

## UML & Design Patterns Lab

**(Textbook no.2 i.e.** Object-Oriented Analysis & Design with the Unified Process by Satzinger, Jackson & Burd Cengage Learning will be the primary source for finding templates for developing different artifacts / diagrams)

### **Take three case studies:**

- **Customer Support System (in the Object-Oriented Analysis & Design with the Unified Process by Satzinger, Jackson & Burd Cengage Learning )**
- **Point-Of-Sale Terminal (in Larman textbook)**
- **Library Management System (in the reference book no. 2 i.e. UML toolkit)**

### **Week 1:**

**Familiarization with Rational Rose or Umbrello**

**For each case study:**

### **Week 2, 3 & 4:**

**For each case study:**

- a) Identify and analyze events
- b) Identify Use cases
- c) Develop event table
- d) Identify & analyze domain classes
- e) Represent use cases and a domain class diagram using Rational Rose
- f) Develop CRUD matrix to represent relationships between use cases and problem domain classes

### **Week 5 & 6:**

**For each case study:**

- a) Develop Use case diagrams
- b) Develop elaborate Use case descriptions & scenarios
- c) Develop prototypes (without functionality)
- d) Develop system sequence diagrams

### **Week 7, 8, 9 & 10:**

**For each case study:**

- a) Develop high-level sequence diagrams for each use case
- b) Identify MVC classes / objects for each use case
- c) Develop Detailed Sequence Diagrams / Communication diagrams for each use case showing interactions among all the three-layer objects
- d) Develop detailed design class model (use GRASP patterns for responsibility assignment)
- e) Develop three-layer package diagrams for each case study

### **Week 11 & 12:**

**For each case study:**

- a) Develop Use case Packages
- b) Develop component diagrams
- c) Identify relationships between use cases and represent them
- d) Refine domain class model by showing all the associations among classes

### **Week 13 onwards:**

**For each case study:**

- a) Develop sample diagrams for other UML diagrams - state chart diagrams, activity diagrams and deployment diagrams