Software Design Description

for

Defense Industry ERP Application

Version 1.0

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Gülşen Özge DUMAN 201611016
Tolgahan YILMAZ 201611065
Kenan GULUZADE 201611505
Çisem Su ACAR 201611002

Contents

1 SOFTWARE DESIGN DESCRIPTION

1.1 Introduction

The Software Design Summary is a manual that will be used to facilitate the development of software by providing descriptions of how the software should be designed. Within the Software Design Summary are narrative and graphical documentation of the software design for the project including use case models, sequence diagrams, collaboration models, object behavior models, and other supporting requirement material.

1.2 Purpose

The purpose of Software Design Definitions is to outline the design views of the project and provide a full description of the system design. Software Design Definitions should describe the components required for the application and the structure of the software, as well as data and interfaces. The SDD should contain the necessary information for the software and framework to be designed to provide an explanation of the details.

1.3 Scope

This summary of the software design is for a full-level framework that will act as a final product for the use of a system that provides full functionality for construction. The framework focuses on this Software Design Summary. The emphasis is focused on creating the documents and changing the documents for this unique Software Design Definition. The method will be used separately and will consist mainly of an exterior of document interaction that abstracts interactions with documents and handling.

1.4 Definitions, Abbreviations, Acronyms

ERP	*Enterprise Resource Planning*
Company	CDK Savunma Company
M	Manager
GM	General manager
US	Unit Supervisor
PL	Production Level
T	Test Level
COC	Certificate of Conformity
AC	Account Creator
RP	Record Product
WH	Warehouse
FQ	First Quality
HR	Human Resources
ACC	Accounting
SHP	Shipment
PR	Production

1.5 References

[1] IEEE Std 1016-2009, IEEE Standard for Information Technology—Systems Design—Software Design Descriptions

[2] Pressman, Roger S., *Software Engineering "A Practitioner's Approac*h", Fifth Edition, McGraw-Hill, 2000.

1.6 Overview

The primary objective of the ERP Application project is to assist the MCC of the Organization to make their job easy. With separate subsections, the Software Design Document is split into 11 sections. The Software Design Document parts are:

1 Introduction
2 Design Considerations
3. Architecture
4. System Interfaces
5. User Interface Design
6. Process Design
7. Database Design

2 Design Considerations

This section covers the main constraints of the Defense ERP Project, its possibilities and dependencies. The general activities and authorities of the users were mentioned and information about the general design of the project was provided.

2.1 Approach

By design, usability, user experience and correct process management are the main issues. Minimalized modern designs and colors are intended for the benefit of users.

2.2 Tools Used

The ERP program is directly drafted with Adobe Photoshop, the material and interface are drafted, customizable, Bootstrap and the hover effects it brings are available for the buttons with integrated Mock-Up and UI / UX components. Graphics and their providers are Illustrator designs integrated as HTML. Single page designs are organized within the framework of ASP.NET architecture with the helpers mentioned above.

2.3 Constraints

The limitations of the ERP system may vary due to the system being prepared for corporate purposes. Since the main issue of the restrictions will be for the correct management of the company's resources, visual-based warehouse control operations and density controls will be made based on user data, and as you can see in the sample interfaces, a decision mechanism will be created in this way that will be reflected in the technicians of the relevant field. Each user is authorized to perform data entry, data update and deletion operations according to their access authorization, in line with the system infrastructure. Admin has the authority to view, modify and delete all these directly remotely. Software restrictions, other than institutional controls, will be made based on the logic of working within the unit. According to the requirements of the institution, the warehouse clerk, test clerk, quality officer (hereinafter referred to as the technical staff) will have the authority to arrange the work in his unit. The human resources department, the accounting officer (hereinafter referred to as the officer) will have the authority to regulate the data in their units and their sub-units. Adminde has the authority to create an extra account. It is not possible to create an external membership for security reasons.

2.4 Assumptions and Dependencies

Each user has privileges in the ERP system with their own units. The system provides data to the decision-making structure in manpower, from person to person or from person to person, and the data provided according to this data and according to the work done is entered as a record within the institution and displayed institutionally.

Technical Staff

Production personnel, test personnel, first control personnel, quality control personnel, shipping personnel, warehouse personnel are gathered under this heading and each user who has access to the system updates the data in their unit.

Officer

People who have access to the system in the human resources employees, accounting employees, management and administrative employees group, see the performance and instant activity status in organizing the data in their field and in graphics and operation.

Admin

Admin is the only person who is responsible for performing user account transactions and has direct access to all data in the system. It is the user who sees all the performance, all the statistical data and the whole operation within the institution.

3 Architecture

3.1 Software Architecture

ERP software will have a database-centric and continuously changeable, updatable and viewable software architecture. Model - View - Controller structure of ASP.NET language and Razor structure basics directly offered by the language can be used in our project. Management of the software architecture to devices and access accounts will provide different access possibilities for basic users and update them in a common database. In this way, the process and ERP structure will be facilitated. In Figure 1, there is a software architecture for ERP.

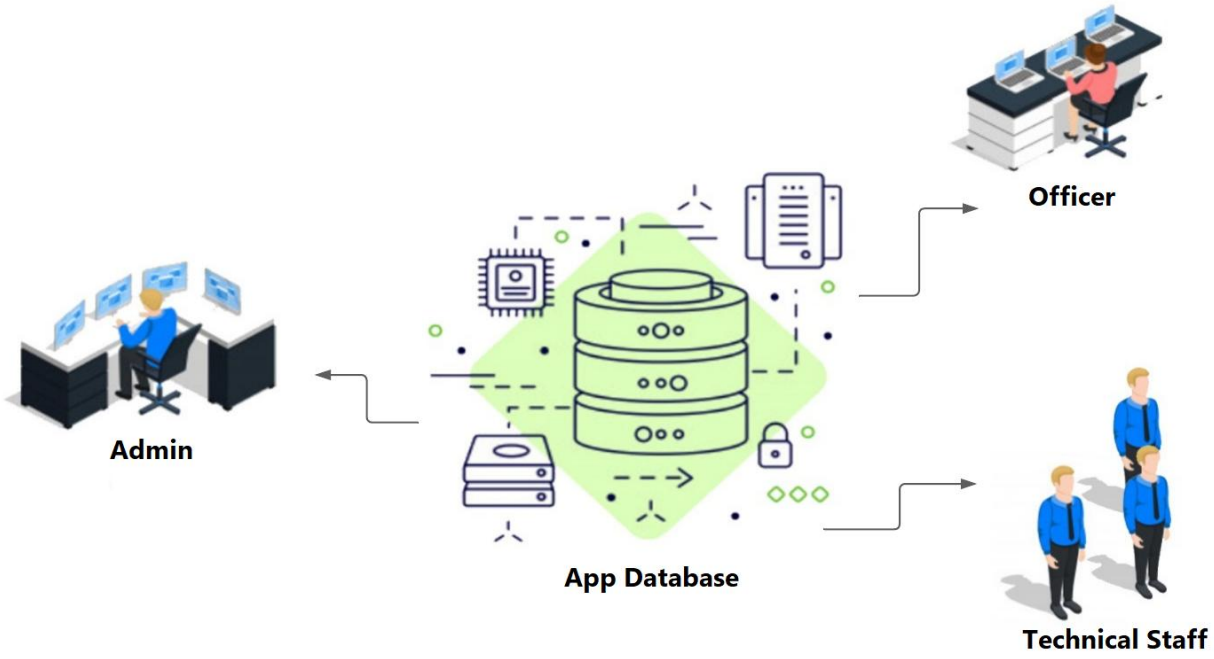


Figure 1: Software Architecture for ERP

3.2 Hardware Architecture

The system will be hosted on a server belonging to the institution for data security, which is considered important by the sector, and will be included in a Windows-supported hosting provider. Failure conditions will be calculated and manual and automatic backups will be made regularly, and it will be suitable for speed and active use. In Figure 2, there is a hardware architecture for ERP.

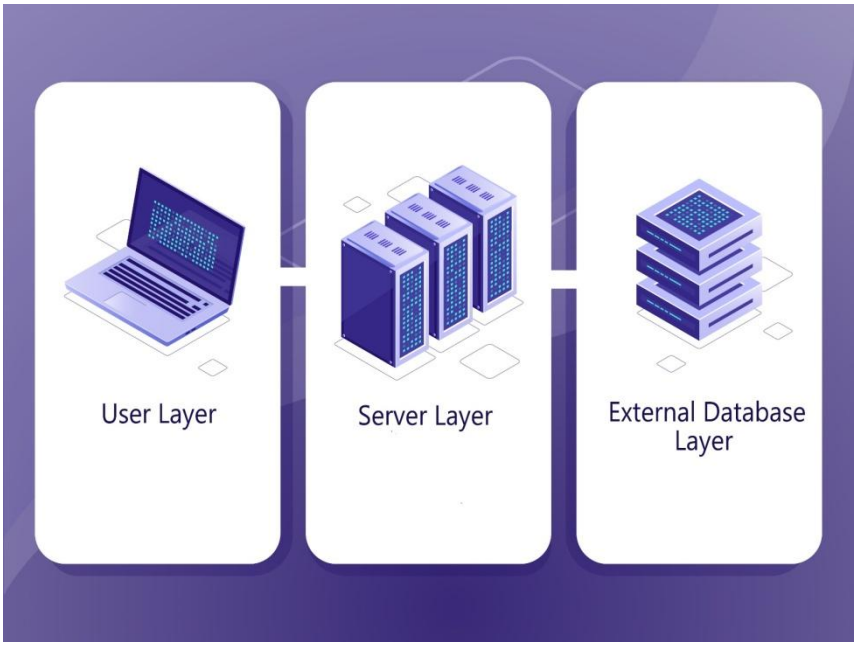


Figure 2: Hardware Architecture for ERP

4 System Interfaces

Server-Side

The server has the XTreme SSD package, 6C / 12T - E5-2620 v3 Core, 32 GB DDR4 (Max 768GB) RAM, 2 x 240 GB SSD Disk, RAID 1 - 5 - 10.

Client-Side

Devices that have an internet browser connection that meets the requirements of Google Firebase on the client side and can run JavaScript above HTML 3.0 are sufficient to use the system actively.

4.1 External System Interfaces

The external system interface will not be used for the ERP system, but there will be an unincorporated page path to be added on demand.

5. User Interface Design

The Interface perspective provides the means for information designers, programmers, and testers to know how to use the resources supplied by a design topic correctly. The descriptions of external and internal interfaces not given in the SRS are included in this description. This point of view consists of a collection of screens' interface requirements.

5.1 Navigation

A. Admin Pages
- i. Create New Account
  - 1.Success Message
  - 2.Failure Message
- ii. Delete Account
  - 1.Success Message
  - 2.Failure Message
- iii. Update Account
  - 1.Success Message
  - 2.Failure Message

B. Login Page
- a. Home Page
- b. Technical Page
  - b.1. FirstQualifier Page
    - i.List Technical Page
    - ii.Add FirstQualifier Page
      - 1.Success Message
      - 2.Failure Message
    - iii.Update FirstQualifier Page
      - 1.Success Message
      - 2.Failure Message
    - iv. Delete FirstQualifier Page
      - 1.Success Message
      - 2. Failure Message
  - b.2. Warehouseman Page
    - i.List Technical Page
    - ii.Add Warehouseman Page
      - 1.Success Message
      - 2.Failure Message
    - iii.Update Warehouseman Page
      - 1.Success Message
      - 2.Failure Message
    - iv. Delete Warehouseman Page
      - 1.Success Message
      - 2. Failure Message

b.3. ProductionPlanOfficer,Tester,Qualifier Page
i.List Technical Page
ii.Add ProductionPlanOfficer,Tester,Qualifier Page
1.Success Message
2.Failure Message
iii.Update ProductionPlanOfficer,Tester,Qualifier Page
1.Success Message
2.Failure Message
iv. Delete ProductionPlanOfficer,Tester,Qualifier Page
1.Success Message
2. Failure Message
b.4. Shipment Page
i.List Technical Page
ii.Add Shipment Page
1.Success Message
2.Failure Message
iii.Update Shipment Page
1.Success Message
2.Failure Message
iv. Delete Shipment Page
1.Success Message
2. Failure Message
c. Officer Page
c.1. HumanResource Page
i.List Technical Page and HumanResource Page
ii.Add HumanResource Page
1.Success Message
2.Failure Message
iii.Update HumanResource Page
1.Success Message
2.Failure Message
iv. Delete HumanResource Page
1.Success Message
2. Failure Message
c.2. Accounting Page
i.List Technical Page and Accounting Page
ii.Add Accounting Page
1.Success Message
2.Failure Message
iii.Update Accounting Page
1.Success Message
2.Failure Message
iv. Delete Accounting Page
1.Success Message
2. Failure Message

5.1.A Admin Page

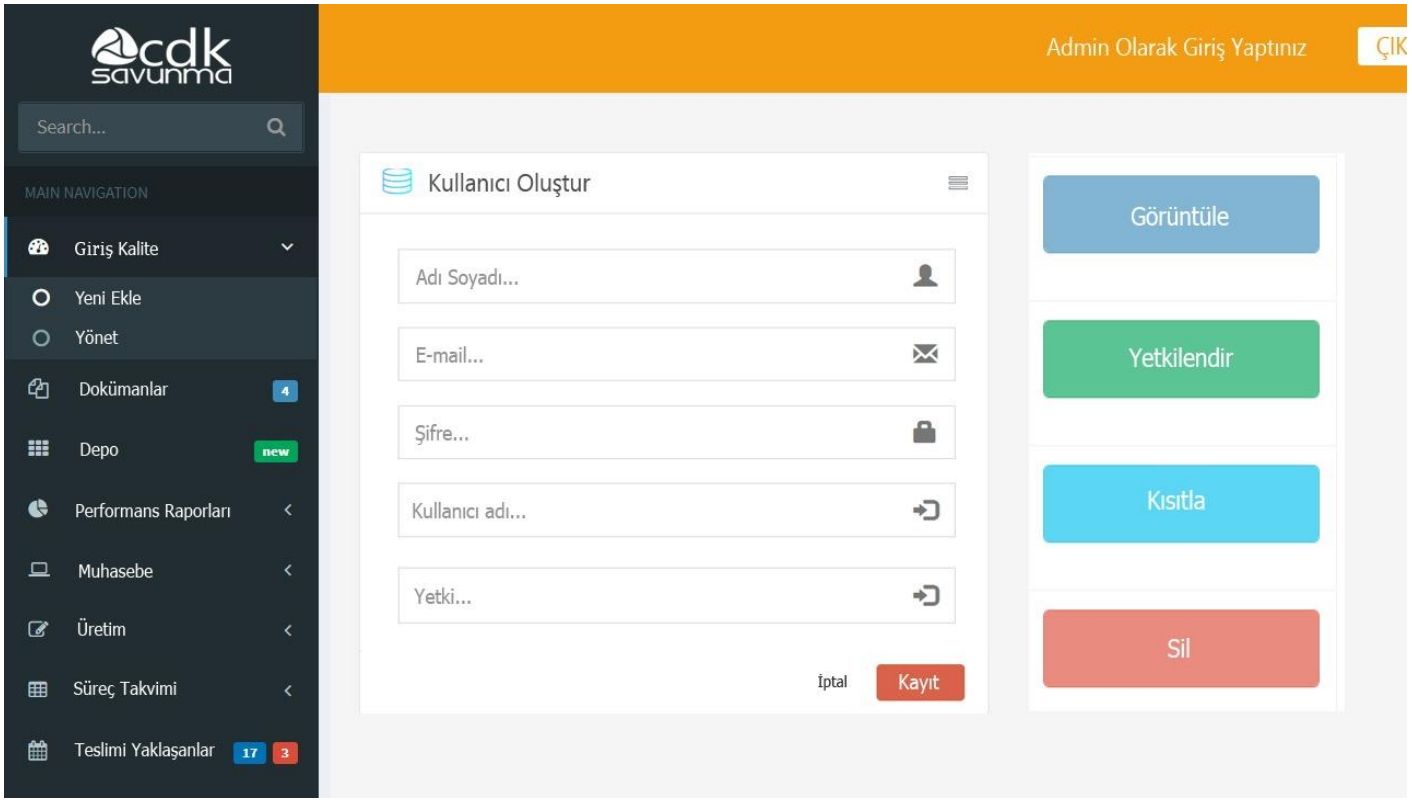


Figure 3: Admin Page

Figure 3 shows the admin page where users can log in by the administrator authorized to issue the accounts they need to log in. In addition to creating an account, this page can be performed for editing and deleting an account.

5.1.B Login Page

Button	Click Action
Login	If the entered information is correct, it logs into the system, if the entered information is missing or incorrect, it gives an error message.
Remember Me	The user can use the forget me button in order not to enter user name and password information each time they log into the system. When the forget me button is activated, when the user enters the system, the user name and password are automatically filled in and they can log in.

Figure 4. Login Page of ERP Application

Figure 4 shows the login page for the accounts created by the Admin. It is the login page where the employees enter their username and password.

5.1.B.a – Home Page

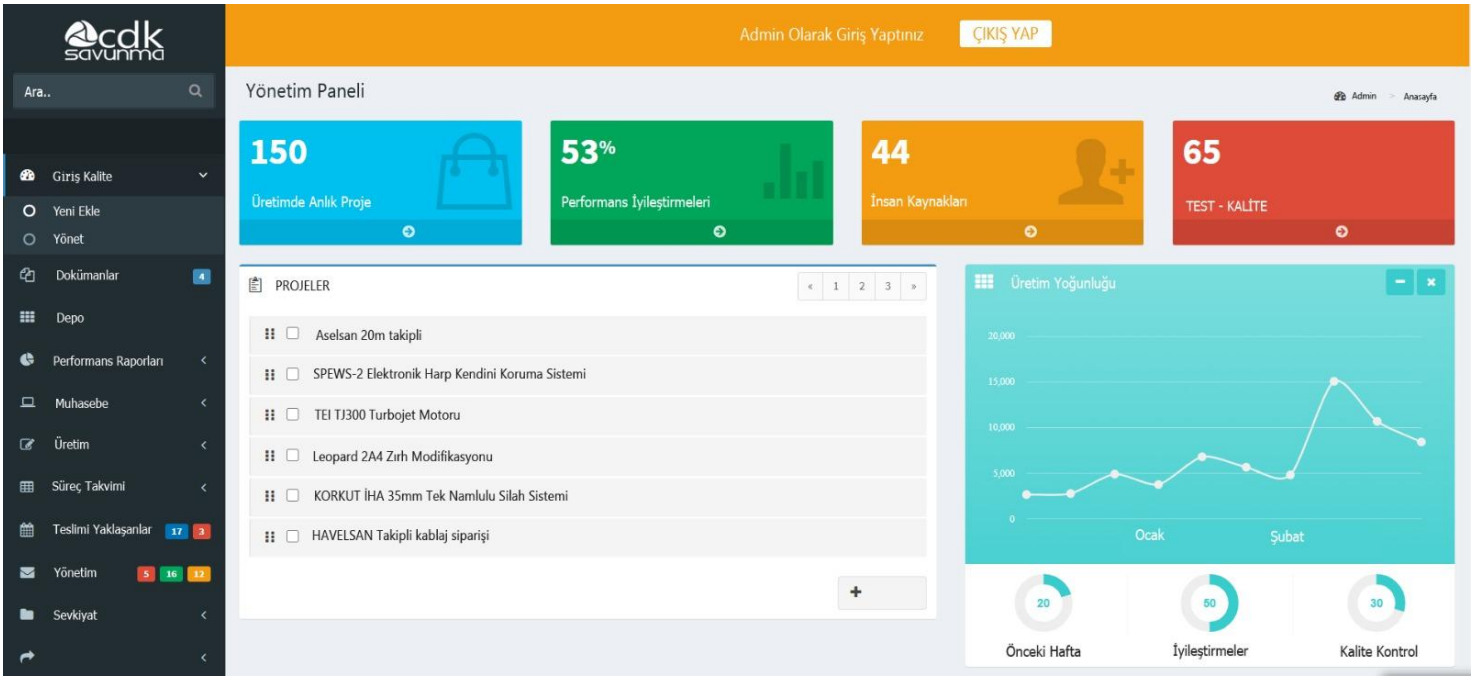


Figure 5: Home Page

Figure 5 shows the home page for each user who can log in.

5.1.B.b Technical Page

5.1.B.b.1 FirstQualifier Page

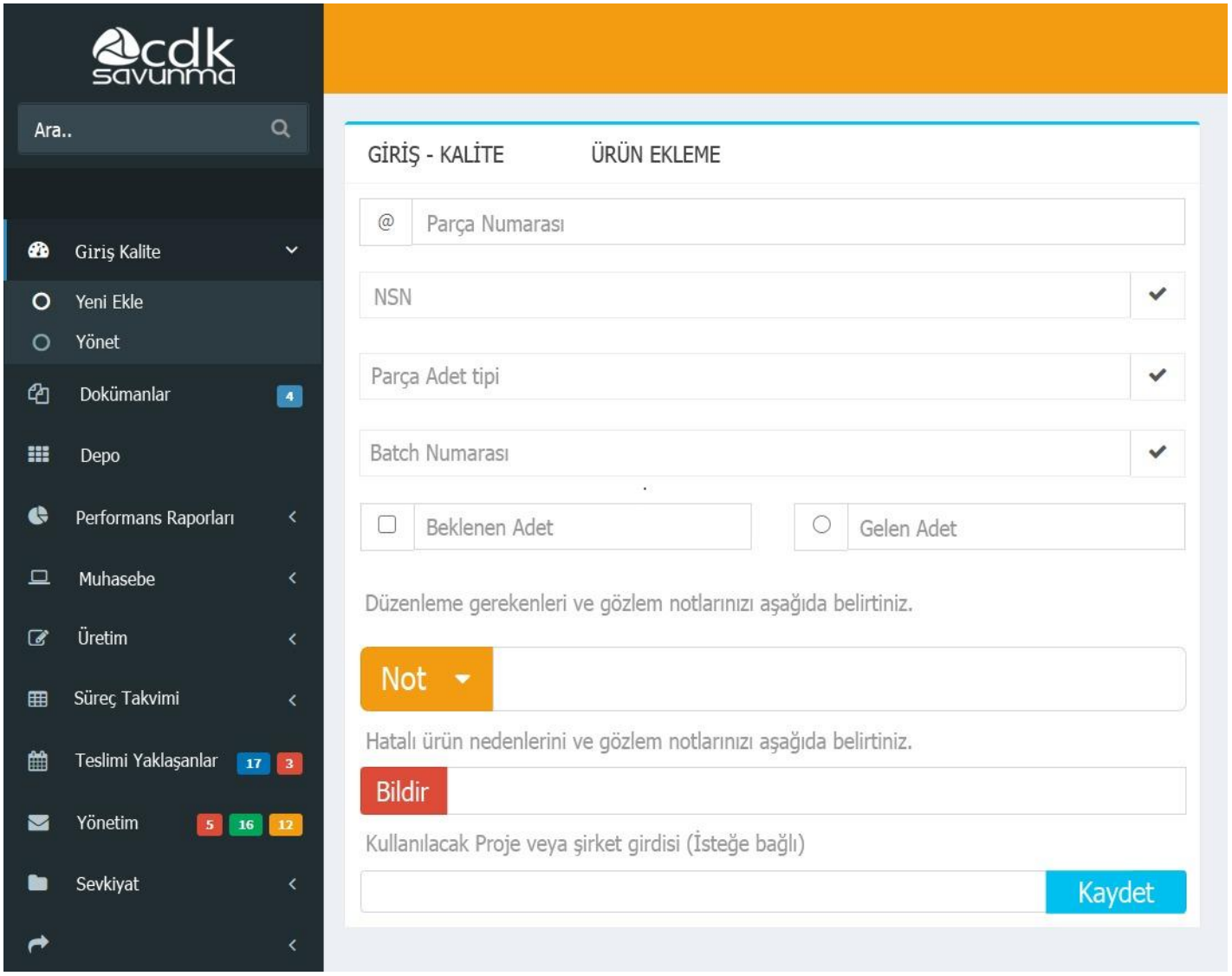


Figure 6 : First Qualifier Page

Figure 6 shows the registration page of the products sent to the company in the ERP system. Only those with first quality authorization are allowed to access this page.

5.1.B.b.2 Warehouseman Page

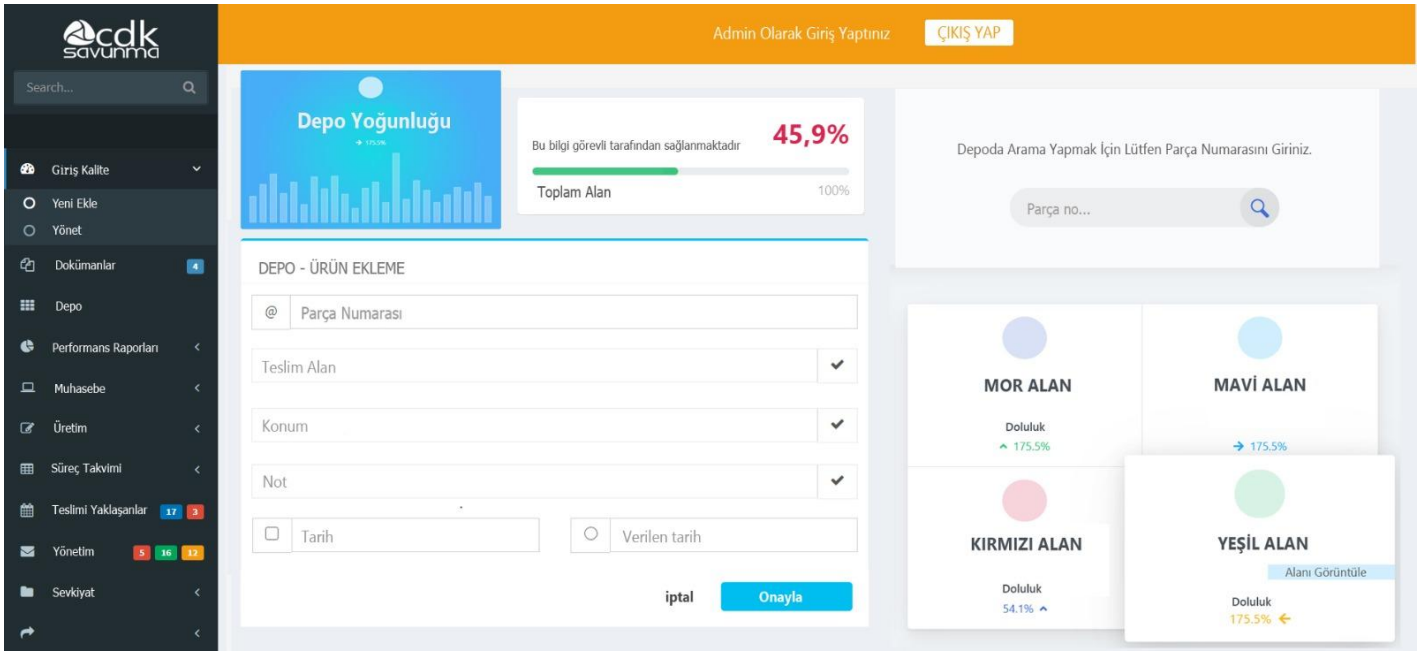


Figure 7 : Warehouseman page

In Figure 7, the products entered from the first quality page are added to the warehouse page on this page. Detailed information for the warehouse page of the products is entered on this page. Only persons authorized to warehouseman can access this page.

5.1.B.b.3 ProductionPlanOfficer, Tester, Qualifier Page

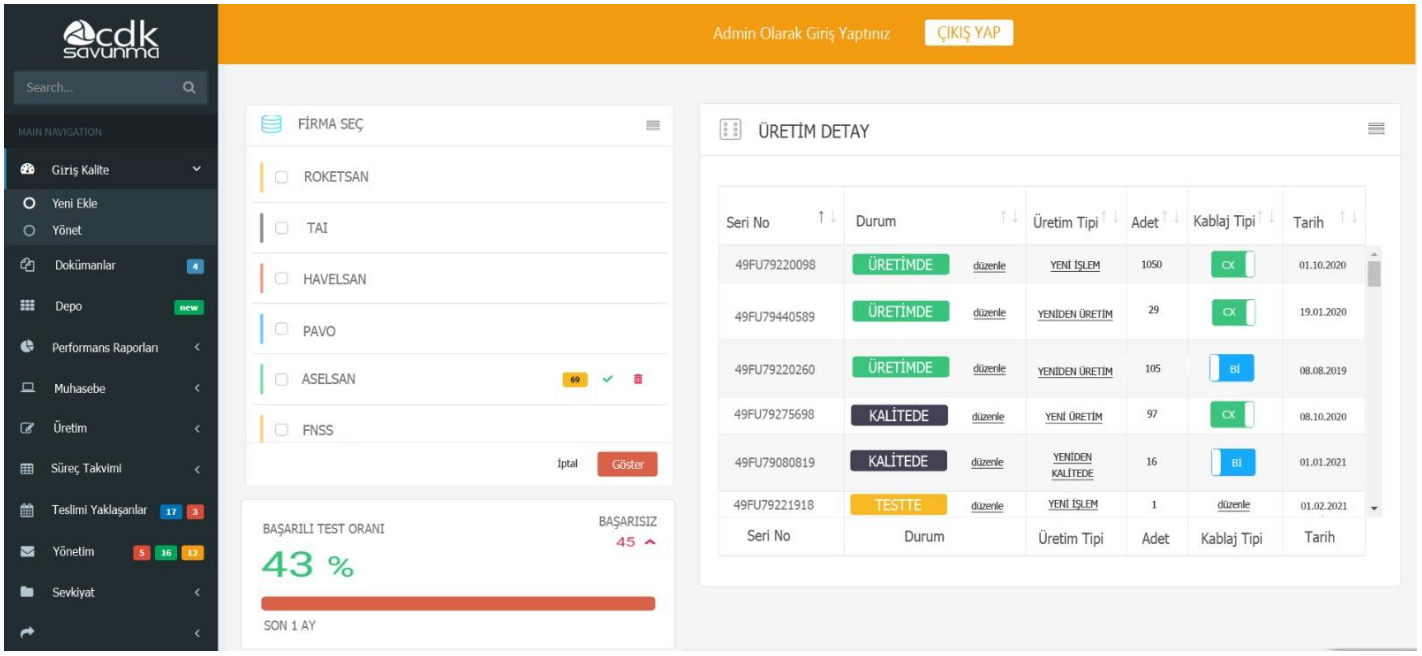


Figure 8: ProductionPlanOfficer, Tester, Qualifier Page

In Figure 8, a page to show the production status of the products is given. On this page, tester and qualifier have the authority to make changes in the "DURUM" section in the page only after processing. ProductionPlanOfficer officials also have the authority to make changes in the rest.

5.1.B.b.4 Shipment Page

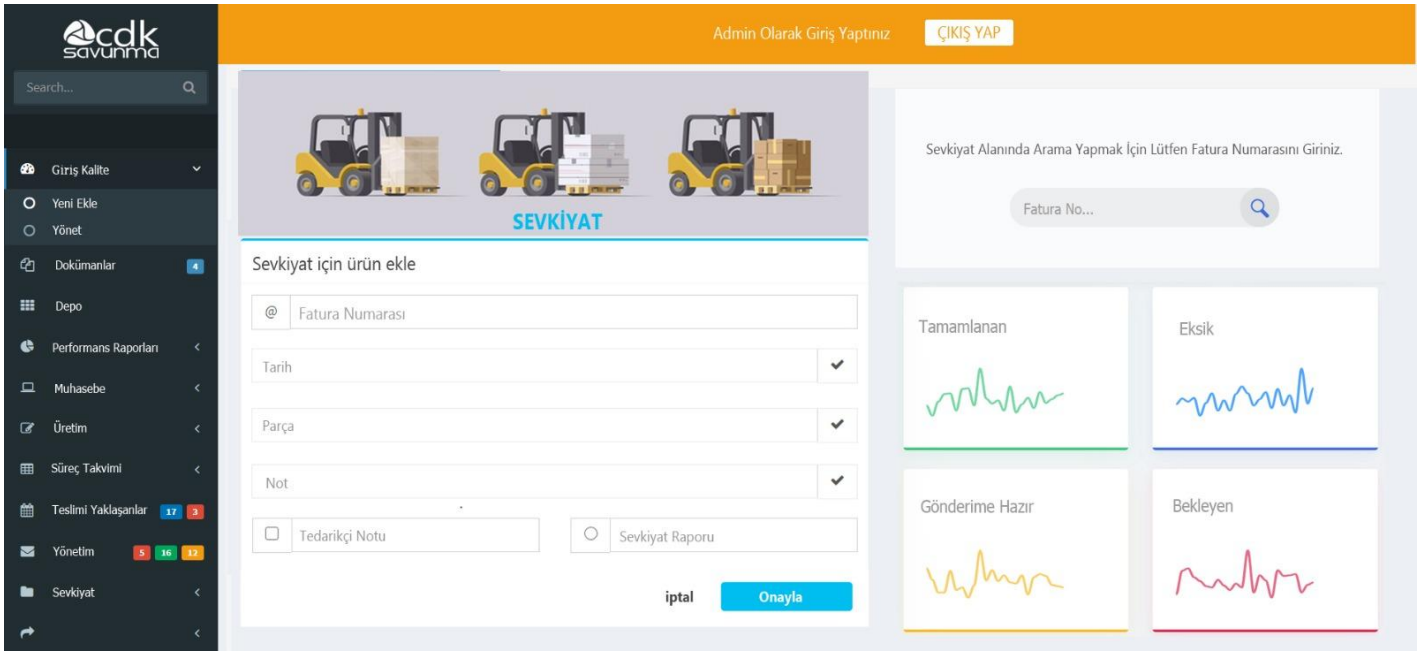


Figure 9 : Shipment Page

The page for the products coming to the shipment stage is shown in Figure 9. Only those with shipment authorization can do this.

5.1.B.c Officer Page

5.1.B.c.1 HumanResource Page

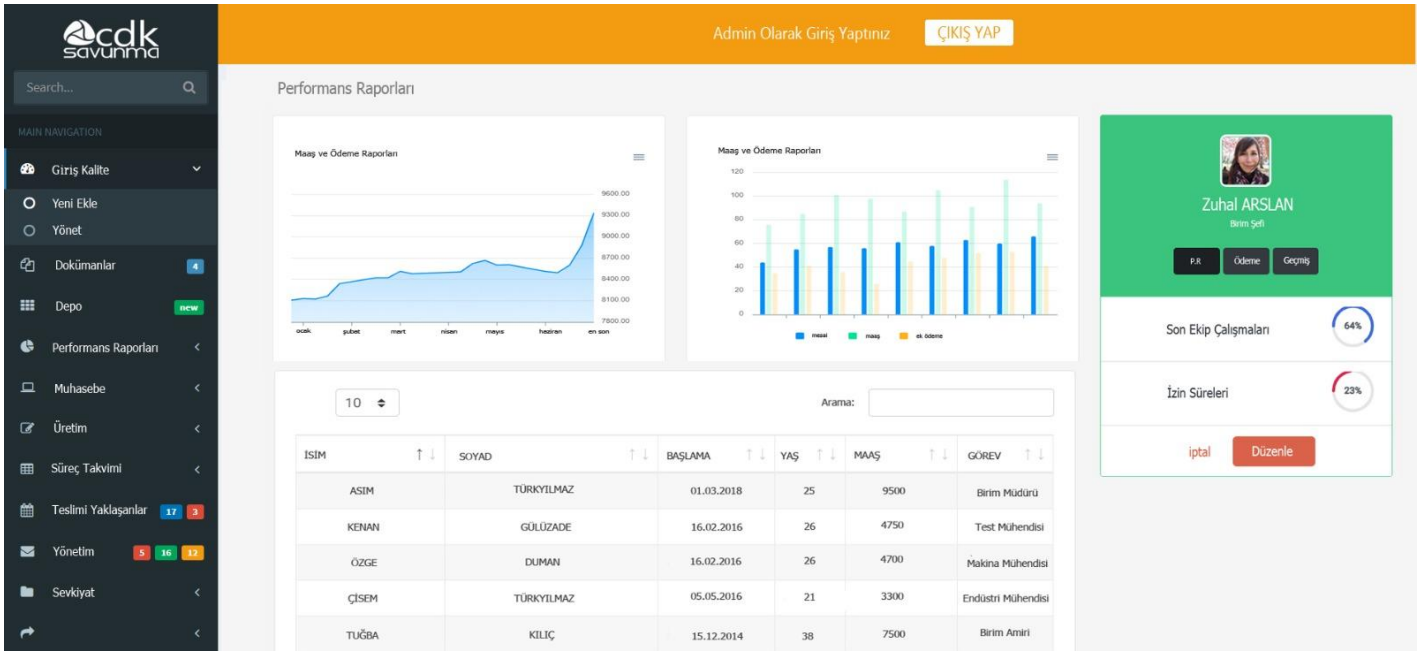


Figure 10:HumanResource Page

Figure 10 shows the page where people with human resources authority can log in and enter information.

5.1.B.c.2 Accounting Page

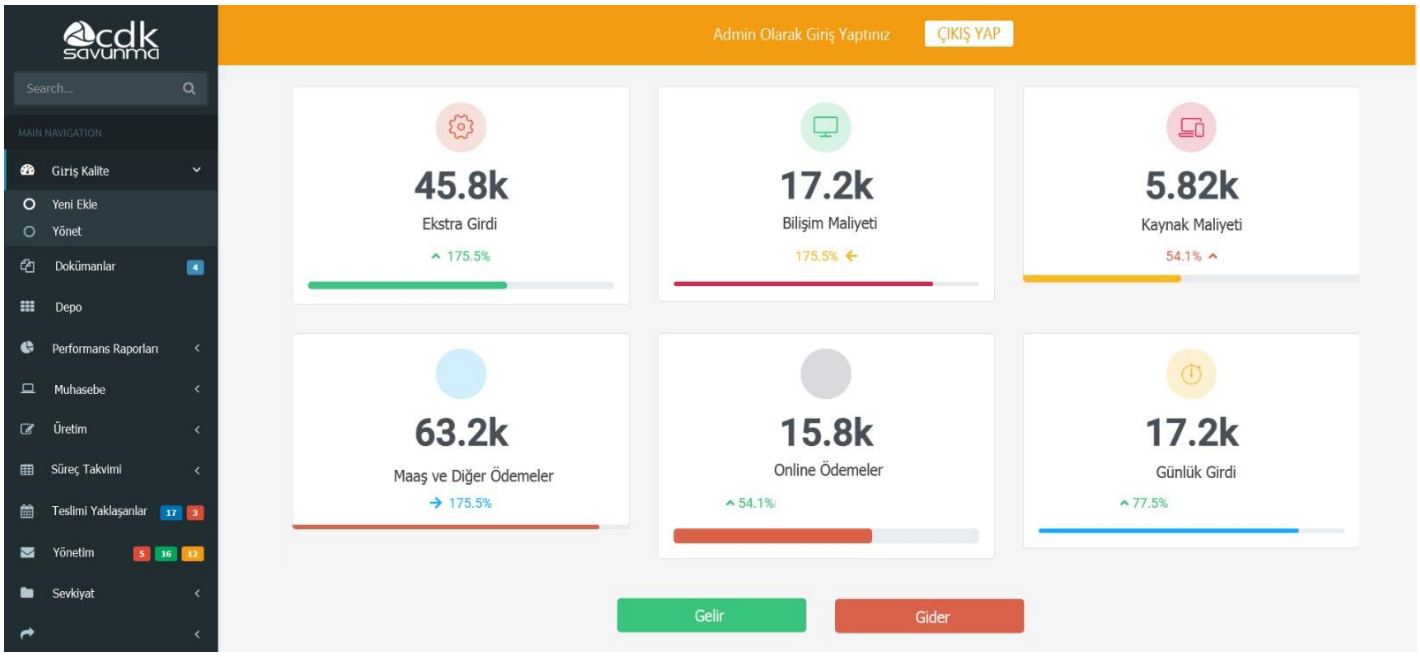
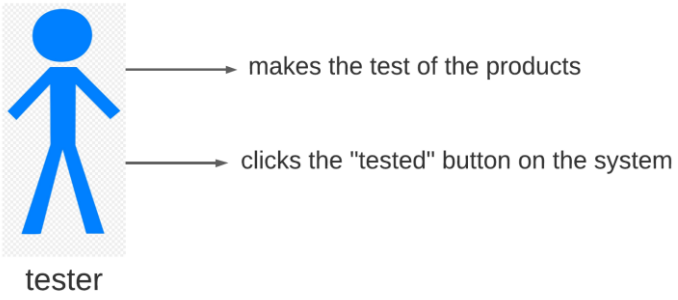


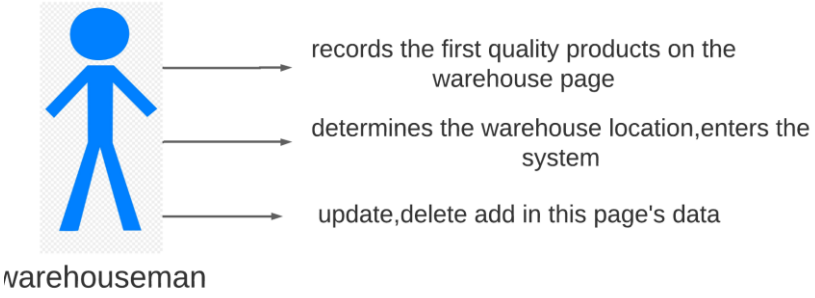
Figure 11: Accounting Page

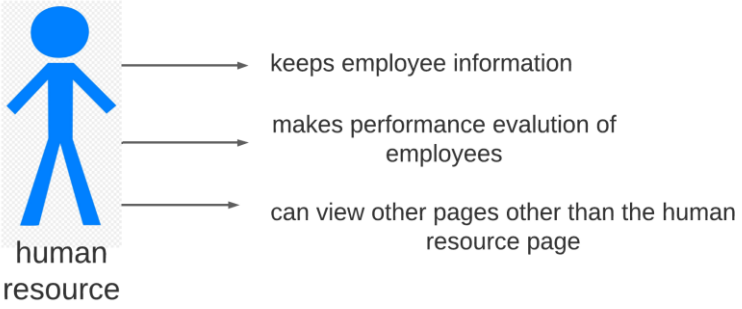
Figure 11 shows the page where people with accounting authority can log in and enter information.

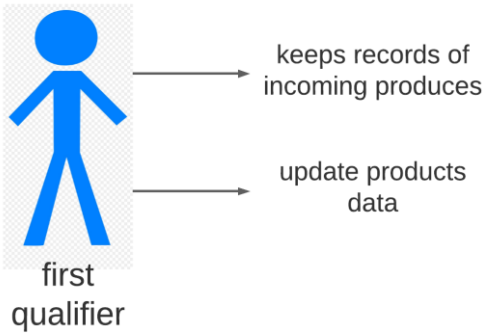
5.2 Use Cases

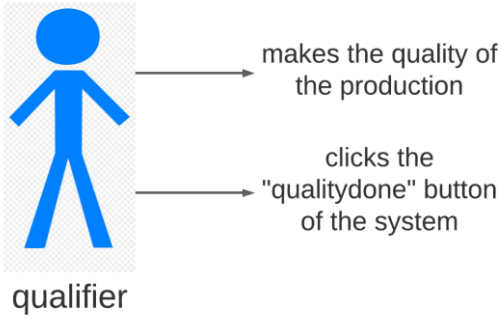
ERP system; It will be used by tester, warehouseman, human resource, first qualifier, qualifier, admin, production planning officer, shipper and accountant. Different attributes are available for each user.

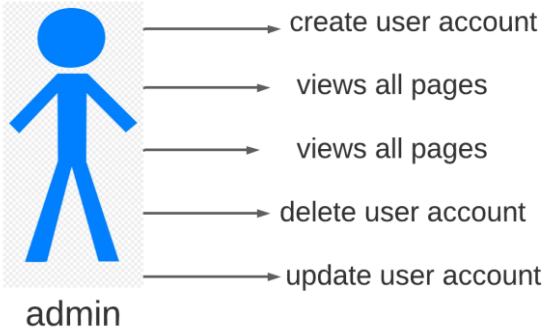


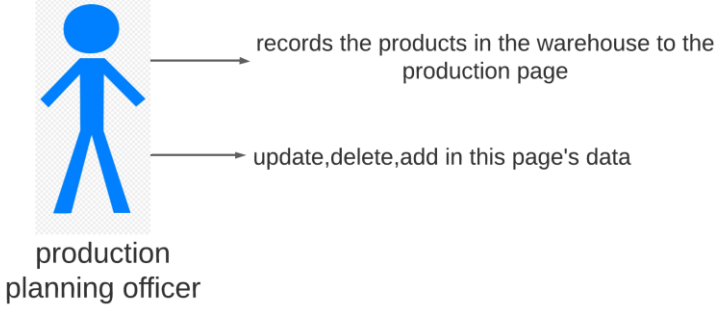


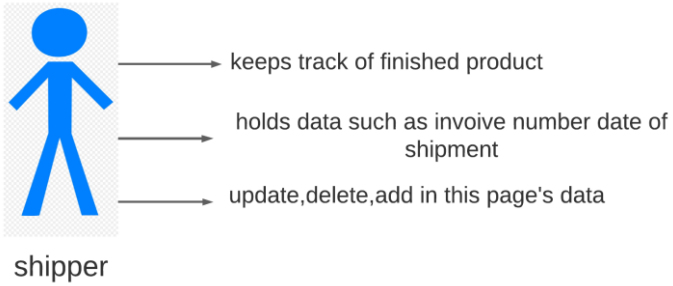



keeps records of incoming produces
update products data
first qualifier


makes the quality of the production
clicks the "qualitydone" button of the system
qualifier


create user account
views all pages
views all pages
delete user account
update user account
admin


records the products in the warehouse to the production page
update,delete,add in this page's data
production planning officer


keeps track of finished product
holds data such as invoive number date of shipment
update,delete,add in this page's data
shipper

6. UML Diagrams

6.1 Sequence Diagram

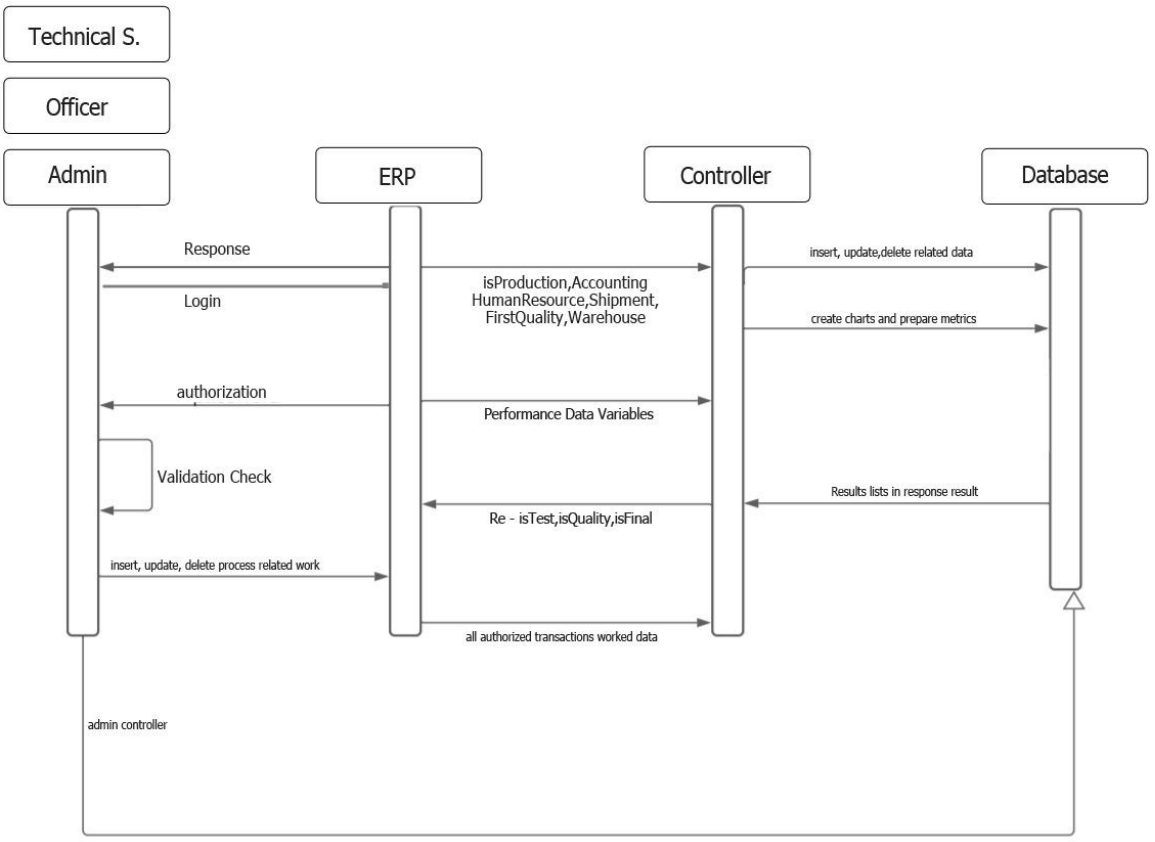


Figure 12: Sequence Diagram for ERP

6.2 Class Diagram

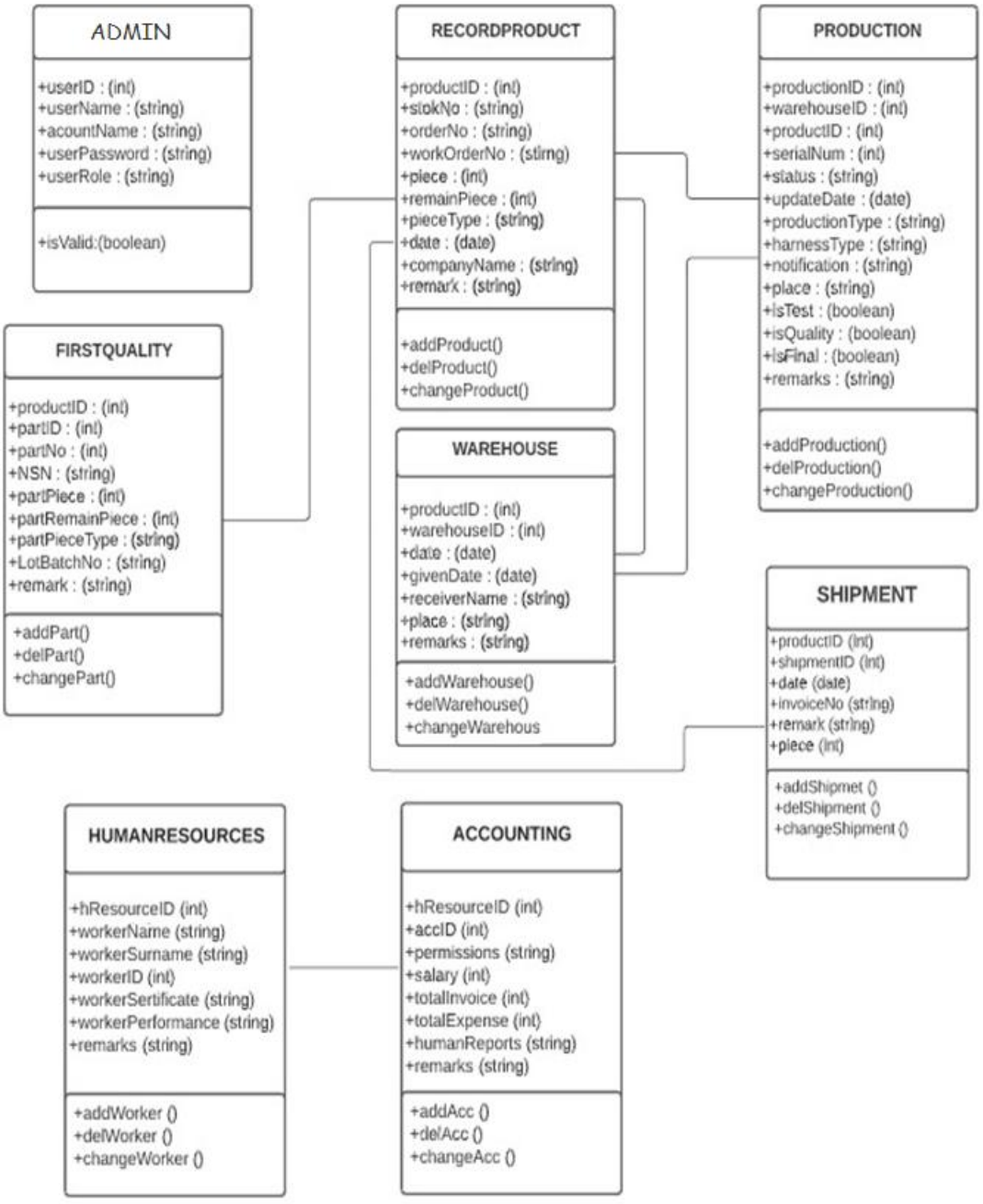


Figure 13 : Class Diagram for ERP

6.3 Activity Diagram

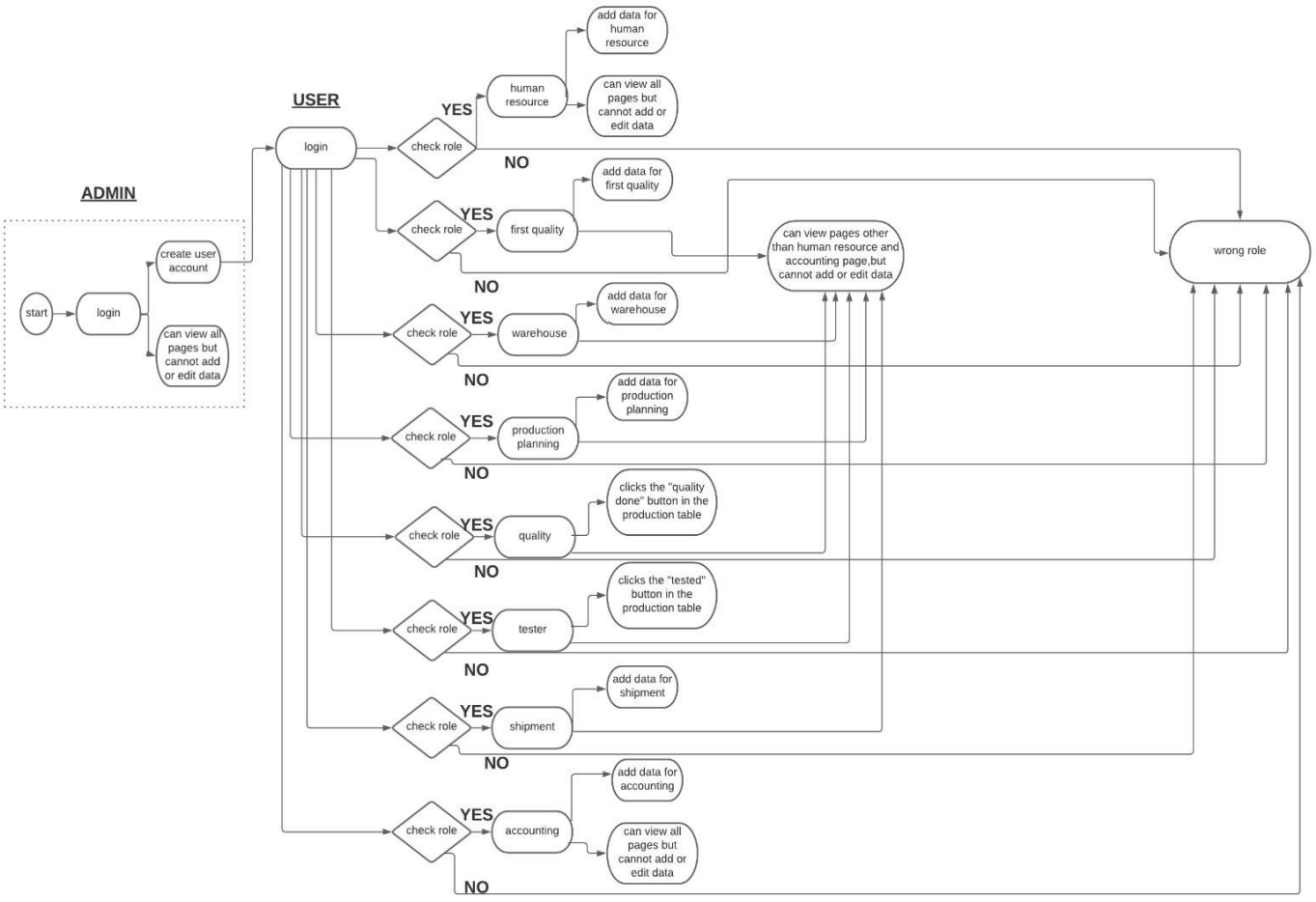


Figure 14 : Activity Diagram for ERP

7 Database Design

7.1Tables

7.1.1 Admin Table

Attribute Name	Attribute Type
userID**(PK)**	int
userName	nvarchar(50)
accountName	nvarchar(50)
userPassword	nvarchar(50)
userRole	nvarchar(50)

7.1.2 Accounting Table

Attribute Name	Attribute Type
accID**(PK)**	int
hResourceID**(FK)**	int
permissions	nvarchar(50)
salary	int
totalInvoice	int
humanReports	nvarchar(50)
remarks	nvarchar(50)

7.1.3 FirstQuality Table

Attribute Name	Attribute Type
partID**(PK)**	int
productID**(FK)**	int
partNo	int
NSN	nvarchar(50)
partPiece	int
partRemainPiece	int
partPieceType	nvarchar(50)
LotBatchNo	nvarchar(50)
remark	nvarchar(50)

7.1.4 HumanResources Table

Attribute Name	Attribute Type
hResourceID**(PK)**	int
workerName	nvarchar(50)
workerSurname	nvarchar(50)
workerID**(FK)**	int
workerSertificate	nvarchar(50)
workPerformance	nvarchar(50)
remarks	nvarchar(50)

7.1.5 Production Table

Attribute Name	Attribute Type
productionID**(PK)**	int
warehouseID**(FK)**	int
productID**(FK)**	int
sarialNum	int
status	nvarchar(50)
updateDate	date
productionType	nvarchar(50)
nofication	nvarchar(50)
place	nvarchar(50)
isTest	bit
isQuality	bit
isFinal	bit
remarks	nvarchar(50)

7.1.6 WareHouse Table

Attribute Name	Attribute Type
warehouseID**(PK)**	int
productID**(FK)**	int
date	date
givenDate	date
receiverName	nvarchar(50)
place	nvarchar(50)
remarks	nvarchar(50)

7.1.7 Shipment Table

Attribute Name	Attribute Type
shipmentID**(PK)**	int
productID**(FK)**	int
date	date
invoiceNo	nvarchar(50)
remark	nvarchar(50)
piece	nvarchar(50)
pieceType	nvarchar(50)

7.1.8 RecordProduct Table

Attribute Name	Attribute Type
productID**(PK)**	int
stokNo	nvarchar(50)
orderNo	nvarchar(50)
workOrderNo	nvarchar(50)
piece	int
remainPiece	int
pieceType	nvarchar(50)
date	date
companyName	nvarchar(50)
remark	nvarchar(50)

7.2 Database Diagram

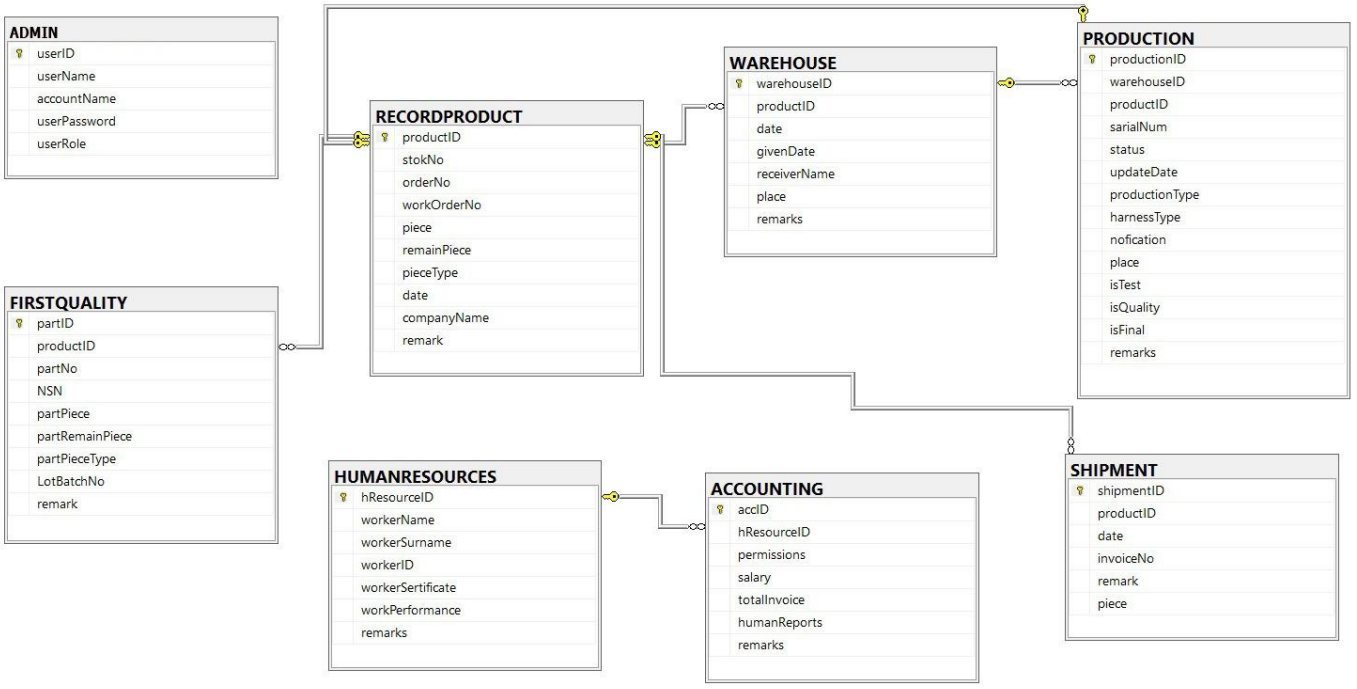


Figure 15:Database for ERP

7.3 ER Diagram

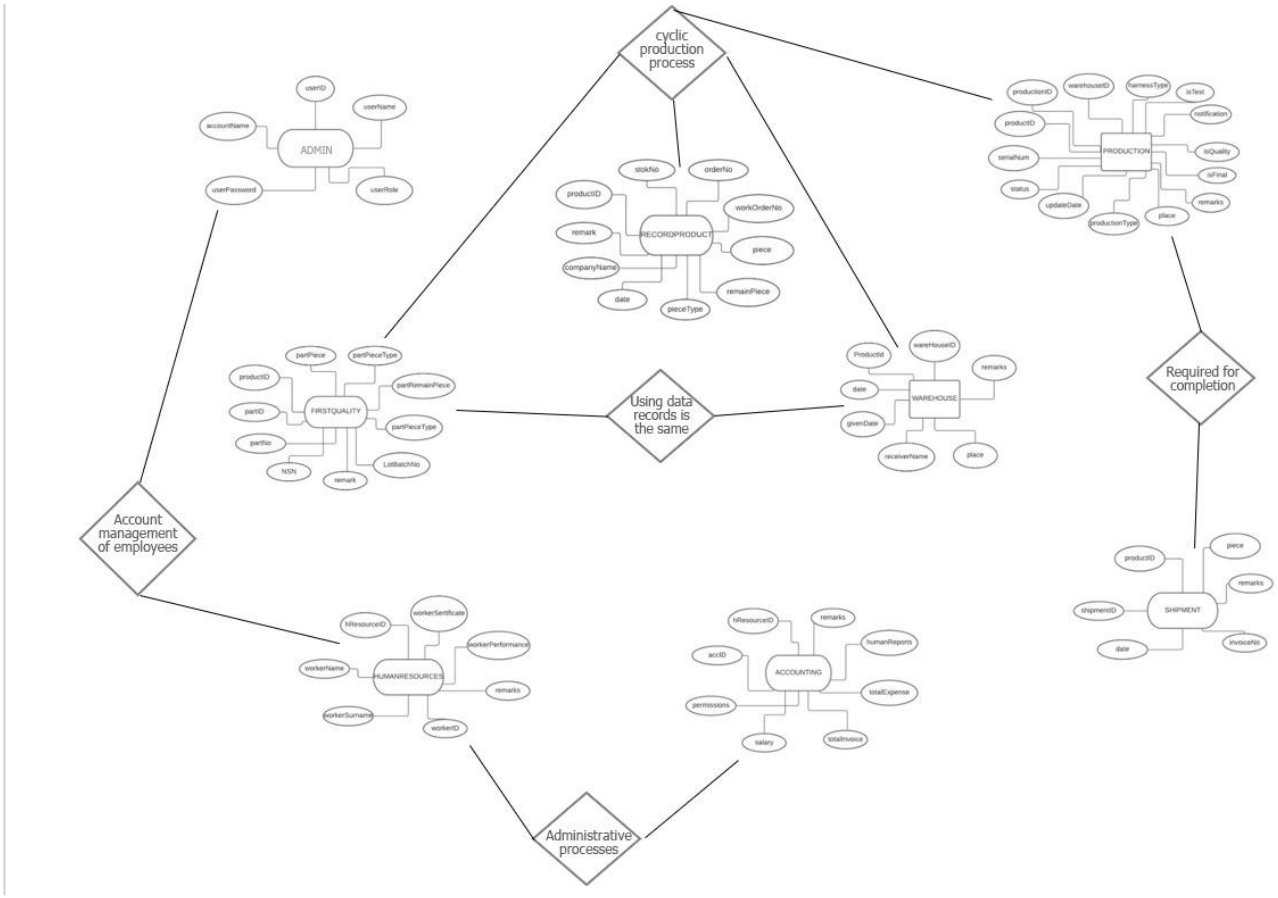


Figure 16 : ER Diagram for ERP