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CST3009 Assignment 1
ERP SYSTEM

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ERP
SYSTEM

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Contents

OBJECTIVES

a) Background:

Nowadays, almost every company integrates part or all of its business aspects together to accomplish more performance and capability. ERP is the process of integrating all the business activities and processes in an organization to achieve diverse gains.

- When data, decision-making, and control are in one central point advances to improved efficiency and the SILO effect is eliminated
- A specific point of data entry helps to minimize data redundancy while saving employee's time in entering data, thereby reducing labour and cost.

b) Purpose:

The main purpose of this ERP system is to integrate measures in a typical business cycle for example when a purchase is made by a customer, it is translated to a sales order. The warehouse is checked for enough availability of the needed product. On fulfilment of the inquiry, the transaction will either be successful or unsuccessful. Successful transaction will conclude in the printing of receipt and fulfilment process. Furthermore a successful purchase order will conclude in a successful procurement process.

c) Significance:

The significance of this ERP system is that:

1. There is a common data source
2. There is reduced data redundancy and data duplicative entry
3. Reduce time spent and make business processes accessible
4. Make transfer of data from one department to another accessible

Design Requirements

The system was make using Java EE using elements of Java HTML CSS and XAMPP for the database

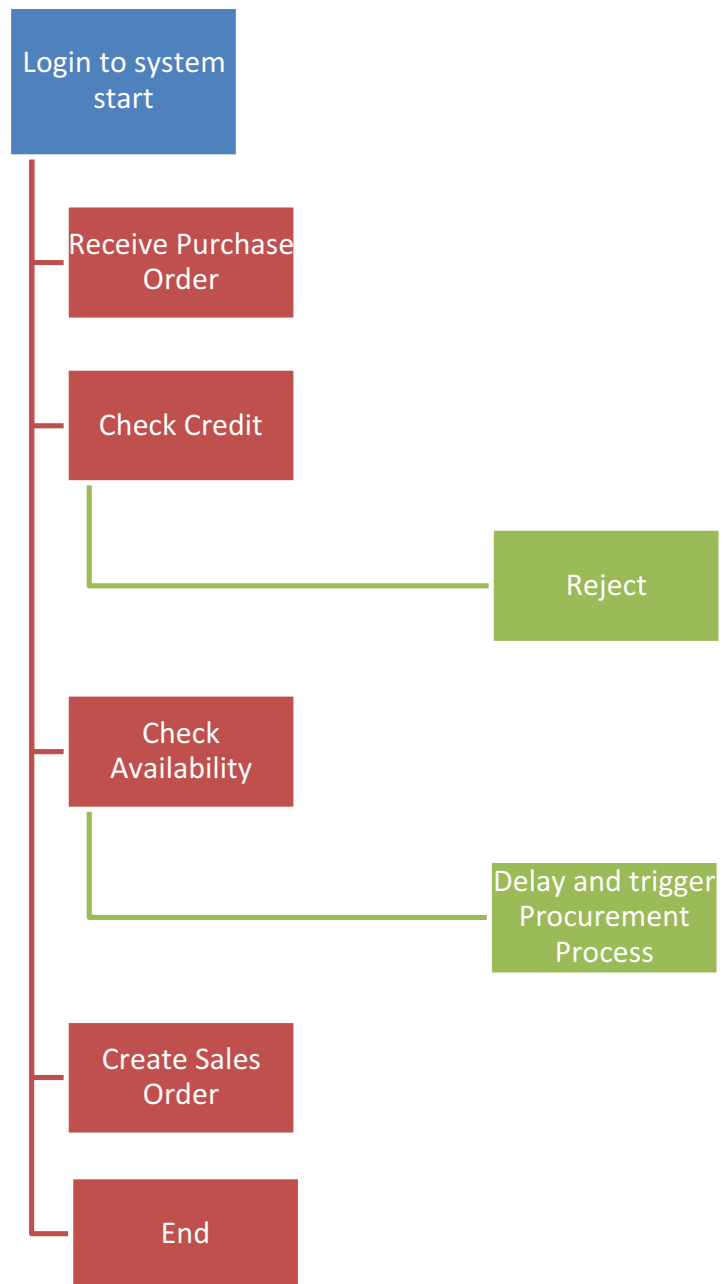# OVERALL DESIGN

Programming Flowchart

The Program begins from the Login Page and after entering details which are the EMPLOYEE NAME, EMLOYEE ID, DEPARTMENT ID AND PASSWORD, it redirects to the users specific department page.

LOGIN

WAREHOUSE
MANAGEMENT PAGE

ACCOUNTING PAGE   SALESMAN PAGE   PROCUREMENT PAGE
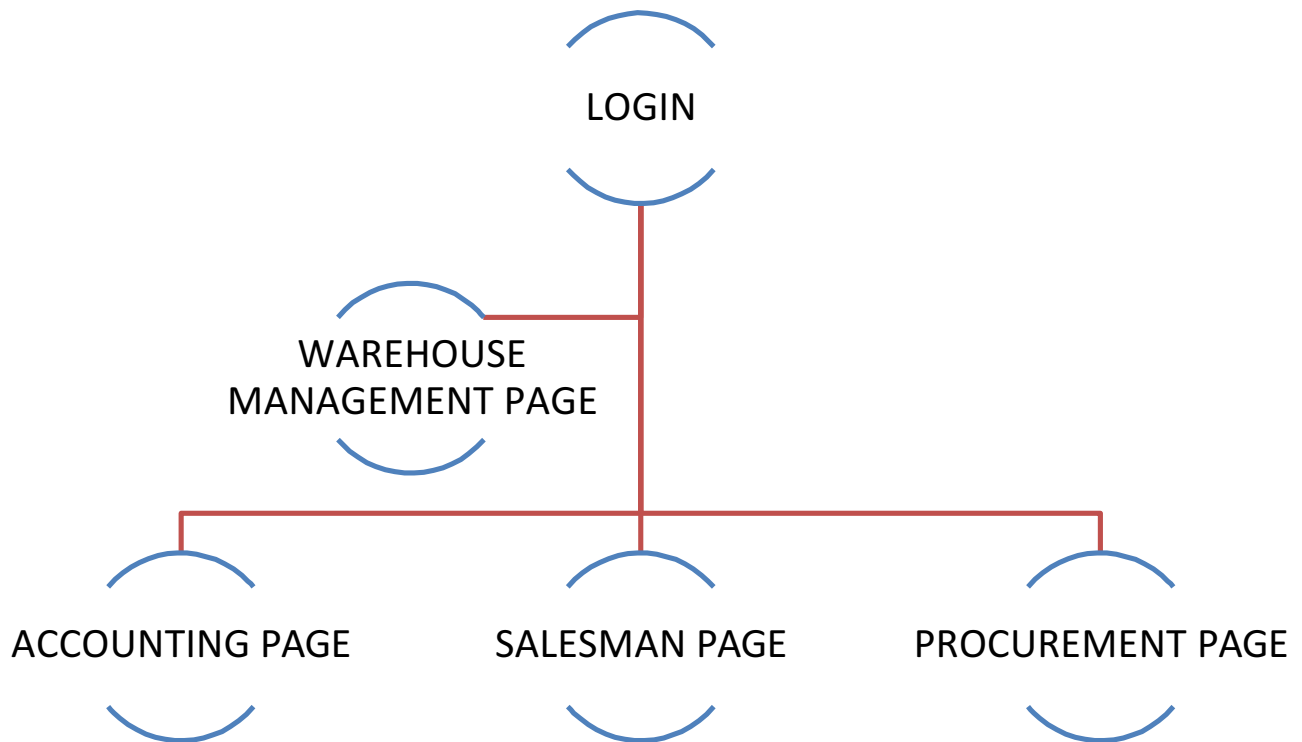
Sales Man Page Flowchart

The Ware House Management Page Flow Chart
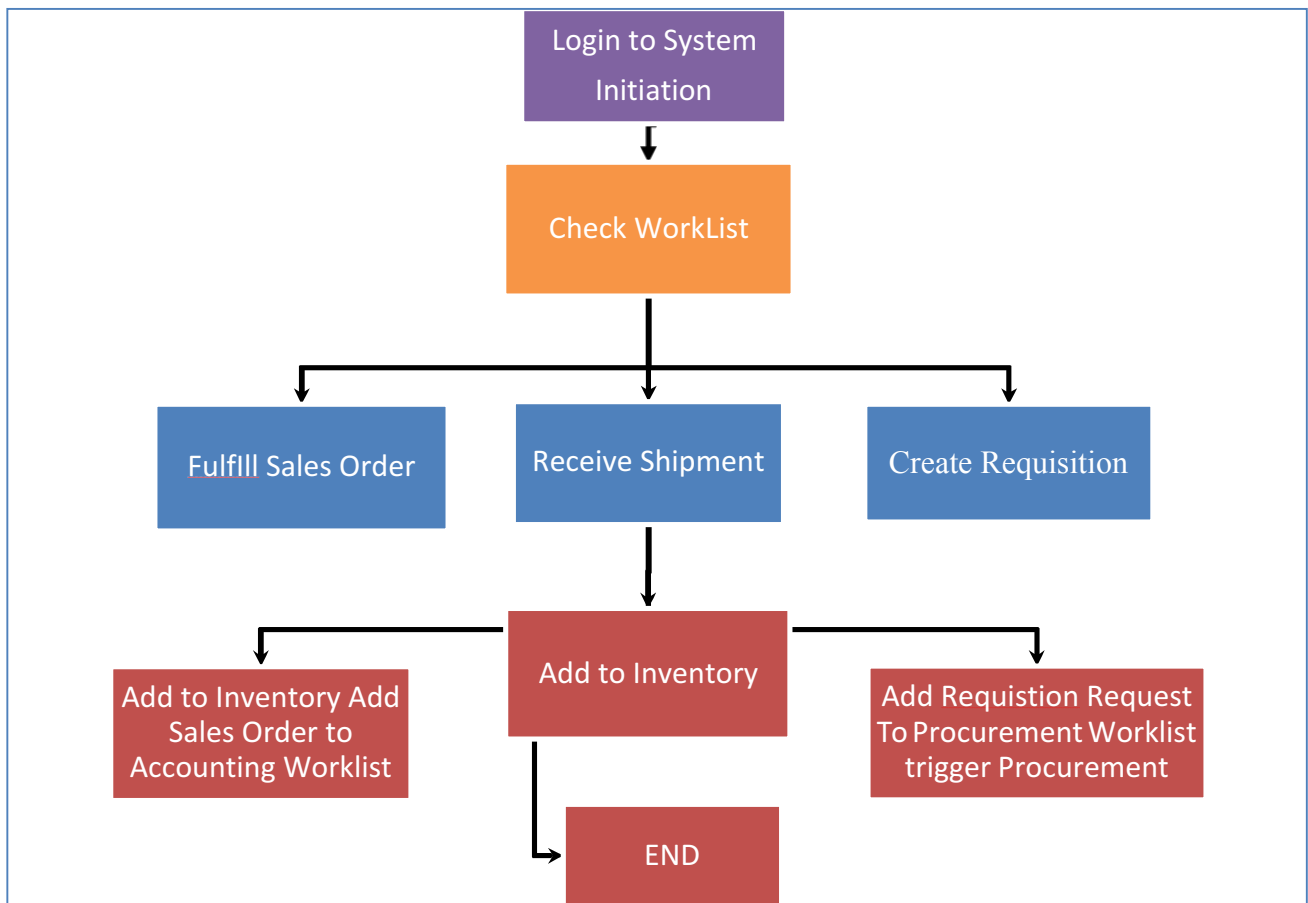
The Procurement Page flowchart

| Login to System Initiation | → | Check WorkList | → | Create Purchase Order from Requistion | → | Send Purchase Order to Vendor | → | End |

Accounting Page Flowchart showing basic processes of the pages
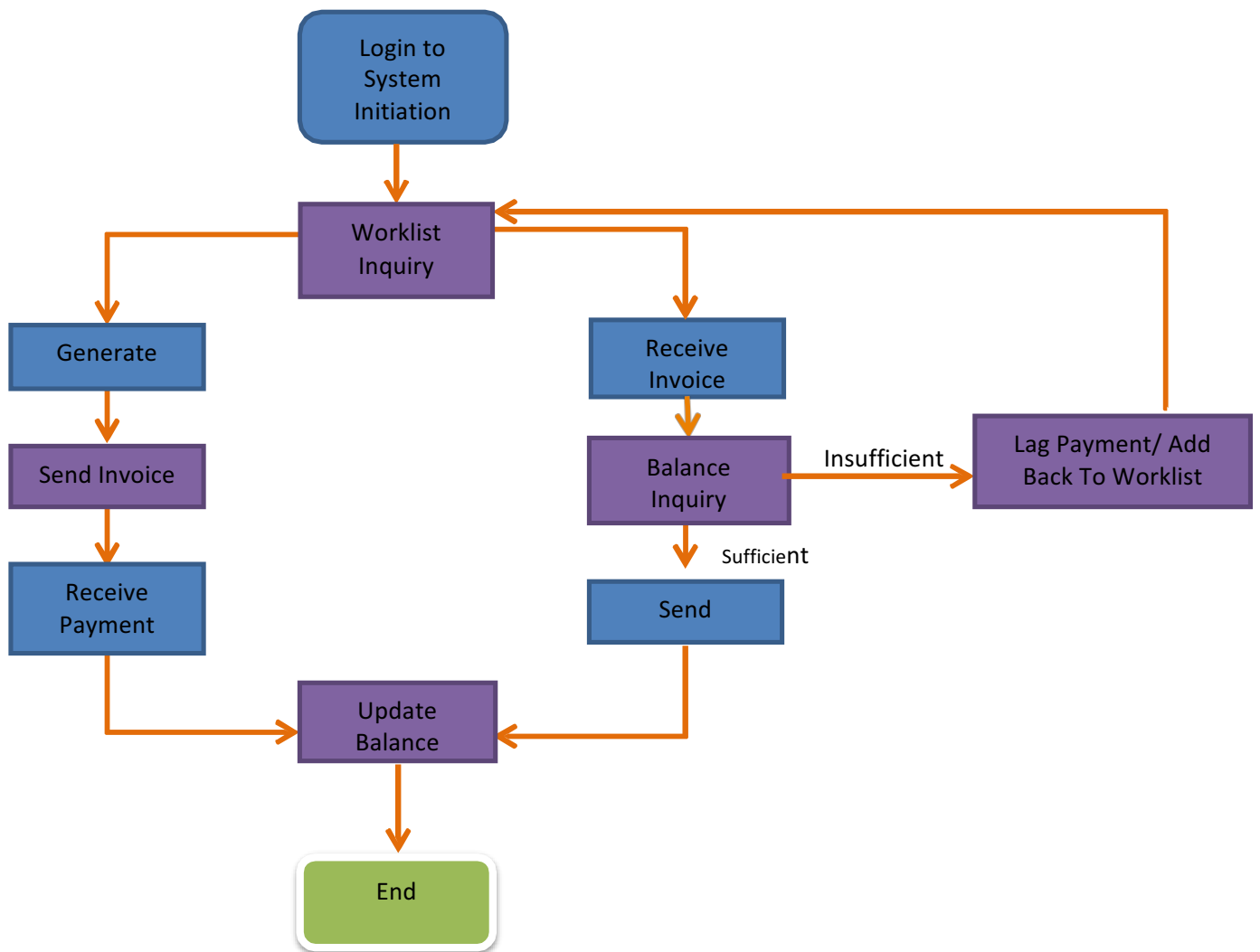
Data Base Design

BankAccount
- id
- Account_Number
- Account_Name
- Balance

PendingPayments
- primary_key
- Salesorderno
- customerid

OutpendingPayments
- primary_key
- Salesorderno
- customerid

WMworklist
- primary_key
- Salesorderno
- customerid

Sales_Order_Check
- Sales_Order_ID
- Customer_ID
- Date
- numberof Item
- id

Purchase_Orders
- id
- purchase_Order ID
- material id
- quantity

Sales_Order
- id
- SalesOrderID
- material id
- quantity

ProcurementWorklist
- primary_key
- purchaseorderno
- customerid

Received WMworklist
- primary_key
- purchaseorderno
- customerid

Purchase_Order_Check
- Purchase_Order ID
- Customer_ID
- Date
- numberofItem
- id

Inventory
- Material_ID
- MaterialName
- Unit_price
- InstockNo
- Date-Added
- Date_Uploaded
- unitcost

AccountingWorklist
- primary_key
- Salesorderno
- customerid

Vendors
- Vendor_ID
- vendorName
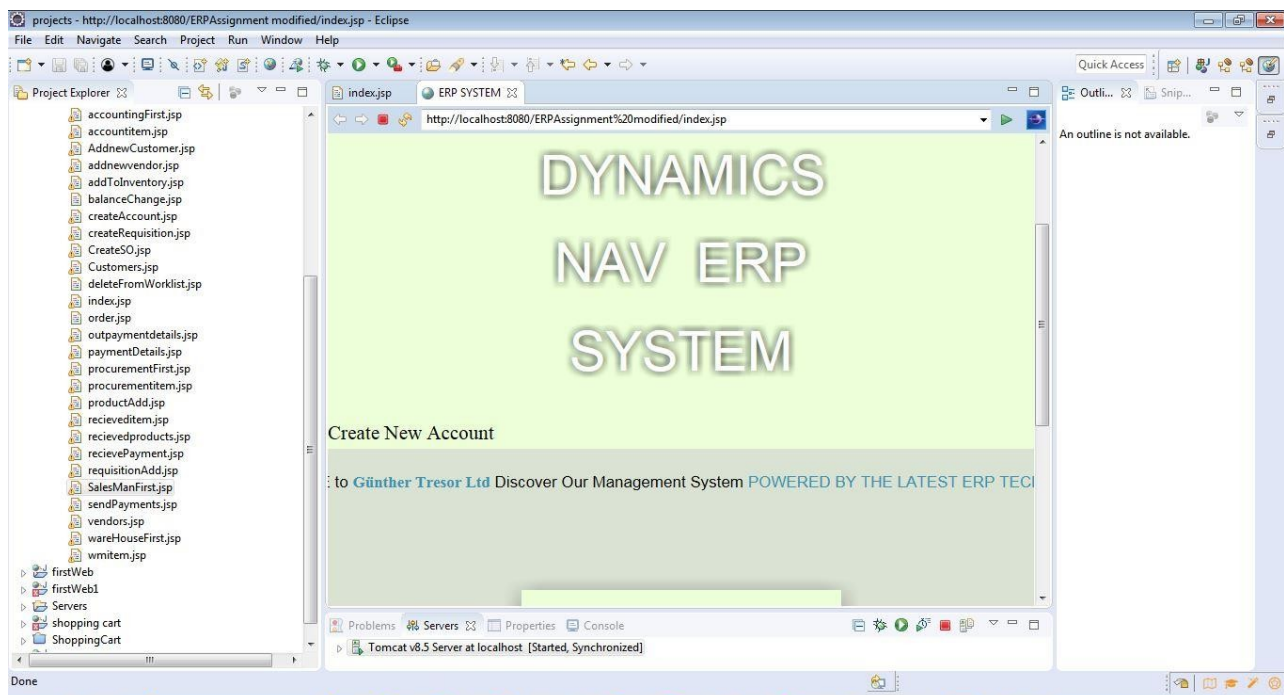- vendor address
- Phone
- Email

Customer
- customer_ID
- CustomerName
- Customer address
- Phone
- Email

Employees
- employee_ID
- employee Name
- Password
- Department

FUNCTION DESIGN

The program starts with a login page with a form that runs a servlet when submitted that checks name, employee id and password is correct
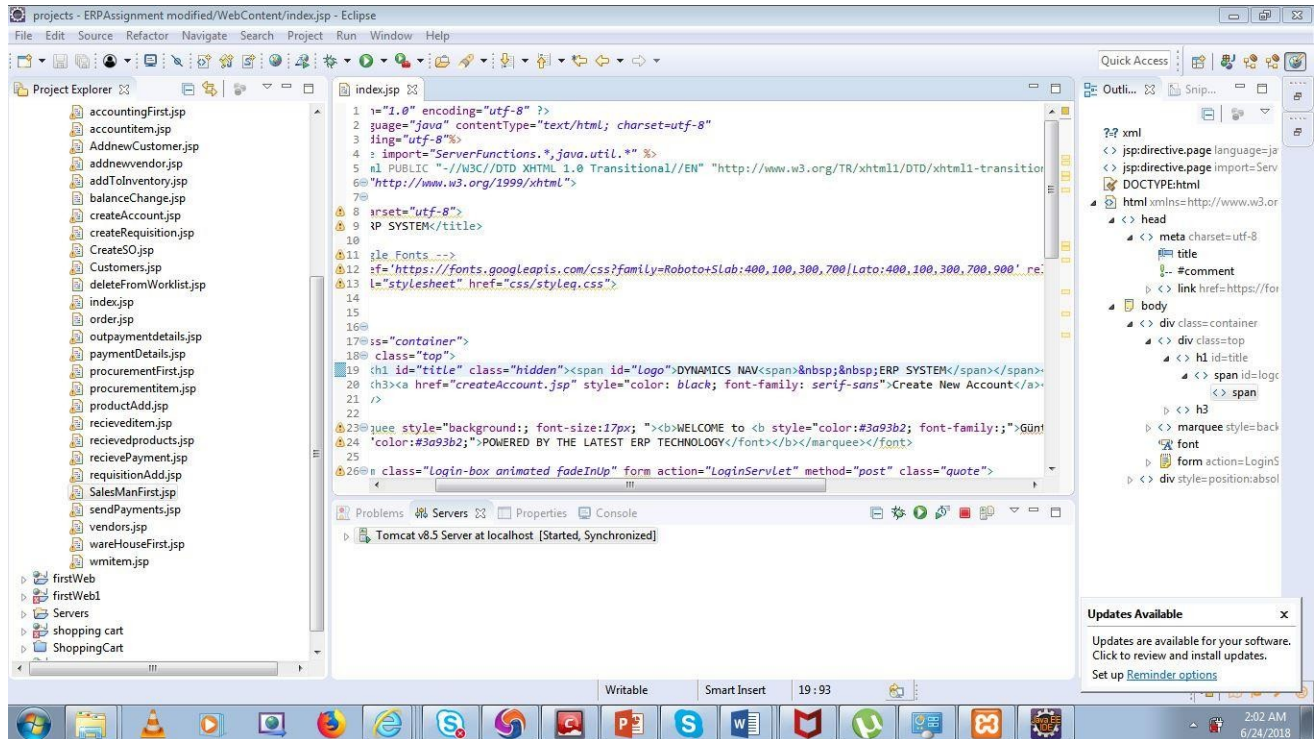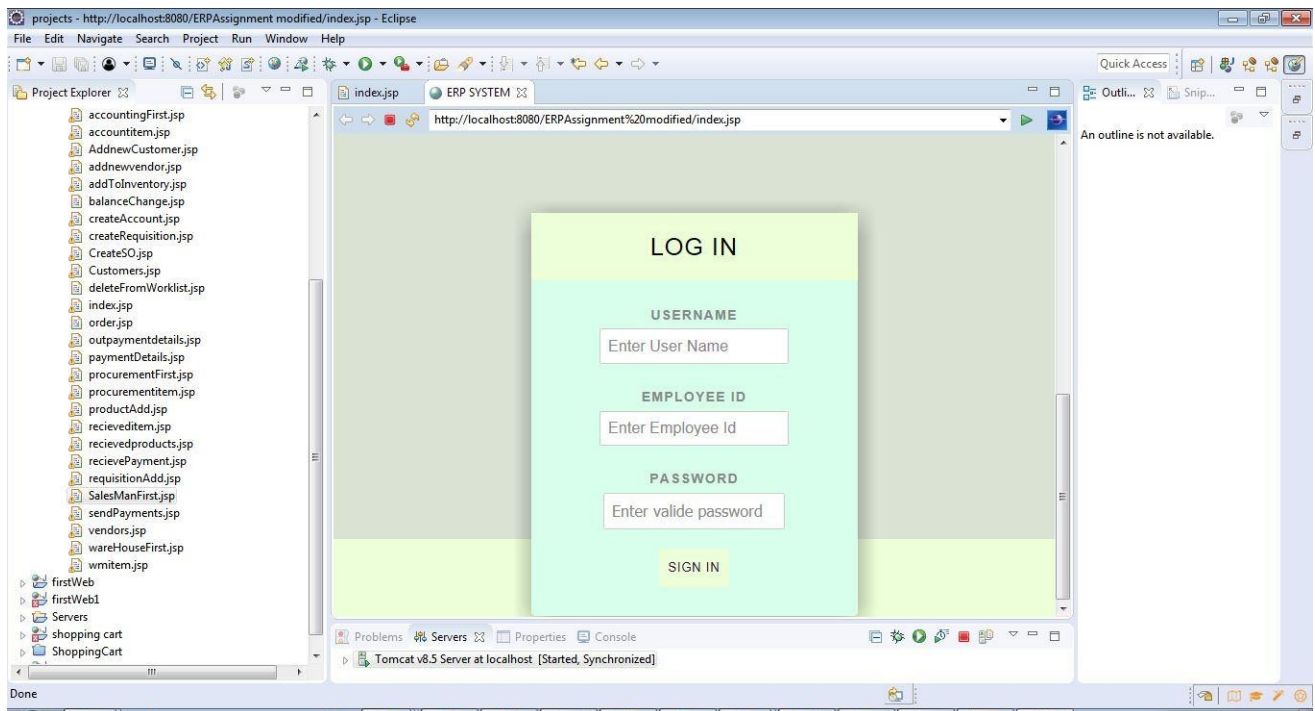
After login the program checks data base for employee id, employee name, department and password and if correct redirects to employee department saved in database
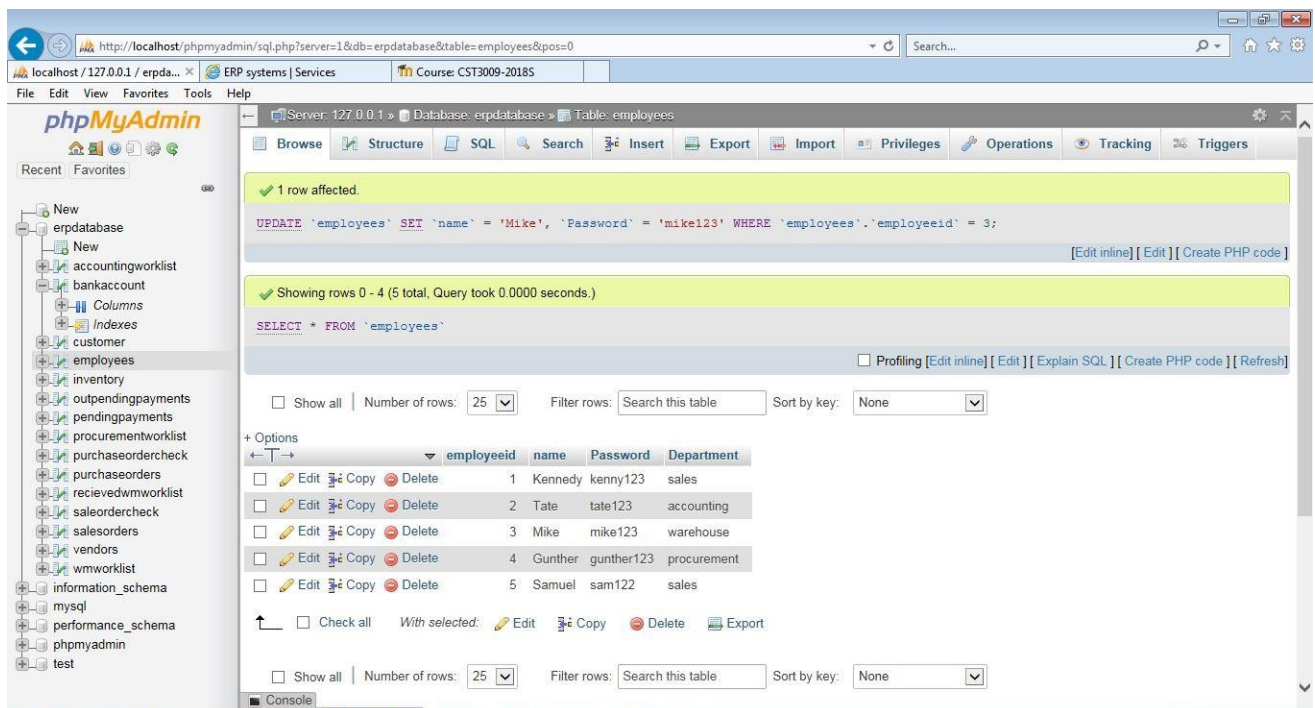
When the user from sales department logins they have the option to create a new sales order and add items to cart and then submit to database

DYNAMICS NAV ERP SYSTEMS

Log Out

Create Sales Order

ProductId	ProductName	Quantity	UnitPrice	Total
1	shirt	2	50	100
2	shoes	5	20	100
3	slippers	10	10	100
Final Total				300

Add Products

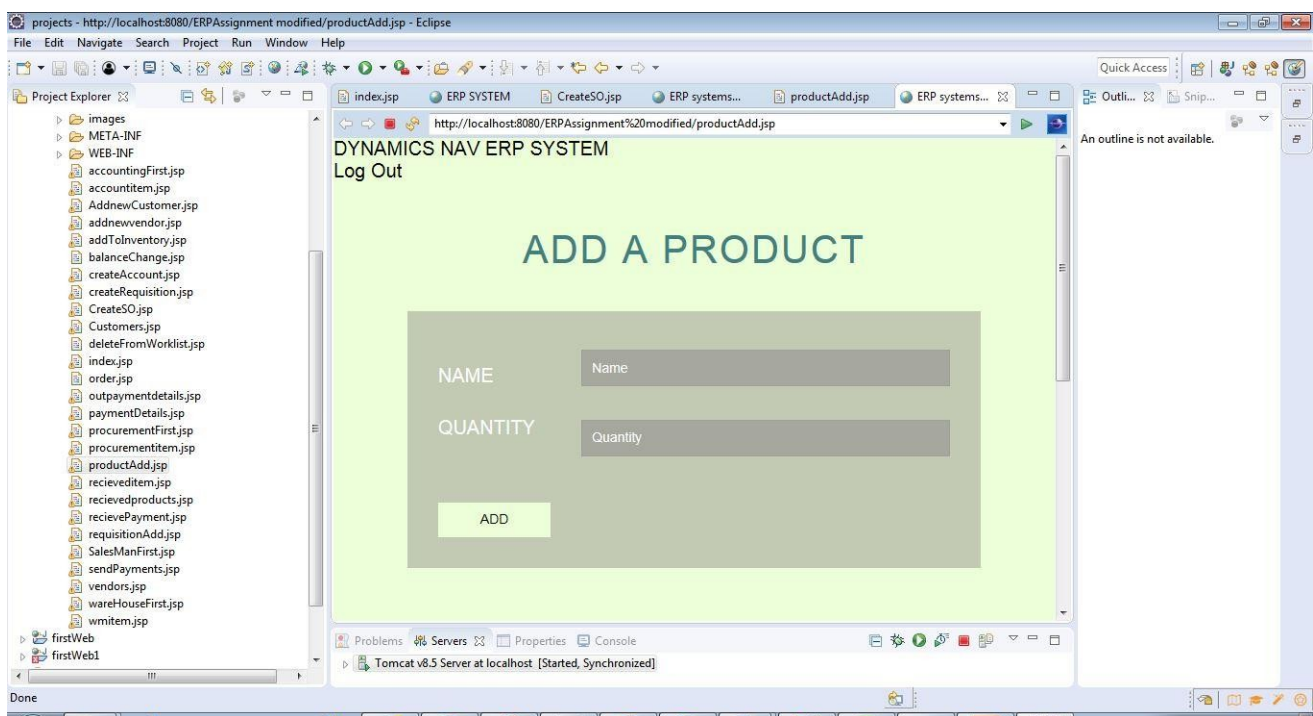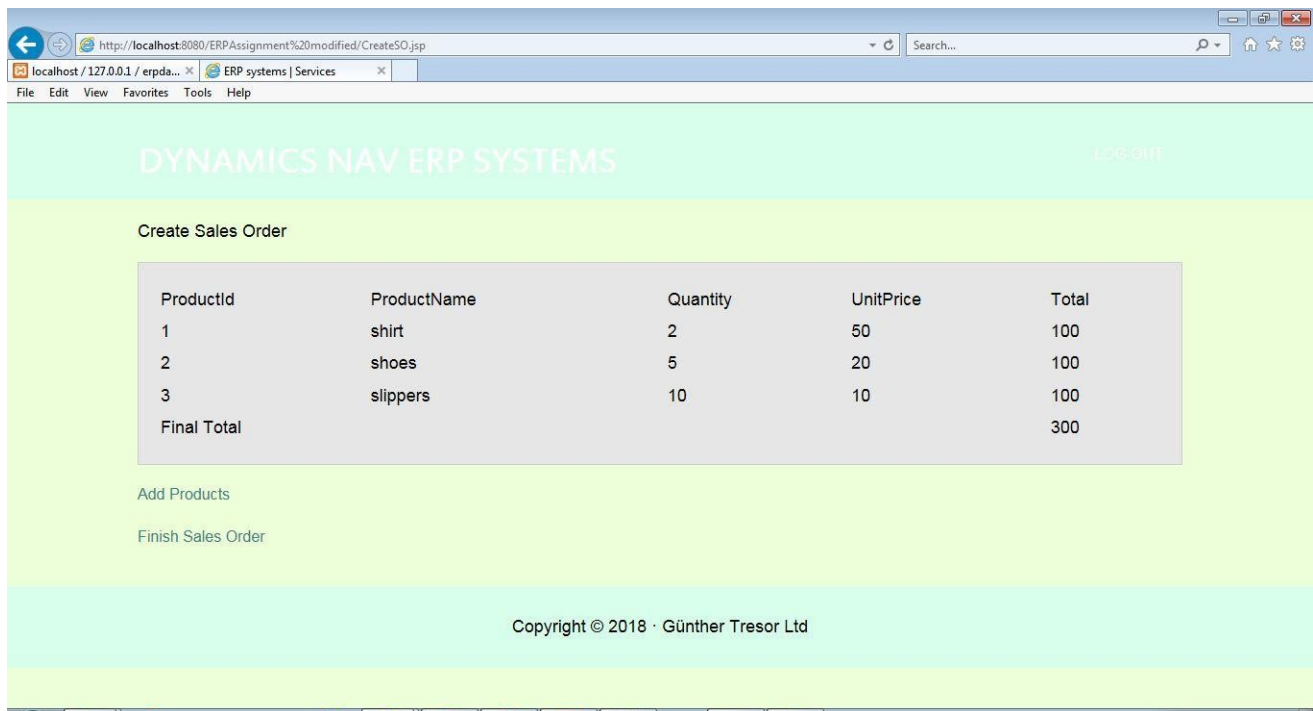Finish Sales Order

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Quick Access

Project Explorer
- images
- META-INF
- WEB-INF
- accountingFirst.jsp
- accountitem.jsp
- AddnewCustomer.jsp
- addnewvendor.jsp
- addToInventory.jsp
- balanceChange.jsp
- createAccount.jsp
- createRequisition.jsp
- CreateSO.jsp
- Customers.jsp
- deleteFromWorklist.jsp
- index.jsp
- order.jsp
- outpaymentdetails.jsp
- paymentDetails.jsp
- procurementFirst.jsp
- procurementitem.jsp
- productAdd.jsp
- recieveditem.jsp
- recievedproducts.jsp
- recievePayment.jsp
- requisitionAdd.jsp
- SalesManFirst.jsp
- sendPayments.jsp
- vendors.jsp
- wareHouseFirst.jsp
- wmitem.jsp
- firstWeb
- firstWeb1

index.jsp   ERP SYSTEM   CreateSO.jsp   ERP systems...   productAdd.jsp   ERP systems...

http://localhost:8080/ERPAssignment%20modified/productAdd.jsp

DYNAMICS NAV ERP SYSTEM
Log Out

ADD A PRODUCT

NAME   [Name]

QUANTITY   [Quantity]

[ADD]

An outline is not available.

Problems   Servers   Properties   Console

Tomcat v8.5 Server at localhost [Started, Synchronized]

Done

The program the redirects to a servlet and takes product name and quantity and adds it to cart and displays cart
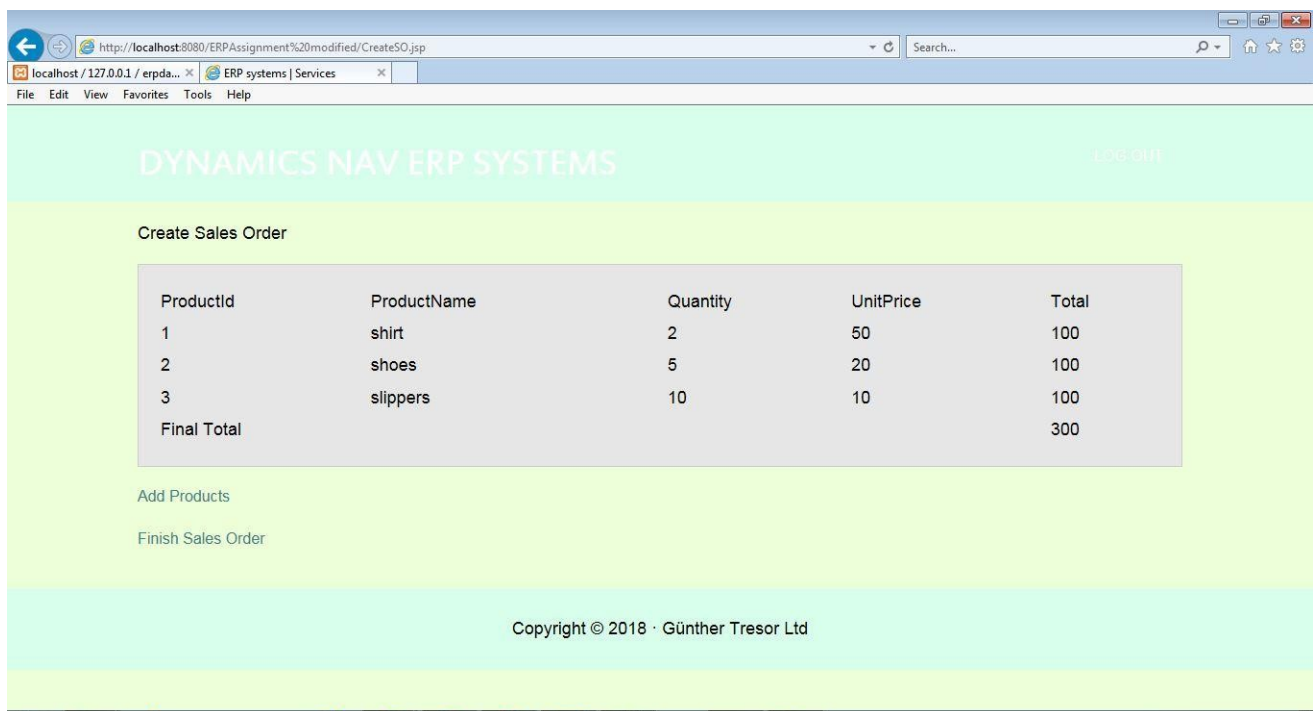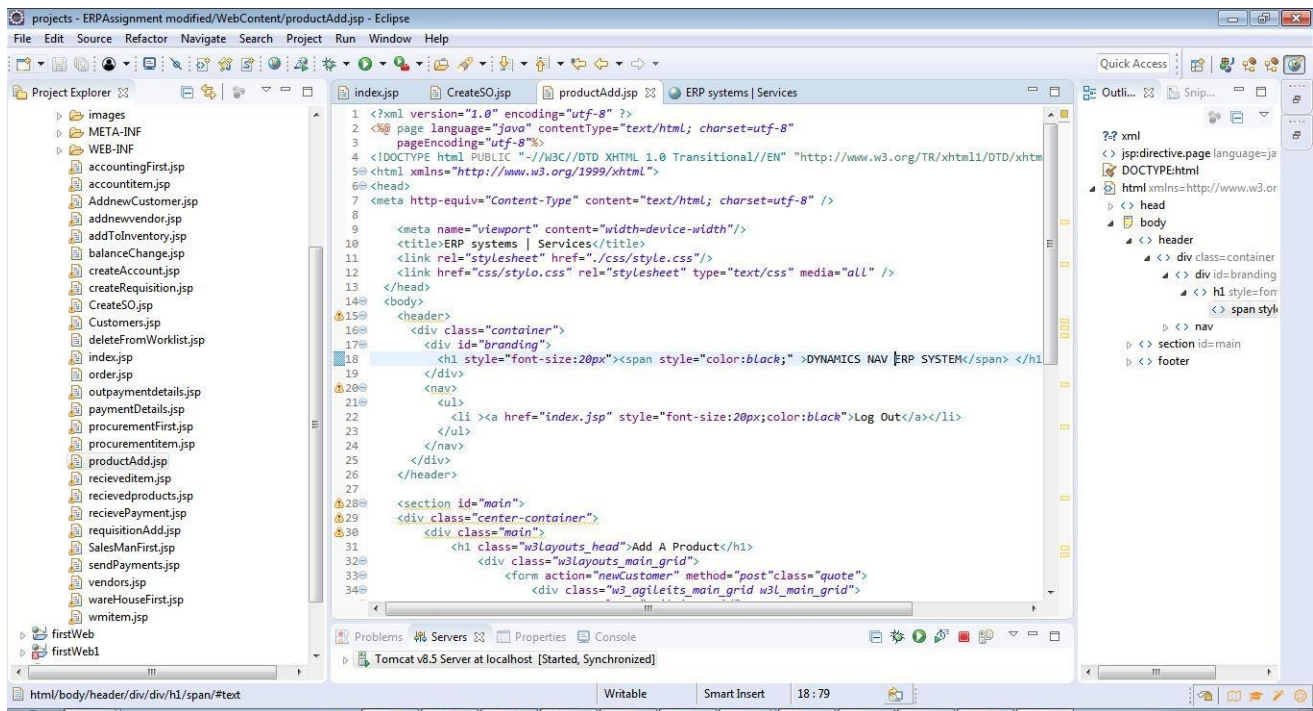
When the Warehouse Management member logs into the system they can view work list or create requisition
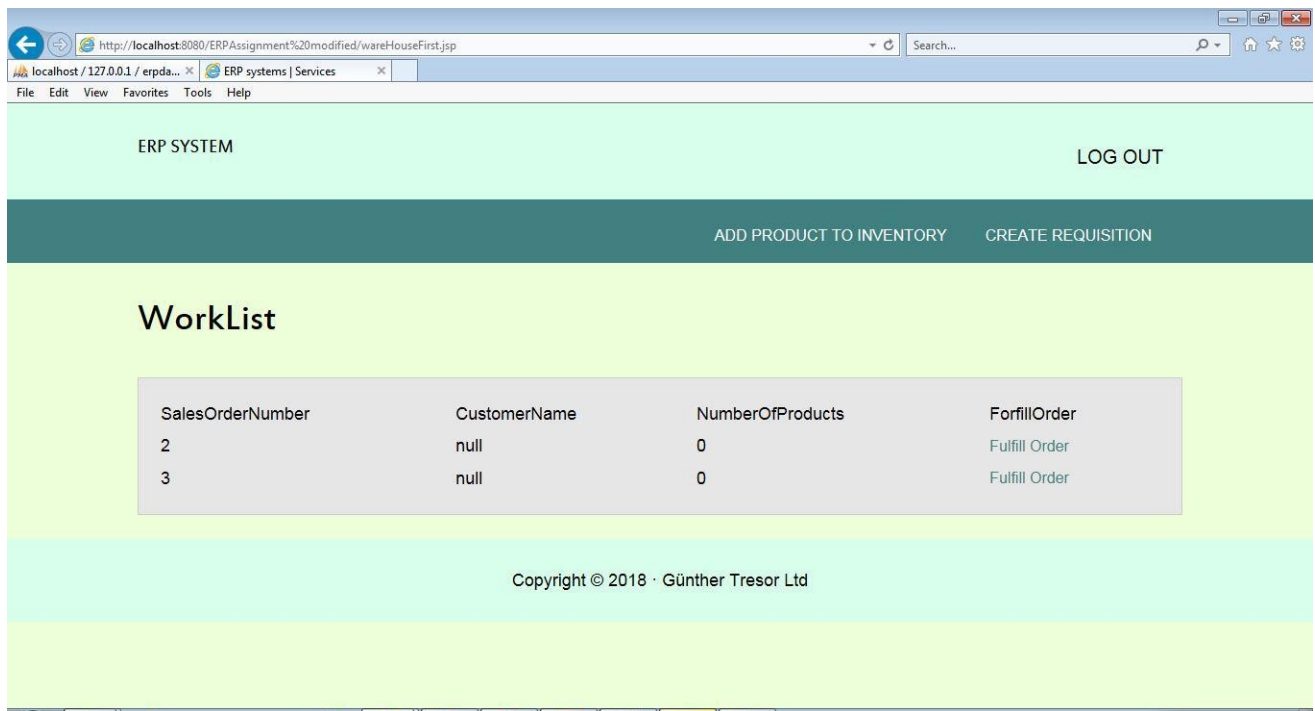
When they click fulfil order the page redirects to a details page that shows the shipping details

Once clicked the item is cleared from worklist

The ware house can also receive products and add new products to inventory
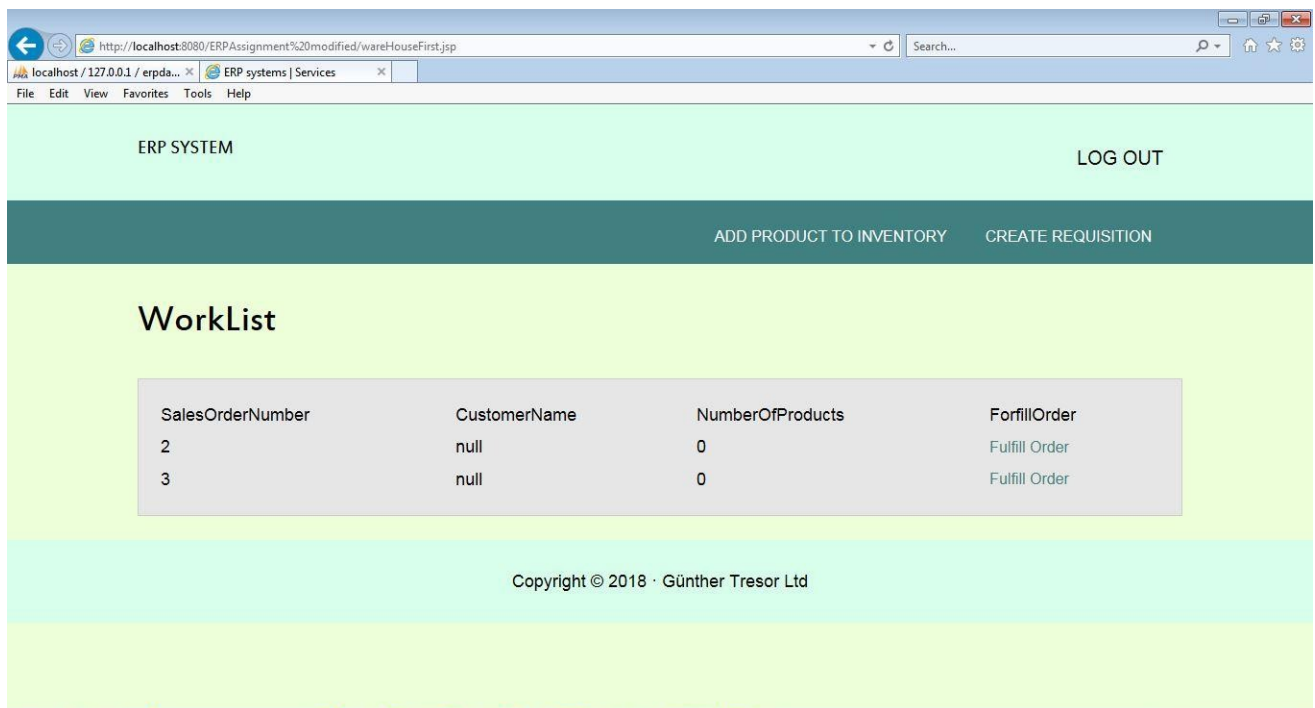
When the accounting user logins they can view worklist to create new invoice and also receive payments and send payments

ERP SYSTEM

LOG OUT

COLLECTPAYMENTS   SENDPAYMENTS

Accounting WorkList

Create Invoice

SalesOrderNumber	CustomerName	NumberOfProducts	Task

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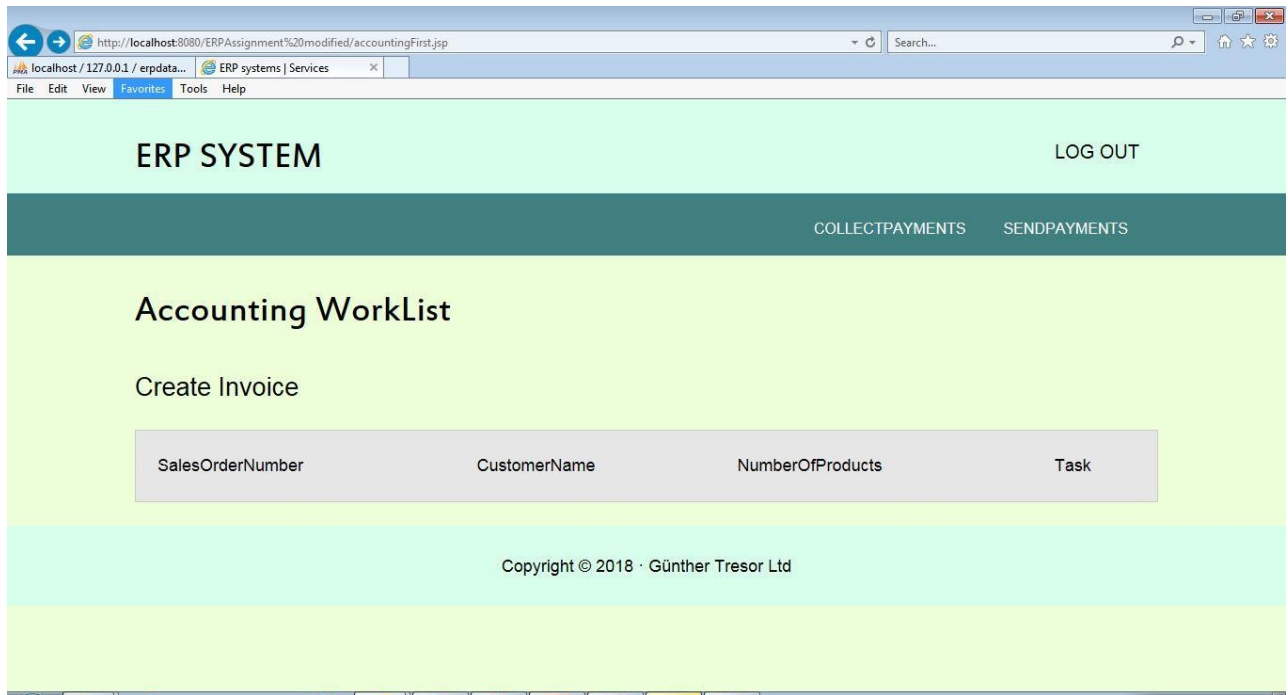
DEBUGGING AND TESTING
TEST ANALYSIS

ERP software quality evaluation system developed on the bases of the testing. Finally, the project manager must assess the system and also the factors used for the new system Therefore, it is important to maintain documents for each phase. In order to do this the allocated and used resources must be compared and it is also important to assess the test performances.

Requirements for Test Procedure

The comprehensive evaluation and the comparison of different testing strategies for scenarios is a critical part in the current research on software testing. Mutation analysis helps to determine the effectiveness of a test strategy and compare the different test strategies based on their effectiveness measures. Test strategy which is reliable for all programs cannot be established. Boolean and Relational Operator (BRO) and Boolean and Relational Expression (BRE) testing are two condition based testing strategies.

These are unlike the existing condition based upon the detection of errors such as Boolean errors and relational expression error in a condition. In accordance with the empirical studies of the algorithm SBEMIN and SBEMINSEN along with theoretical properties of BRO and BRE it is confirmed that BRO and BRE testing are practical and effective for testing programmes with complicated conditioning. Software based self-test strategy is well suited for a low cost embedded system, which does not require immediate detection of error. Three software state of the practice testing strategies are: code reading by stepwise abstraction, functional testing using equivalence portioning and boundary value analysis, and finally structural testing using 100% statement coverage criteria.

Adaptive testing is an online testing strategy, adapted to reduce the variance in the results of the software reliability assessment. Complex system test strategies are derived through the performance of the software, calculated based on the computer line of code. Test policies for the complex system are chosen based on the derived test strategy. Optimally refined proportional sampling is a strategy which is simple and low in cost. Empirical study was made through a sample programme with seeded error, and found that this strategy is better than random testing. Test data generation strategy is used to generate the test data. Test strategy can only be considered reliable for a particular programme, if and only when it produces a reliable bunch of test data for that programme.

Path analysis testing strategy is a method used to analyse the reliability of the path testing. In this strategy data are generated which enables the different paths of the system to be executed. Debugging strategy based on the requirement of testing is focused on the situation where the selected testing requirement does not indicate the fault site but apparently provides helpful information for fault localization. Path pre fix testing strategy is a user interactive. Adaptive testing strategy and Test path which are used previously will be used to select the subsequent paths for testing.

Testing

There was a separate stage to test the quality of software in the software development lifecycle and there is a separate independent Quality Assurance and testing team for a successful ERP development team. According to best practice testing principles it is necessary to, understand the requirements, test planning, test execution,

identify and improve processes (Process Improvement, Defect Analysis, and requirements review and risk mitigation). A Development Model's Implications for testing is based on: Review the user interface early, Start writing the test plan as early as possible, Start testing when the work is on the critical path, Plan to staff the project very early, Plan waves of usability tests as the project grows more complex, Plan to write the test plan and Plan to do the most powerful testing as early as possible. Identify the necessary infrastructure; hardware and software are the major areas when developing test procedures.

Testing Methods

There are several testing methods that incorporate to test the ERP application. These methods can be used in a different stage as well as for different purposes. Structural Testing: the software entity is viewed as a "white box". The selection of test cases is based on the implementation of the software entity. The expected results are evaluated on a set of coverage criteria. Structural testing emphasizes the internal structure of the software entity. Grey-box testing, is defined as testing software while already having some knowledge of its underlying code or logic. The testers are only aware of what the software is supposed to do. Black-box testing methods include: equivalence partitioning, boundary value analysis, all-pairs testing, state transition tables, decision table testing, fuzz testing, model-based testing, use case testing, exploratory testing and specification-based testing. Validation is basically done by the testers during the testing. While validating the product if some deviation is found in the actual result as against the expected result then a bug is reported or an incident is raised. Hence, validation helps in unfolding the exact functionality of the features and helps the testers to understand the product in a much better way. It helps in making the product more user friendly.

Verification Tests

Verification is intended to check that a product, service, or system meets a set of design specifications. In the development phase, verification procedures involve performing special tests to model or simulate a portion, or the entirety of a product, service or system. The verification procedures involve regularly repeating tests devised specifically to ensure that the product, service, or system continues to meet the initial design requirements, specifications, and regulations as time progresses

Vulnerability Testing

Vulnerability analysis is a process that defines, identifies, and classifies the security holes (vulnerabilities) in a computer or in an application such as ERP, network, or communications infrastructure. In addition, vulnerability analysis can forecast the effectiveness of proposed countermeasures and evaluate their actual effectiveness after they are put into use

Conclusion

In accordance with the above discussion the above summary gives a clear picture. Based on the hypotheses the researcher has tested in order to reduce the ERP failure rate under the software testing phase.
The ERP System functions well and the system supports the fulfilment process, procurement process warehouse management 、 accounting 、 credit control and authority management.