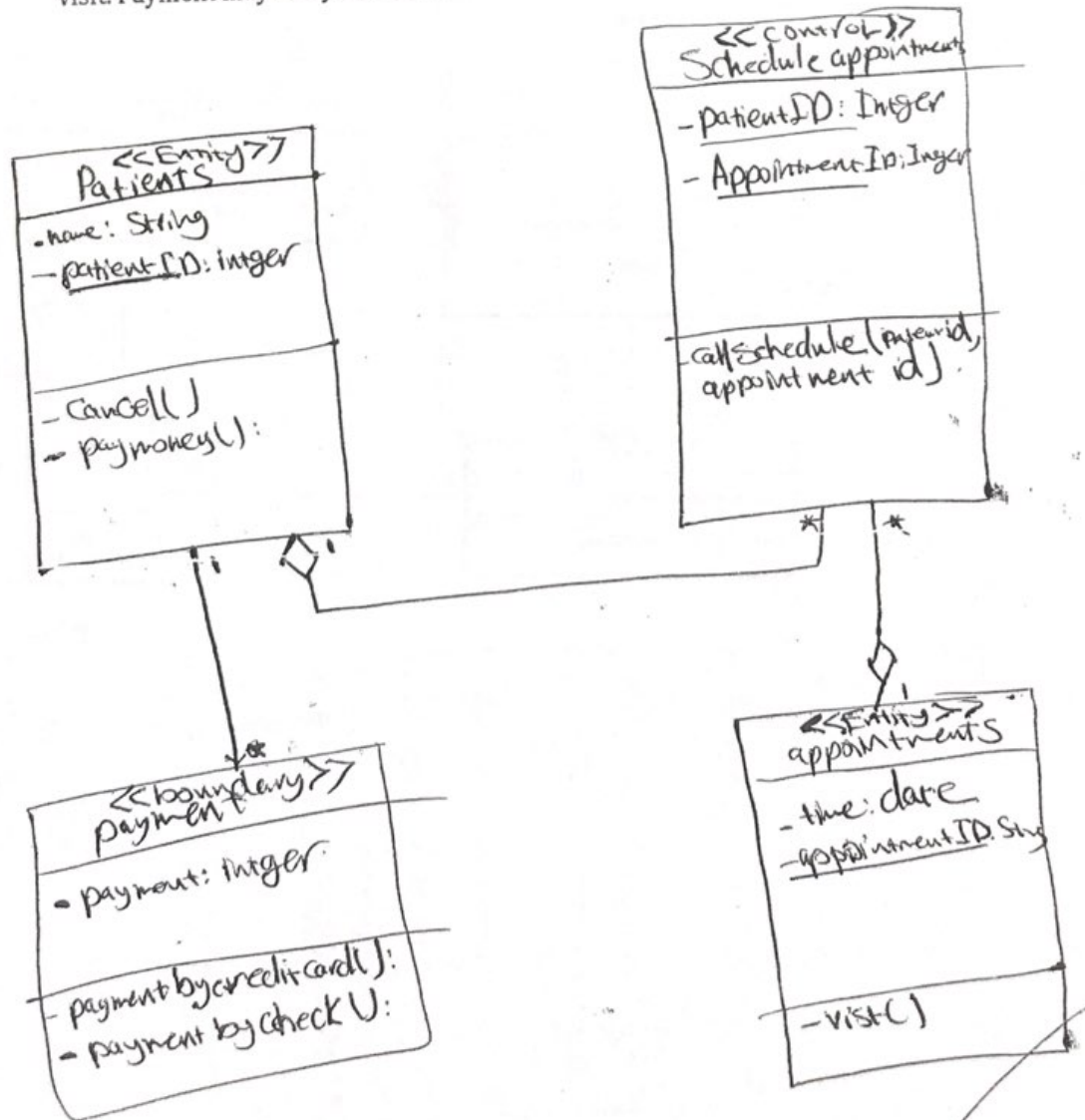




### Question 2 [20 marks]

Draw a class diagram (using the UML notation) to reflect the requirements of the system described below:

You are to develop a system for a clinic. The primary purpose of the system is to schedule appointments for patients. Patients usually call in to schedule appointments. The appointments result in a visit, unless the patient cancels the appointment. If a patient does not show up, the appointment is canceled. The visit may result in some medication, which is prescribed by the doctor who attends on the patient. The patient has to make his/her payment at the end of the visit. Payment may be by credit card or check.

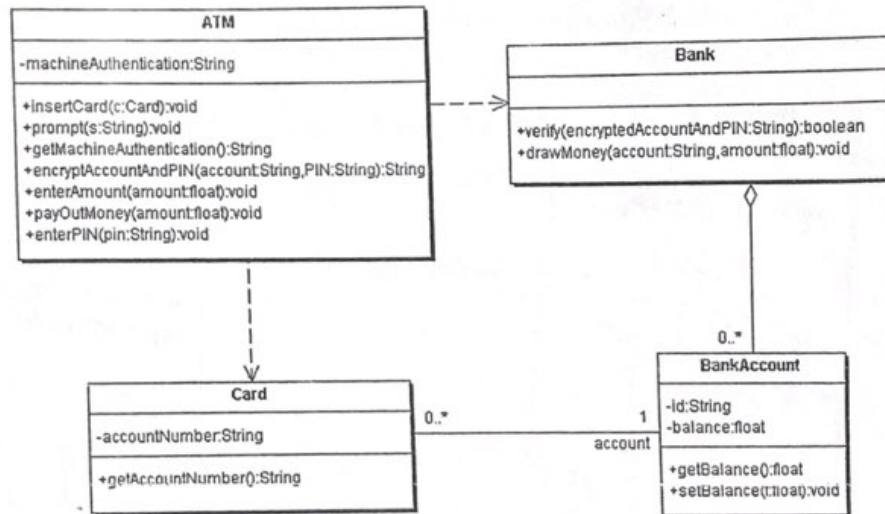


8/20

### Question 3 [20 marks]

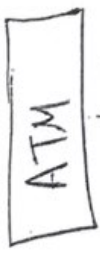
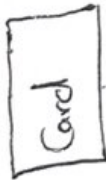
Create a sequence diagram for the following collaboration. Use the classes and methods on Class Diagram below.

A customer wants to draw money from his bank account. He enters his card into an ATM (automated teller machine). The ATM machine prompts "Enter PIN". The customer enters his PIN. The ATM (internally) retrieves the bank account number from the card. The ATM encrypts the PIN and the account number and sends it over to the bank. The bank verifies the encrypted Account and PIN number. If the PIN number is correct, the ATM displays "Enter amount", draws money from the bank account and pays out the amount



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Question 3



Get Account Number: String

insert Card (c: Card): void

prompt (s: String): void

~~insert Card (c: Card): void~~

get Machine Authentication: String

Enter Pin (pin: String): void

encrypt Account Pin (accountPin: String): String

Enter Amount (amount: float): void

verify (encrypted Account and pin: String): boolean

get Balance (f: float): void

draw Money (account, amount): void

Set Balance

pay Out Money (pin: String): void

11/6/20

**Question 5 [20 marks]**

Assume that an account in the Banking Application has the following characteristics:

1. An account is in the "Open" state when it is created
2. When the account balance falls below the minimum balance, it goes to the "Overdrawn" state, and the customer is notified immediately. Such an account would be restored to the "Open" state as soon as the balance goes above the minimum required.
3. Accounts that remain in the "Overdrawn" state for 30 days are put in a "Hold" state.
4. An account object goes from the "Hold" state to the "Open" state when a message called `removeHold()` is sent to the account object.
5. Accounts that remain in the "Hold" state for 30 days are automatically canceled, in which case the account goes to the "Canceled" state.
6. In addition, the customer may cancel an account, which would put the account in the "Canceled" state. Cancellation may be done when the account is in the "Open" state.

Draw a statechart to model the lifecycle of an account object.

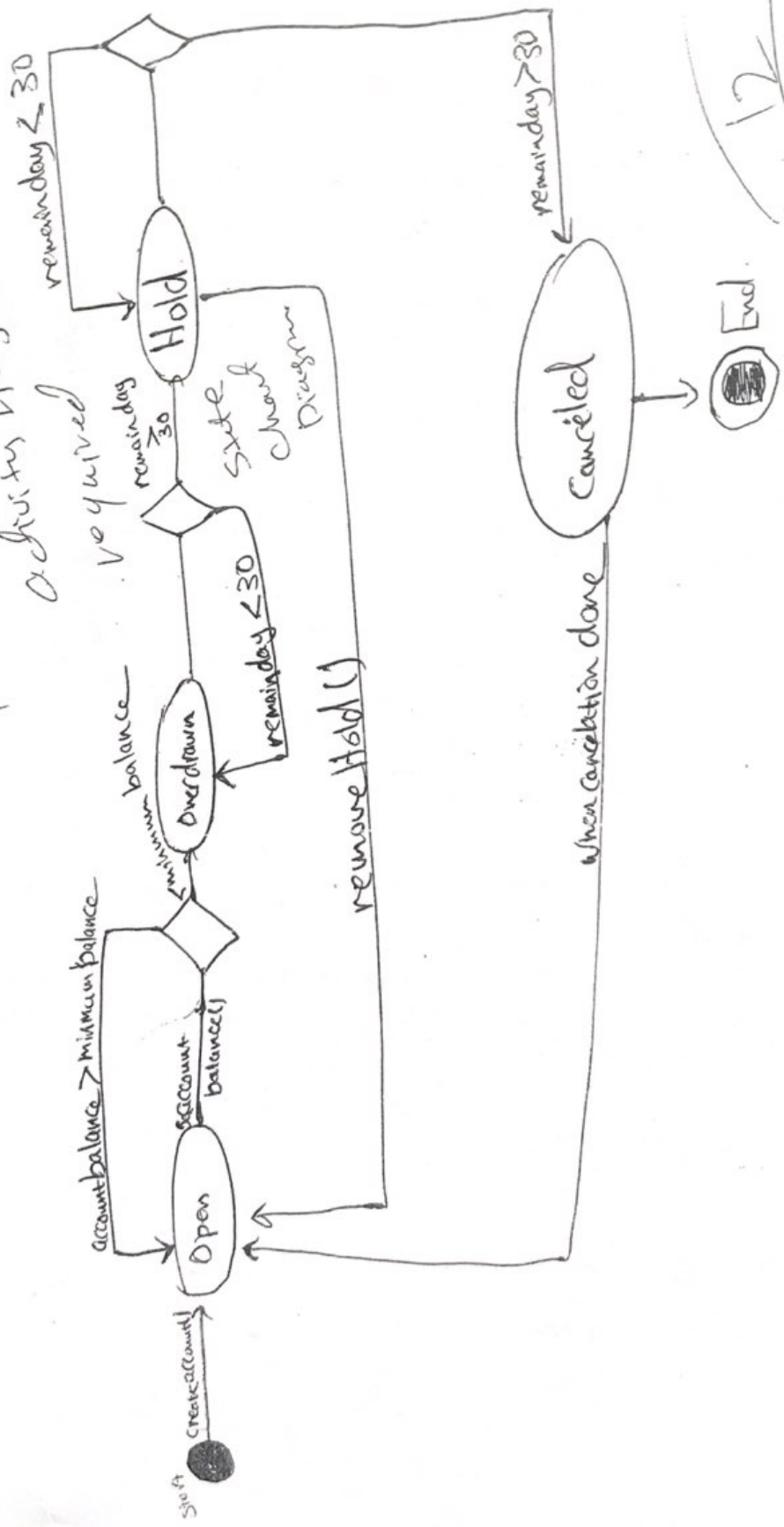


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Question 9

Draw an Activity Diagram



12  
20

Rewrite the following requirements to be good requirements, or state that they are good requirements: [10]

- a) The system should be easy to learn.

The system should be user friendly.  
and this is done by using training scenarios describing step by step instructions for novice users guiding them how to use the system.

- b) Each user must be at least 18 years old.

good requirements

- c) The website will allow a user to login with their email address and password.

we can write it in this form:  
The system must use authentication.

- d) The user interface will be section 508 compliant.

good requirement.

- e) The user can purchase a book with a credit card.

- The other ways are not specified. -  
: One of the payment methods can be using credit card

- f) The system will allow a normal and a premium user.

The requirement is good. It is specified and