1. Draw the use case and activity diagram for following scenario:
   A ticket vending machine (TVM) dispenses tickets to passenger at a railway station. Passengers use the front panel to specify their boarding and destination place, detail of passenger (number of adults & children) and date of travel. The machine displays the fare for the requested ticket. The passenger then deposits cash in the place provided and presses 'accepts cash'. The machine check the cash, if it is more, the balance cash is paid out the ticket requested is printed. The system is also used by the operator who might want to know the cash held in the machine, the break-up of small changes available in the machine, withdraw or deposit cash when needed. And the report option also included the detailed report of transaction, summary report of the number of tickets sold for each destination, opening balance, cash collected, cash dispensed and current balance in the machine.

2. Students are willing to take a MockTest before going to take an actual exam. For satisfying their needs assume that you will be developing the software with following document. "In the online mock test, student is attending the test where as administrator is conducting the exam. Here the administrator can be a software module. For attending the mock test the student have to register to attend the test while providing all necessary information. After the registration student will receive the login id and password. Using the loginid, password, student is attending the exam, backtrack or review questions and finally they get the results. They have to complete the exam within the time frame. Administrator is the only person has the rights to add, delete or modify the questions and extend exam timing etc. "Read the document carefully and if necessary you can add additional details related to the system.

3. A busy restaurant consists of one chef, a customer and waiter. The chef is responsible for order all the food ingredients, preparation of the food and doing the washing up. The waiter is responsible for taking the customer order, preparing the bill and taking the payment made by the customer. The customer browses the menu, orders the food, consumes the food, orders the bill and pays the bill. Draw the use case diagram for the restaurant showing role of chef, waiter and customer.

4. Draw the use case and activity diagram for the people within the university. Provide a person class- A person may be a citizen or foreigner male or female. Each person may play the role of a student or employee. Employee can be either professor or registrar. Student may be an under-graduate, master-student or Ph.D. student.

5. Draw the use cases for transactions such as transaction history. Deposit amount, checking account and savings account.

6. Draw the use case diagram and class diagram for a car rental application. The car rental agency has multiple offices/branches. The customer visits the agency for enquiry and takes a test ride then selects the car by signing the terms and conditions

form. The customer can also book the car through telephone email and SMS. The agency checks the availability of the car and gives the status to the customer. The customer can also avail the driver facility if required, by paying additional charges. The billing is done based on the type of vehicle and distance travelled.

7. What is importance of sequence diagram? Illustrate it with an example of invalid PIN for ATM.
8. How do you represent conditional and parallel behaviour in an activity diagram?
9. Define the decomposition. How do the arithmetic and object oriented decomposition differ? Justify your answer.
10. What are the major elements of object model?

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