

SOFTWARE ARCHITECTURE AND DESIGN

15SE311

TOPIC

SUPPLY CHAIN MANAGEMENT

CREATED BY

AVIRUP CHATTARAJ (RA1711020010095)

&

SOMESH DAVE (RA1711020010087)

SUPPLY CHAIN MANAGEMENT SOFTWARE

INITIAL DOCUMENTATION

ABSTRACT

Supply Chain Management or SCM can be technically defined as the broad range of activities which are required in order to plan, control and execute a product's flow. The process begins with acquiring the basic raw materials and ends with the distribution of the product to the end customers. The series of steps involved in the SCM software are: -

1. Raw materials
2. Supplier
3. Manufacturer
4. Distributor
5. Retailer
6. End Customers

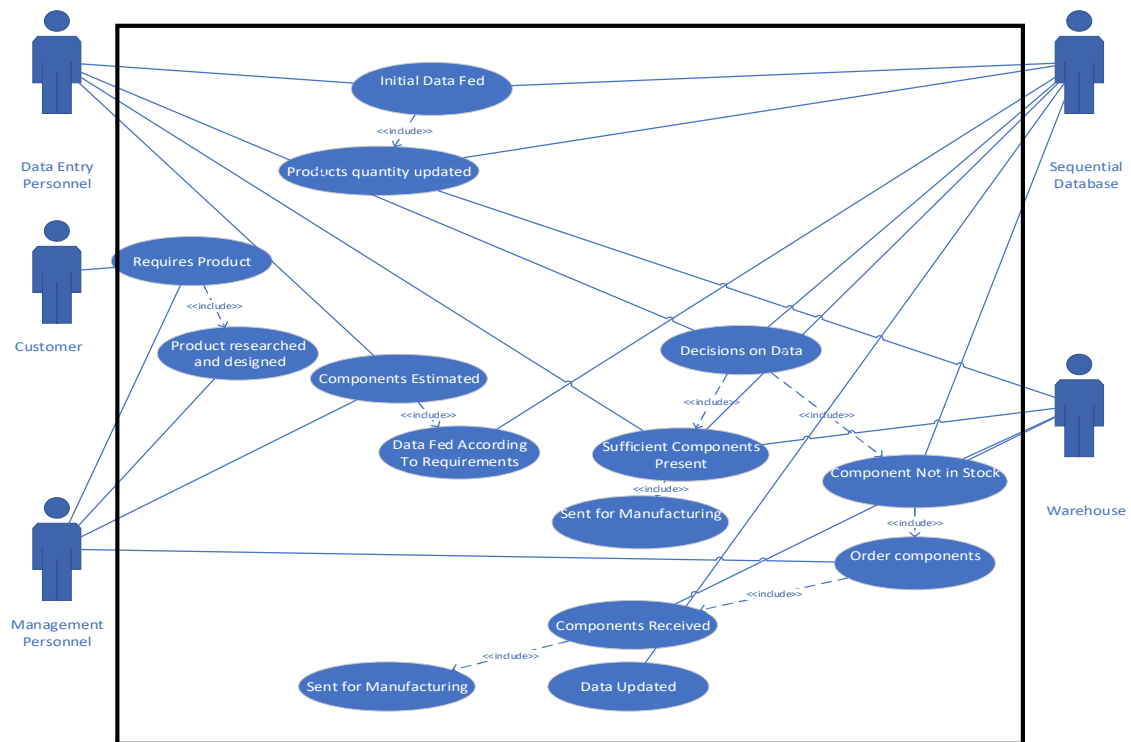
FUNCTIONAL REQUIREMENTS

1. The software is going to take decisions regarding a new product after it has been properly researched upon and designed by the R&D team.
2. The software after checking its own inbuilt database is going to send the components for manufacturing depending upon the quantity of components.
3. The software is then going to issue an alert to the administrative personnel if the quantity of a product falls below stock.
4. The software is going to carry out a strict check on the number of products coming from various suppliers.
5. The software is also going to send automated reports to the management team regarding their daily, weekly, monthly and annual spending.

NON-FUNCTIONAL REQUIREMENTS

1. The software is going to contain all the information regarding the company's products.
2. The software is going to have strict data integrity so that the new R&D designs of the products are not exposed to any competitors.
3. The software is going to be scalable as the database of the software is going to be hosted on the cloud and therefore the software can handle a lot of products.
4. The software's performance is going to be maintained so that no bottlenecks get created and all the modified data gets updated in the database within seconds.

USE CASE DIAGRAM

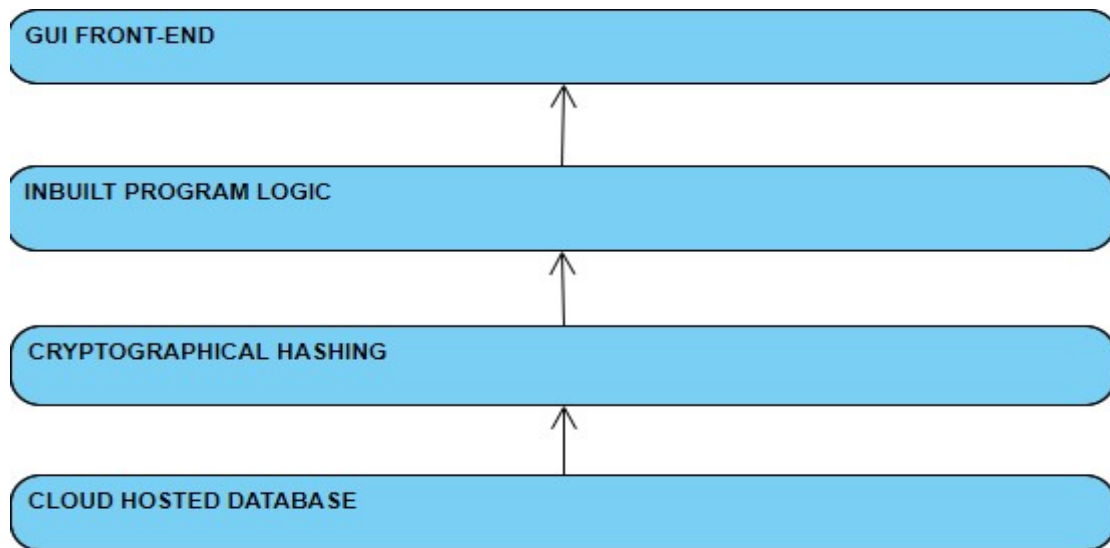


The above Use-Case diagram can help us in understanding the working of the SCM software: -

The main actors who are involved in the SCM software are going to be: -

- Data Entry Personnel
- Customer
- Management Personnel
- Sequential Database

1. The data entry personnel will feed in the initial data which gets stored in the sequential database and the product quality is then updated.
2. Next whenever a customer requires a product, the product gets researched and designed by the R&D team of the company with the management taking the most crucial decisions.
3. After that the components are estimated which are then fed into the estimated database by the data entry personnel.
4. If there is the presence of sufficient components as queried back by the sequential database then the components can be sent for manufacturing.
5. In case the number of components are not sufficient then the components would be first ordered and the new data would then be fed into the sequential database.
6. After which the components can be sent for manufacturing.



LAYERED PATTERN DIAGRAM

SOFTWARE ARCHITECTURE

The software architecture which is going to be best suited for supply chain management is going to be the layered pattern. It is one of the well-known software architecture patterns.

In case of layered pattern the main idea is to split the whole software into layers where each layer is going to contain a certain responsibility and provides a service to a higher layer.

The layered pattern is most suited for this SCM software because the software can be mostly broken up down into a number of parts: -

- GUI Frontend
- Cloud Hosted Database
- Inbuilt Program Logic
- Cryptographical Hashing

At the lowest level would be the Cloud hosted database that is going to contain all the product details and is the main part from where all the details can be queried. Next is the Cryptographical hashing codes for all products so that proper data integrity is maintained and the various products are referred to by a random code in order to protect the company's R&D products from competitors. Next would be the Inbuilt Program Logic that is going to assist the GUI Frontend with the Cloud Hosted Database and help query the details. Also, at the top would be the GUI Frontend in which the data can be filled and the details be queried back and shown.