



SMU

SINGAPORE MANAGEMENT
UNIVERSITY

CS301: IT Solution Architecture
AY 2019-2020 Term 2

Project Proposal

Team Name:
ITSA GOURDS

Wayne Loh	S9610314Z
Seow Jian Liang Job	S9518801Z
Lee Wei Han Sean	S9635788E
Li KangZheng	S9522728G
Wong Xian Rui Abel	S9620800F

Instructor: *Dr. Ouh Eng Lieh*

Background and Business Needs

In light of the recent Coronavirus outbreak, the shortage of masks available at physical stores, and the close physical proximity when queueing for them has led to the need of an eCommerce store selling masks. The eCommerce store will feature a wide array of masks that will cater to the different levels of coverage and filters needed for different strains of viruses. Since prices sold on the site will be standardized, the site aims to eliminate the existence of potential black markets overcharging for the masks. Customers' information will also be processed to eliminate the scenario of hoarding.

The functionality of the store will be focused around customer-side interactions present in an eCommerce store. Shoppers will be able to find a specific mask based on the ID, name, price, view the masks, and checkout their orders. The site will provide a convenient platform for citizens to purchase mask at the comfort and safety of their home.

Stakeholders

Stakeholder	Stakeholder Description
Customer	<ul style="list-style-type: none">• Checks out mask(s) from the website• Views masks• Login into his/her account to view orders
Business Owner	<ul style="list-style-type: none">• Conceive objectives for greater profit• Design and implement plans and strategies• Ensure that the company has the adequate and suitable resources to complete its daily routines• Organize and coordinate operations for optimal productivity• Supervise the work of employees• Liaise with external partners/vendors/suppliers• Assess overall company performance periodically against objectives
Project Manager	<ul style="list-style-type: none">• Define project scope and objectives• Planning of resources (manpower, time, money, hardware) needed to reach objectives• Manage the utilization of resources effectively and efficiently
Security Manager	<ul style="list-style-type: none">• Monitor networks for security breaches and investigate violations• Design, implement, and maintain the organization's cyber-security plan.• Direct the installation and use of security tools (e.g., firewalls, data encryption), to protect sensitive information.• Recommend and implement security standards and best practices• Ensure that IT security audits are conducted periodically or as needed (e.g., when a security breach occurs).
Infrastructure Manager	<ul style="list-style-type: none">• Overviews IT operations• Maximise system uptime to meet service level agreements (SLAs)• Ensure maintainability in system architecture• Promote consistent standards and reusability in codes• Maintain logs, documentation and reporting of network irregularities

Key Use Cases

<u>Enter Mask Data</u>	
Use Case ID	1
Description	Business Owner is able to list mask details and edits mask details such as price, image, quantity, description.
Actors	Business Owner
Main Flow of events	<ol style="list-style-type: none">1. The business owner enters the inventory view page2. System displays the fields to add new product information3. Business owner keys in mask details with regards to the new supply e.g. Price, Quantity, Description4. Business owner clicks button to add new mask information5. The system updates the inventory information and updates the inventory page
Alternative Flow of events	<ol style="list-style-type: none">1. Business owner enters the inventory view page2. System displays the fields to add new product information3. Business owner decides to not proceed to add new product information4. Business owner exits the page and the system does not update
Pre-conditions	<ul style="list-style-type: none">• NULL
Post-conditions	<ul style="list-style-type: none">• Mask information is updated

<u>Purchase Mask (Add to Cart)</u>	
Use Case ID	2
Description	Customer views the mask and specifies the quantity that he would like to purchase and adds it to the cart
Actors	Customer
Main Flow of events	<ol style="list-style-type: none">1. Customer enters the mask details page2. The system displays the mask information and quantity information on the page3. The customer selects the desired quality and clicks the “add to cart” button4. The system adds the order information into the cart and updates the chart icon on the page

Purchase Mask (Add to Cart)

Alternative Flow of events	<i>Mask is out of stock</i> <ol style="list-style-type: none">1. Customer enters the mask details page2. System displays the mask information but disable the field to select quantity3. Customer exits the page and the system does not update <i>Customer changes his mind</i> <ol style="list-style-type: none">1. Customer enters the mask details page2. System displays the mask information and quantity information on the page3. Customer decides to not proceed with the order4. Customer exits the page and the system does not update
Pre-conditions	<ul style="list-style-type: none">• Customer should be logged in• Mask information should be in the database
Post-conditions	<ul style="list-style-type: none">• Cart information is updated

View Masks

Use Case ID	3
Description	Customer has a bird's eye view of all the products that the business is currently selling
Actors	Customer
Main Flow of events	<ol style="list-style-type: none">1. Customer enters the view masks page2. System displays hyperlinks that redirect to mask details page. Hyperlinks represented by images, names, and price of masks3. Customer clicks on mask that he wants to know more about or potentially purchase, is redirected to mask details page of a particular mask id
Alternative Flow of events	Customer decides to not to view Customer exits the page
Pre-conditions	<ul style="list-style-type: none">• Customer should be logged in• Mask information should be in the database
Post-conditions	<ul style="list-style-type: none">• NULL

<u>Login</u>	
Use Case ID	4
Description	Customer logs into his account to make a purchase or view history of products
Actors	Customer
Main Flow of events	<ol style="list-style-type: none"> 1. Customer clicks login button 2. Customer is prompted to enter username and password 3. Customer enters username and password 4. Customer is logged in and redirected back to homepage
Alternative Flow of events	<p>Customer checks out without logging in</p> <ol style="list-style-type: none"> 1. Customer clicks checkout button in cart page 2. Customer is prompted to enter username and password 3. Customer enters username and password <p>Customer is logged in and redirected to order summary page</p>
Pre-conditions	<ul style="list-style-type: none"> • Customer is not logged in
Post-conditions	<ul style="list-style-type: none"> • Customer is logged in

<u>Checkout</u>	
Use Case ID	5
Description	Customer checks out their cart once they have their desired item(s) placed in the cart, confirming their purchase of mask(s)
Actors	Customer
Main Flow of events	<ol style="list-style-type: none"> 1. Customer is already viewing their cart 2. Customer clicks the “check out” button to confirm their purchase 3. System processes the checkout 4. Confirmation email is sent to customer
Alternative Flow of events	<p><i>Customer logs out without checking out</i></p> <ol style="list-style-type: none"> 1. Customer is already viewing their cart 2. Customer then logs out of the web page without checking out 3. System clears cart memory
Pre-conditions	<ul style="list-style-type: none"> • Customer should be logged in • Mask information should be in the database • Customer’s email information is already in database upon registration
Post-conditions	<ul style="list-style-type: none"> • Confirmation of purchase is sent to customer via email

Quality Requirements

Quality Requirement Title - Maintainability	
Quality Requirement ID	1
Description	<ul style="list-style-type: none">• Conduct and run test cases for all classes• Ensure CI/CD• Ensure loose coupling, high cohesion
Significance	<ul style="list-style-type: none">• Test cases decreases chances of introducing new bugs or breaking new builds while fixing bugs and adding new features.• It also provides ease of bringing new developers on board and reduces technical debt.

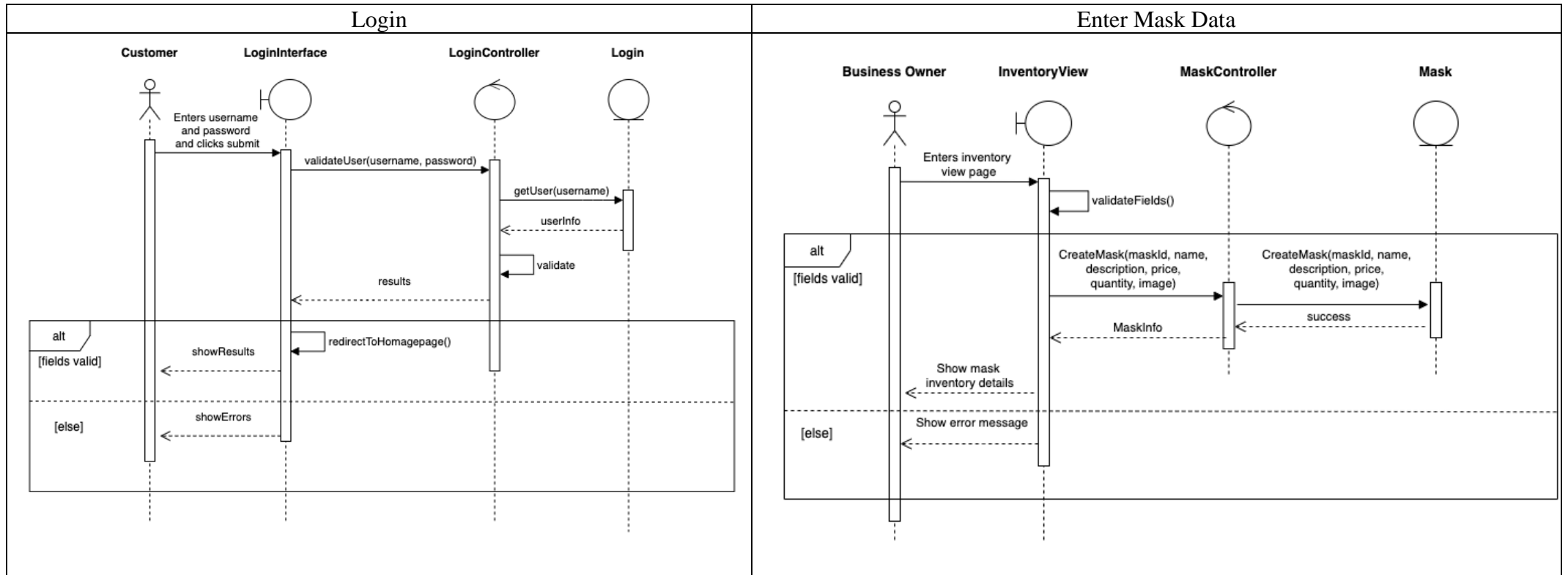
Quality Requirement Title - Availability	
Quality Requirement ID	2
Description	<ul style="list-style-type: none">• 99.99% uptime between 9am – 10pm daily
Significance	<ul style="list-style-type: none">• It is important to ensure that customers are able to swiftly and efficiently place their orders during waking hours. This is especially pertinent in times of a pandemic.

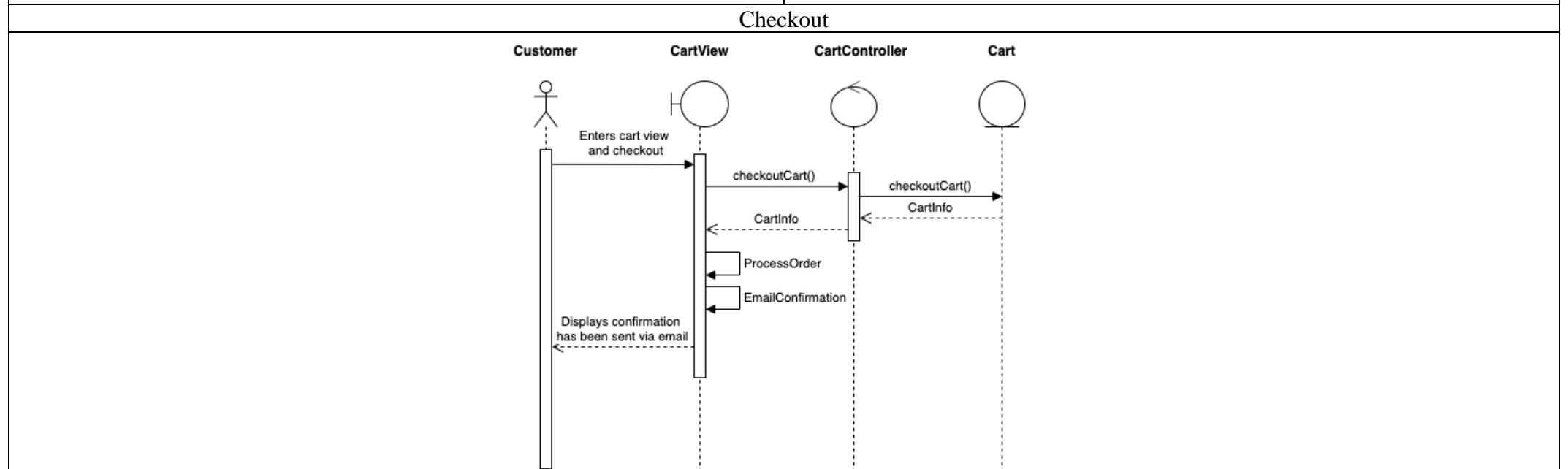
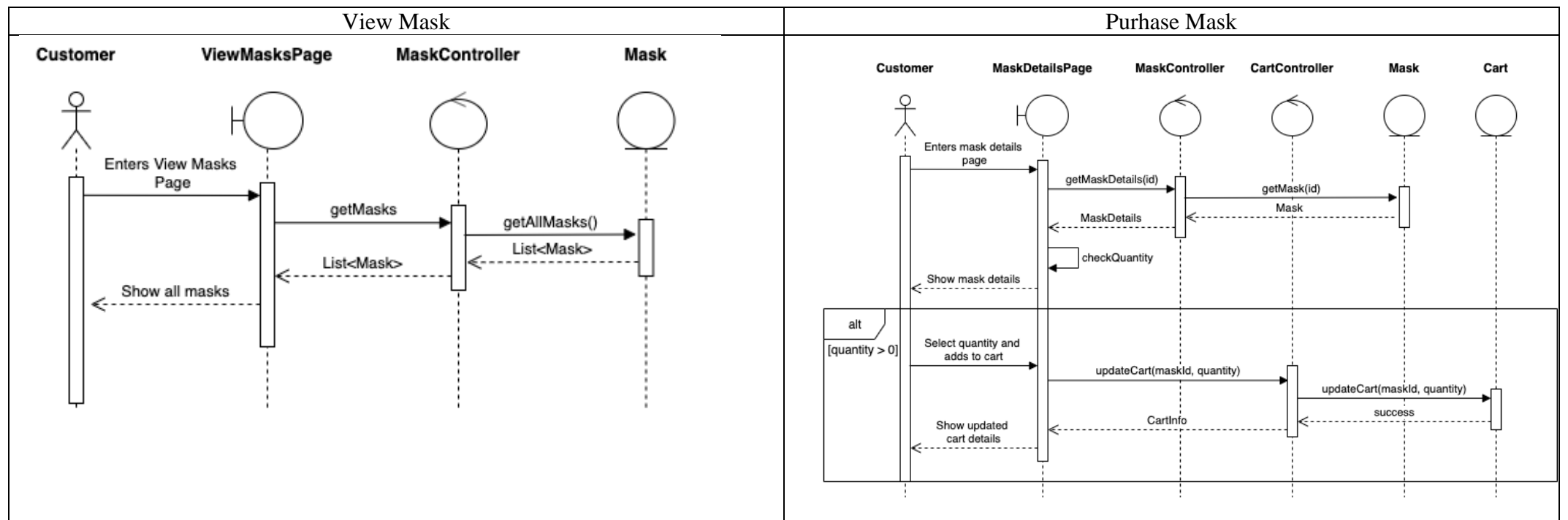
Quality Requirement Title – Security	
Quality Requirement ID	3
Description	<ul style="list-style-type: none">• No unauthorised access to protected pages• No HTML tampering• No SQL injection• No breach of data confidentiality during data transmission
Significance	<ul style="list-style-type: none">• Keeping sensitive information secure is key to building trust with customers. Other areas of security such as data tampering are even more relevant as eCommerce sites are susceptible to payment fraud(s).

Quality Requirement Title - Performance	
Quality Requirement ID	4
Description	<ul style="list-style-type: none">• 5 seconds initial web page load time• 3 seconds subdomain page load time• Handle 100 concurrent users
Significance	<ul style="list-style-type: none">• Performance is pertinent in times of crisis due to the global rush for protective masks. Estimating the sum of physical customers and translating them to online ones, it is imperative that our system is able to handle a large number of users at any point in time.• As masks are considered a necessity during crisis time, it stands to reason that a slightly higher than average load time for our web page is acceptable. Users will be willing to wait a few seconds longer just to get their masks.

Views

Sequence Diagram





Deployment Diagram

