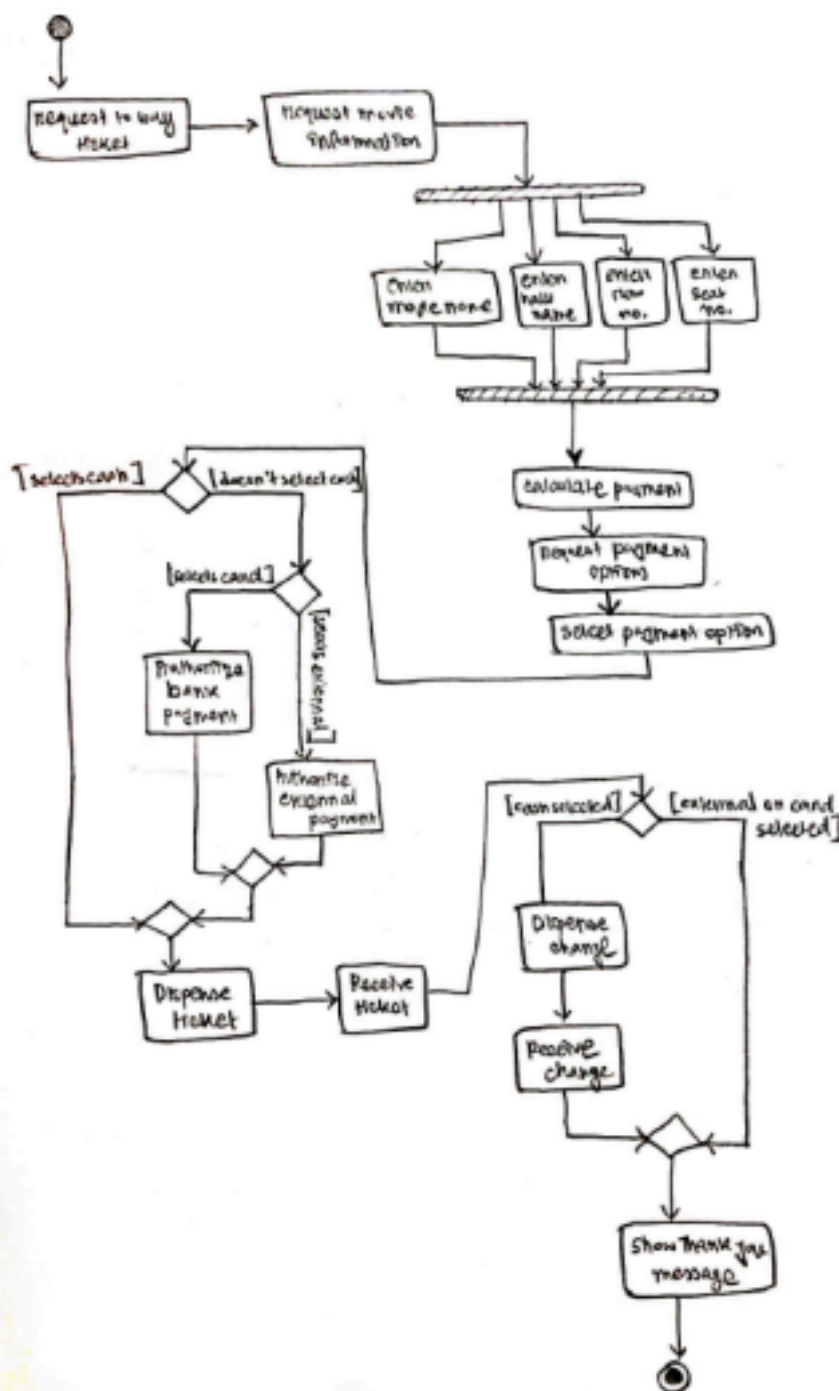Activity is started by Commuter actor who needs to buy a ticket. Ticket generating screen will request movie information from the Commuter. This information will include movie name, hall name, row number, and seat number. Based on the provided information, the ticket vending machine will calculate payment due and request payment options. Those options include payment by cash, or by credit or debit card or by external payment system such as bKash or Nagad. If payment by card was selected by Commuter, another actor, Bank will participate in the activity by authorizing the payment. If payment through an external payment gateway system is selected, then that particular system (bKash or Nagad) will participate in the activity by authorizing the payment transaction. After payment is complete, the ticket is dispensed to the Commuter. Cash payment might result in some change due, so the change is dispensed to the Commuter in this case. Ticket vending machine will show a "Thank You" screen at the end of the activity.

a. [5 marks] Draw a UML activity diagram based on the above scenario.
b. [5 marks] Draw a UML activity diagram with swimlanes based on the above scenario.

(b)

Commuter	Ticket Vending machine	Bank	External Nagad /Bkash

● (start)

request to buy ticket → request more information

(fork bar)

- enter route name
- enter hall name
- enter ross number
- enter seat number

(join bar)

Calculate payment due → Request payment options → Select payment option

◇ decision
- [select cash]
- [doesn't select cash] → ◇
  - [select card] → Authorize Payment (Bank)
  - [Selects external payment] → Authorize payment (External Nagad/Bkash)

◇ (merge) → Dispense Ticket → Receive Ticket

◇ decision
- [cash selected] → Dispense Change → Receive Change
- [card or external selected]

◇ (merge) → Show Thank You message → ● (end)