A picture containing drawing, food

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**CS301: IT Solution Architecture   
AY 2019-2020 Term 2**

***Project Proposal***

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# 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

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| **Stakeholder** | **Stakeholder Description** |
| Customer | * Checks out mask(s) from the website * Views masks * Login into his/her account to view orders |
| Business Owner | * 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 | * 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 | * 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 | * 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

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| **Login** | |
| Use Case ID | 1 |
| Description | Customer logs into his account to make a purchase or view history of products |
| Actors | Customer |
| Main Flow of events | 1. Customer enters the login page 2. Customer enters his username and password and clicks on the “login” button 3. System redirects customer to homepage |
| Alternative Flow of events | *Invalid username or password*   1. Customer enters the login page 2. Customer an incorrect username and password “login” button 3. System shows an error message |
| Pre-conditions | * Customer is not logged in * User account must exist |
| Post-conditions | * Customer is logged in |

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| **Enter Mask Data** | |
| Use Case ID | 2 |
| Description | Business Owner is able to create new mask listing on the e-commerce website |
| Actors | Business Owner |
| Main Flow of events | 1. The business owner enters the inventory page to add new mask 2. The business owner enters the required information and clicks on the “submit” button 3. The system creates a new mask record in the database 4. The system shows a success message |
| Alternative Flow of events | *Invalid fields*   1. Business owner leave one of the required fields blank and clicks submit 2. The system shows the error message and highlight the invalid field 3. The system performs no creation |
| Pre-conditions | * Business owner is logged in |
| Post-conditions | * Mask information is created |

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| **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 | 1. Customer enters the view masks page 2. System displays a list of masks with their summary information and a button to view the respective masks 3. Customer clicks on the “view mask” button |
| Alternative Flow of events | 1. Customer decides to not to view 2. Customer exits the page |
| Pre-conditions | * Customer should be logged in * Mask information should be in the database |
| Post-conditions | * NULL |

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| **Add mask to cart** | |
| Use Case ID | 4 |
| 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 | 1. Customer enters the mask details page 2. The system displays the mask and quantity information on the page 3. The customer selects the desired quality and clicks the “add to cart” button 4. The system adds the order information into the cart and updates the chart icon on the page |
| Alternative Flow of events | *Mask is out of stock*   1. Customer enters the mask details page 2. The system displays the mask information but disable the field to select quantity 3. Customer exits the page and the system does not update   *Customer changes his mind*   1. Customer enters the mask details page 2. System displays the mask and quantity information on the page 3. Customer decides to not proceed with the order 4. Customer exits the page and the system does not update |
| Pre-conditions | * Customer should be logged in * Mask information should be in the database |
| Post-conditions | * Cart information is updated |

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| **Checkout** | |
| 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 | 1. Customer enters the cart page 2. System displays the cart items, the quantities, and total price 3. Customer clicks on the “checkout” button to confirm their purchase 4. System processes the checkout and a confirmation email is sent to the customer |
| Alternative Flow of events | *Cart is empty*   1. System displays an empty cart and user cannot checkout |
| Pre-conditions | * Customer should be logged in * Mask information should be in the database |
| Post-conditions | * Confirmation of purchase is sent to customer via email * Quantity of the mask is updated accordingly |

# Quality Requirements

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| **Quality Requirement Title - Maintainability** | |
| **Quality Requirement ID** | 1 |
| **Description** | * Conduct and run test cases for all classes * Ensure CI/CD * Ensure loose coupling, high cohesion |
| **Significance** | * Decreases chances of introducing new bugs or breaking new builds while fixing bugs and adding new features * Ease of bringing new developers on board * Reduces technical debt |

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| **Quality Requirement Title - Availability** | |
| **Quality Requirement ID** | 2 |
| **Description** | * 99.99% uptime between 9am – 10pm daily |
| **Significance** | * 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. |

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| **Quality Requirement Title - Security** | |
| **Quality Requirement ID** | 3 |
| **Description** | * No unauthorised access to protected pages * No HTML tampering * No SQL injection * No breach of data confidentiality during data transmission |
| **Significance** | * 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). |

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| **Quality Requirement Title – Performance** | |
| **Quality Requirement ID** | 4 |
| **Description** | * 5 seconds initial web page load time * 3 seconds subdomain page load time * Handle 100 concurrent users |
| **Significance** | * 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

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| --- | --- |
| **Login** | **Enter mask data** |
| **A close up of a map  Description automatically generated** | A close up of a map  Description automatically generated |
| **View masks** | **Add mask to cart** |
| **A close up of a logo  Description automatically generated** | A close up of a map  Description automatically generated |
| **Checkout** |
| **A close up of a logo  Description automatically generated** |

## Deployment Diagram

A screenshot of a cell phone

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