Project Proposal

Global Supply Chain Management Platform

Date: December 07, 2025

Team: DigiMinds

Members:

Sangeeta Singh (NUID: 002082071)
Jamie Gist (NUID: 003182426)
Jafaeth Gomez (NUID: 003189253)

Team: **DigiMinds**

Executive Summary

This proposal describes a desktop computer program that helps different companies work together in a supply chain. A supply chain is when products move from the factory where they are made, through warehouses where they are stored, to stores where customers buy them.

The program allows multiple companies to coordinate their work, share information, and track orders from start to finish. This makes the whole process faster, cheaper, and more reliable.

Key Information:

- • Type of Program: Desktop application
- • Programming Language: Java
- • Team Size: 3 people
  - Sangeeta Singh (NUID: 002082071)
  - Jamie Gist (NUID: 003182426)
  - Jafaeth Gomez (NUID: 003189253)
- • Main Purpose: Help companies in a supply chain work together better

Team: **DigiMinds**

What Problem Does This Solve?

In today's world, products often go through many steps before reaching customers. For example, a product might be made in a factory, stored in a warehouse, and then sold in a store. These are often different companies that need to work together.

Current Problems:

- • Companies use different computer systems that don't talk to each other
- • It's hard to see where an order is in the process
- • Companies have to call or email each other, which is slow and can cause mistakes
- • Quality checks are not connected to the main process
- • Companies don't know how much inventory other companies have
- • It's difficult to track an order from start to finish

Our Solution: This program creates one system where all companies can see what's happening, send messages to each other, and track orders from beginning to end.

Sangeeta Singh (NUID: 002082071)
Jamie Gist (NUID: 003182426)
Jafaeth Gomez (NUID: 003189253)

Team: **DigiMinds**

What Will This Program Do?

The program will help three types of companies work together:

Manufacturing Companies

These companies make products. The program helps them:

- • Manage production orders
- • Request quality inspections
- • Order materials they need

Logistics Companies

These companies store and ship products. The program helps them:

- • Manage warehouse inventory
- • Coordinate shipping and delivery
- • Process orders from manufacturing companies

Retail Companies

These companies sell products to customers. The program helps them:

- • Create sales orders
- • Check inventory levels
- • Track customer orders

System Administrators

These people manage the whole system. The program helps them:

- • Set up new companies and departments
- • Create user accounts
- • View reports about how the system is working

Sangeeta Singh (NUID: 002082071)
Jamie Gist (NUID: 003182426)
Jafaeth Gomez (NUID: 003189253)

Team: **DigiMinds**

Main Features

1. User Login and Security

Users must log in with a username and password. Passwords are stored securely using encryption. Each user has a specific role that determines what they can see and do in the system.

2. Company and Department Management

The system can manage multiple companies (called enterprises) and departments within each company (called organizations). Each company and department has its own employees and work to do.

3. Work Request System

When one department needs something from another department, they create a "work request." For example, a sales department might request products from a warehouse. The system tracks these requests and shows their status (pending, in progress, completed).

4. Cross-Company Communication

The system allows departments in different companies to send requests to each other. For example, a manufacturing company can send an order to a logistics company for shipping.

5. Reports and Statistics

System administrators can view reports showing how many companies, employees, and work requests are in the system. This helps them understand how the system is being used.

6. Test Data Generation

The program can automatically create sample data (fake but realistic companies, employees, and orders) so people can test the system without having to enter everything manually.

Sangeeta Singh (NUID: 002082071)
Jamie Gist (NUID: 003182426)
Jafaeth Gomez (NUID: 003189253)

Team: **DigiMinds**

How Does It Work?

The system is organized in a hierarchy (like a tree structure):

At the top is the EcoSystem - this is the main system that manages everything. It's like the brain of the whole operation.

Below that are Networks - these are groups of companies that work together. For example, all companies in North America might be in one network.

Within each network are Enterprises - these are the actual companies (Manufacturing, Logistics, or Retail companies).

Within each enterprise are Organizations - these are departments within the company (like Production, Warehouse, Sales, etc.).

Each organization has Employees who work there, and User Accounts that let them log into the system.

Each organization also has a Work Queue - this is like an inbox where they receive requests from other departments or companies.

Example Flow:

1. 1. A customer places an order with a Retail company's Sales department.
2. 2. The Sales department creates a work request to the Manufacturing company's Production department.
3. 3. The Production department makes the product and creates a request to the Logistics company's Warehouse.
4. 4. The Warehouse stores the product and notifies the Shipping department.
5. 5. The Shipping department delivers the product to the customer.

All of this is tracked in the system, so everyone can see where the order is at any time.

Sangeeta Singh (NUID: 002082071)
Jamie Gist (NUID: 003182426)
Jafaeth Gomez (NUID: 003189253)

Team: **DigiMinds**

Technology Used

The program is built using:

Java Programming Language

Java is a popular programming language that works on Windows, Mac, and Linux computers. This means the program can run on almost any computer.

Java Swing (User Interface)

Java Swing is a tool for creating the visual parts of the program - the windows, buttons, and forms that users see and interact with.

DB4O Database

DB4O is a database system that stores all the information (companies, employees, orders, etc.) so it's saved even after you close the program.

Maven (Build Tool)

Maven is a tool that helps organize the program code and automatically downloads any additional tools the program needs.

Security Tools

The program uses BCrypt to encrypt passwords, so they are stored safely and cannot be easily stolen.

Sangeeta Singh (NUID: 002082071)
Jamie Gist (NUID: 003182426)
Jafaeth Gomez (NUID: 003189253)

Team: **DigiMinds**

Who Will Use This?

Production Managers

People who manage manufacturing. They use the program to:

- • See production orders
- • Request quality inspections
- • Track what needs to be made

Quality Inspectors

People who check product quality. They use the program to:

- • Receive inspection requests
- • Record inspection results
- • Approve or reject products

Warehouse Managers

People who manage warehouses. They use the program to:

- • See incoming orders
- • Track inventory levels
- • Process storage requests

Shipping Coordinators

People who coordinate shipping. They use the program to:

- • See shipping requests
- • Track deliveries
- • Update shipping status

Sales Representatives

People who sell products. They use the program to:

- • Create sales orders
- • Check product availability
- • Track customer orders

Inventory Analysts

People who manage inventory. They use the program to:

- • Monitor stock levels
- • Process inventory requests
- • Coordinate with warehouses

System Administrators

People who manage the system. They use the program to:

- • Set up new companies and departments
- • Create user accounts
- • View system reports
- • Manage the overall system

Sangeeta Singh (NUID: 002082071)
Jamie Gist (NUID: 003182426)
Jafaeth Gomez (NUID: 003189253)

Team: **DigiMinds**

Project Phases

The project will be completed in 5 phases:

Phase 1: Foundation (Sangeeta)

Build the basic structure:

- • Create the main system components
- • Set up company and department structures
- • Create employee and user account systems
- • Set up the database

Phase 2: Core Features (Jamie, Jafaeth, Sangeeta)

Add the main functionality:

- • Build the work request system
- • Create the login and security system
- • Build the main user interface
- • Add system administration features

Phase 3: User Interfaces (Jamie, Jafaeth)

Create interfaces for each user role:

- • Production manager interface
- • Warehouse manager interface
- • Sales representative interface
- • And interfaces for all other roles

Phase 4: Testing and Reports (Jamie, Jafaeth, Sangeeta)

Add finishing touches:

- • Create test data generator
- • Build reporting system
- • Write documentation
- • Test everything

Phase 5: Final Polish (Jamie, Jafaeth, Sangeeta)

Make it perfect:

- • Fix any problems found during testing
- • Improve the user interface
- • Complete all documentation
- • Prepare for demonstration

Sangeeta Singh (NUID: 002082071)
Jamie Gist (NUID: 003182426)
Jafaeth Gomez (NUID: 003189253)

Team: **DigiMinds**

What Will Be Delivered?

1. The Computer Program

A complete, working program that includes:

- • All the features described above
- • User interfaces for all roles
- • Security and login system
- • Database for storing information
- • Reporting system

2. Documentation

Written materials including:

- • This project proposal
- • User guide (how to use the program)
- • Technical documentation (how the program works)
- • Setup instructions
- • Diagrams showing the system structure

3. Test Data

Sample data so people can test the program:

- • Sample companies
- • Sample employees and user accounts
- • Sample work requests and orders

Sangeeta Singh (NUID: 002082071)
Jamie Gist (NUID: 003182426)
Jafaeth Gomez (NUID: 003189253)

Team: **DigiMinds**

Benefits of This System

For Companies

- • Faster order processing - no more waiting for phone calls or emails
- • Better visibility - see where orders are at any time
- • Fewer mistakes - automated tracking reduces errors
- • Lower costs - more efficient processes save money
- • Better quality - integrated quality checks ensure products meet standards

For Employees

- • Easier to do their job - everything in one place
- • Clear communication - send and receive requests easily
- • Less confusion - always know what needs to be done
- • Better organization - track all work in one system

For Customers

- • Faster delivery - more efficient supply chain means faster service
- • Better quality - integrated quality checks mean better products
- • More reliable - fewer mistakes mean orders arrive correctly

Sangeeta Singh (NUID: 002082071)
Jamie Gist (NUID: 003182426)
Jafaeth Gomez (NUID: 003189253)

Team: **DigiMinds**

How We Will Know It's Successful

The project will be considered successful when:

- ✅ The program runs without errors
- ✅ Users can log in securely
- ✅ Companies can be created and managed
- ✅ Work requests can be sent between departments and companies
- ✅ All user roles have working interfaces
- ✅ Reports can be generated
- ✅ Test data can be created automatically
- ✅ All documentation is complete
- ✅ The program can be demonstrated to show all features

Sangeeta Singh (NUID: 002082071)
Jamie Gist (NUID: 003182426)
Jafaeth Gomez (NUID: 003189253)

Risks and Challenges

Like any project, there are some risks. Here's how we plan to handle them:

Technical Challenges

Challenge: Making sure all parts of the program work together correctly.

Solution: Test everything regularly as we build it, not just at the end.

Challenge: Making sure user passwords are secure.

Solution: Use proven security tools (BCrypt) that are already tested and secure.

Challenge: Making sure the program works on different computers (Windows, Mac, Linux).

Solution: Use Java, which is designed to work on all platforms, and test on different systems.

Project Management Challenges

Challenge: Team members might not always be available.

Solution: Keep good documentation so anyone can understand the code, and have regular team meetings.

Challenge: The project might take longer than expected.

Solution: Plan extra time in the schedule and focus on the most important features first.

Team: **DigiMinds**

Conclusion

This project will create a useful tool that helps companies in a supply chain work together more effectively. By providing a single system where everyone can see what's happening and communicate easily, we can make the whole supply chain process faster, cheaper, and more reliable.

The program will be built over 8 weeks by a team of 3 people, using proven technologies and following best practices for software development. The result will be a complete, working system that can be demonstrated and used as a foundation for future improvements.

Key Points:

- • Solves a real problem - helps companies coordinate better
- • Uses proven technology - Java, which is reliable and widely used
- • Well-planned timeline - 8 weeks with clear phases
- • Complete solution - program, documentation, and test data
- • Ready to use - can be demonstrated and used immediately

Sangeeta Singh (NUID: 002082071)
Jamie Gist (NUID: 003182426)
Jafaeth Gomez (NUID: 003189253)