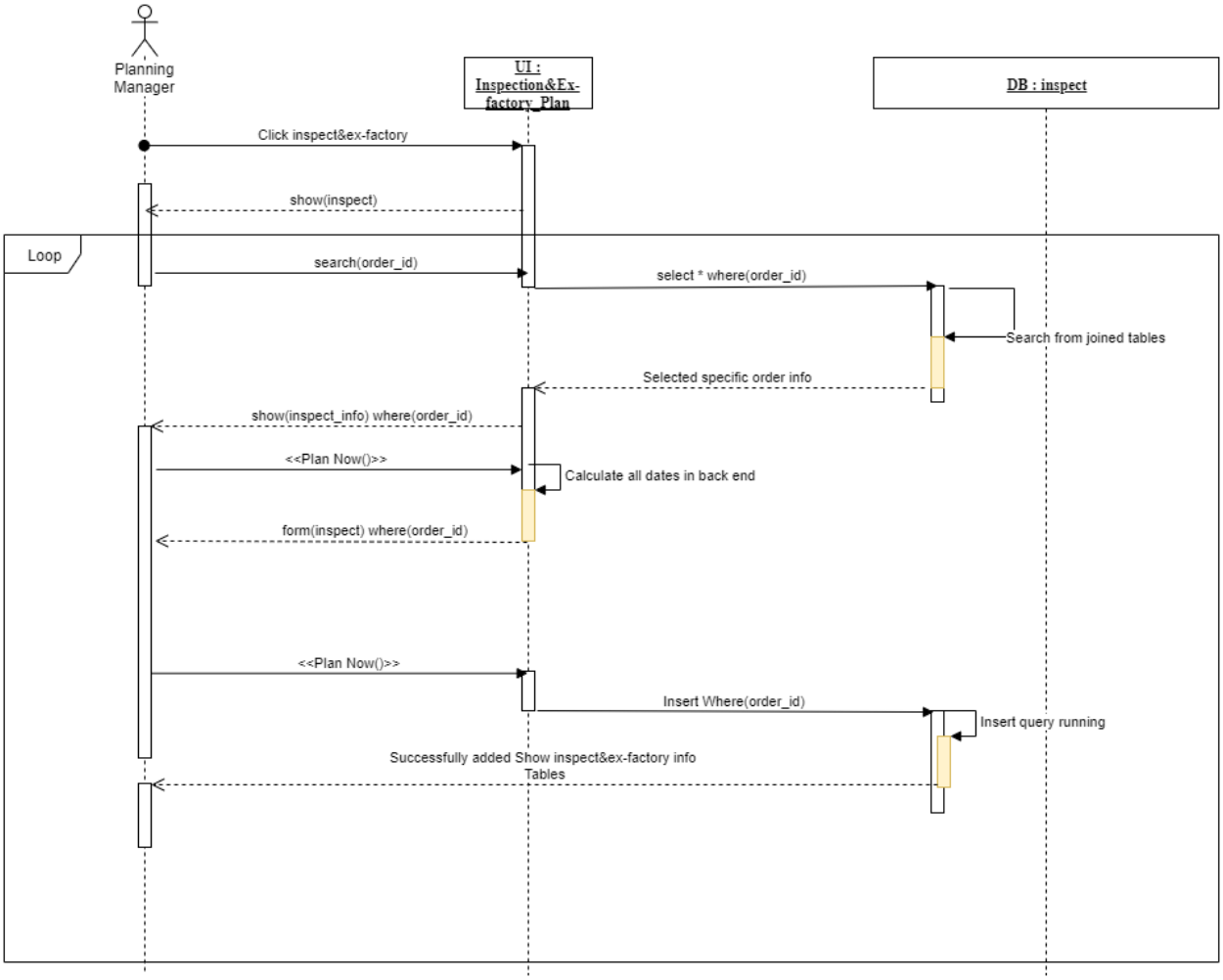

Figure 3.22: Sequence Diagram of Make Inspection & Ex-Factory plan

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3.4.11 Generate Report.

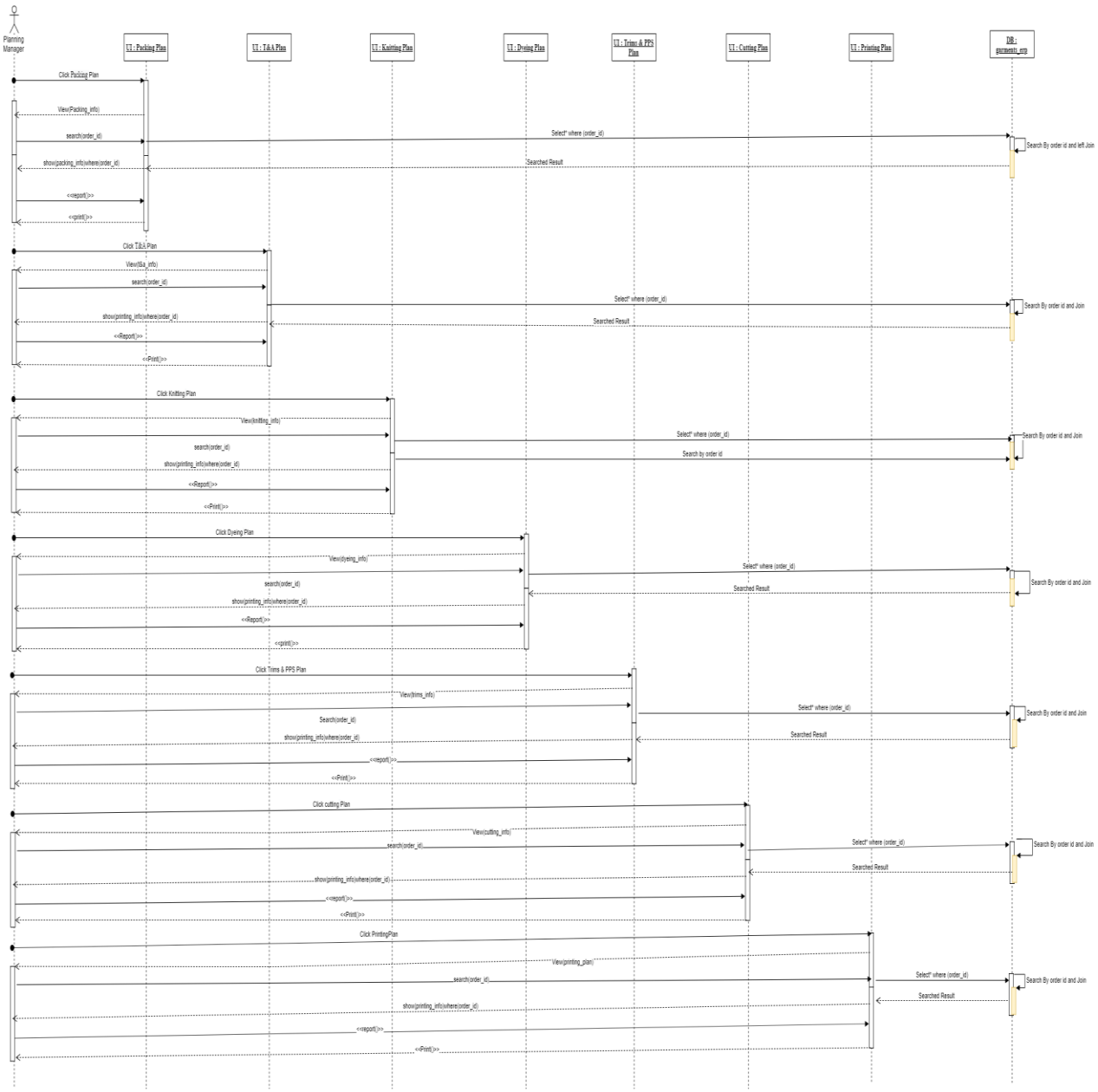

Figure 3.23: Sequence Diagram of Generate Report

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Chapter 4
System Design Specification

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4.1 Development tools and technology

Software development tools are used to develop software. There are different kinds of tools for software developers to make the process of software development very smoothly. But now, I will mention some of tools that I am using to develop my project.

4.2 Database Design Diagram

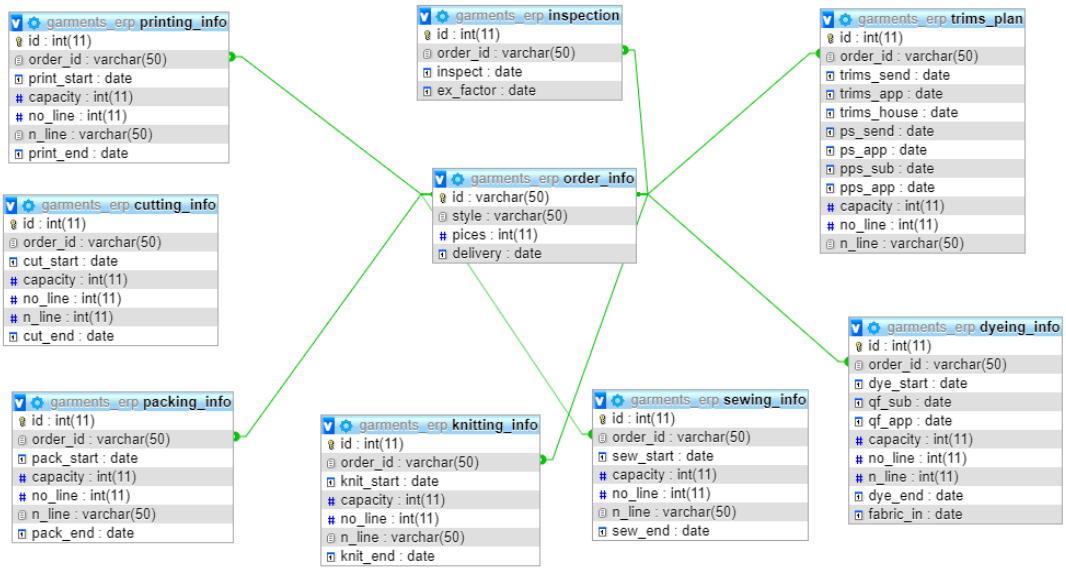

Figure 4.1: Database Diagram(GarmentsERP)

4.3.1 User Interface Technology

First of all, after landing any application, interface of that software is appeared to the user. So, the importance of user interface is very high. For success of any software application, a good looking user interface plays a vital role. User interface includes using good image, graphics, typography, stylesheets, scripting etc.

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4.3.1.1 Programming Language

For developing any application system minimum one programming language is essential. In my application, there are two different programming language is used. One is for front-end side. And another is for server side. The front-end language that I have used to my application is HTML. And the server side programming language name is PHP which stands for Hypertext Preprocessor . Both of them are open source general purpose scripting language.

4.3.1.2 JQuery UI

JQuery UI is a name of library which uses JavaScript as core programming language. It simplifies codes of a programming language named JavaScript. Generally, it interacts with Graphical User Interface (GUI). It also provides visual effects with animation . It can also override cascading style sheets. It is also a subset of JavaScript. By using AJAX no page reloading is required. It is also compatible with any browser like Google Chrome, Mozilla Firefox, Opera, Safari, Internet Explorer etc

4.3.1.3 CSS framework or Bootstrap

After completing markup, cascading style sheets are designed. It generally explains how HTML elements will display. There are three ways to write style-sheet. One internal CSS, another is external CSS. And last one is inline CSS. But most of time external CSS is used. Because, by using external CSS, all CSS data can be kept in different files. But nowadays CSS framework seems to be very popular. In our application, I have used Bootstrap4. This framework is developed mainly for CSS and JavaScript. It is a free and open source front-end framework. This framework is highly used for designing website and web application also. This framework supports almost every browser. Like Google Chrome, Mozilla Firefox, Opera, Safari, Internet Explorer etc. Bootstrap also provides media query which features responsive layout for different devices with different screen size. Bootstrap provides a set of some files which contains style-sheets which gives basic definition. Bootstrap also provides some JavaScript components also. There are some built in components like JQuery UI. By using Bootstrap framework , we get both CSS and JavaScript facilities with a single platform . But before start designing an application interface with Bootstrap , one may have some basic knowledge about this framework . It will increase the efficiency.

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4.4.2 Implemented tools and platform

As I have said before, there are some tools and technologies that need to be used for developing software. It is very important to determine which tools and platforms are the best match of my requirements . After making a proper decision, one need to start using them.

4.4.2.1 Integrated Development Environment

IDE stands for Integrated Development Environment. Programmers write code on IDE. After that IDE provide the feature to execute the source code. For developing my web application, I have used an IDE. To develop my web version, I have used "Sublime Text" which is powered by Sublime HQ Company. It is a commercial IDE for cross platform environment. It is able to suggest code to the programmers also.

4.4.2.2 Database Server (MYSQL Server V-10.1.36-MariaDB)

For developing our whole project, we have followed Relational Database Management System or RDBMS. And we find that MySql provides the feature of RDBMS. So we should not have any issue to refuse MySql database. It is also very easy to use. It can also ensure the security, scalability , high performance and many things. Now, we are using "MYSQL Server V-10.1.36-MariaDB".

4.4.2.3 Web Server

We have used xampp apache server. It is a free and open source software to use. It can be used on cross platform. It supports a wide range of features and most of them are already implemented as compiled modules. This module can extend the main features or core functionality. Now, we are working with HTTP 1.1 version.

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Chapter 5
System Test

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5.1 Testing Features

Feature testing can be considered as making change to add or modify the new functionalities to the existing project. To test the features and functionality, a new test set is to be written for testing purpose. Almost every feature and functionality have different characteristics. Those are designed to make the application more useful, intuitive, reliable, secured, scalable, effective and efficient.

5.1.1 Features to be tested

Features	Priority	Description
Login	1	User must be authenticated by login
Logout	1	Session must be destroyed after logout
Calculate T & A Plan data	3	Calculation of T & A Plan data must be done automatically and properly
Insert T & A Plan data	3	T&A Plan data must be inserted properly.
Calculate Knitting Plan data	1	Calculation of Knitting Plan data must be done automatically and properly
Update Knitting Plan data	2	Knitting Plan data must be updated properly.
Calculate Dyeing Plan data	1	Calculation of Dyeing Plan data must be done automatically and properly
Update Dyeing Plan data	2	Dyeing Plan data must be updated properly.
Calculate Trims&PPS Plan data	1	Calculation of Trims&PPS Plan data must be done automatically and properly
Update Trims&PPS Plan data	2	Trims&PPS Plan data must be updated properly.
Calculate Printing Plan data	1	Calculation of Printing Plan data must be done automatically and properly
Update Printing Plan data	2	Printing Plan data must be updated properly.
Calculate Cutting Plan data	1	Calculation of Cutting Plan data must be done automatically and properly
Update Cutting Plan data	2	Cutting Plan data must be updated properly.
Calculate Sewing Plan data	1	Calculation of Sewing Plan data must be done automatically and properly
Update Sewing Plan data	2	Sewing Plan data must be updated properly.

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Calculate Packing Plan data	1	Calculation of Packing Plan data must be done automatically and properly
Update Packing Plan data	2	Packing Plan data must be updated properly.
Generate Plan Reports	1	Generate all plans specifically and by searching with Order ID. Then, at first click "Report" Button finally click "Print" button.
Technological Features		
Database	1	Database will be used at almost every operation. So this is why, this part must be controlled tightly.

Here, 1 = Low Priority, 2 = Medium Priority, 3 = High Priority

5.2 Testing Strategy

Testing strategy is to be considered as a general purpose of testing process. Testing object, testing function methods, total available resources are included to the testing strategy. It is also the indicator of test levels that are to be performed on the whole software development life cycle. Those strategies that are prepared by the quality assurance team that should be reviewed by the developers of the application. After that it should be reviewed by the test team leads. Different kinds of testing strategies can be performed according to the type of application system that need to be tested.

5.2.1 Test approach

To complete the test process, testers must take some approach. There are mainly two type of test approach.

- **Automation testing:** Automation testing is a name of testing technique by which test engineers prepare some scripts according to test plan and after that they use suitable tools to perform testing of the software . Nowadays, almost every software company follow the approach of automation testing.
- **Manual testing:** Manual testing is also a name of technique of testing by searching out the bugs or vulnerability in an application. In this process, test engineers manually test and execute the test cases without having any automation tools.

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5.2.1.1 Black Box Testing

Black box testing is a software testing method by which test engineers test the software without having knowledge of the internal architecture of the application that need to be tested. It is also known as behavioral testing. Black box testing can be either functional or non-functional. It ignores the internal mechanism of a system. We have decided to perform the equivalent class partitioning and Boundary value analysis techniques to implement.

5.2.1.2 Equivalent Class Partitioning

Equivalent class partitioning is also known as equivalent partitioning. In this technique input data is to be divided into groups. Those group of data are expected to perform as similar behavior. Each groups works as same as other groups also.

The main advantage of following the approach of equivalent class partitioning is to reduce the total number of test cases from infinite to finite. Another advantage is that it can be applied to all testing levels also.

For legal input value output will produce a meaning data. But for illegal input value, output will not produce meaningful data.

5.2.1.3 Boundary Value Analysis

Boundary value analysis is a name of software testing by which input data can be included within a boundary range. Following this strategy, test engineers firstly define the boundary value. After that they take a specific boundary and then write the test cases that will be go through the application for testing purpose. After completing those tasks, testers use test cases to test applications software.

5.2.1.4 White Box Testing

White box testing is also a name of testing approach which is also known as clear box testing, glass box testing, open box testing, transparent box testing, code based testing or structural testing. It is opposite to the black box testing. In black box testing, the internal

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architecture or algorithms is not known to the testers whether the whole software architecture is known to the testers while white box testing.

Testers can also predict the output of every test cases for white box testing. White box testing can be classified into some levels. Such as:

- Unit Testing
- Integration Testing
- System Testing

The main advantage of white box testing is that testing is more throughout and the testing can be started from the very beginning stage.

5.2.2 Pass / Fail Criteria

Pass or fail criteria will be set by the test engineers. They will prepare the pass / fail criteria on the basis of which input data are worked and which are not works well. Those data that are worked well will considered as pass criteria. And rest of input data will be considered as fail criteria.

Now I will give the pass / fail criteria below.

- System crash will not be considered as pass case.
- If any criteria pass 100% times, then it will be considered as pass criteria only.
- If data can't be displayed to the application properly, then it is also to be considered as fail criteria.

5.2.3 Testing Schedule

Test Phase	**Time**
Testing plan create	1 week
Test specification	2 week
Unit testing	During development time
Component test	1 week
Test Phase	**Time**
Integration testing	1 week
Validating use cases	1 week
Testing user interfaces	1 week
Load testing	1 week
Performance testing	1 week
Release to production	1 week

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5.2.4 Trace Ability Matrix

Project Manager			**Business Analyst Lead**		
QA Lead			**Target Implementation Date**		
BR#	**Category / Functionality / Activity**	**Requirement Description**	**Use Case Reference**	**Test Case Reference**	**Comments**
Br-1	Functional	Calculate T & A Plan data	Use case 3.1.1	Test case 5.6.1	
BR-2	Functional	Insert T & A Plan data	Use case 3.1.2	Test case 5.6.3	
BR-3	Functional	Calculate Knitting Plan data	Use case 3.1.3	Test case 5.6.4	
BR-4	Functional	Update Knitting Plan data	Use case 3.1.4	Test case 5.6.5	
BR-5	Functional	Calculate Dyeing Plan data	Use case 3.1.5	Test case 5.6.6	
BR-6	Functional	Update Dyeing Plan data	Use case 3.1.6	Test case 5.6.7	
BR-7	Functional	Calculate Trims&PPS Plan data	Not Done Yet	Not Done Yet	
BR-8	Functional	Update Trims&PPS Plan data	Not Done Yet	Not Done Yet	
BR-9	Functional	Calculate Printing Plan data	Not Done Yet	Not Done Yet	
BR-10	Functional	Update Printing Plan data	Not Done Yet	Not Done Yet	
BR-11	Functional	Calculate Cutting Plan data	Not Done Yet	Not Done Yet	
BR-12	Functional	Update Cutting Plan data	Not Done Yet	Not Done Yet	
BR-13	Functional	Calculate Sewing Plan data	Not Done Yet	Not Done Yet	

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BR-14	Functional	Update Sewing Plan data	Not Done Yet	Not Done Yet	
BR-15	Functional	Calculate Packing Plan data	Not Done Yet	Not Done Yet	
BR-16	Functional	Update Packing Plan data	Not Done Yet	Not Done Yet	
BR-17	Non-functional	Reliability	N/A	N/A	

5.3 Testing Environment

Testing environment means to prepare the environment with hardware and software so that test engineers can be able to execute test cases as required. Besides hardware and software usage, network configuration might be needed to execute test plans.

For making the environment for testing, some key area need to setup. Those are:

- Test data
- Database server
- Client's operating system
- Front end running environment
- Browser
- System and application
- Network
- Hardware with server operating system
- Documentation is also required. Like: user manuals, installation guides, configuration guides, documents etc.

5.4 Test Cases

A test case refers to some rules and regulations or conditions by which it can be determined whether a system can be able to meet the works or requirements under test cases properly. We know, there is a chance to have some fault or break holes in any application. This is very common scenario. And those issues are solved usually by software testing approaches. But if we don't care of those issues, then the full application development might be ruined. So proper testing must be needed. For testing our application, I have prepared some test cases. Now, I am going to provide them.

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5.4.1 Log In

Test case #1			**Test case name:** Log in		
System: GarmentsERP(T&A and Planning)			**Subsystem: N/A**		
Designed by: S.M Mazidul Islam Shuvo			**Designed date:** 2/12/19		
Executed by:			**Executed date:**		
Short description: The registered users need to login to the application. And before that our application will check the authentication and authorization.					
Pre-conditions: • Users are always redirected to the login page whether they have not authenticated by our application while entering into the dashboard. • Assume that, the Username is 'Merchandiser' and password is 'password'					
Step	**Username**	**Password**	**Expected result**	**Pass/Fail**	**Comment**
1	Khaquzzaman	112233	Invalid		
2	Merchandiser		Password can't be blank		
3		000000	Username can't be blank		
4	Admin	Root	Successfully login to the application and redirected to the dashboard		
Post-conditions: Users including T&A and Planning Manager will successfully login to the application.					

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5.4.2 Calculate T & A Plan data

Test case #2		**Test case name:** Calculate T & A Plan data		
System: GarmentsERP(T&A and Planning)		**Subsystem:** N/A		
Designed by: S.M Mazidul Islam SHuvo		**Designed date:** 2/12/19		
Executed by:		**Executed date:**		
Short description: Users including T&A and Planning Manager need to fill up only few fields which as marked as required.				
Pre-conditions: • User like T&A and Planning Manager need to login first to be authenticated by the application program. • Every required field must be filled up by that T&A and Planning Manager.				
Step	**Action**	**Response**	**Pass/Fail**	**Comment**
1	All required fields are not filled yet.	Fields must not be empty.		
2	All input filed is filled up by the user.	Application will save those information.		
Post-conditions: Every information is saved to the database of the application program properly.				

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5.4.3 Insert T & A Plan data

Test case #3		**Test case name:** Insert T & A Plan data		
System: GarmentsERP(T&A and Planning)		**Subsystem:** N/A		
Designed by: S.M Mazidul Islam Shuvo		**Designed date:** 2/12/19		
Executed by:		**Executed date:**		
Short description: After calculating Dates T&A and Planning Manager click "Confirm" button for insertion				
Pre-conditions: • User must be authenticated by our application. • T&A and Planning Manager must calculate dates by clicking "Calculate" button first. • User type must be T&A and Planning Manager.				
Step	**Action**	**Response**	**Pass/Fail**	**Comment**
1	All data is not provided Properly.	Application shows error.		
2	Click "Confirm" button after successfully calculation of dates	All dates are inserted successfully.		
Post-conditions: After calculating all dates T&A and Planning Manager click "Confirm" button for insertion and successfully added.				

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5.4.4 Calculate Knitting Plan data

Test case #4		**Test case name:** Calculate Knitting Plan data		
System: GarmentsERP(T&A and Planning)		**Subsystem:** N/A		
Designed by: S.M Mazidul Islam Shuvo		**Designed date:** 2/12/19		
Executed by:		**Executed date:**		
Short description: T&A and Planning Manager selects order info by searching and click "Plan Now" button and then again "Plan Now" button.				
Pre-conditions: • User must be authenticated by our application. • T&A and Planning Manager must confirm T&A plan first. • User type must be T&A and Planning Manager. • T&A and Planning Manager selects order info by searching.				
Step	**Action**	**Response**	**Pass/Fail**	**Comment**
1	Order is not passed to other page	Application shows error.		
2	Order is not passed to other page	All dates are calculated correctly		
Post-conditions After selecting specific order info by clicking "Plan Now" to the application, it will calculate all dates in back-end.				

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5.4.5 Update Knitting Plan data

Test case #5		**Test case name:** Calculate Knitting Plan data		
System: GarmentsERP(T&A and Planning)		**Subsystem:** N/A		
Designed by: S.M Mazidul Islam Shuvo		**Designed date:** 2/12/19		
Executed by:		**Executed date:**		
Short description: T&A and Planning Manager calculates knitting info by click "Plan Now" button and then again "Plan Now" button for store all data.				
Pre-conditions: • User must be authenticated by our application. • User type must be T&A and Planning Manager. • T&A and Planning Manager calculates knitting data.				
Step	**Action**	**Response**	**Pass/Fail**	**Comment**
1	All data is not provided Properly.	Application shows error.		
12	Click "Plan Now" button after successfully calculation of dates	All dates are inserted successfully.		
Post-conditions: After calculating all data T&A and Planning Manager click "Plan Now" button for insertion and successfully added.				

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5.4.6 Calculate Dyeing Plan data

Test case #6		**Test case name:** Calculate Dyeing Plan data		
System: GarmentsERP(T&A and Planning)		**Subsystem:** N/A		
Designed by: S.M Mazidul Islam Shuvo		**Designed date:** 2/12/19		
Executed by:		**Executed date:**		
Short description: T&A and Planning Manager selects order info by searching and click "Plan Now" button and then again "Plan Now" button.				
Pre-conditions: • User must be authenticated by our application. • T&A and Planning Manager must confirm T&A plan first. • User type must be T&A and Planning Manager. • T&A and Planning Manager selects order info by searching.				
Step	**Action**	**Response**	**Pass/Fail**	**Comment**
1	Order is not passed to other page	Application shows error.		
2	Order is not passed to other page	All dates are calculated correctly		
Post-conditions After selecting specific order info by clicking "Plan Now" to the application, it will calculate all dates in back-end for Dyeing Plan.				

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5.4.7 Update Dyeing Plan data

Test case #6		**Test case name:** Calculate Dyeing Plan data		
System: GarmentsERP(T&A and Planning)		**Subsystem:** N/A		
Designed by: S.M Mazidul Islam Shuvo		**Designed date:** 2/12/19		
Executed by:		**Executed date:**		
Short description: T&A and Planning Manager calculates Dyeing info by click "Plan Now" button and then again "Plan Now" button for store all data.				
Pre-conditions: • User must be authenticated by our application. • User type must be T&A and Planning Manager. • T&A and Planning Manager calculates knitting data.				
Step	**Action**	**Response**	**Pass/Fail**	**Comment**
1	All data is not provided Properly.	Application shows error.		
12	Click "Plan Now" button after successfully calculation of dates	All dates are inserted successfully.		
Post-conditions: After calculating all data T&A and Planning Manager click "Plan Now" button for insertion and successfully added for Dyeing Info.				

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Chapter 6
Requirement Analysis

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6.1 User Interface

First of all, after landing any application, interface of that software is appeared to the user. So, the importance of user interface is very high. For success of any software application, a good looking user interface plays a vital role.

6.1.1 T&A and Planning Page

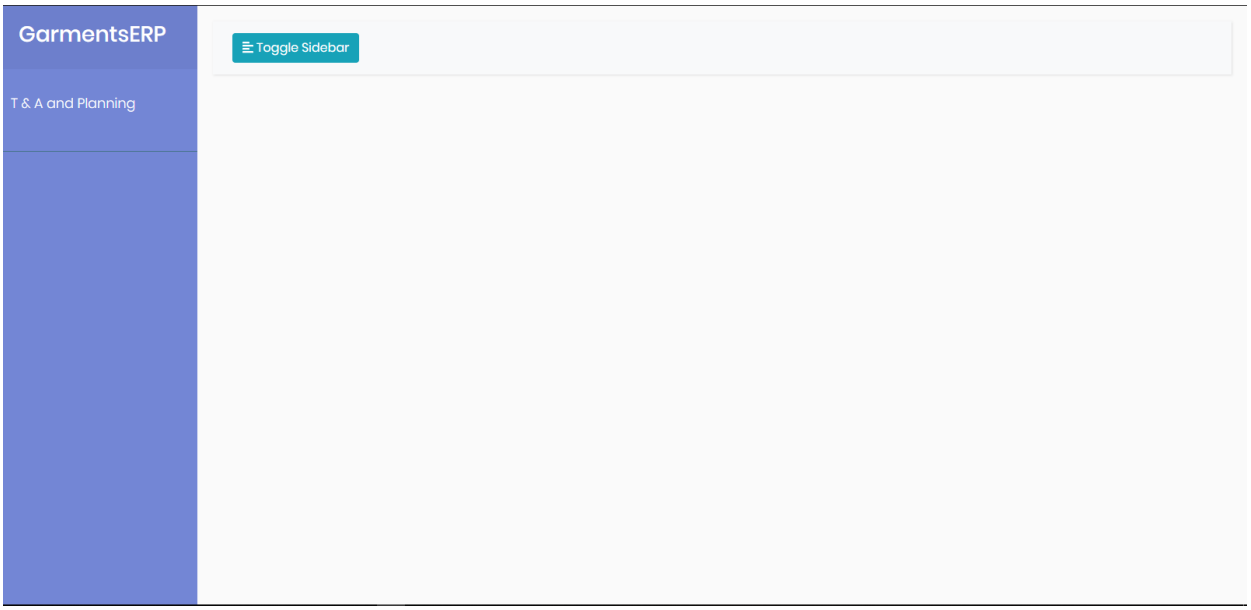

Figure 6.1: T&A and Planning Page

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6.1.2 Log in page

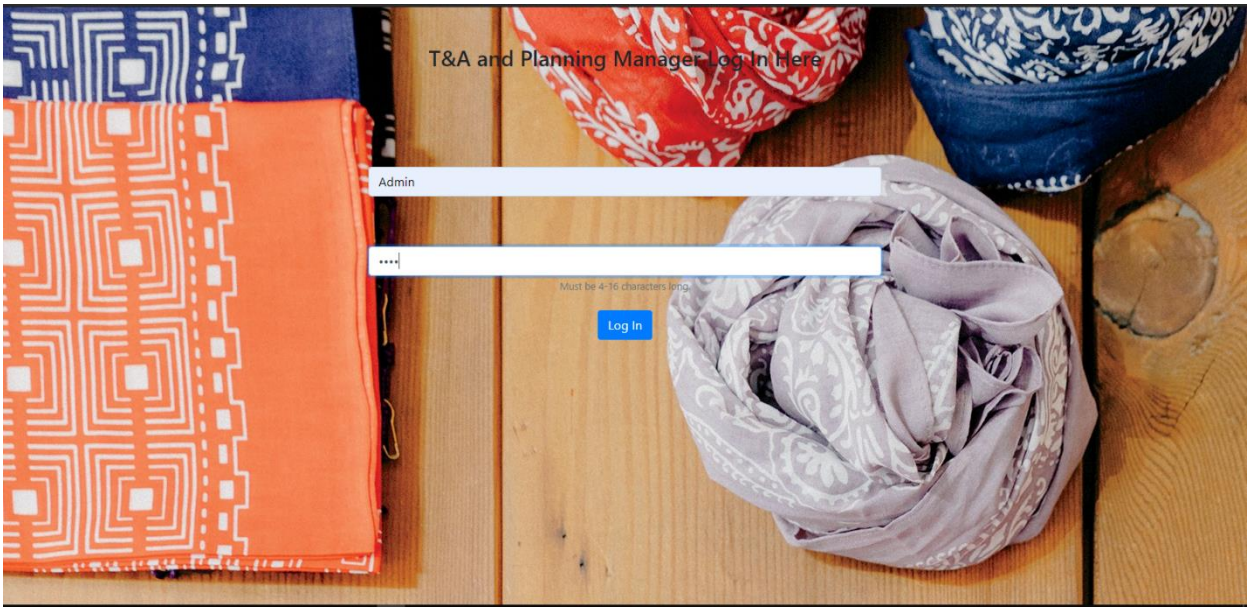

Figure 6.2: Login page

6.1.3 Home page

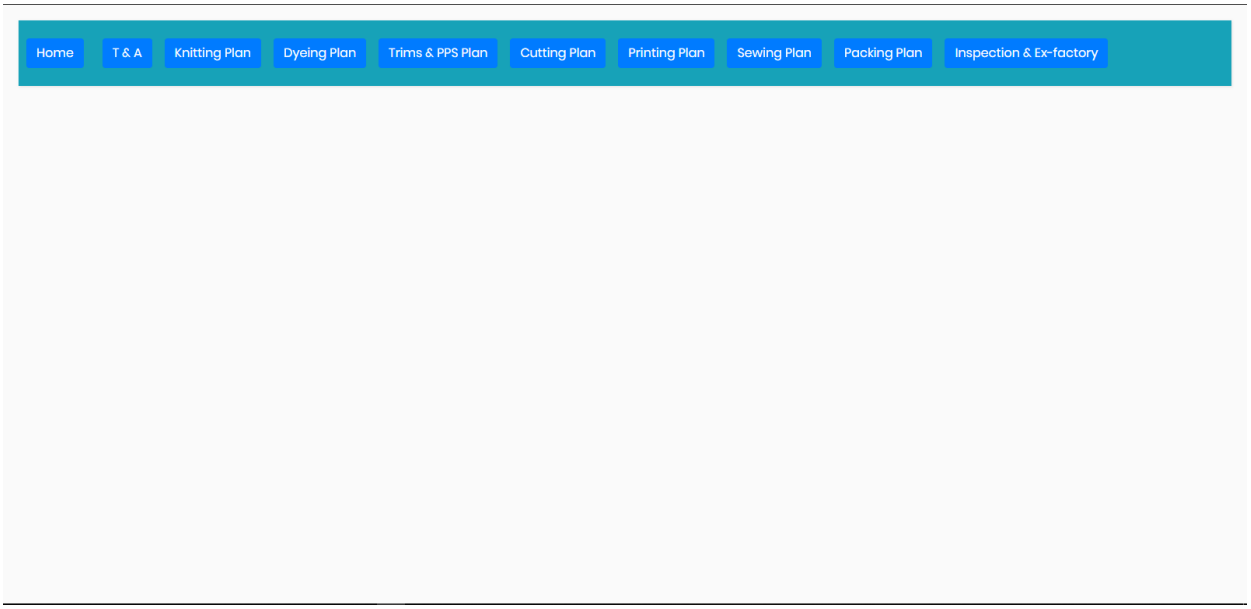

Figure 6.3: Home page

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6.1.4 T&A Planning

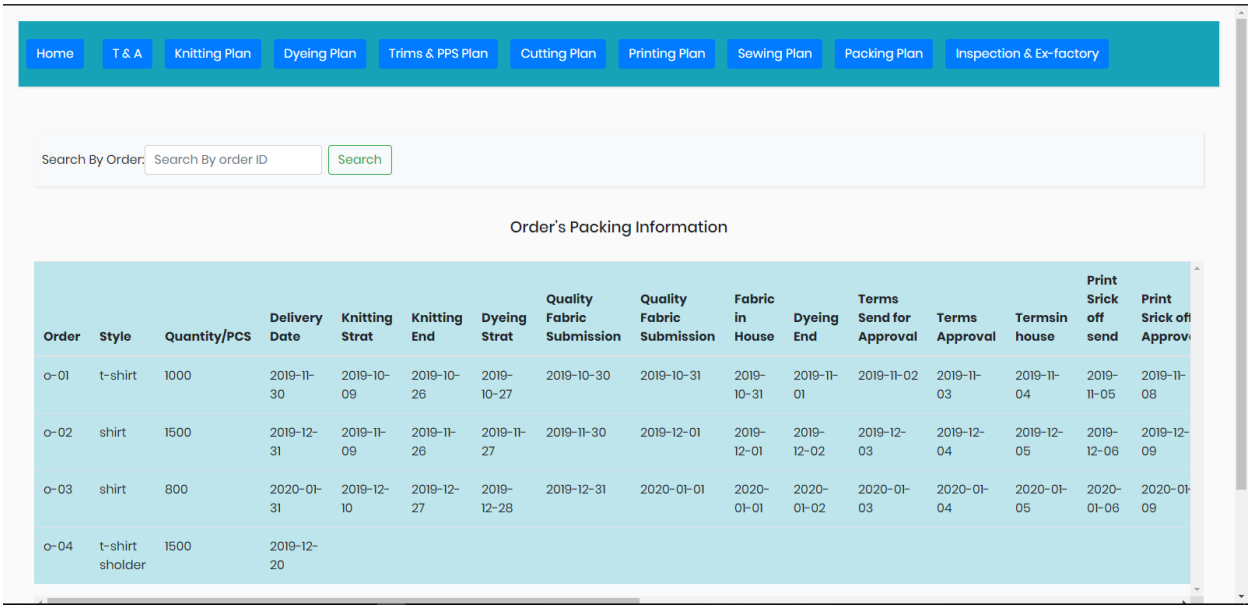

Figure 6.4: T&A Planning page

6.1.5 T&A plan now page

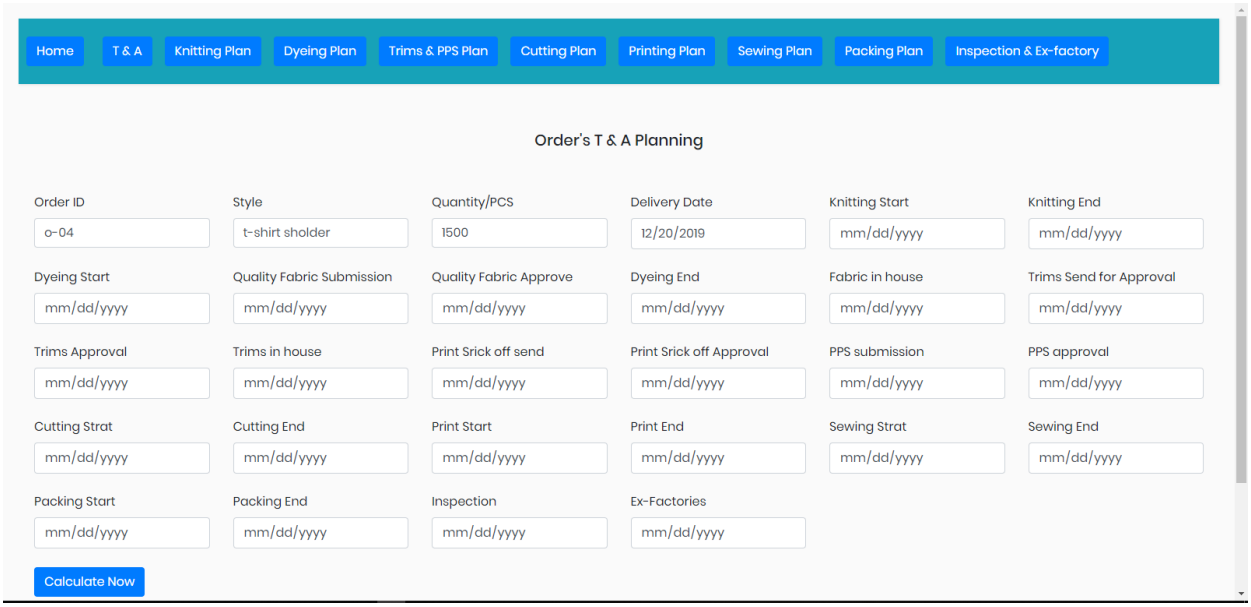

Figure 6.5: T&A plan now page

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6.1.6 T&A print

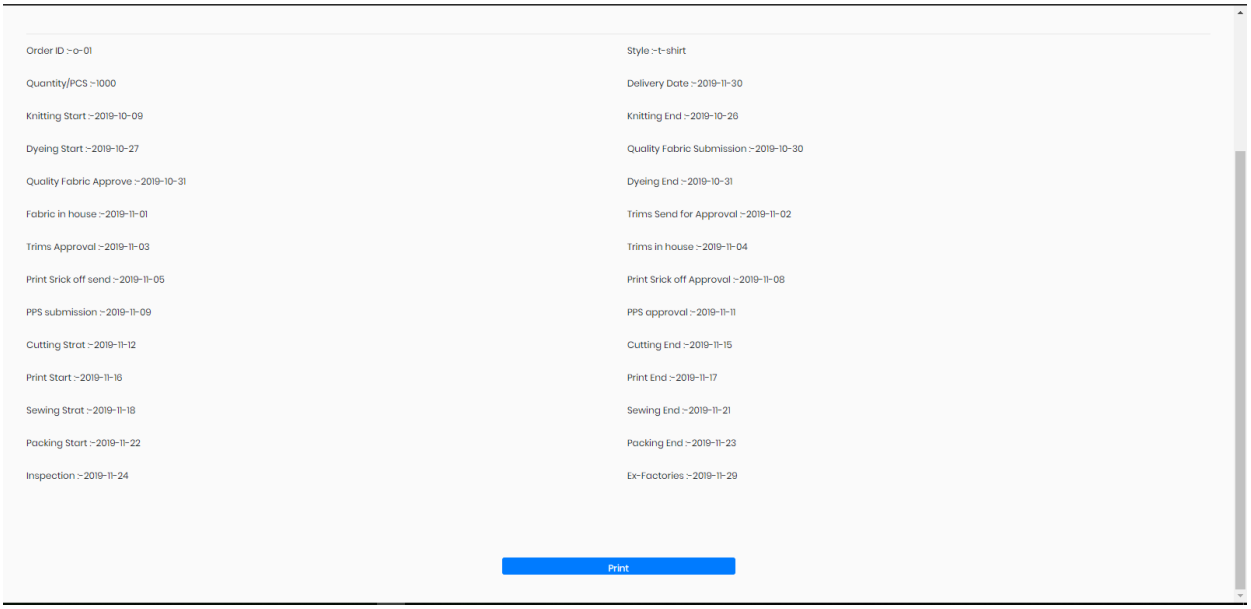

Figure 6.6: T&A print page

6.1.7 Knitting Plan page

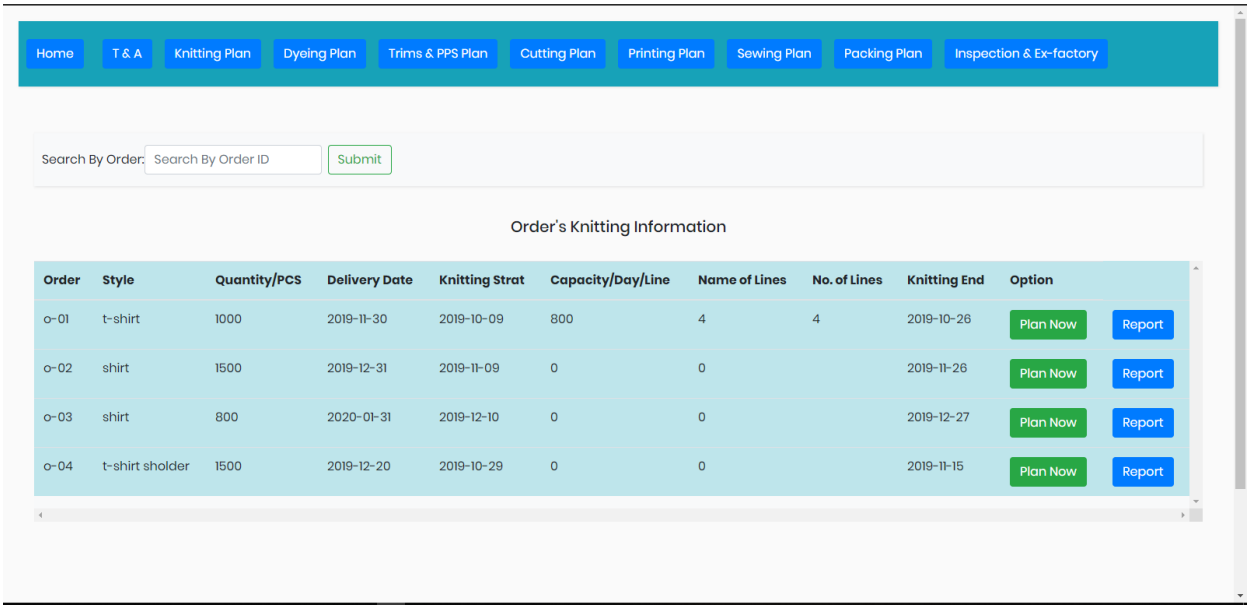

Figure 6.7: Knitting plan page

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6.1.8 Knitting plan now page

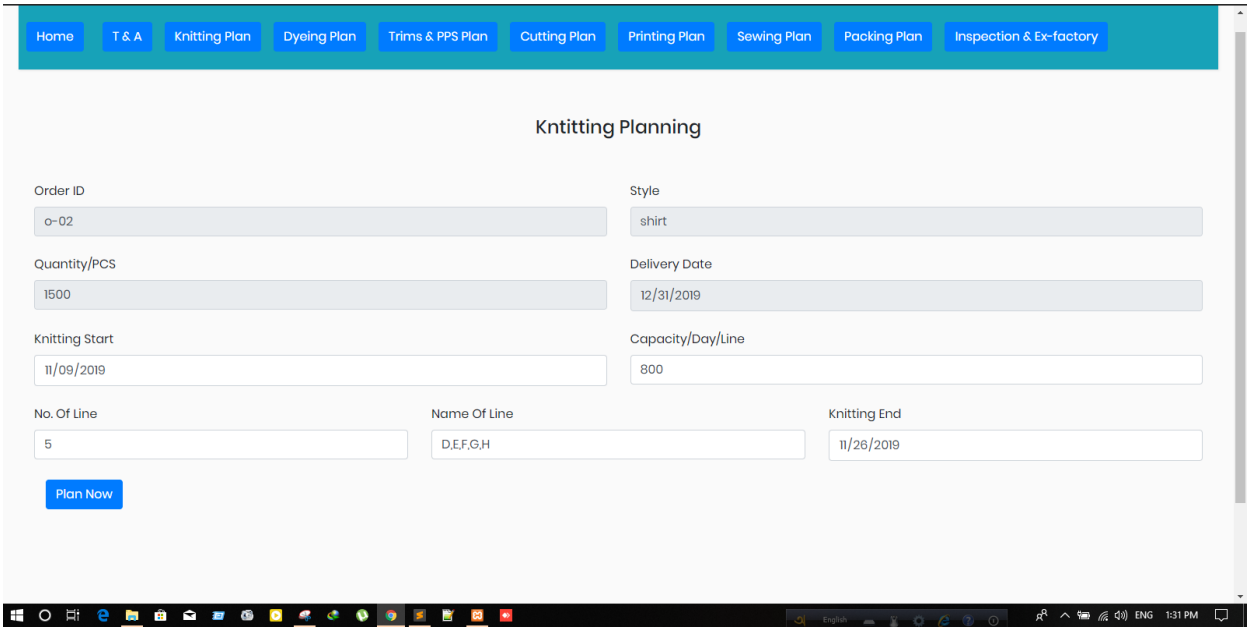

Figure 6.8: Knitting plan now page

6.1.9 Knitting Plan Print page

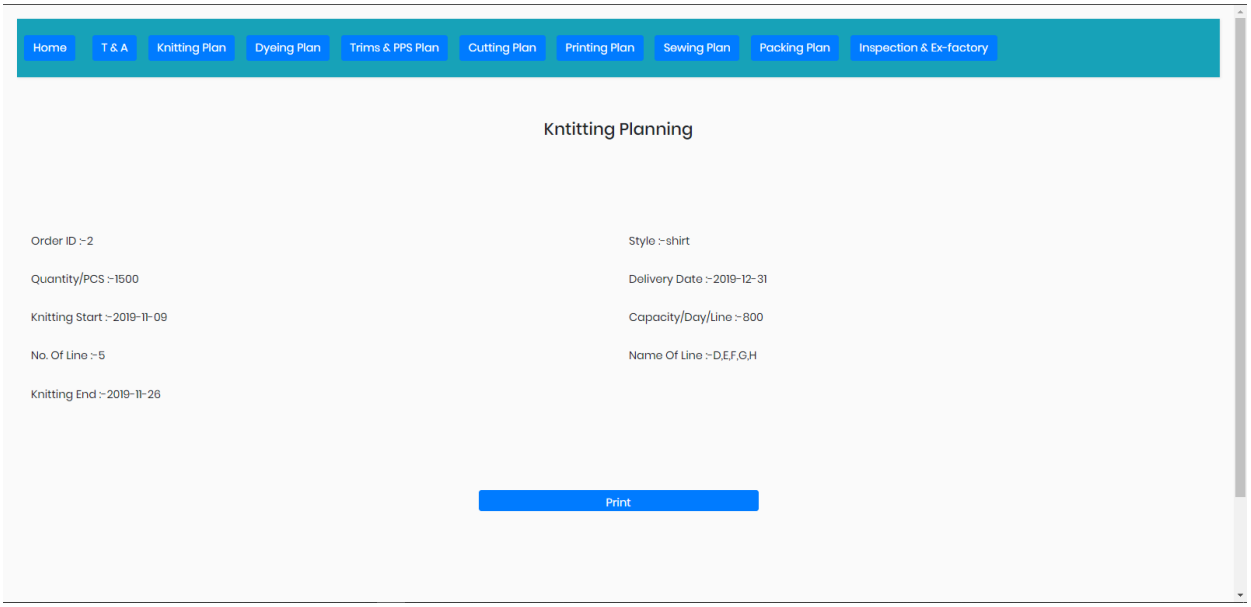

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Figure 6.9: Knitting plan Print page

6.1.10 Dyeing Plan Page

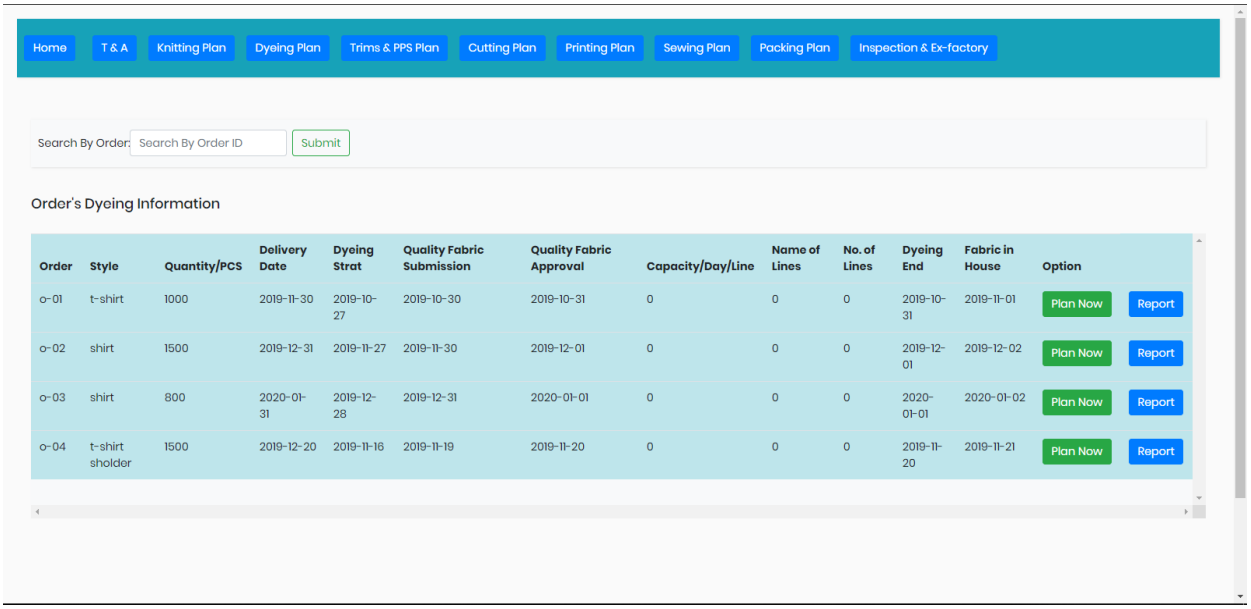

Figure 6.10: Dyeing plan page

6.1.11 Dyeing Plan Now Page

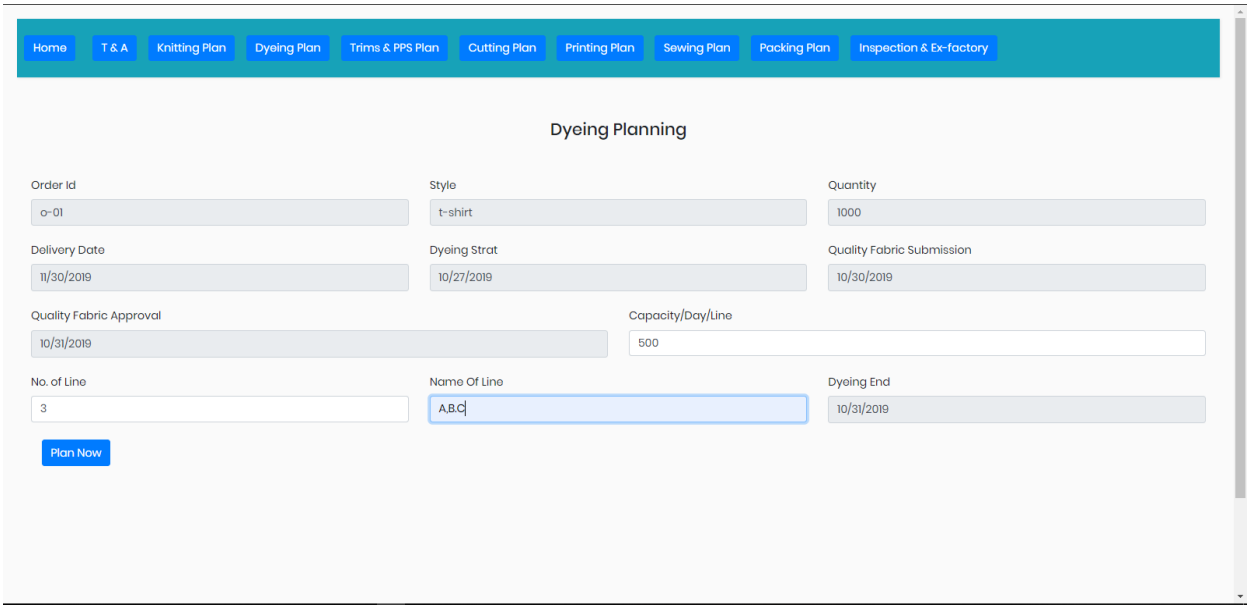

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Figure 6.11: Dyeing plan now page

6.1.12 Dyeing Print Page

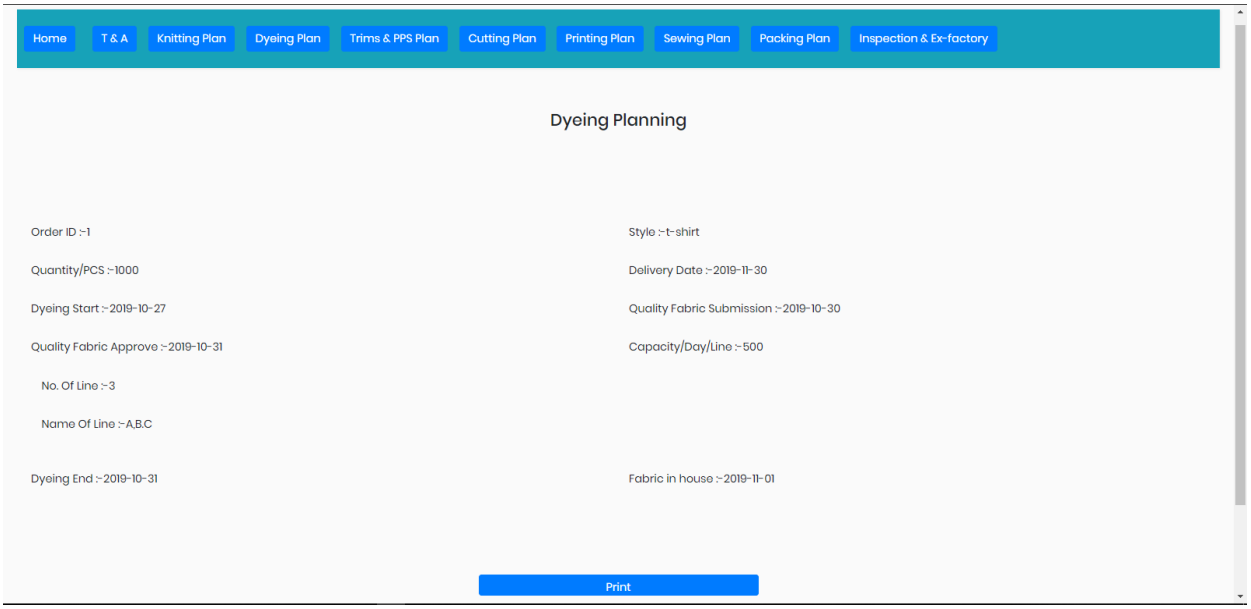

Figure 6.12: Dyeing plan Print page

6.1.13 Trims & PPS planning

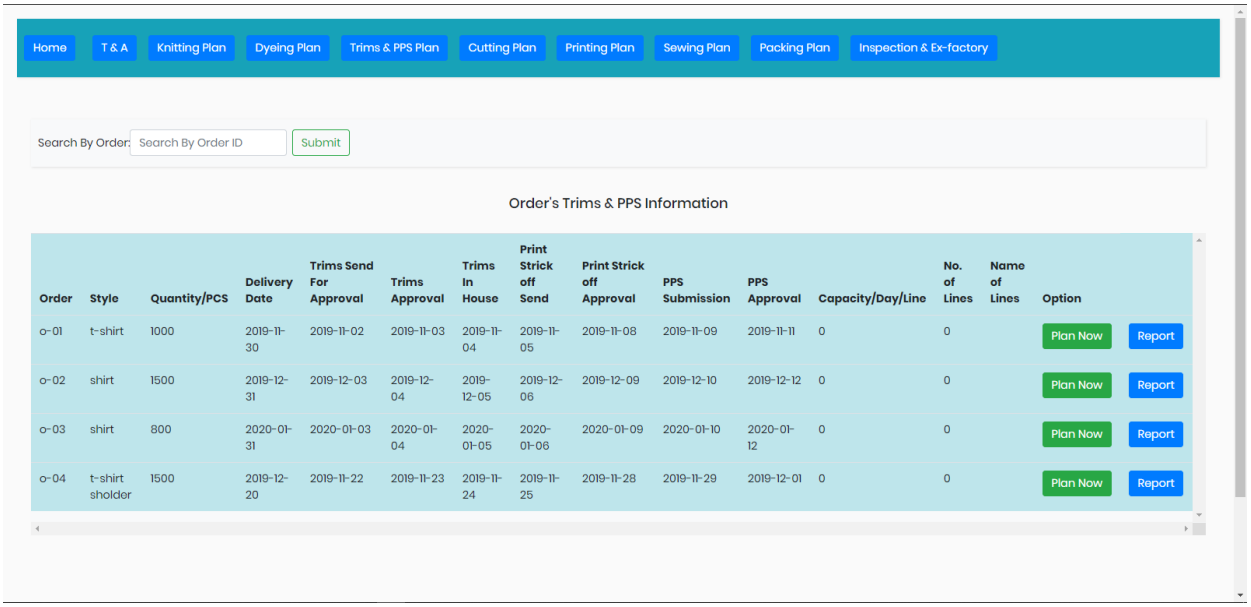

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Figure 6.13: Trims & PPS plan page

6.1.14 Trims & PPS Plan Now Page

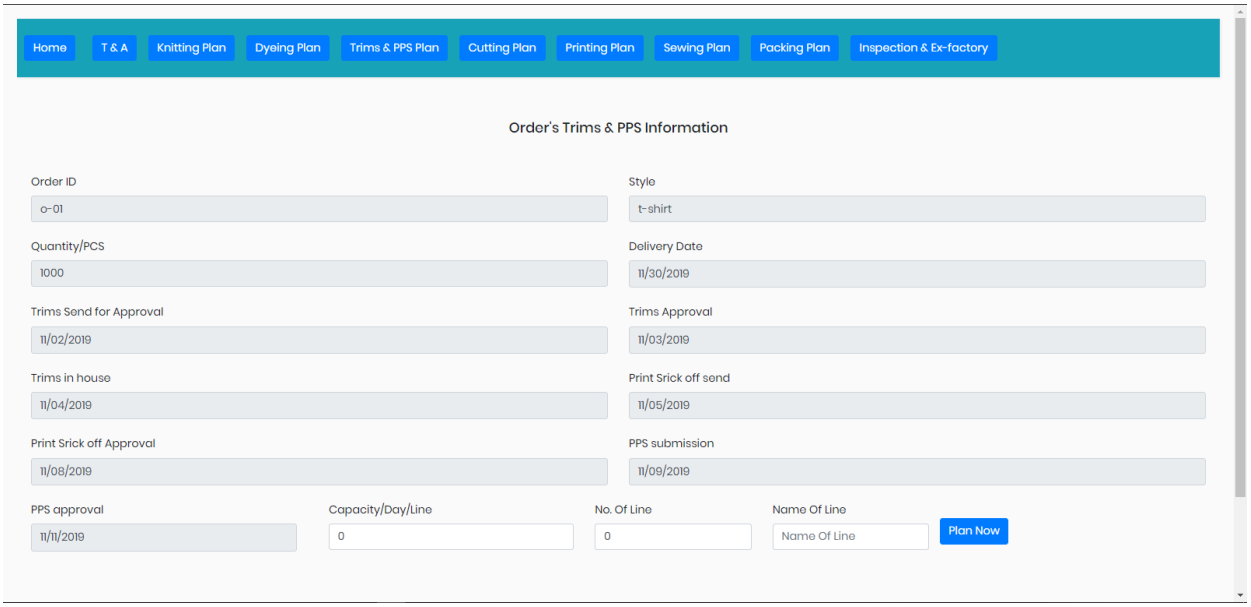

Figure 6.14: Trims & PPS plan now page

6.1.15 Trims & PPS Print page

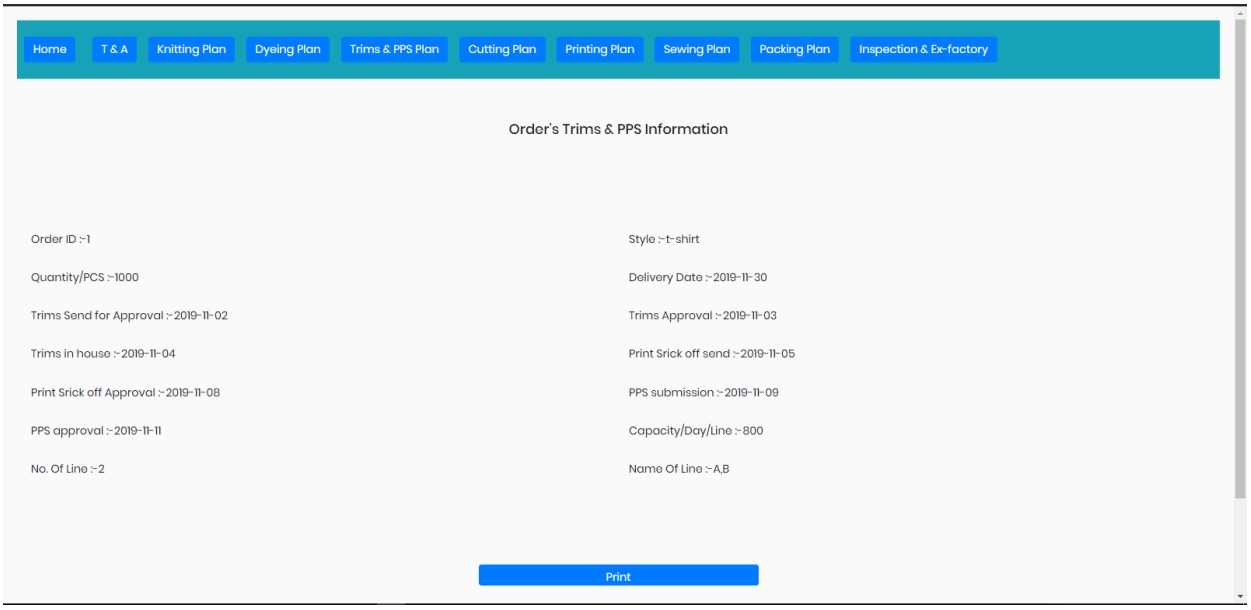

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Figure 6.15: Trims&PPS print page

6.1.16 Cutting Plan Page

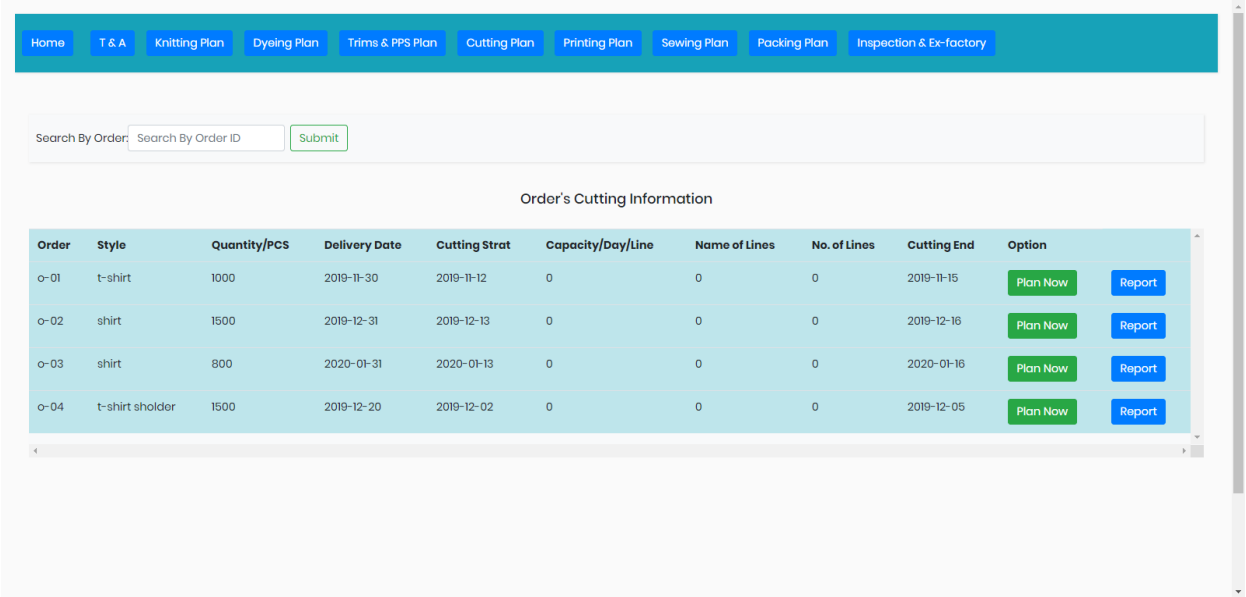

Figure 6.16: Cutting plan page

6.1.17 Cutting Plan Now Page

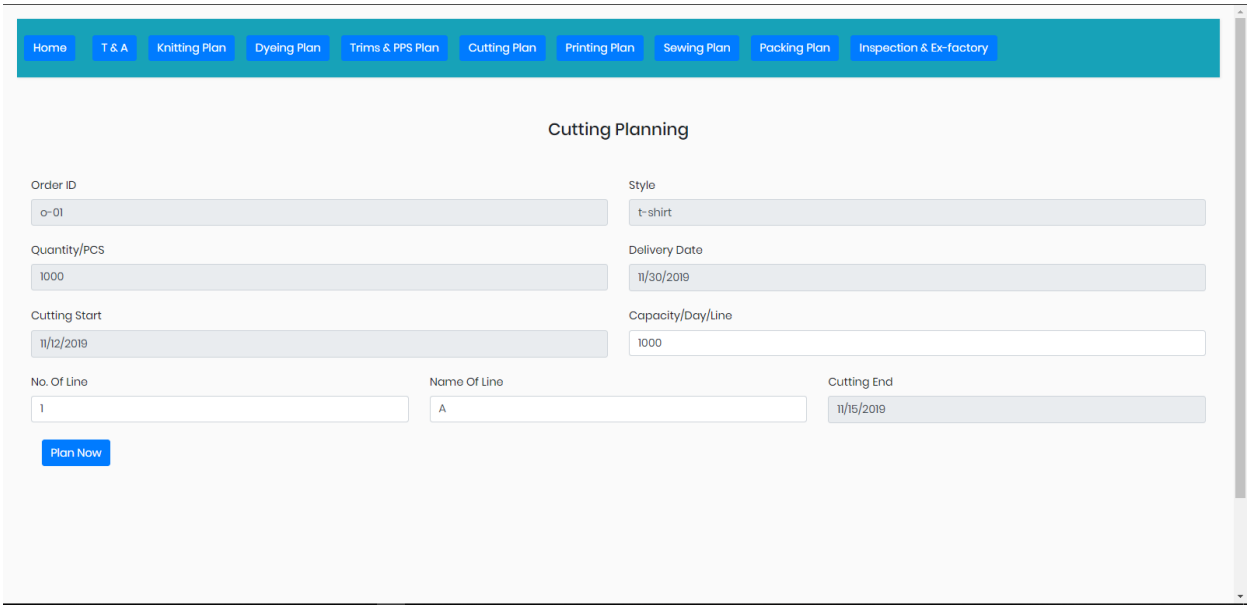

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Figure 6.17: Cutting plan now page

6.1.18 Cutting Print Page

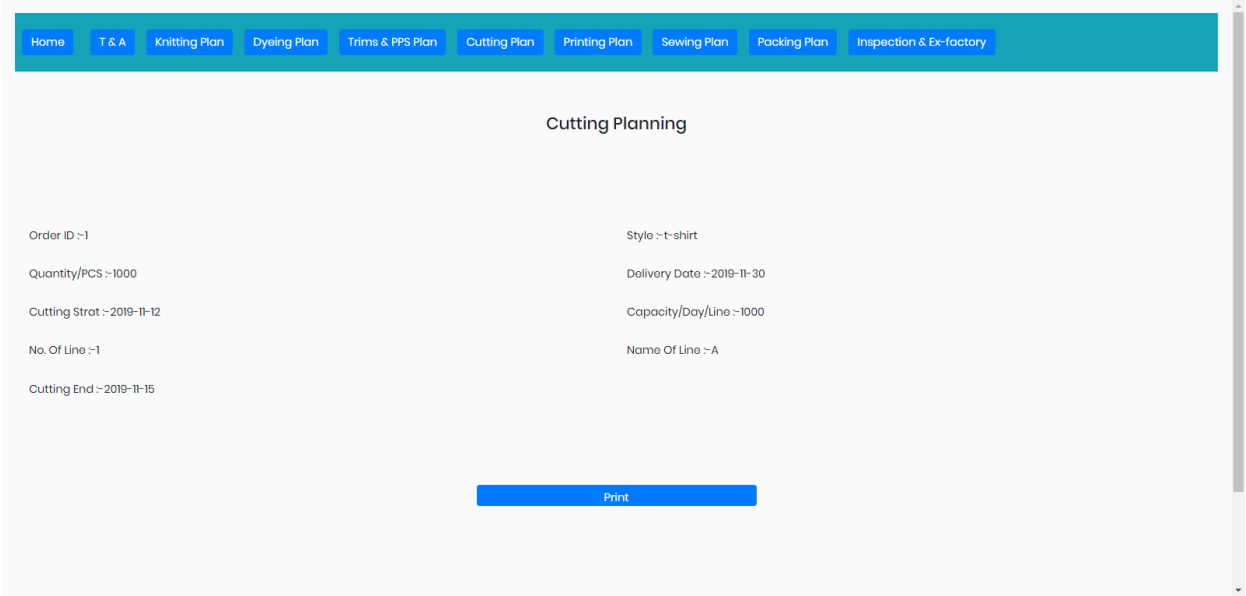

Figure 6.18: Cutting plan now page

6.1.19 Printing Plan Page

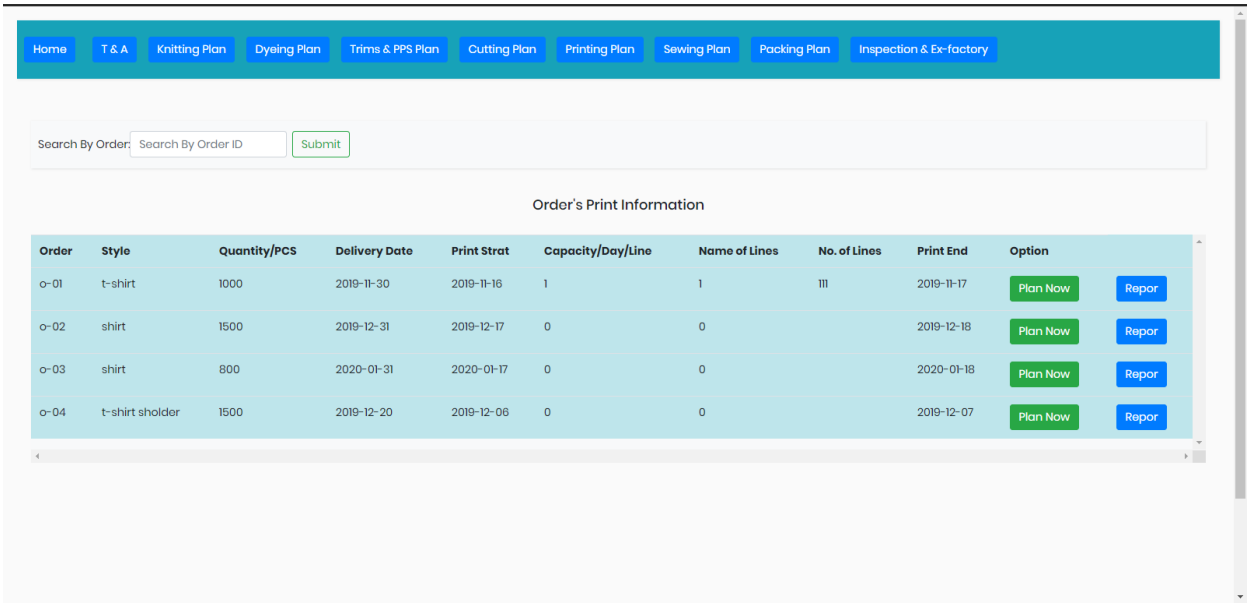

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Figure 6.19: Printing plan page

6.1.20 Printing Plan Now Page

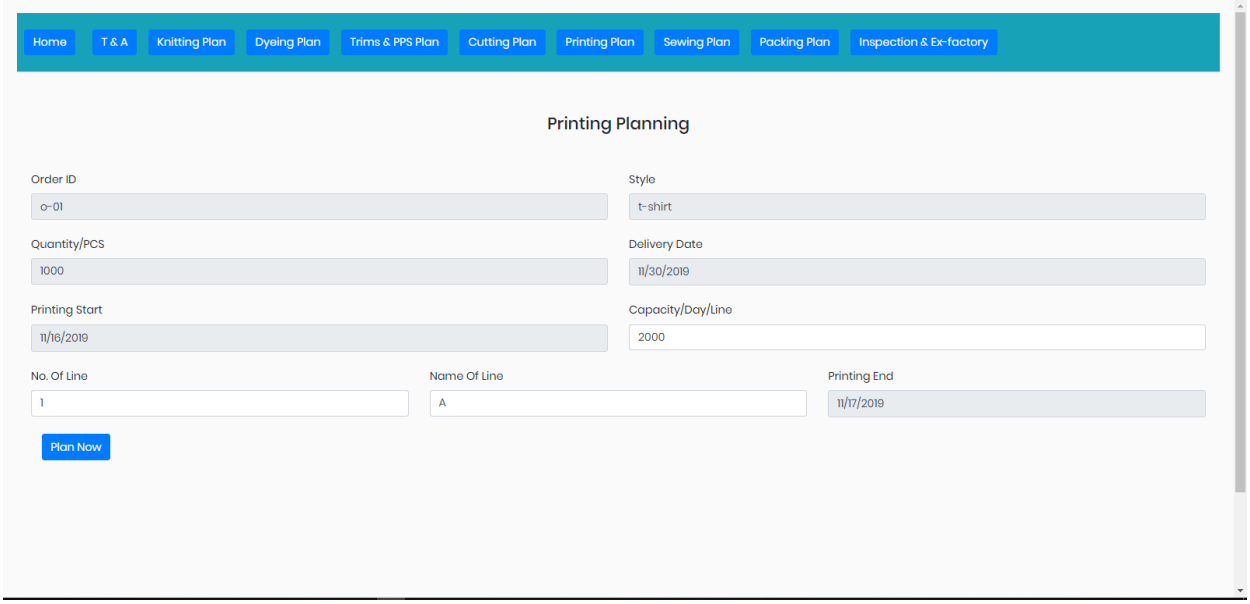

Figure 6.20: Printing plan now page

6.1.21 Printing Plan Print Page

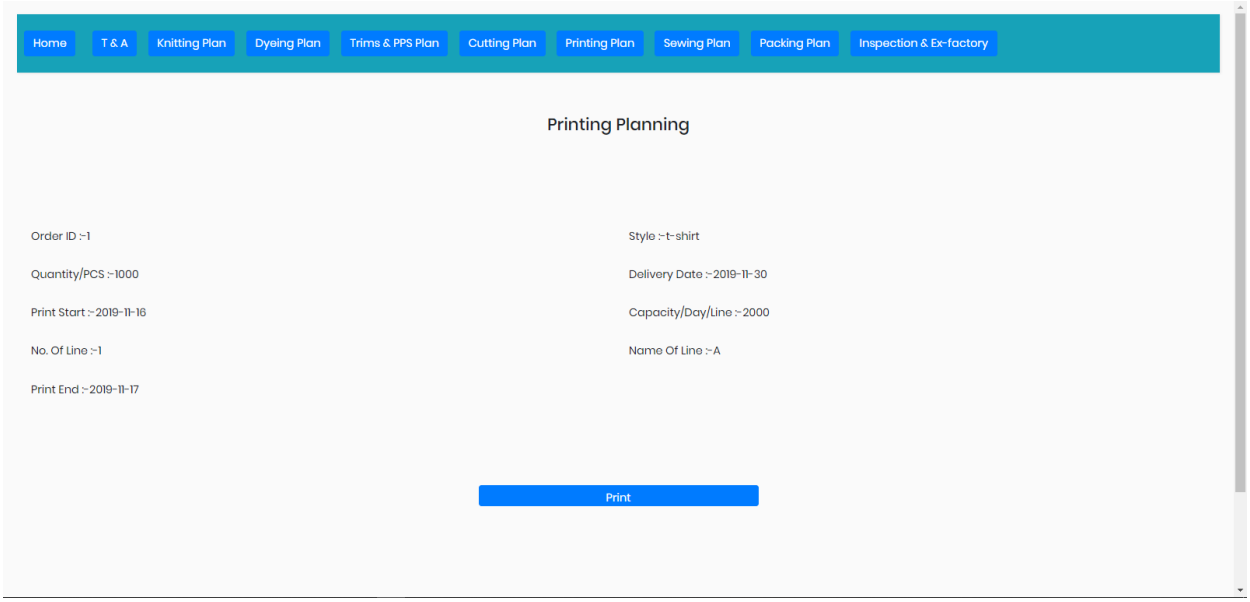

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Figure 6.21: Printing plan Print page

6.1.22 Sewing Plan Page

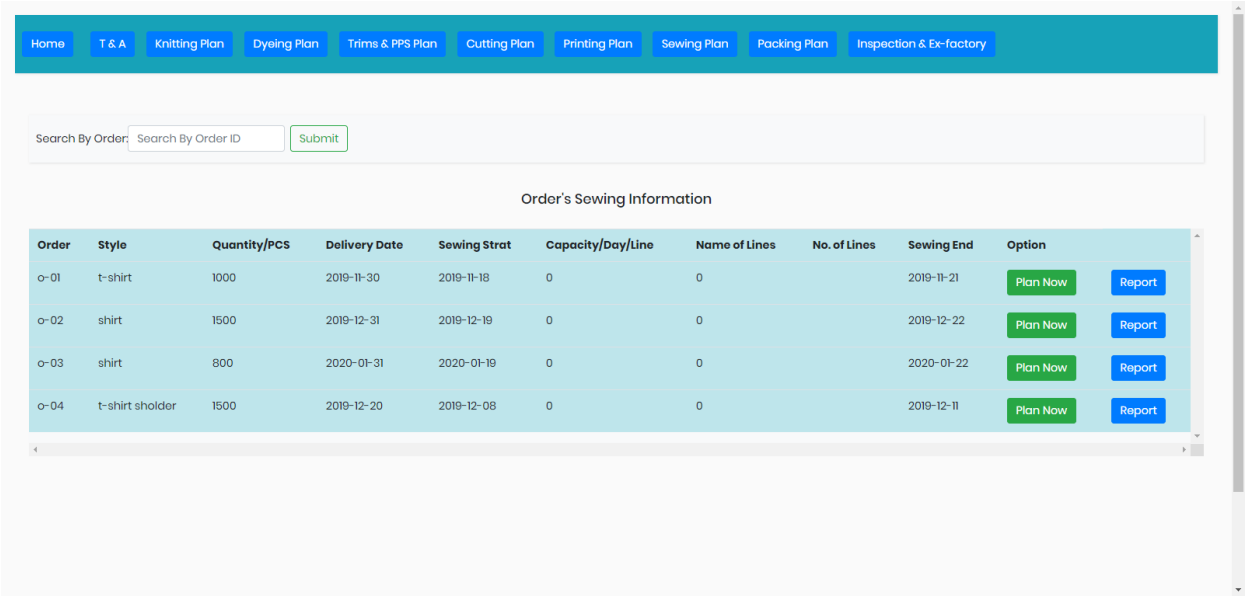

Figure 6.22: Sewing plan page

6.1.23 Sewing Plan Now Page

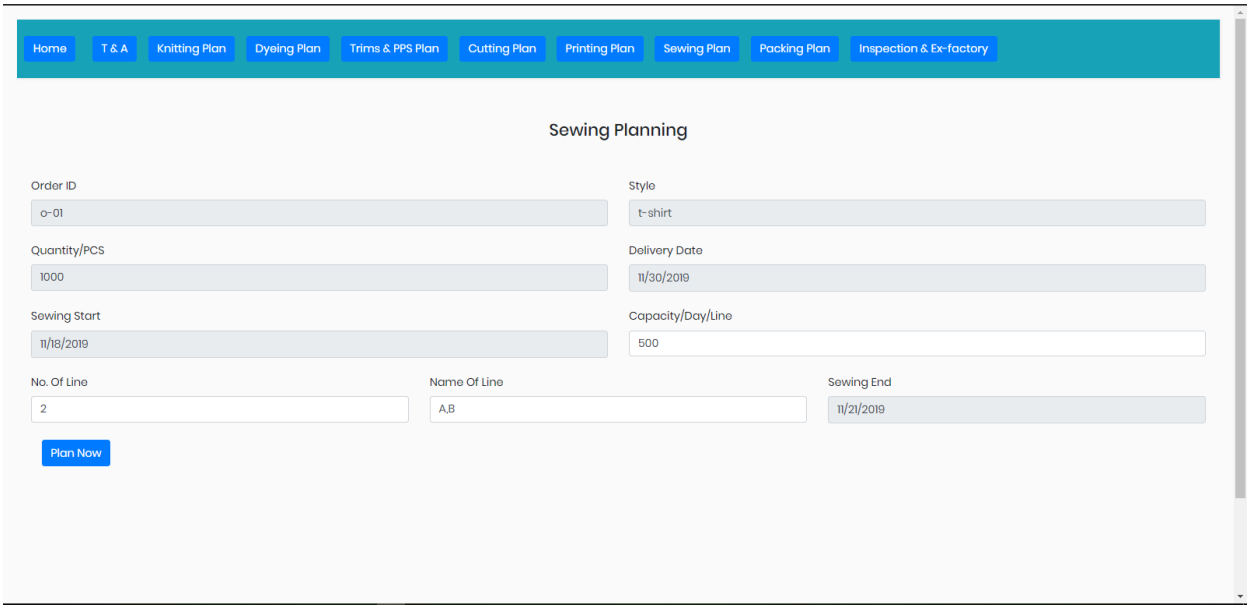

Figure 6.23: Sewing plan now page

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6.1.24 Sewing Plan Print Page

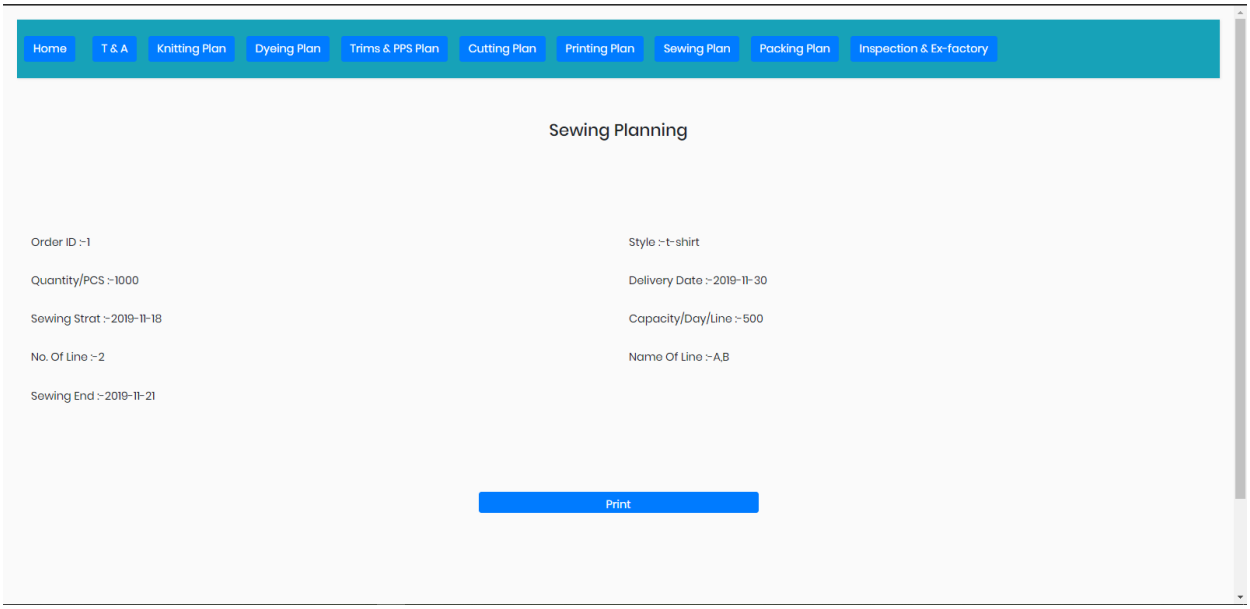

Figure 6.24: Sewing plan Print page

6.1.25 Packing Plan Page

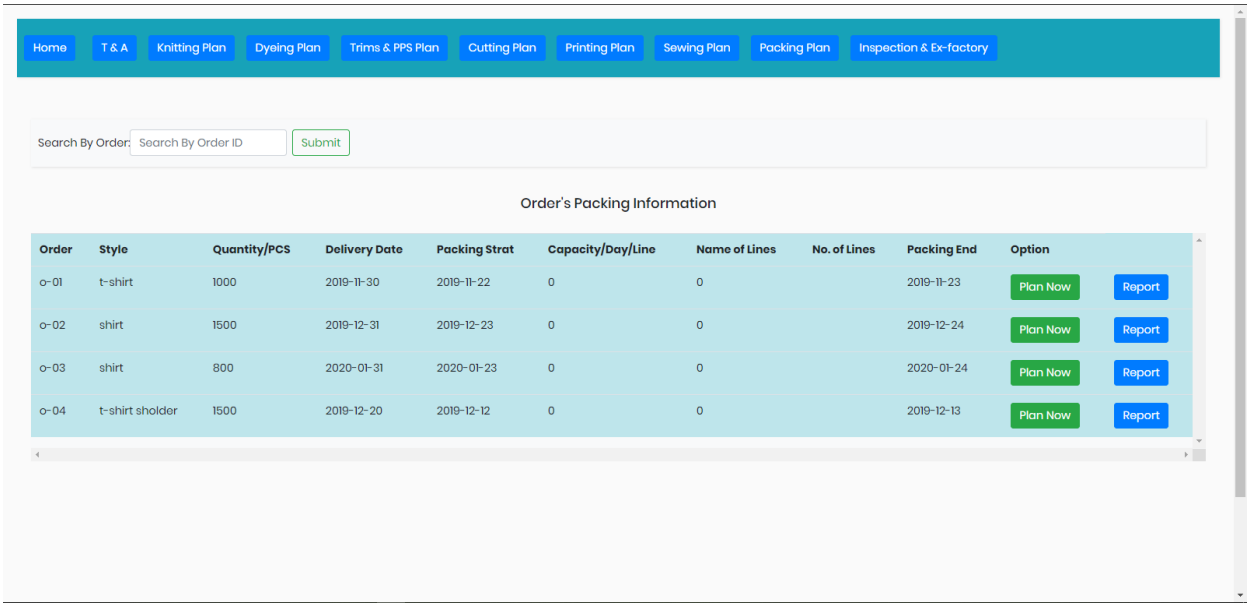

Figure 6.25: Packing plan page

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6.1.26 Packing Plan Now Page

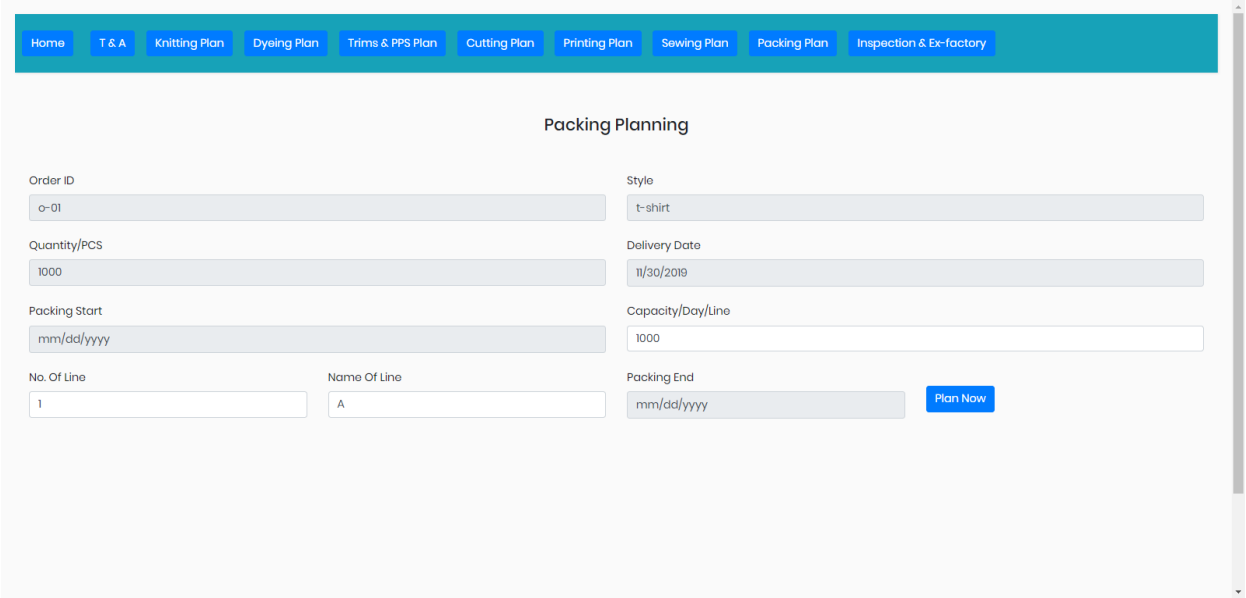

Figure 6.26: Packing plan now page

6.1.27 Packing Plan Print Page

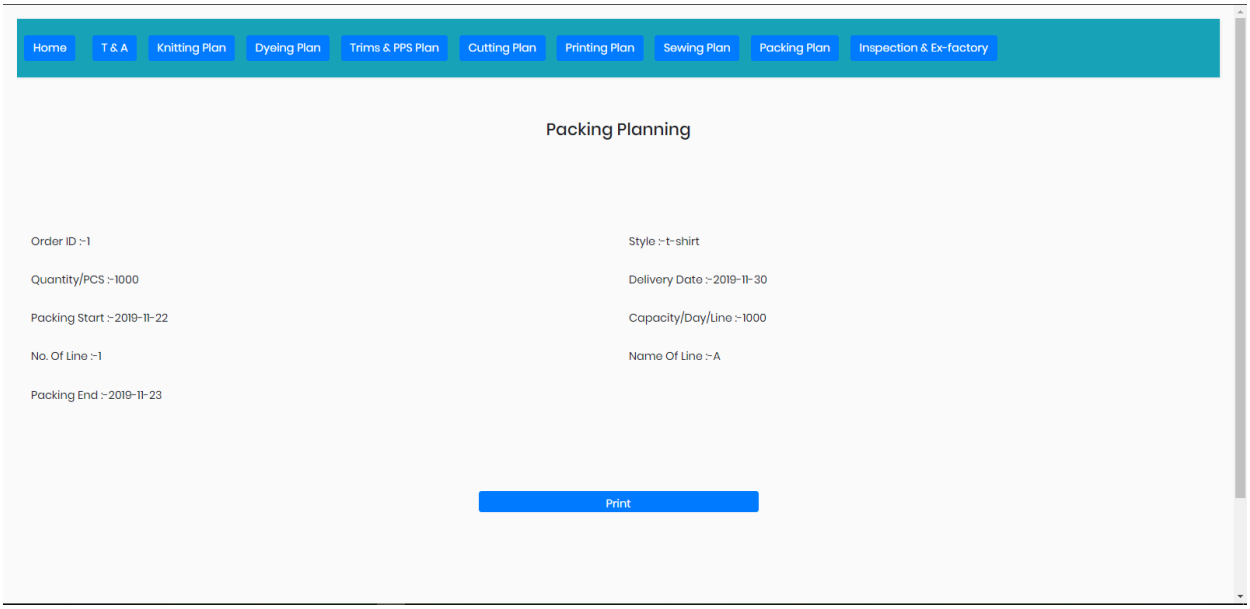

Figure 6.27: Packing plan Print page

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6.1.28 Inspection & Ex-Factory Plan Page

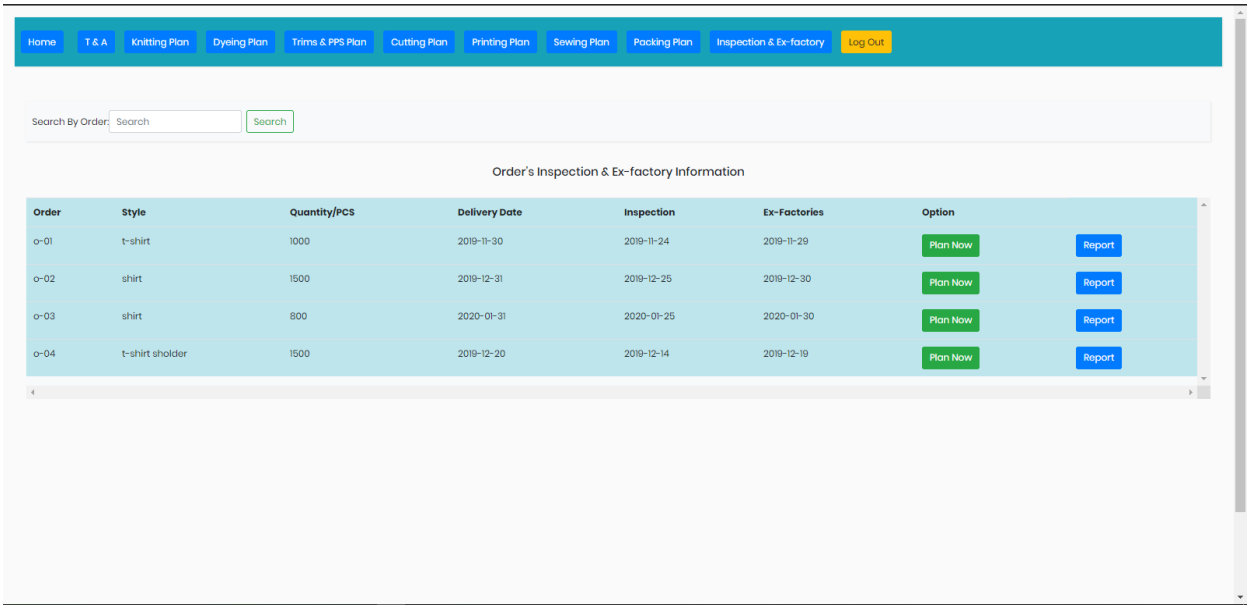

Figure 6.28: Inspection & Ex-Factory plan page

6.1.29 Inspection & Ex-Factory Print Page

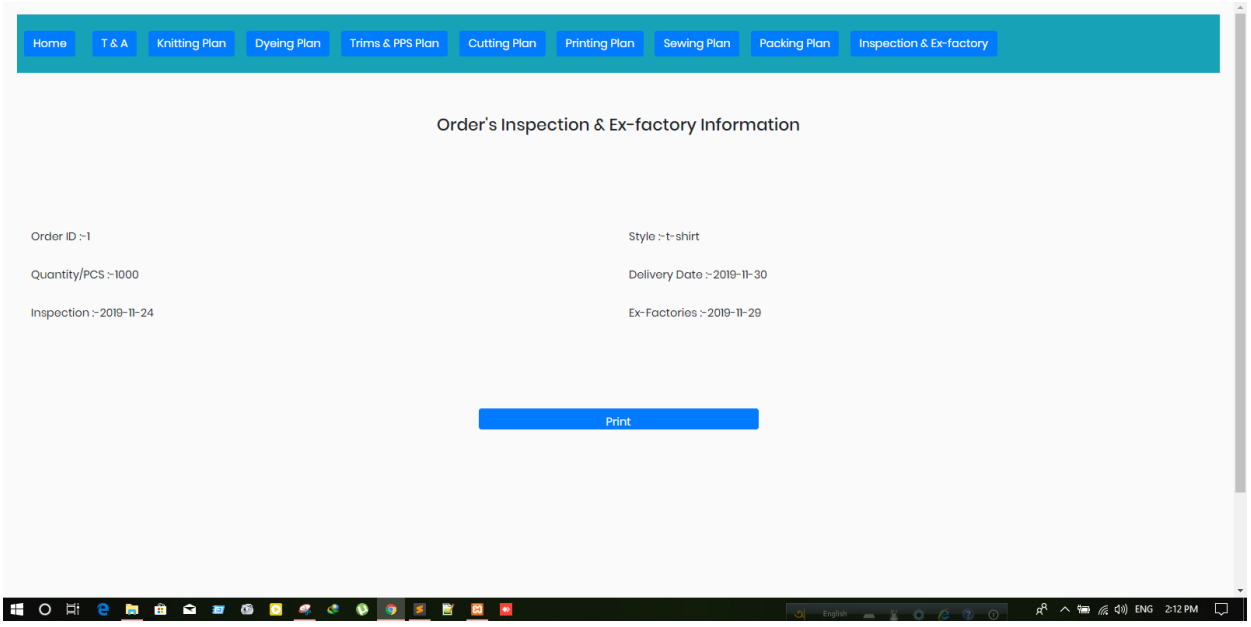

Figure 6.29: Inspection & Ex-Factory plan Print page

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Chapter 7
Project Summary

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7.1 GitHub Link

https://github.com/1612SMShuvo/GarmentsERP.git

7.2 Summary

I have started to develop this project from April. From the very starting of development of this project, it demands hard working, patients, persistency to meet the requirements of stakeholders. After that I have proposed the design. And then started to work.

Database plays a vital role for any application software. And so this is why, I have designed the database diagram having tables with proper relationship. After that, I have prepared the user interface and take their approval to continue to the next part. It is to be said that, the interface of my application is very simple and easy to understand. After completing that, I have started to write the core functionality of the project.

Developing project is not end of all tasks actually. There are some other important tasks to perform. And that is testing. It is also known as quality assurance also. Almost at every software company there are a quality assurance team. Their main responsibility is to find the loop holes or vulnerability of software. If there any bug remains before handover to the stakeholders, there is a change to ruin the whole project. So testing plan is very important. And after developing the project, I have tried to assure the quality of this project.

7.3 Limitations

For developing this project, I have faced some limitations. Now I will describe those in brief.

- **Sending reports by email**: In our application, there is not having any mailing method directly by which one can contract with others for business purpose. End user need to email or contract with others now by manual way.

7.4 Obstacles and Achievements

I believe that if there are not any obstacles to develop a project, then there doesn't have any challenges. Because we know, challenge give us the opportunity to prove ourselves. Obstacles, challenges and achievements are like a path to the success. Before starting this project, I didn't know the actual flow of software development life cycle. By developing this project, I have learnt to know how to have a row requirement from clients. After that I have learnt system analysis, database design and many things. My supervisor helps me a lot from the very beginning of the development of this project.

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There are some other obstacles and achievements also that I will describe below.

• **Lack of Actor's Engagement:** There are different types of stakeholders in our full web application. And each actors uses different functionality. And almost they are busy with their day to day activities. So this is why, T&A and Planning manager can't plan or update plan in time.

• **Scope Change:** Sometimes, some features need to be changed or modified. Then I need to follow reverse engineering process. And again designed to meet the new requirements. It also made me frustrated sometimes.

7.5 Future Scope

I have learnt a lot throughout the whole development stage of this project. For making this project developed, I have also meet some young entrepreneurs and enthusiasts also. I am very much thankful to all of them as their idea and discussion gave me some opportunities to make my product complete. It will help me to work with similar type project in future also.

7.6 References

I have gained some knowledge from some platforms. Obviously I will mention those references. For making my project successful those resources help me a lot. Not I will mention the names below.

https://blog.stoneriverelearning.com/16-best-websites-for-learning-php-programming/	PHP programming
www.github.com	Authentication
www.php.net	Joining value Retrieve
www.mysql.com/products/workbench	Joining query
www.w3schools.com	HTML & CSS
www.jquery.com	Print function
https://www.youtube.com/watch?v=2yaUC8Piul0	Programming
www.wikipedia.com	Documentation
www.mysql.com	Foreign key Creation
www.getbootstrap.com	Joining query & CSS
www.stakeoverflow.com	Mysql_fetch_Assoc() function error
www.draw.io/	For drawing all diagram

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