1. **Draw an activity diagram for providing automotive insurance to car owners with an Open Access Insurance System.**

   The purpose of the Open Access Insurance System is to provide automotive insurance to car owners. Initially, a prospective customer fills in an insurance application, which provides information about the customer and his or her vehicles. This information is sent to an insurance agent, who processes the application by sending it to various insurance companies to create quotes for insurance. When the responses return, the agent then determines the best policy for the type and level of coverage desired and gives the customer a copy of the insurance policy proposal and quote.

2. **Draw an activity diagram for <u>borrowing a book</u> with a Library Information System. Show explicitly the notations for swimlanes, decision and merge nodes, fork and join nodes, guard conditions if there is any of these been used in the diagram.**

   When a user borrows a book (check out), he/she has to scan the barcode of his/her library card at an LIS user terminal. The LIS will display his/her personal loan records that contain details like books borrowed, due date of return, as well as the total overdue fine, if any. If there is an outstanding fine, the LIS will not allow the user further loan. The user terminal will automatically print a charge notice. Users can settle fine payment at the library counter, which is handled by the library assistants with an LIS administrator terminal. If there is no outstanding fine, the LIS will check whether the user has exceeded the loan limit. A user can borrow at most five books for one month. If the loan limit is not exceeded, the user can borrow a book by scanning the book barcode at an LIS user terminal. A new loan record is added to the user loan records. A receipt is then printed, indicating the book title, ISBN, publisher, author, date of loan and due date for return.

3. **Draw an activity diagram go describe the process of making a purchase request. The process should start from browsing the catalogue until view order or cancel order. Show explicitly the notations for swimlanes, decision and merge nodes, fork and join nodes, guard conditions if there is any of these been used in the diagram.**

Bzon is an online shopping system which sells books worldwide. A customer browses the catalogue in the online shopping website to see various book items from a given supplier's catalogue, and selects one or more items from the catalogue.

In order to make a purchase request, the customer needs to register a new account by entering personal details. The system creates a customer account if one does not already exist. When the account is created, the registered customer needs to login to the system to make a purchase request. He/she needs to submit the purchase request and make the payment using a credit card. The customer's credit card is checked for validity and sufficient credit to pay for the requested catalog items via the external bank system. If the credit card check shows that the credit card is valid and has sufficient credit, the customer purchase is approved and the system sends the order confirmation to the customer and sends the purchase request to the supplier. The customer is allowed to view the details of the delivery order. If authorization of the customer's credit card is denied (e.g., invalid credit card or insufficient funds in the customer's credit card account), the system prompts the customer to enter a different credit card number. The customer can either enter a different credit card number or cancel the order.

4. **Draw an activity diagram for a registered customer to book a movie ticket using the online movie booking system. Show explicitly the notations for swimlanes, decision and merge nodes, fork and join nodes, guard conditions if there is any of these been used in the diagram.**

XYZ is the leading film exhibitor and distributor in Malaysia. It has 30 cinema branches all over Malaysia. XYZ provides an Online Movie Booking System to minimise operation cost and increase ticket sales. Each cinema consists of many rooms and each room has many seats. Room and seat information such as room number, room type, seat number and seat type are recorded in the system.

All customers can search movie timetable to obtain available ticket for a session in any cinema specified by the customer. Only the registered customer is allowed to make online booking. A new customer needs to register a new account by entering personal details. The system will create a customer account if one does not already exist. When the account is created, the registered customer can proceed to login to the system.

To make a booking, a customer is required select a movie session and number of tickets. Next the customer can select seat number(s). After selecting the seat number(s), he/she can proceed to make a payment for the booking using credit card or debit card. The payment is subject for an approval from the Bank Credit Unit. Once payment has gone through successfully, the system will issue a booking confirmation by sending a notification to the customer via email. If the payment is rejected, customer will receive a failure notification.

5. Model an activity diagram based on the following pseudocode written in Structured English for "Calculate Sales". Show explicitly the actions, control flows, nodes and guard conditions.

```
do while there are more salesperson in the list
        calculate total sales for this salesperson
        begin case
            case sales >= RM10k
                    add name to 'top salesperson' list
                    set bonus rate to 5%
            case sales < RM2k
                    add name to 'observation' list
        end case
        store sales amount
end do
calculate total sales amount
format sales report
```