

CA32106: Object Oriented Analysis and Design

Assignment

UML Sequence and Use Case Diagrams

Some dynamic UML diagrams can display how the system responds in more than one situation. For example, you were able to show how the ATM responded when the user input his or her PIN both correctly and incorrectly in a single statechart diagram. Sequence diagrams show only one execution path through the system, which corresponds to one scenario. Additional scenarios or execution paths require additional sequence diagrams.

Part A

Using Visual Paradigm, create a UML sequence diagram from the following scenario describing an automatic teller machine (ATM). Show appropriate lifelines (which has nothing to do with “Who Wants To Be A Millionaire”), activations, and message types. You may invent the names for classes, objects, and messages as necessary.

The diagram shows three objects: a customer, an ATM, and a bank (that owns the ATM)

1. The customer inserts his or her ATM card
2. The ATM prompts the customer for his or her PIN
3. The customer enters his/her PIN without error
4. The ATM asks the bank to verify the PIN
5. The bank verifies the PIN as matching the card
6. The ATM displays a menu of options
7. The customer selects withdraw from checking
8. The ATM prompts for an amount
9. The customer enters an amount
10. The ATM asks the bank to verify sufficient funds
11. The bank verifies that the customer has sufficient funds
12. The ATM
 - a. dispenses the cash
 - b. notifies the bank of the withdrawal
13. The ATM displays a menu of options
14. The custom ends the session
15. The ATM returns the customer’s bank card

Part B

Copy and paste the diagram created above to a new page and make the following modifications.

- At step 11, the bank indicates insufficient funds
- Have the ATM and the customer exchange appropriate messages leading to the customer requesting a lesser amount, for which the bank verifies sufficient funds and which the ATM dispenses

Part C

Using Visual Paradigm, create a UML use case showing the following use cases.

1. A customer may do the following:
 - a. Get a checking balance
 - b. Get a savings balance
 - c. Withdraw from checking
 - d. Withdraw from savings
 - e. Transfer money from savings to checking
2. A bank representative may do the following:
 - a. Replenish the cash supply
 - b. Collect the deposits
3. The service representative may do the following:
 - a. Replenish the blank receipts
 - b. Change the printer ribbon
 - c. Repair the ATM