

**Date: October 14, 2021**



**National University of Modern Languages**

**Subject: Software Design and Architecture**

**Lab Report # 02**

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BSSE 4B

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## **Lab Title: Working with Use Case Diagrams**

### **Question 1**

Do a comparative analysis of UML tools

#### **Answer:**

<b>reasons</b>	<b>Draw.io</b>	<b>Ms Visio</b>	<b>Smart draw</b>
language	Does not available in different languages	Does not available in different languages	Available in different languages so, user from different areas of the world can understand its working
Desktop application	It is Desktop application	It is Desktop application	It is Desktop application
usability	Easy to use for beginners because of less difficult features and	Widely used for business purpose	Widely used for business purpose
Online access	Provide facility to access and make diagram online	Does not provide facility to access online unless and until we download and install it on our PCs	Does not provide facility to access online unless and until we download and install it on our PCs
Variety of templates	It provides colorful template which attract the attention of users.	It also provides variety of templates.	It also provides variety of templates.

### **Question 2:**

Which diagrams come under static and dynamic UML diagrams also give reasoning

#### **Answer:**

#### **Static diagrams:**

## 1. Class Diagram

Why class diagram is said to be static diagram?

- In UML class diagram represent the static aspect of system.
- static aspects represent those parts of a diagram, which forms the main structure therefore they are stable.
- Class diagrams basically represent the object-oriented methodology of a system, which is static in nature.
- it is generally used for development purpose. This is the most widely used diagram at the time of system construction.

### **Dynamic Diagrams:**

These diagrams show dynamic behavior of system.

2. Activity Diagram
3. Use case Diagrams
4. Sequence Diagram
5. State Machine Diagram

#### ➤ **Why Activity Diagram is dynamic in nature?**

- It is a graphical representation that shows workflow in stepwise activities.
- The control flow is drawn from one operation to another. Activity diagram deals with all type of flow control by using different elements such as fork, join, etc.

#### ➤ **Why Use case Diagram is dynamic in nature?**

- Use case diagram is to capture the dynamic aspect of a system.
- It helps in understanding how a user might interact with the system.
- A single use case diagram captures a particular functionality of a system.

#### ➤ **Why Sequence Diagram is dynamic in nature?**

- It focuses on lifeline or processes and objects that live simultaneously.
- Messages are exchanged between objects to perform a function before the lifeline ends.
- It shows interaction between group of objects.

➤ **Why State Machine Diagram is dynamic in nature?**

- State Diagram are used to capture the behavior of a software system.
- State chart diagram/ state machine diagram is used to capture the dynamic aspect of a system.
- An object goes through various states during its lifespan. The lifespan of an object remains until the program is terminated.
- The object goes from multiple states depending upon the event that occurs within the object.
- Each state represents some unique information about the object.

**Question 3:**

**Consider following scenario**

At the beginning of each semester students may request a course catalogue from registrar containing a list of course offering for the semester. Information about each course, such as professor, department and prerequisites will be maintained by registrar to help students make informed decisions. The new on-line registration system will allow students to perform registration and select four course offerings for the coming semester. In addition, each student will indicate two alternative choices in case a course offering becomes filled or canceled. No course offering will have more than ten students. No course offering will have fewer than three students. A course offering with fewer than three students will be canceled. Once the registration process is completed for a student, the registration system sends information to the billing system, so the student can be billed for the semester. Professors must be able to access the on-line system to indicate which courses they will be teaching. Professors will also need to view course offering roster to see which students signed up for their course offering. For each semester, there is a period of time that students can change their schedules. Students must be able to access the on-line system during this time to add or drop courses. The billing system will credit all students for courses dropped during this period of time. The registrar would also maintain course curriculum and update it in the system

**Q1 Identify primary and secondary Actors of the system.**

**Primary Actors:**

- Student
- Professor
- Registrar

**Secondary Actors:**

- Registration System
- Billing System

**Q2 Create actor goal list for above scenario**

<b>Actors</b>	<b>Goals</b>
Student	Request course catalogue, select four courses, may change their schedule in specific period of time, can access online system to add and drop courses
Registrar	Maintain information about courses, professor and department, maintain and update course curriculum
Professor	Access online system to know which course they teach, view course offering roster
Registration system	Allow student to perform registration, send information
Billing System	Receive information, billed student for semester, credit all students for courses dropped

**Q2 Identify Use Cases that appears as verbs.****Q3 Use Include and Extend relationship where needed****Q4 Draw a complete Use Case diagram of the system****Answer:**

