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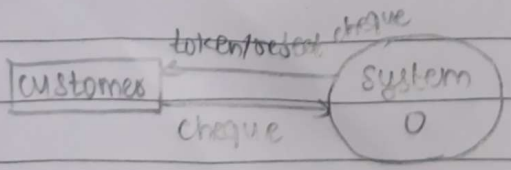
1. A customer presents a cheque to a clerk. The clerk checks a database containing all account numbers and make sure whether the account number in the cheque is valid, whether adequate balance is there in the account to pay the cheque and whether the signature is authentic. Having done these the clerk gives the customer a token. The clerk also debits the customers account by an amount specified on the cheque. If the cash cannot be paid due to an error on the cheque, the cheque is returned. The token number is returned on the top of the cheque and it is passed on to the cashier. The cashier calls out returned token number, takes customer signatures, pays cash, enter cash paid in database and files the cheque.

⇒ A system is designed to handle cheque payment in a bank. It includes verifying ~~cheque~~ cheque, account number, balance and signature, issuing token, debiting amount or rejecting the payment. The system involves interactions between customer, clerk, cashier and account database.

(i) Context diagram (level-0)

The system accepts the cheque from the customer and returns either token or reject it depending on verification results. If verified, cheque is passed to the cashier for cash payment.



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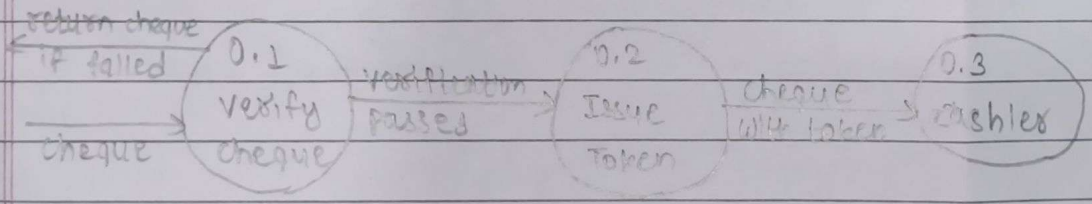
(ii) Level-1 DFD

→ The system is broken down into

(a) Receive cheque and verify
- Accept cheque from user
- Extract account number and validate it
- Check balance and signature.

(b) Issue token or Reject
- If all the verification passes, issue a token and debit the amount.
- Otherwise, return cheque to customer

(c) Pass cheque with token to cashier
- Send cheque with token on the top of cheque to cashier.
- Call out token number, collect signature, pay amount, record the cash payment and file the cheque.



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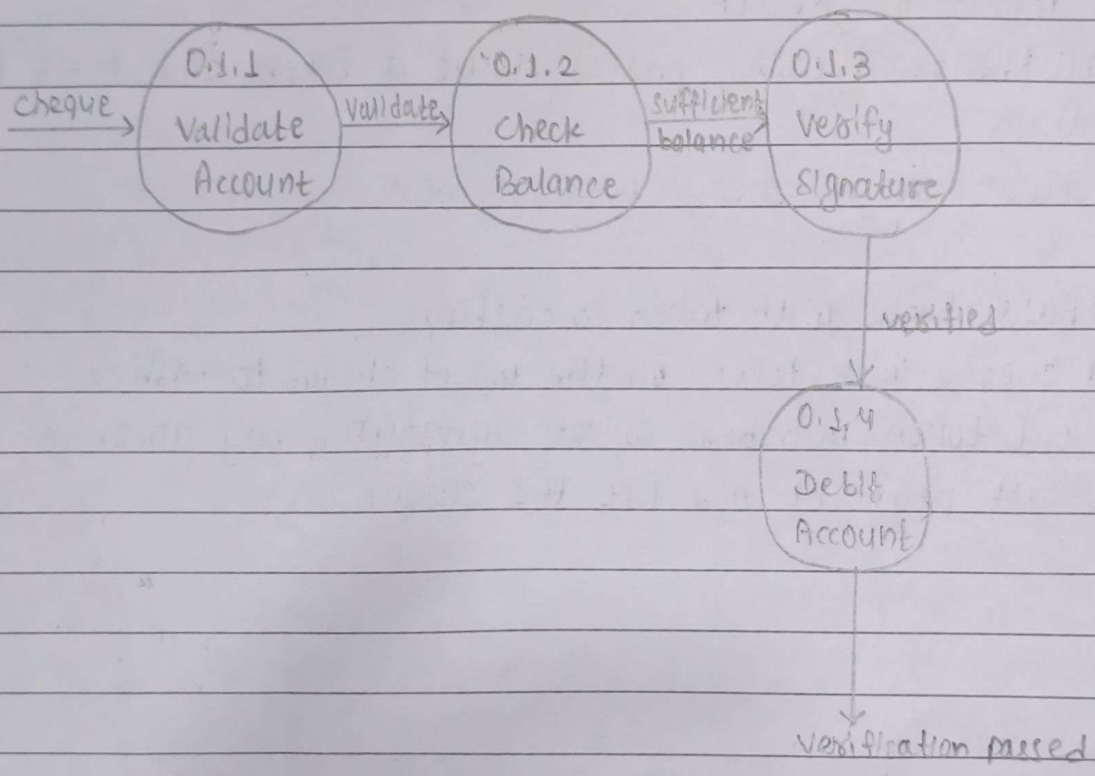
(iii) Level-2 DFD

- Break down the process 0.1 into

(a) Validate account number
(b) check sufficient balance
(c) verify signature
(d) Debit ~~customer~~ amount



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Q. Design use case diagram for library management system.

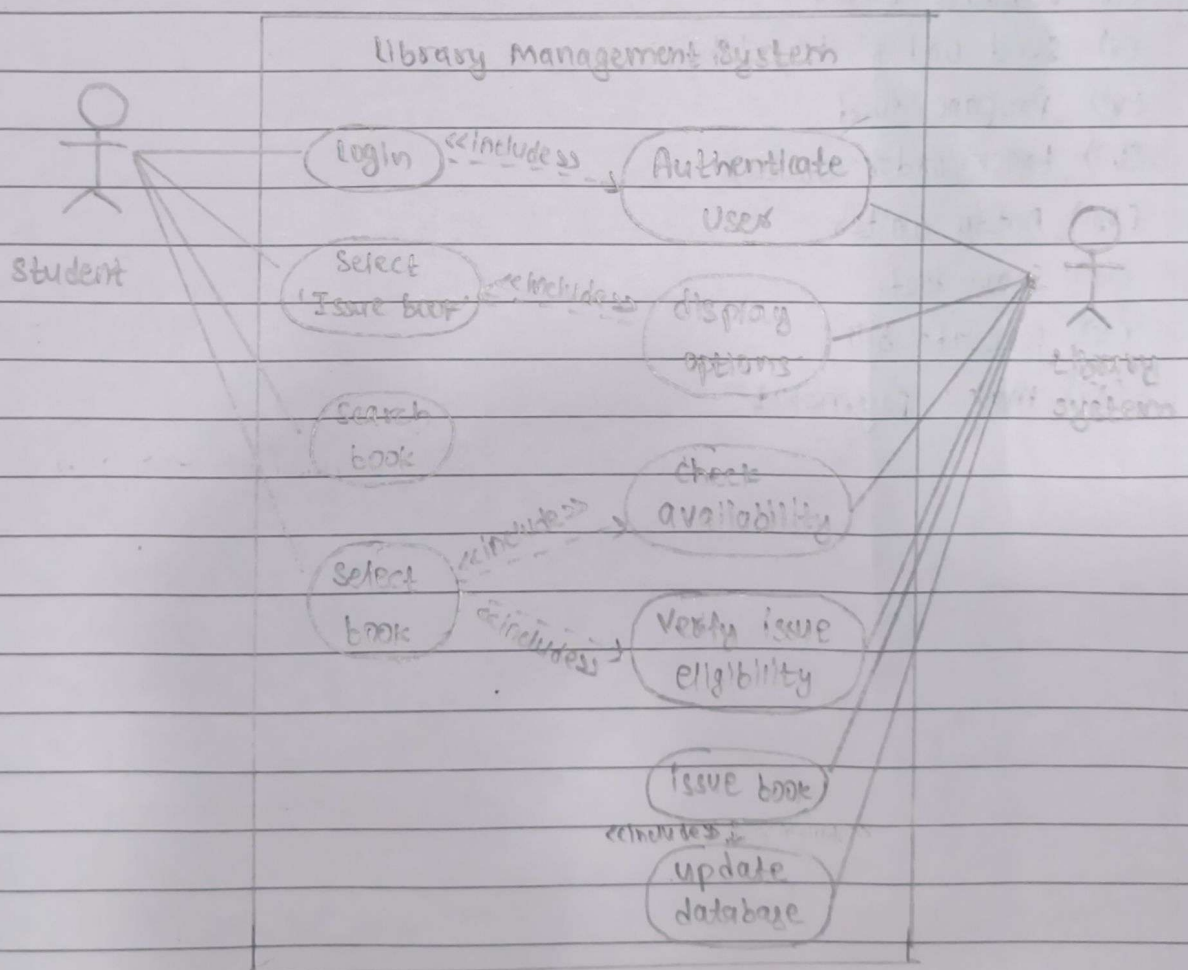
⇒ Actors

(i) Student

(ii) Library system

Use cases

(i) Login
(ii) Authenticate user
(iii) Select 'Issue'
(iv) Search book
(v) Select book
(vi) Check availability
(vii) Verify issue eligibility
(viii) issue book
(ix) Update library database
(x) Display options.



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Q. Design use case diagram for restaurant order system.

→ Actors

(i) Customer
(ii) Waiter
(iii) Resturant order system
(iv) Kitchen staff

Use cases

(i) View menu
(ii) Place order
(iii) enter order in system
(iv) validate order
(v) send order to kitchen
(vi) Prepare food
(vii) track order status
(viii) notify waiter
(ix) Serve food
(x) generate bill
(xi) make payment

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