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Software Engineering, Winter 2025
Practice Assignment 3

Exercise 3-1

Mention at least seven non functional requirements of system and explain the importance of each non functional requirements.

Exercise 3-2

1. What are non functional requirements of Facebook ?
2. An Informatics website is going to be build for Informatics GIU students. What are non functional requirements of Informatics website ?

Exercise 3-3

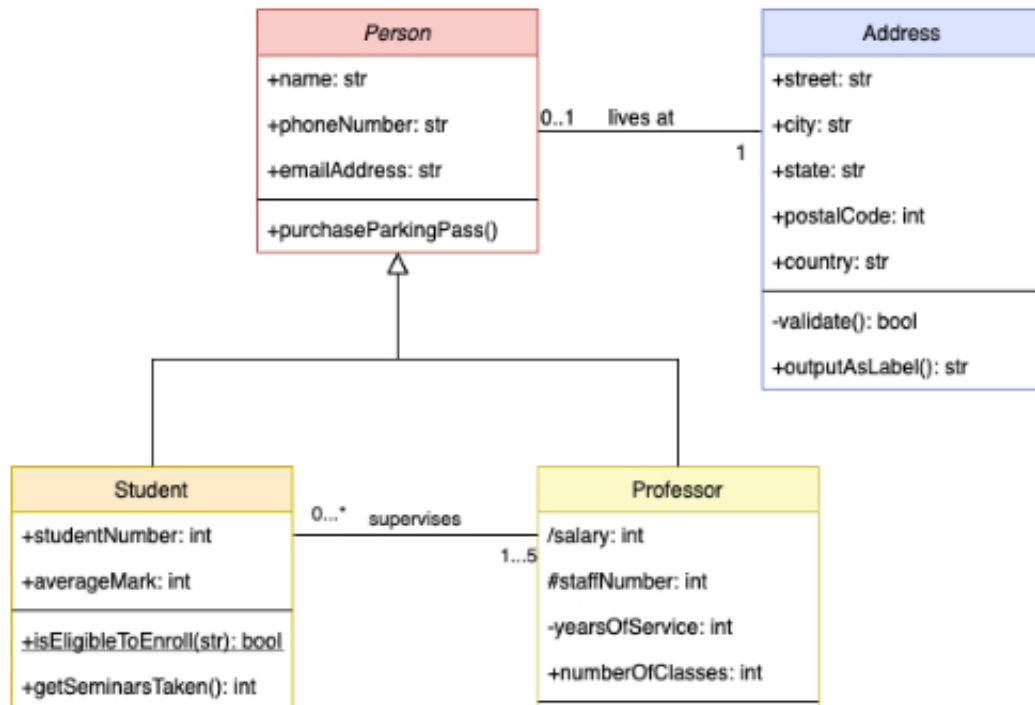
What are the differences between Unified Modeling Language (UML) diagram and use case diagram ?

Exercise 3-4

Explain the differences between Aggregation and Composition dependencies in a class diagram.

Exercise 3-5

Describe the following class diagram



Assume that Address has extra attributes such as buildingNo, floorNo, and apartmentNo.
 What is the difference between + and - sign in class diagram ?
 What are benefits of inheritance dependency ?

Exercise 3-6

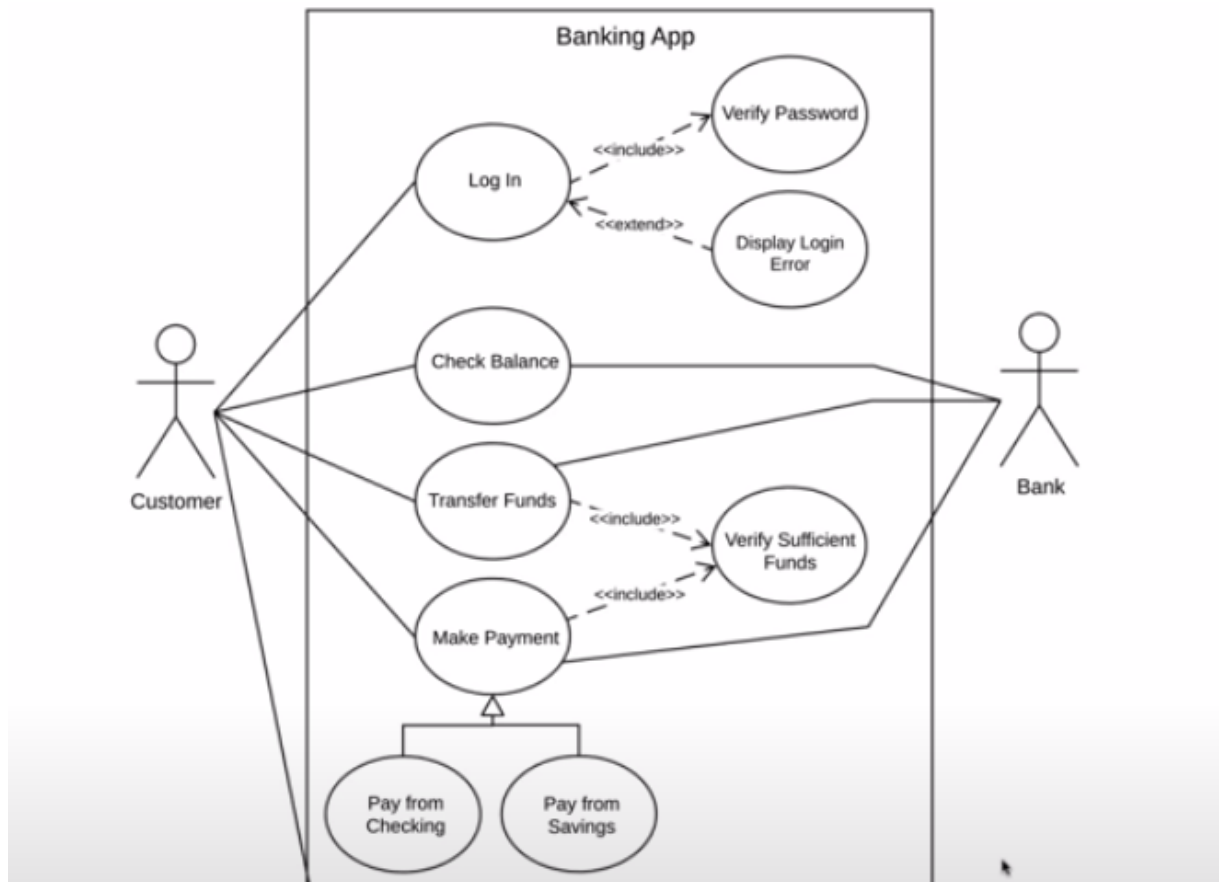
The GIU university mainly has academic staff and non academic staff. A Professor, Doctor, and Teaching Assistant are academic staff. Whereas HR and IT staff are non academic staff. Each department has at least one academic staff member and each academic staff member works only for one department. Also, GIU university has Computer Science Department and Mechanical Engineering Department.

Design the following class diagram.

Don't add attributes and methods to each class.

Exercise 3-7

Describe the following use case diagram



Exercise 3-8

Draw a sequence diagram for an ATM withdrawal transaction use case.

The scenario is as the following:

- The user will insert the card into the ATM, The ATM will verify the card through the Bank server, and in case of a verified card the ATM will ask the user to enter the PIN code otherwise the card will be ejected.
- When the user replies to the ATM with the PIN code, the ATM will verify the PIN through the Bank server, and in case of a verified PIN, the ATM will ask the user to enter the required amount otherwise the card will be ejected.
- When the user replies with the amount, the ATM will ask the bank server to start the transaction.
- The Bank server will check if there are sufficient funds in the bank account.
- In case of sufficient funds, the bank server will ask to withdraw the amount from the bank account and the bank account will reply with withdraw successful message to the bank server, then the bank server will reply to the ATM with a transaction successful message and the ATM will dispense the cash to the user.
- But in case of insufficient funds, the bank account will reply insufficient funds message to the bank server, then the bank server will reply to the ATM with a transaction unsuccessful message.
- Finally the ATM will eject card to the user.