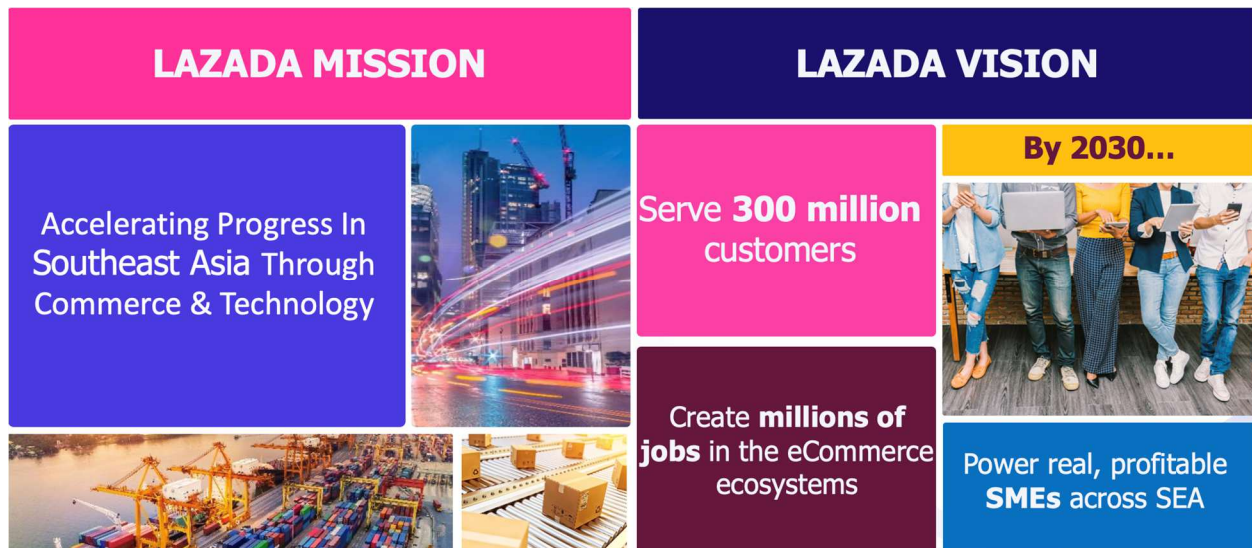




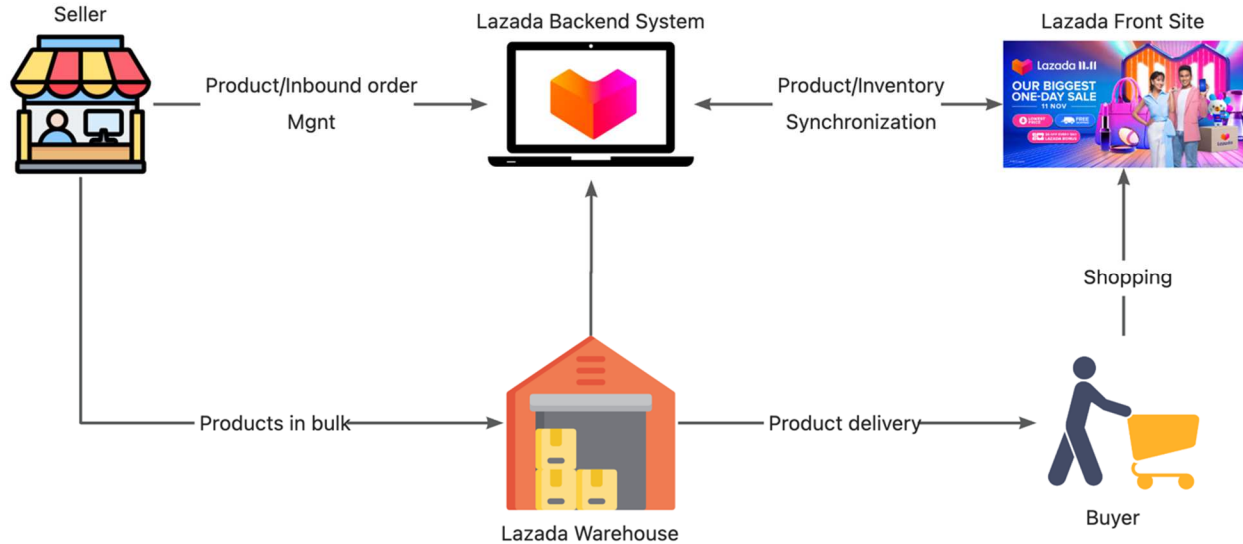
Background

Founded in 2012, Lazada Group is Southeast Asia's leading eCommerce platform. With a presence in six countries – Indonesia, Malaysia, the Philippines, Singapore, Thailand and Vietnam – we connect this vast and diverse region through our technology, logistics and payments capabilities. Today, we have the largest selection of brands and sellers, and by 2030, we aim to serve 300 million customers. In 2016, Lazada became the regional flagship of the Alibaba Group, and is backed by Alibaba's best-in-class technology infrastructure.



ECommerce System

Besides providing marketplace for sellers, Lazada also provides drop shipping business model where seller's products are stored, picked, packed and shipped directly from Lazada warehouse to ensure your customers enjoy the fastest, most convenient delivery, it's FBL – Fulfillment By Lazada.



You can also checkout detail about FBL [here](#)

Requirements

In this use case, we will design a minimal simplified FBL model

We will look at five roles in this model:

- Customer: who buy products from Lazada
- WH Administrator: who manage product category and warehouse (WH) area setup
- Seller: who manage product, inbound order (IO) creation
- WH Worker: who work in WH and take care of order fulfillment
- Shipper: who ship products from warehouse to customers

To be able to operate this FBL, we need product solutions for each entity involve in this model

Lazada Site:

Customer: customer a need a website where they can find products they need and make purchase

- Browsing, filtering products by product's attribute for example price, brand, color and extra attributes from product's category
- Search product



- Do checkout
- Make order

Admin System:

WH Admin: WH admin needs product solution to manage product category, warehouse areas

- Product Category management: create, update, delete. Team can define additional product attributes at category level then each product belongs to product category will have those extra attributes
- Warehouse area management: create, update, delete. Each area has CBM info. One product can be stored in many areas, total product's quantity is total of stock of product from all areas that product is in

Seller: Seller need product solution to manage product and IO creation

- Product management: create, update, edit, delete. Each product has basic attributes like: title, description, price, image and product dimension information: length, width, height. Beside product basic attributes, product also inherits attributes from product's category.
- Inbound order: seller can create inbound order for their products. Product inventory will only be updated when WH worker finish IO

WH Worker:

- IO listing: can view and finish IO, system need to recommendation areas to put for each product in IO and action to finish PO. Recommendation logic should prioritize for areas:
 1. Already have same product in
 2. Still have enough space to put whole amount of product in (base area free CBM vs product's CBM)
 3. Empty areas
- Order listing: can view, and pick products for order, system needs to recommend areas to pick for reach product in order. Recommendation logic should prioritize areas that have enough quantity for product in an order

Delivery hero:

- Order listing: can see list of ready-to-deliver orders and delivery order action



Specific Requirements for COSC2769 – Full Stack Development

The following requirements must be addressed in the group project. Your application only needs to support three roles: admins, sellers, and customers (assume there is only one central warehouse for all products). Create a single-page application (SPA) for each role.

Warehouse Admins

Product Category Management: Admins can Create, Read, Update, and Delete product categories. Categories can be top-level or subcategories. For example, admins can create two top-level categories: Electronics and Vehicles. Under Electronics, admins can create subcategories like TV, Computers, and Phones. Under Computers, admins can create further subcategories such as Laptop, PC, and All-in-One. There is no limit on the number of categories and subcategories. Updating and deleting a category is available only if no product is associated with that category. Besides a name, each category can have additional product attributes. When defining an additional attribute, the admins can specify the attribute name, whether the attribute is required or optional, and whether the attribute is a number or text. A product belonging to category X has all basic attributes, all additional attributes defined in X, and all additional attributes defined in X's ancestor categories.

Seller Approval: Admins can see all registered sellers. By default, after registration, a seller's status is 'Pending'. Admins can update a seller's status to 'Approved' or 'Rejected'. Only approved sellers can manage products. Note that admins can update sellers' statuses multiple times.

Sellers

Registration and Login: The following fields are required for seller registration: email (unique), phone (unique), password, and business name. Passwords must be stored securely (salted and hashed). The sellers can log in using email and password or phone and password.

Product Management: Basic CRUD features. Sellers can filter, and sort products based on name, price, and date added. Filter and sort operations must be done at the front end.

Order Management: Sellers can view orders and customer information if the orders contain the sellers' products. For example, if an order X contains product A and product B, the seller who sells product A can see the customer of order X and how many items of product A the customer wants. However, the seller who sells product A cannot see that the order also contains product B. When viewing orders, the sellers can mark their products in those orders as "Shipped" or "Canceled". For each product in an order, the seller can only choose "Shipped" or "Canceled" for the whole product. For example, if a customer orders 3 TVs, the TV seller can only ship all 3 TVs (Shipped status) or ship no TV (Canceled status), but not 1 or 2 TVs.

Sales Statistics: Sellers can see the statistics of all their products based on orders' statuses. The valid statuses are New, Shipped, Canceled, Accepted, and Rejected (read the description below for more information about Accepted and Rejected).

Customers

Registration and Login: The following fields are required for customer registration: email (unique), phone (unique), password, and address. Passwords must be stored securely (salted and hashed). The customers



can log in using email and password or phone and password. Unlike sellers, there is no need for customers to get approval from admins before they can use the website.

Browsing/Filtering/Searching Products: Customers can browse products using product categories/subcategories. In addition, customers can filter products using name/price/date added. Customers can also search products with custom keywords (the search must look up information in the product title and product description fields). Due to the large number of products, a pagination feature is required to let customers view all returned products. To use those features, the customers don't need to log in first.

Add to Cart/Remove from Cart: Customers must be able to add products to a shopping cart and remove products from the shopping cart. The customers can update the product quantities for products in the shopping cart. Customers can clear their shopping carts. To use this feature, the customers don't need to log in first. If the customer is not logged in, the shopping cart content is stored in the browser's local storage. If the customer visits the website next time, the shopping cart content is loaded from the local storage. If the customer is logged in, the shopping cart content is stored in both the browser's local storage and server. Next time, if the customer uses a different computer and logs in, she will still see her previous shopping cart content (the cart content is loaded from the server). But if the next time the customer uses the current computer to visit the website, she still has the shopping cart content because it is also stored in the browser's local storage.

Place Orders: Customers can place an order with all products in the shopping cart. The initial status of an order is "New".

Order Management: Customers can see the most recent status of products in their orders when they are updated by the corresponding sellers. If the status is "Shipped", the customer can decide if she "Accepted" or "Rejected" the product (this flow simulates the physical product delivery process). After a product status is updated as "Accepted" or "Rejected", nothing can be done to update the product status further.

Allowed Packages/Libraries/Modules

Front-end: react, react-dom, react-scripts, bootstrap, react-router

Back-end: express, express middleware at [Express middleware](#), mongoose, mysql, mysql2

If you want to use modules not listed above, you must ask the course Coordinator/Lecturer first.

Allowed Packages/Libraries/Modules (August 20)

UI modules/libraries

- react-bootstrap
- @heroicons/react
- styled-components
- Font Awesome
- Animate.css



Browser-server communication

- axios
- jwt
- jwt-decode

Server modules/libraries

- bcrypt
- dotenv
- sequelize
- slugify