INTERNATIONAL CENTRE FOR APPLIED SCIENCES
(Manipal University)
II SEMESTER B.S. DEGREE EXAMINATION – NOV. / DEC. 2016
SUBJECT: SOFTWARE DESIGN USING OBJECT ORIENTED PARADIGM (CS 122)
(BRANCH: CS, CE, E&C and E& E)
Friday, 16 December 2016

Time: 3 Hours   **Max. Marks: 100**

✓ **Answer ANY FIVE full Questions.**

1.A.   What are the requirements for developing good software systems?
1.B.   What is the Importance of Modeling? (With respect to Software Industry)
1.C.   Explain with diagram Iterative Model. What are its Advantages and Disadvantages
                                                                                           (5+5+10)

2.   With the help of examples explain kinds of relationships in UML   **(20M)**

3.   Explain the following in Sequence Diagrams with help of Diagrams
     (i) opt
     (ii) alt
     (iii) par
     (iv) loop   **(5x4=20M)**

Case Study: Analyzing Via Net Bank ATM
- The bank client must be able to deposit an amount and withdraw an amount from his or accounts. Each transaction must be recorded.
- The Via Net bank client can have two type of accounts: Checking and Savings
- For each checking account one savings account can exists.
- PIN code consisting of integer digits between 0 to 9
- PIN code allows access to all the accounts.
- No receipts will be provided for any account transaction.
- The Bank application operates for a single banking institution only.
- Neither a saving nor checking account have a negative balance.
- The system should automatically withdraw money from a related savings account if the requested withdrawal amount on the checking account is more than its current balance.
- If the balance on a savings account is less than the withdrawal amount requested, the transaction will stop and the bank client will be notified

4.A.   Explain Noun-Phrase Approach and apply the same for an ATM Case study
4.B.   Explain what do you mean by Common Class Pattern Approach and apply
       the same for an A TM Case study   **(10+10)**

Road Repair and Tracking Software (RRTS) to be developed for automatic various book keeping activities associated with the road repairing task of the Public Works Department of the Corporation of large city. Road Repair and Tracking System (RRTS): A city corporation has branch offices at different suburbs of the city. Residents raise repair requests for different roads of the city. These would be entered into his computer system by a clerk. Soon after a repair request is raised, a supervisor visits the road and studies the severity of road condition. Depending on the severity of the road condition and the type of the locality (e.g., commercial area, busy area, relatively deserted area, etc.), he determines the priority for carrying out work, the types and number of machine required, and the number and types of personnel required.

Based on this data, the computer system should schedule the repair of the road depending up on the priority of the repair work and subject to the availability of raw material, machines, and personnel. This schedule report is used by the supervisor to direct different repair work. The manpower and machine that are available are entered by the city corporation administrator. He can change these data any time. Of course, any change to the available manpower and machine would require a reschedule of the project. The may or of the city can request for various road repair statistics such as the number and type of repairs carried out over a period of time and the repair work outstanding at any point of time and the utilization statistics of the repair manpower and machine over any period of time.

5.A.   Explain the basic procedure to define the use cases.
5.B.   Draw the Use-Case diagram for the following Case Study (RRTS)

(10+10)

6.   Explain the different components of an activity diagram. Draw the Activity Diagram for the following Case Study (RRTS)   **(20M)**

7.A.   Explain the different components in a Collaboration diagram with an example.
7.B.   Draw the Sequence Diagram for any 2 use cases of the (RRTS) case study

(10+10)

8.A.   Explain any 2 GRASP patterns in detail.
8.B.   Draw System Sequence Diagram for any one use case of above case study (RRTS)

(10+10)

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