

# Software Architectures

## (SEZG651/SSZG653)

### Assignment 1

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# Purpose Of System

**Enrollment and Sign-in web widget for ABC partner brands' web/app, and ABC web/app**

**Implementing Single Sign On (SSO) on all the brand so that the end user can login to all the e-commerce brand of ABC Group to the single login Id and password**

## **Features:**

- **User Enrolment to partner web/app**
- **User authentication and Sign-in to partner web/app**
- **User authentication and Single Sign-On across partner ABC brand apps**

# Requirement Of The System

- **Functional Requirements**

**Such requirements describe system behavior under specific conditions and include the product features and functions which web & app developers must add to the solution. Such requirements should be precise both for the development team and stakeholders. Some of the Functional Requirement are as followed which was is on priority basis:**

- 1. Security:**

- 1.1 A user's data should be secure and must not be leaked to an outsider as the detail which the user it entering to login the application are quite sensitive and can lead to data breaching if unwanted user tries to hack the system.**

- 1.2 Facebook gives a wider purview of security to readers due to recent data breach incidence at Facebook and the consequences faced by Facebook.**

- 2. Accuracy**

- 2.1 The data which is entered by the end user to login should be accurate and on the basis of that the detail of the end users should be viewed whether it add to cart module, search module, payment gateway module etc.**

# Requirement Of The System

**2.2 When the user get the refund of any product then the correct refund money should be credited to the end user account.**

## **3. Interface Requirement**

**When end user try to login to the brand the end user need to enter below mentioned detail in login Id**

**3.1 Mobile Number**

**3.2 Email Id**

**3.3 Social Login using GMAIL, FACEBOOK**

**For resetting the password certain rules has be followed**

**The system must allow users to reset their password by clicking on "I forgot my password" and receiving a link to their verified email address.**

- **Minimum 8 character( Upper Case & Lower Case)**
- **No Space**
- **Special Character**

# Requirement Of The System

- **Non Functional Requirement**

The non-functional requirement says about “what a system should be” rather than “what a system should do” (functional requirement). They are mostly derived from functional requirements based on input from the customer and other stakeholders. Non-functional requirements explain the quality aspects of the system to be constructed.

Some of the Non-Functional Requirement are as followed which was is on priority basis:

1. **Performance**

- 1.1 The system should be able to support x simultaneous users on the day of sales, festival

- 1.2 The mean time to download and view and whitepaper in PDF format for a X Kbps modem shall not exceed x seconds.

- 1.3 Time taken to view the UI after the end user login should not be longer.

2. **Reliability**

- 2.1 The system shall be completely operational at least 90% of the time.

- 2.2 Down time after a failure shall not exceed 2 hours as it is the E-commerce project so down time is proportional to the customer and if the user is not happy with the service then it will affect business.

# Requirement Of The System

## 3. Supportability

3.1 The system should be able to accommodate new products and product lines without major reengineering.

3.2 The system web site shall be viewable from Internet Explorer 4.0 ,Google Chrome, Android, IOS.

## 4. Purchased Components

4.1 A language translation tool from English to French and English to German will be needed as the product is going to launch on the greater scale at the worldwide level . So maximum number of user can use the services .

# Utility Tree For Architectural Significant Requirement

Quality Attributes	Attribute Refinement	ASR
Security	Confidentiality	When the user login to the widget using the mobile number or email then the detail/information related to that user should only be visible. For Example If X user logged in to the Brand X and have added the some product in add to cart then only his detail should be visible.
	Integrity	If any unwanted user tried to logged in to your and enter the password wrong thrice then alert should be prompted to logged in email /mobile number.



# Utility Tree For Architectural Significant Requirement

Quality Attributes	Attribute Refinement	ASR
<b>Availability</b>	<b>No Downtime</b>	As it is an E-Commerce Product so there should be no downtime of the server. If the server went down then it will affect the User experience which may harm the business and we may lose the customer trust.
<b>Maintainability</b>	<b>Routine Changes</b>	If there is some changes in the feature then the system should be adaptable to accept the changes and be quickly repaired in case of the failure or downtime.
<b>Performance</b>	<b>Transaction Response Time</b>	<p>If the user has logged in to the any of the Brand of ABC the response time should be very less so that customer desire should not be killed</p> <p>For example If X user has logged in to Croma Website and purchase the electronic gadget and redirect to the payment page then the response time doing the payment should less so that the user response is positive and next time if user want to buy any product should visit same site which will lead to increase in business.</p>

# Utility Tree For Architectural Significant Requirement

Quality Attributes	Attribute Refinement	ASR
<b>Extensibility</b>	<b>Adding New Feature</b>	Add new feature without impairing existing function. Use Case: Earlier loyalty functionality was not there for user who is login to different brand. But later on client requirement changed client want to add Loyalty functionality but he mentioned that existing function should not get effect as it will lead to customer dissatisfaction while using the product.
<b>Configurability</b>	<b>User Defined Changes</b>	Client wanted to increase the price for Loyalty Subscription. So the developer team working on Loyalty functionality make the changes in 1 working day. No source code need to be changed.

# Tactics To Achieve Top 5 ASR(Quality Attributes)

- **Security**

Security is one of the Important ASR which required irrespective to whatever domain project is being delivered.

In my project which is e-commerce domain the major things which were to be taken care are as follow:

- 1) When the user login to the widget using the mobile number or email then the detail/information related to that user should only be visible.

Use Case (One of the Client Requirement)

If X user logged in to the Brand X and have added the some product in add to cart then only his detail should be Visible.

- 2) If any unwanted user tried to logged in to your and enter the password wrong thrice then alert should be prompted to logged in email /mobile number.

- **Performance**

- 1) If the user has logged in to the any of the Brand of ABC the response time should be very less so that customer desire should not be killed

Use Case (One of the Client Requirement)

If X user has logged in to XYZ Website and purchase the electronic gadget and redirect to the payment page then the response time doing the payment should less so that the user response is positive and next time if user want to buy any product should visit same site which will lead to increase in business.

# Tactics To Achieve Top 5 ASR(Quality Attributes)

- **Maintainability**

If there is some changes in the feature then the system should be adaptable to accept the changes and be quickly repaired in case of the failure or downtime. As If downtime is more than the business can lose the customer and in the e-commerce customer is important to make the business success.

- **Extensibility**

Add new feature without impairing existing function.

Use Case (One of the Client Requirement)

Earlier loyalty functionality was not there for user who is login to different brand. But later on client requirement changed client want to add Loyalty functionality but he mentioned that existing function should not get effect as it will lead to customer dissatisfaction while using the product.

- **Configurability**

Add user defined changes with changing the code structure.

Use Case (One of the Client Requirement)

Client wanted to increase the price for Loyalty Subscription. So the developer team working on Loyalty functionality make the changes in 1 working day. No source code need to be changed.

# Software Architecture Diagram

## 1) Module Decomposition Diagram

- Login With OTP to the brand (SSO)

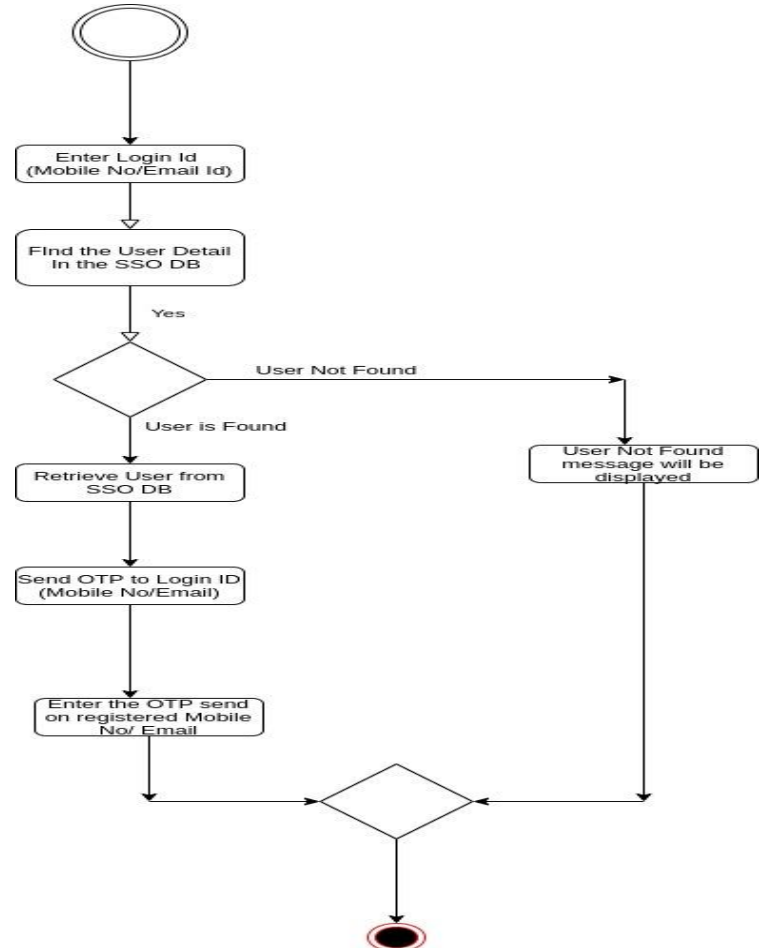
User enter the login ID (Mobile No/Email) once the user

Detail is verified from SSO DB OTP is send to user and once OTP

Is received then user enter the OTP and get as the logged in status

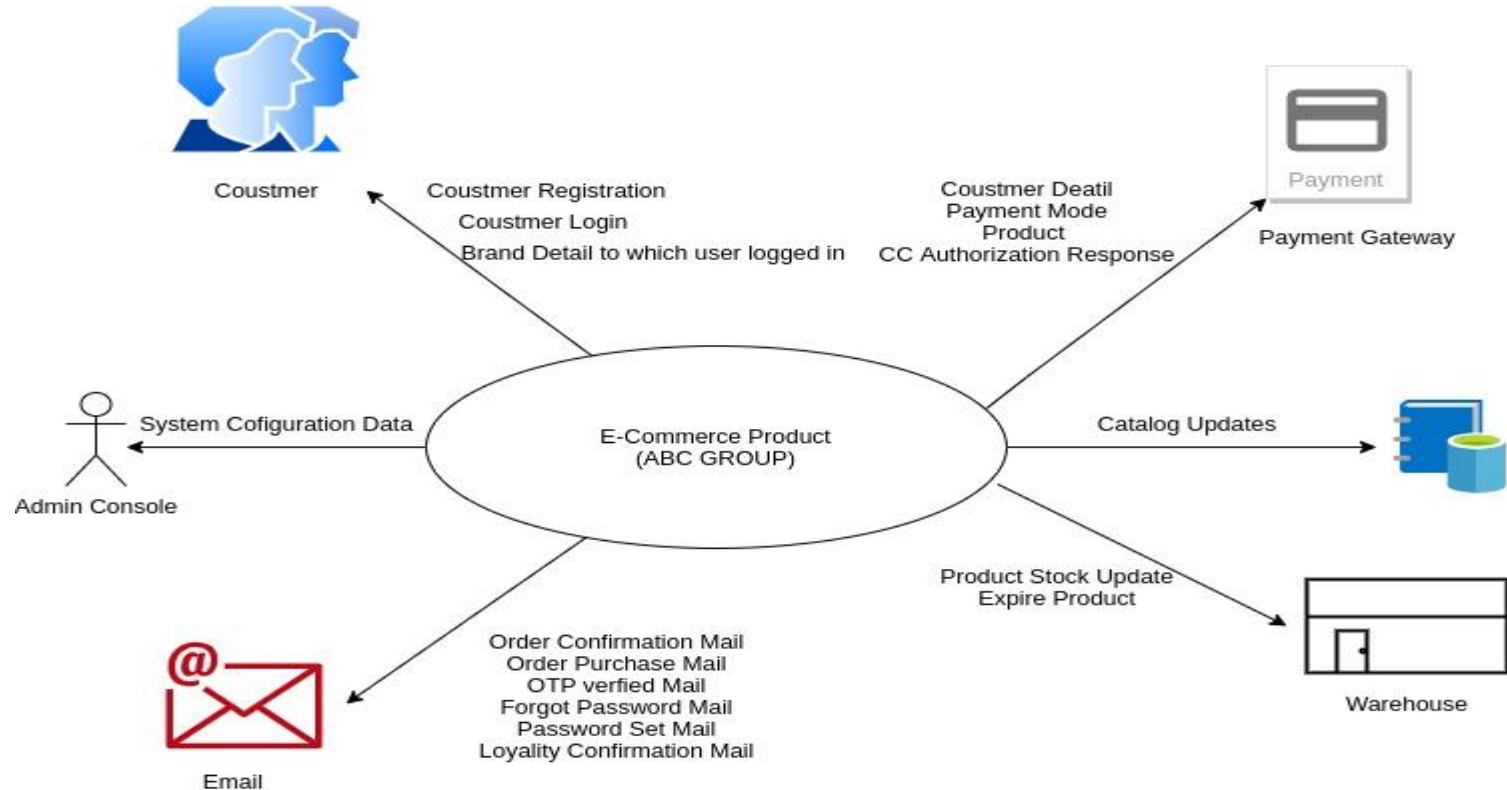
And redirect to brand URL and if user is not verified then error

Then error message is prompted.



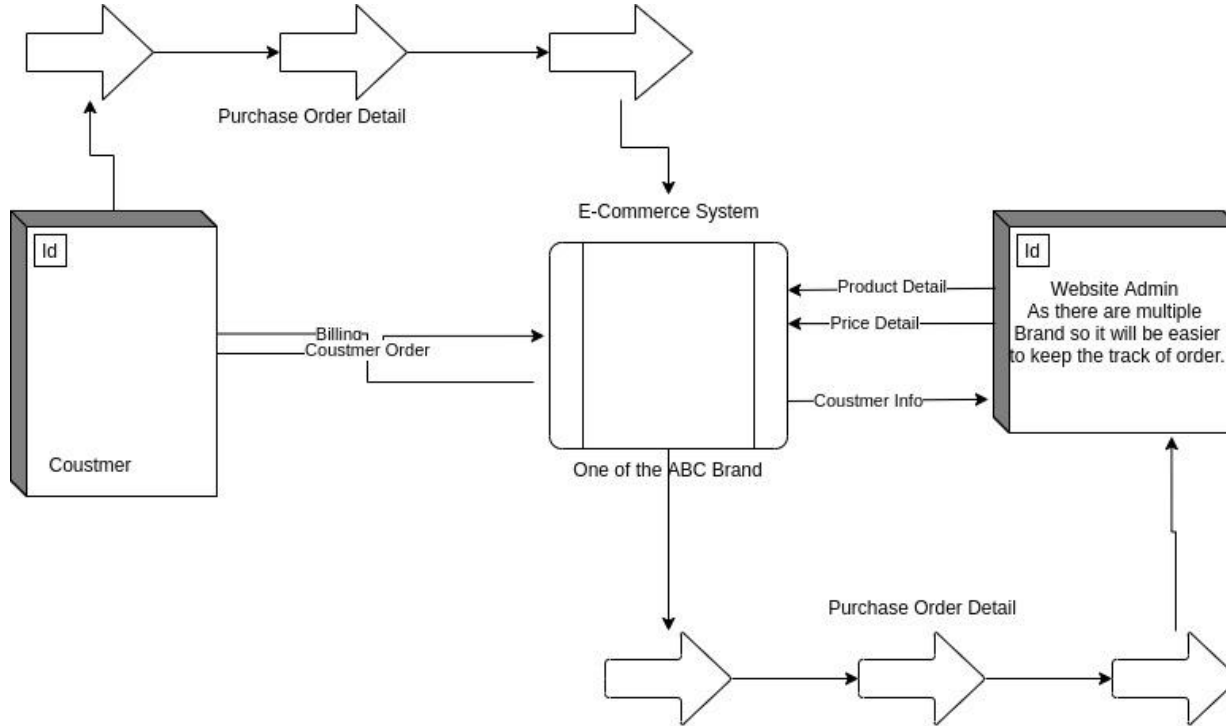
# Software Architecture Diagram

## 2) Deployment Diagram



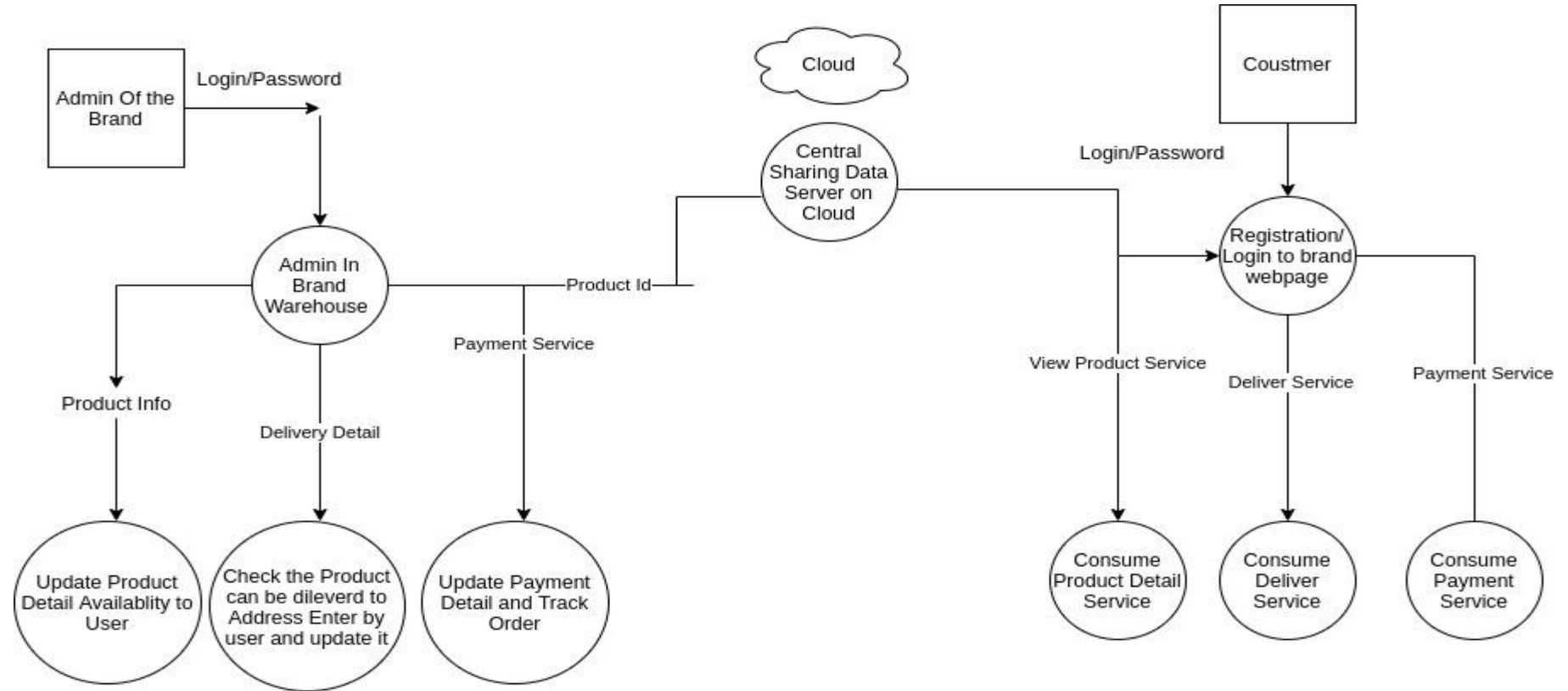
# Software Architecture Diagram

## 3) Context Diagram



# Software Architecture Diagram

## 3) Component And Connection Diagram





# Overview Of How System Work

1. **SSO sign-up will be similar to the email sign-up flow**
  - 1.1 When SSO is selected but the social session (Google/facebook) is not logged in , then login prompt will be asked (Feature of G/FB. No VD required)
  - 1.2 When SSO is selected and multiple social sessions are logged in, then would ask for which login session to use (Feature of Google / FB. No VD required)
2. **In sign-up journey starting the end user can login through the Mobile Number / Email Id . Once the user logged in the login Id the detail will be verified from the backend and once the detail are verified then the user will be logged in and redirected to the brand page for which user has logged in . If the login Id and password does not match then the error message will be pooped to login with correct credentials.**
3. **Forgot password – Functionally Flow ( If the end user does not remember the login password )**
  - 3.1 User will click on Forgot Password button .
  - 3.2 The button will redirect to Forgot Password page where user will enter the Mobile NUMber/Email Id where the otp will be send.
  - 3.3 Once the otp is send there will timer set on the UI that user has to enter the OTP in the 30 second if user fails to do then the end user has to again click on the resend OTP button .

# Overview Of How System Work

**3.4 Resend OTP button will again send the OTP to user via Mobile Number or Email ID**

**3.5 Once the OTP is verified the user can set the new password for login.**

**3.6 After the password is set successfully user will be automatically taken to logged in state.**

## **4 User Logged With Unverified Email Id**

**4.1 If has logged in with an mobile number & provided Email ID which user forgot to verify within 7 days of tenure.**

**4.2 On entering the email id otp will be send to the end user email id . Email ID will be verified and user will be  
logged in .**

## **5 User Loyalty:**

**5.1 If user want to be the Loyal customer of the brand to use special offers of the brand then user has to select the  
Loyalty checkbox and pay the amount then the user will be logged in as the loyalty member of that brand.**

# Key Learnings

1. **Software Architecture is extremely important and play vital role in the Software Development Life Cycle.**
2. **With the help of Software Architecture we can deliver flexible and adaptable product in changing markets.**
3. **It Helps in reduce maintenance costs and amortize development costs as the customer is concerned with the cost, stability and schedule.**
4. **If proper Architecture is not made then the quality of the product at end will be compromised which will lead to end user dissatisfaction and in the end is the business failure.**
5. **It help in risk management . It help to reduce the risks and chance of failure.**
6. **If the architecture is well designed in detail then for the developer it would be easier to understand the requirement and can follow simple approach for the same.**
7. **System Architect gives you the ability to predict the Software System qualities.**
8. **If the Architecture of the Product is properly design then the communication with the stakeholder get easy.**
9. **If the Architecture of the Product is properly design then implementing and managing changes are always welcome as new requirement can come keeping in mind the market, customer need etc.**
10. **On personal experience when I joined the project with the help of the Software Architect it was easy for me to understand the flow of the product and requirement of the client.**

THANK YOU