**Indian Institute of Information Technology, Allahabad**

**Object Oriented Methodology (OOM)**

**Lab Assignment-04**

**UML: Activity Diagram and CRC**

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**Question 1: Coin Operated Pay Phone**

This case study involves a simplified system of a coin-operated pay phone.

1. The minimum cost of a call is 20 pence.

2. After inserting the coins, the user has 2 minutes to dial a number (this time limit is enforced by the switchboard40).

3. The line may be free or engaged.

4. The caller may hang up first.

5. The pay phone uses up money as soon as the callee picks up the receiver and with each unit of time (UT) generated by the switchboard.

6. The caller can add more coins at any time.

7. After hanging up, any unused change is returned.

From these seven sentences, we will progressively work through the following tasks:

* Draw the **Activity Diagram and CRC** for the above given case study

**Question 2: Automatic Teller Machine (ATM)**

This case study concerns a simplified system of the automatic teller machine (ATM). The ATM offers the following services:

1. Distribution of money to every holder of a smartcard via a card reader and a cash dispenser.

2. Consultation of account balance, cash and cheque deposit facilities for bank customers who hold a smartcard from their bank. Do not forget either that:

3. All transactions are made secure.

4. It is sometimes necessary to refill the dispenser, etc.

From these four sentences, we will work through the following activities:

* Draw the **Activity Diagram and CRC** for the above given case study

**Question 3: University Courses**

* In a renowned university, the following system is required to assign courses taught by lecturer to students. Each Course maintains a list of the students on that course and the lecturer who has been assigned to teach that course.
* The Course allow the adding and removing of students from the course, assigning a teacher, getting a list of the currently assigned students, and the currently assigned teacher.
* A lecturer may teach more than one course. And maintains the list of the courses that they teaches.
* Similarly students can study multiple courses. And maintain the list of the courses that they are studying.
* Both lecturer and students belong to group of person which provides the name and email address of both.

Draw the **Activity Diagram and CRC** for the above given case study

**Question 4: Vehicles**

* This model is for imaginary application that must model different kinds of vehicles such as bicycles, motor bike and cars.
* All Vehicles have some common attributes (speed and colour) and common behaviour (turnLeft, turnRight).
* Bicycle and MotorVehicle are both kinds of Vehicle. MotorVehicle differ from Bicycle as they have engines and license plate. In this model MotorVehicle has “sizeOfEngine” (Engine size) and “licensePlate”.
* MotorBike and Car are two kinds of MotorVehicle with some additional attributes and functions.

Draw the **Activity Diagram and CRC** for the above given case study

**Question 5: Restaurant**

* In a popular London restaurant, the following system is required to speed up preparation of meals. Each waiter is assigned a group of tables, after taking orders for a table the waiters enter the orders (a list of dishes and drinks ordered by the diner or group of diners) into the system at the PC.
* The waiter usually knows of any dishes that are unavailable before taking an order but occasionally one of the specials will sell out.
* The system must confirm the availability of dishes. Should an item not be available the system must allow the waiter to change or even delete a customer’s order. Dishes to be prepared are sent to the kitchen, drinks orders to the bar. Starters and main course orders are usually taken together. Drinks and desert orders may be taken separately.
* Kitchen staff sees the dish orders on their screen, prepare them in an appropriate sequence and confirm preparation to the system when complete, similarly with the bar. When a waiter sees the completion indications on his terminal he collects the items and takes them to the table. The waiter can also check on the status of dish and drink orders.
* At the end of the meal the waiter will have the system print a bill, and he will enter the details of payment for it. The management can give discounts.
* The system keeps track of the numbers of customers served by each waiter and the amount of money taken by each waiter. The management can view these statistics.

Draw the **Activity Diagram and CRC** for the above given case study