



CSE471 solutions - yoo

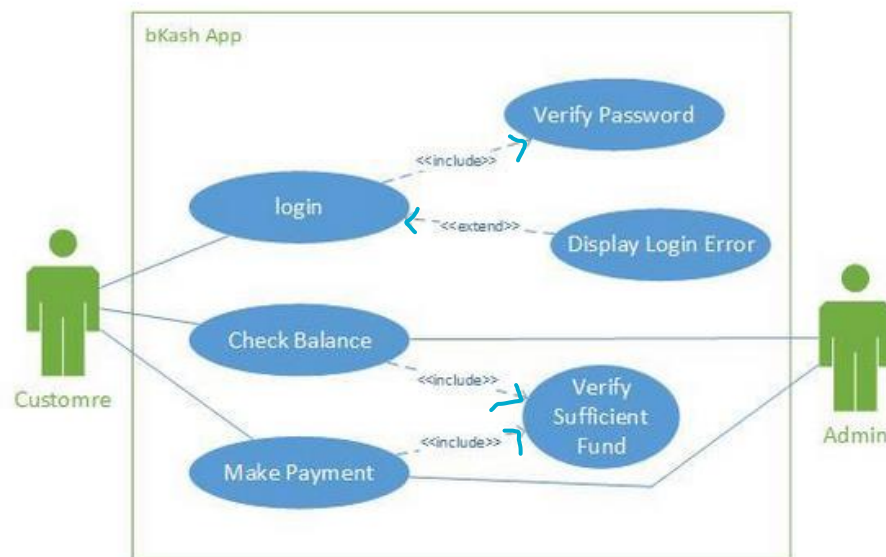
computer networking (BRAC University)



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The question is based on the following case study. You have to **design** a use-case diagram. Your mark is distributed according to your analysis capability and depth of understanding for different actors and use cases along with their relationships.

The customer is using bKash App for the bill payment system. This bKash App is allowing customers to login the system, check the account balance, and make payment towards bills. When a customer types his/her login information the bKash App is going to verify the password before completing the login process. If the login information is incorrect then the app is displaying the login error. When the customer wants to transfer funds to make a payment for the bill this app is going to make sure there is enough money to complete the transaction. When a customer wants to make a payment, the app is going to give them the option of either it is merchant or agent account.

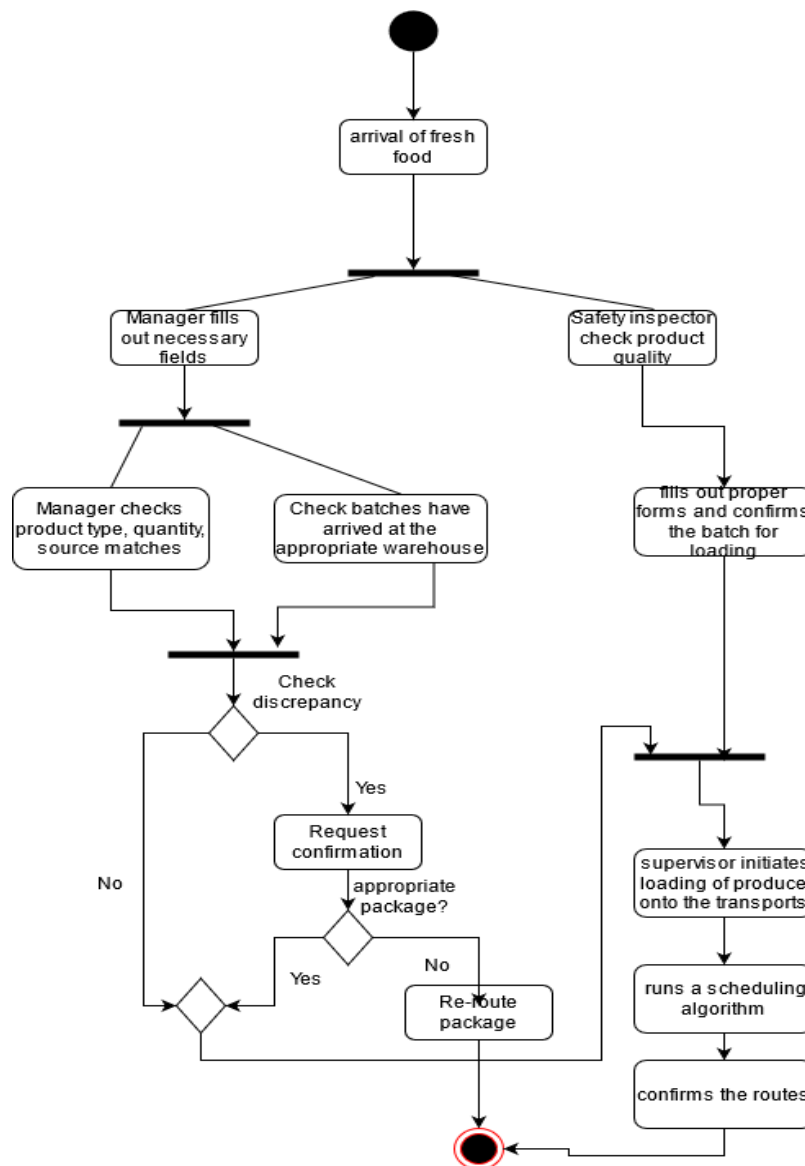


FreshMania, a renowned supplier of fresh vegetables and fruits across the planet, is creating a new planning & optimization system to load and dispatch transports in an efficient manner. The process starts after each batch of fresh produce arrives at the warehouse.

Warehouse managers and safety inspectors independently process. Manager fills out necessary fields and inspector checks product quality in their respective info-panels. Warehouse managers check if the product type, quantity, source matches the sales department's invoice for each batch. They also ensure whether batches have arrived at the appropriate warehouse. If any discrepancies are noticed, managers first request for a confirmation from the sales director if batches should be sent for re-routing. Information is entered into the system only for the batches that are intended for that warehouse. On the other hand safety inspectors checks produce quality, defects, and matches with regulations. If everything checks out, he fills out proper forms and confirms the batch for loading.

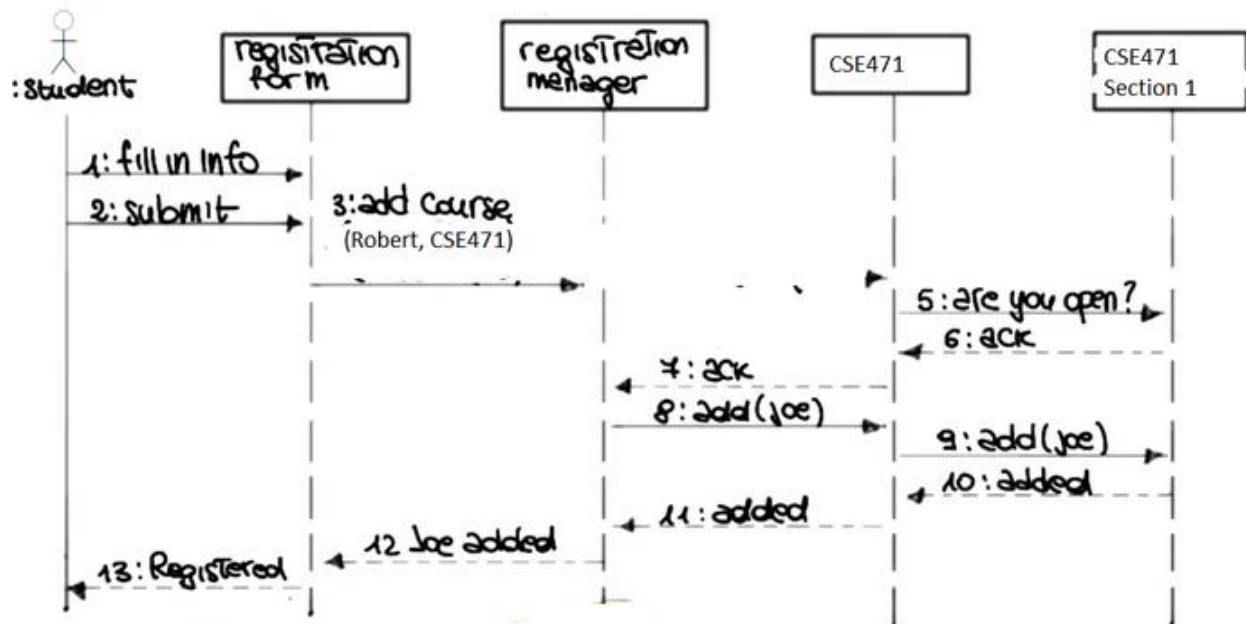
After both of these tasks are done, the dispatch supervisor initiates loading of produce onto the transports. After the loading completes, the supervisor runs a scheduling algorithm to define routes and confirms the routes.

Design an activity diagram based on the above scenario.



Students will send fill_in_info to the registration form and students might submit the form. When submission takes place then the registration form will send a message to the registration manager. It will add course functionality and pass the name "Robert" and course "CSE471" which is the specific course when Robert is registering. Then the registration manager will ask about course CSE471 whether it is accepted or not and also ask for the section number along with course info that is open or not. CSE471 is checking special offerings. If everything is fine then the student receives an acknowledgment and back to the registration manager. At last, Robert will register for the CSE471 course.

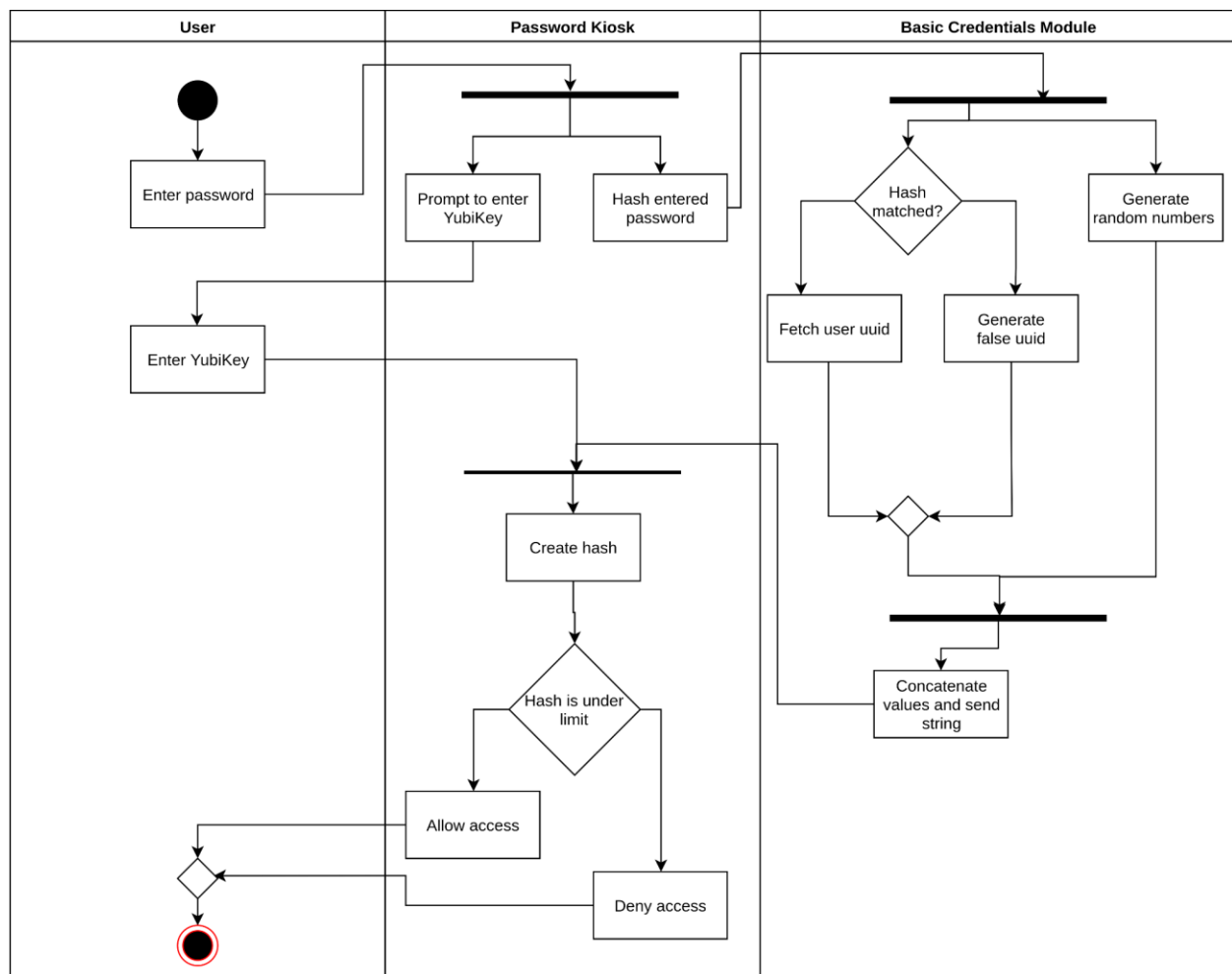
Design a Sequence Diagram for the above scenario.



The Pentagon is working on a new security protocol to ensure that no one other than no Russian spy can infiltrate and get access to classified materials. The protocol set is as follows:

1. The user must first enter their password on the password kiosk
2. The password kiosk will send the hash of the password to the basic credentials module (which is a part of the credentials system) and prompt the user to enter their YubiKey
3. The basic credentials module takes the hash and performs the following simultaneously:
 - a. It matches the hash against known passwords, and if there is a match, then it gets the user uuid, otherwise it generates a false uuid
 - b. It generates a set of random numbers
4. After the uuid and the random numbers are generated, the basic credentials module concatenates them to create a string and sent back to the password kiosk
5. The password kiosk will then use the YubiKey and the string to generate a hash
6. If the hash is under a specific limit, the user is allowed access, otherwise the user is declined access

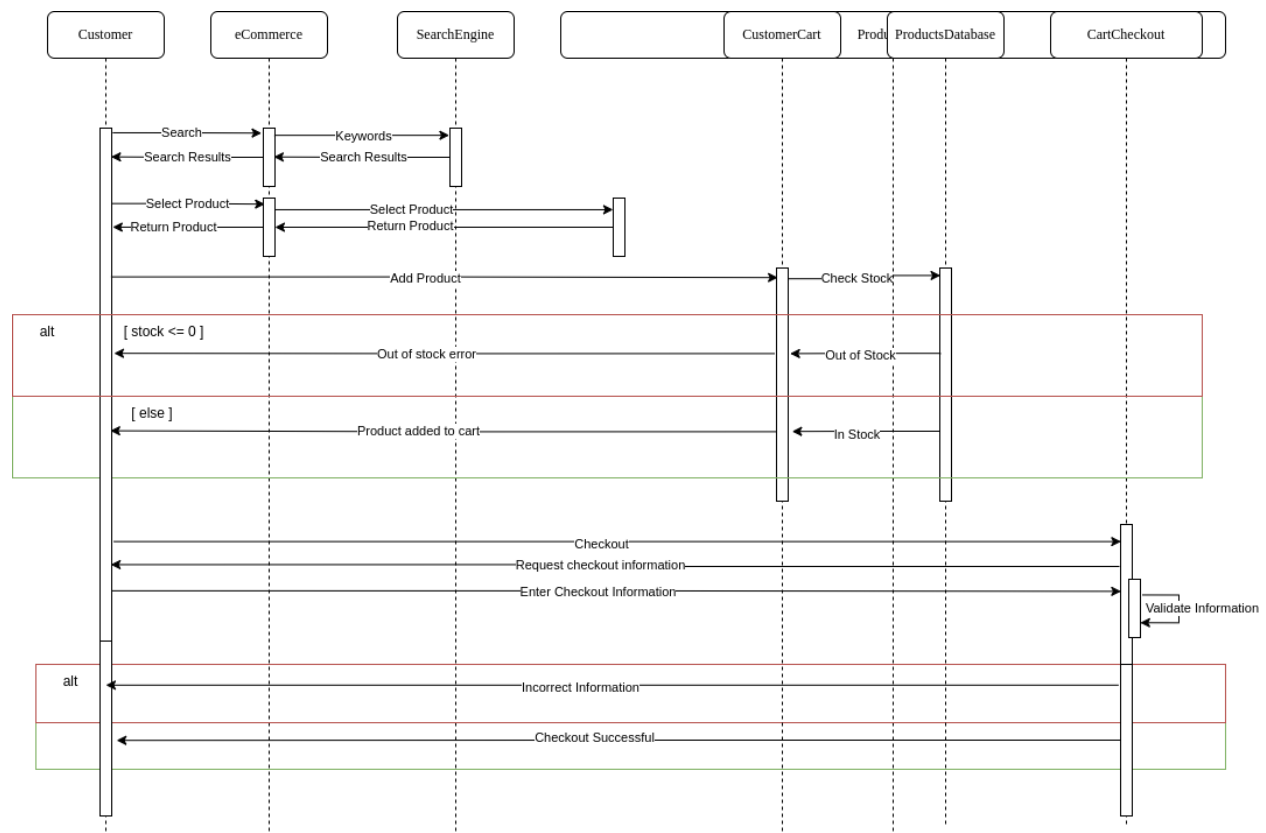
Draw the activity diagram



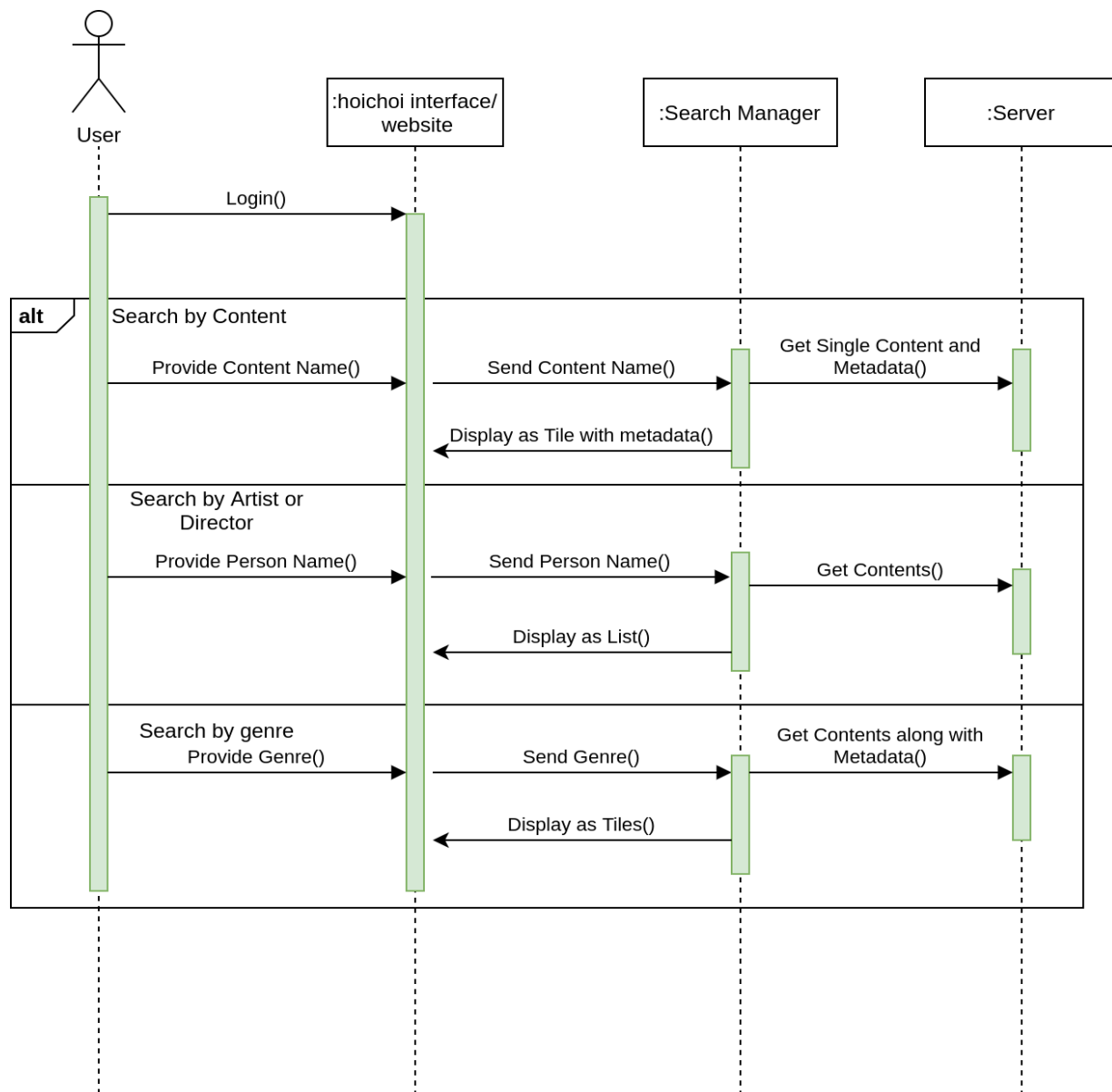
Ecommerce has been booming in Bangladesh, and especially with the pandemic, the demand for it has exponentially increased. A general case ecommerce runs as follows:

After a customer visits the site, they search for a product by typing its name which is passed to the SearchEngine. The SearchEngine then fetches the products from the ProductsDatabase and serials them in accordance to the relevance of the searched keywords and returns them to the customer. The customer selects an item which takes the user to the ProductPage. From the ProductPage, the customer adds the item to their cart which sends a request to the CustomerCart. After receiving the request, CustomerCart sends a request to the ProductsDatabase to check if the item is in stock, if the item is in stock, the product gets added to the CustomerCart otherwise an error is shown. Finally, the customer selects to checkout which sends a request to the CartCheckout where the customer has to enter their full name, email address, phone number and delivery address. If all the information has been entered correctly, a success message is shown, otherwise an error message is shown.

Design a Sequence diagram based on the above information.

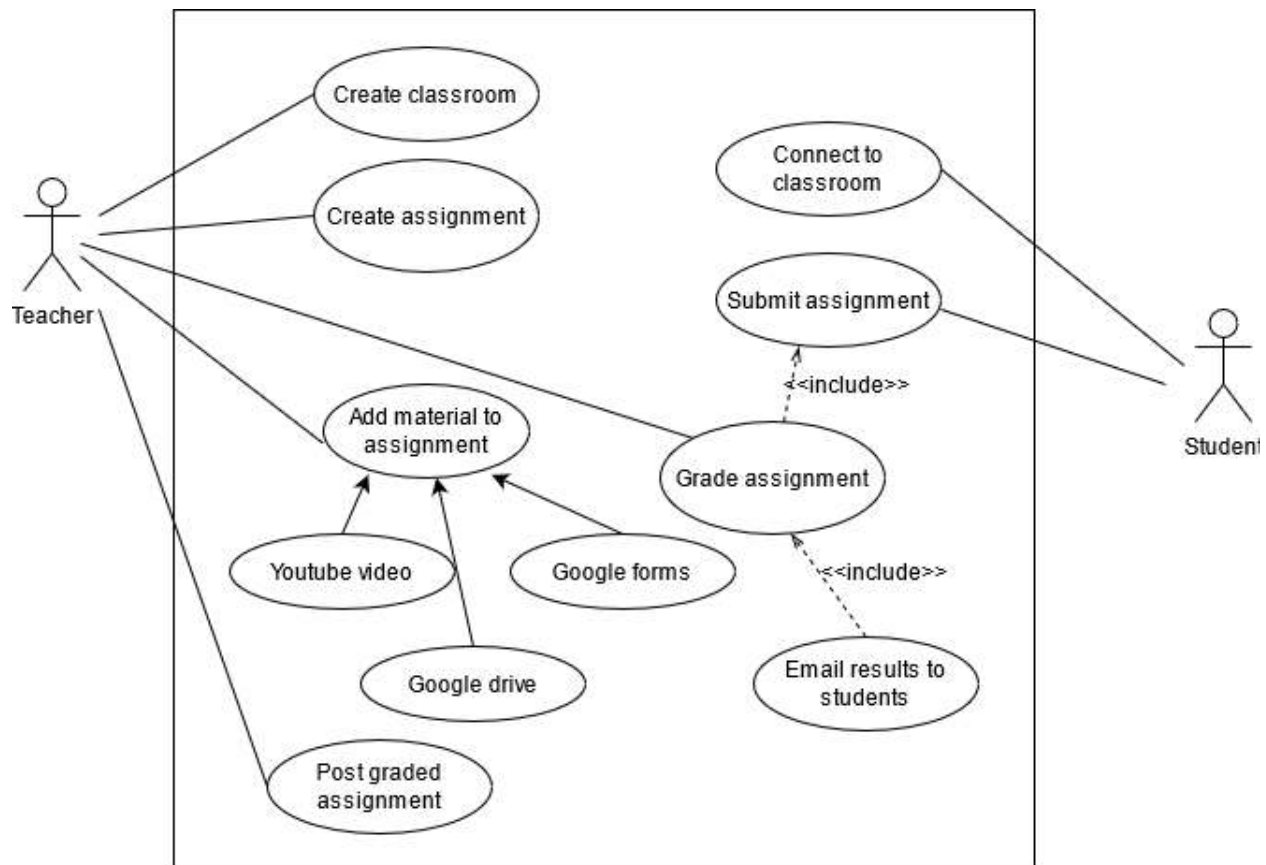


Watching a movie or documentary in hoichoi is always exciting. In a simple hoichoi site, after the user logs in using the credentials, there is a simple dashboard containing the suggested movie or Tv series along with a search bar at the top to search for any item. The user can search for the contents in three ways. They can search by a content name like “Mahanagar”, they can search by the name of an Artist or Director like “Mostafa Sarwar Faruki,” and finally they can search by a genre like “Crime Thriller.” For the first case, the hoichoi search manager fetches a single entry along with the metadata from the hoichoi server and displays it to the user as a tile along with the metadata. For the second case, a list of content involving the Artist or Director is showed (not as tiles) to the users after being fetched from the server. And finally, the relevant contents of a genre search are offered as tiles (without the metadata) for the user to select, however the search manager fetches the metadata from server for later use. All user communication with the search manager is relayed by the web interface of hoichoi. Draw a sequence diagram based on search system of hoichoi as described above.



Google Classroom is a **teacher/student platform**, which Google designed for the way teachers and students think and work. It converts traditional paper-based teaching mechanisms to an online paperless one. It all starts with the **creation of a classroom by a teacher**. **Students can easily connect to a classroom using a unique code created for each classroom**. It also **allows the teachers to create and add materials to assignments**, such as **YouTube videos, a Google Forms survey, and other items from Google Drive**. In this pandemic situation, it has done more for the teacher-student community. **Teachers can set graded assignments**. **Due date setting facility is also offered for the assignments**. Once the assignment is posted, **students can solve those and submit them online**. On completion of submission, **teachers can grade and return the result to the students**. The updates of the events are also emailed to corresponding email addresses which are used while connecting to the classroom.

Design a use case diagram based on the above information.

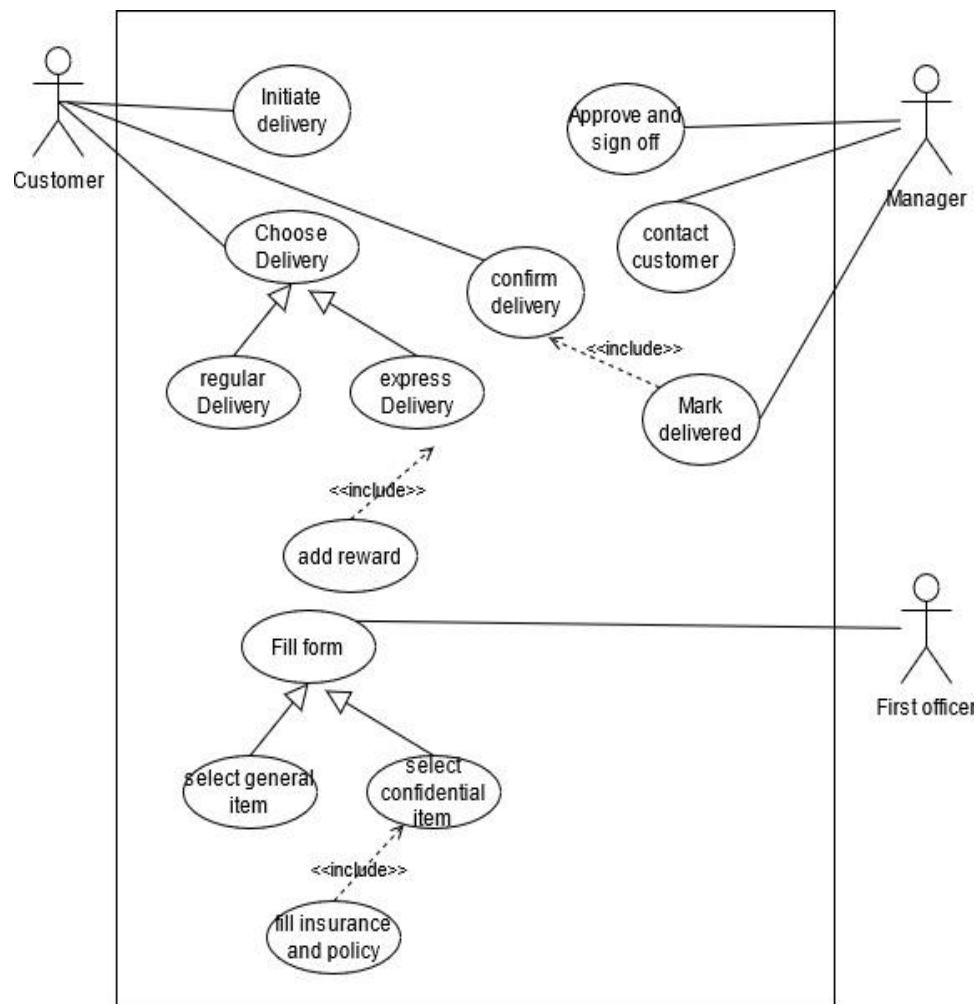


Use Case diagram

Analyzing the system for BDEX (a Bangladeshi courier service), following requirements were identified:

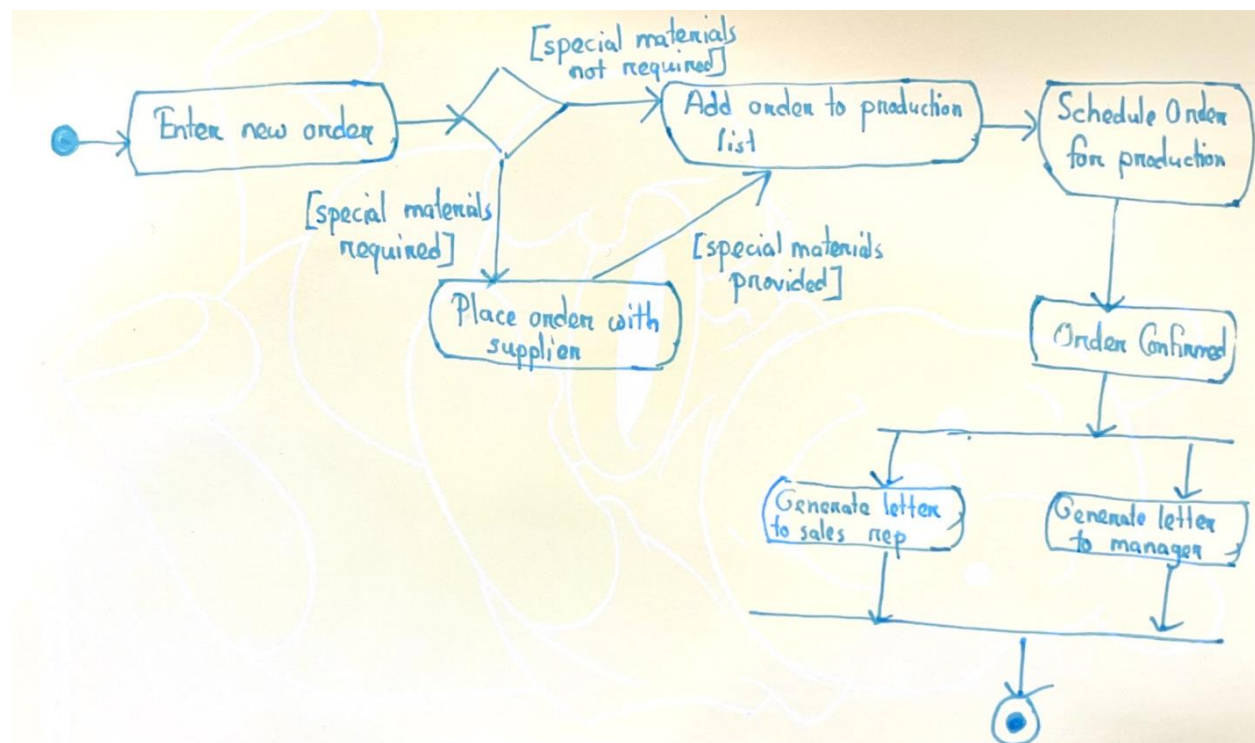
1. There will be three types of users: Customer, First Officer and Manager
2. Customer can initiate emergency delivery by providing item details
3. Customer can choose between regular and express delivery
4. Reward points are added into Customer account for express delivery
5. First Officer can fill out courier form with necessary information
6. For confidential and/or fragile item(s), First Officer must fill out insurance and policy documents during packaging but it is not needed for general items.
7. Manager can approve and sign off parcel item(s) for delivery
8. Manager can contact Customer for delay in parcel arrival
9. Manager can mark packages delivered after getting Customer confirmation

Design a use case diagram based on the above information.



Company TeaLeaves has recently adopted a new order management system for handling production requests. The sales representative can place a new order for production. If special materials are required for producing the new order, then an order is placed for special materials with the supplier. Otherwise, if no special materials are required for producing the new order or the supplier has finished providing the special materials, the order is added to the production list. Afterwards, the order is scheduled for production. Once the order is confirmed, a letter is generated to the sales representation and to the manager.

Draw the activity diagram for the above scenario.



Non Fungible Tokens (NFT) are an application of blockchains where the proof of ownership of an asset is placed on the blockchain network and the owner of the asset has the hash of the block stored in a digital wallet. First the creator of a NFT collection opens up a crypto wallet and then logs into it, if the creator already has a wallet, then s/he just logs in. After that, the creator connects his/her wallet to a marketplace, during the connection process, the marketplace will check if the wallet is already connected or not, if the wallet was not connected, then the wallet will be added to the database and a confirmation message will be sent, otherwise just the confirmation message will be sent. After connecting the wallet, the creator will request to add the NFT collection to the marketplace. The marketplace will check the collection and generate a minting cost in cryptocurrency and then will check if the wallet contains sufficient cryptocurrency to mint (add) the collection. If sufficient cryptocurrency is not present, the request will be denied. If sufficient cryptocurrency is present, then the marketplace will start the minting process. In the minting process, requests are sent to the blockchain network and the remote storage network. The blockchain network mines the block and then validates the block, the remote storage network stores the collection on a server. After both these processes are complete, the creator is sent a notification of the success.

Create the activity diagram for this.

