

**IV Year – I Semester**

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<b>0</b>	<b>0</b>	<b>3</b>	<b>2</b>

## **SOFTWARE ARCHITECTURE AND DESIGN PATTERNS LAB**

### **Software Architecture Lab**

The course project is divided in 6 small components that will be performed during the different lab sessions; there are, in principle, 7 lab sessions. The project consists of the design and implementation of the software architecture of a Weather Mapping System (WMS). Implementation will take place both in Java and C++ (combination of both languages). Each lab assignment consists of a theoretical part and a practical part, which are defined in specific lab assignment statements that are posted at least one or two weeks before the session.

Report and demo (if applicable) for each assignment is due for the following session.

#### **1. Tool Presentation**

This session is an introductory session; there is no lab assignment for this session.

Introduction to working with an industrial strength software development environment, namely Rational Rose: how to write and maintain a UML specification; configuration management; architecture design; CORBA-IDL document generation; Java code generation from a UML model etc.

Presentation of the Project: Weather Mapping System.

#### **2. Use Case View**

Design of the Use Case View. Risk Analysis.

#### **3: Logical View**

Design of the Logical View of the Weather Mapping System (WMS).

#### **4: Integrating Patterns in the Architecture**

Integration of selected architectural and design patterns in the logical view obtained previously.

#### **5: Implementation, Process, and Deployment Views**

Design of the implementation, process, and deployment views for the Weather Mapping System.

#### **6: Component and Interprocess Communication Design**

Generation from the previous architecture design of CORBA Interfaces and Components Definitions.

## **7: Implementation of WMS**

Implementation of the Weather Mapping System (Java & C++), with a particular emphasis on the Interprocess communication mechanism and the software components identified.

### **Lab Reports:**

Lab reports should include:

- The answers to the questions included in the assignment statement. The answers should motivate briefly your design choices.
- The printout of the diagrams and related documents (e.g. class, use cases, operations descriptions etc.) produced using Rational Rose.

**Reference:** <http://www.ece.uvic.ca/~itraore/seng422-06/eng422-06.html>

## **Design Patterns Lab**

<b>S. No</b>	<b>Programs</b>
1.	Use case Diagram for Librarian Scenario
2.	Using UML design Abstract factory design pattern
3.	Using UML design Adapter-class Design pattern
4.	Using UML design Adapter-object Design pattern
5.	Using UML design Strategy Design pattern
6.	Using UML design Builder Design pattern
7.	Using UML design Bridge Design pattern
8.	Using UML design Decorator Design pattern
9.	User gives a print command from a word document. Design to represent this chain of responsibility Design pattern
10.	Design a Flyweight Design pattern
11.	Using UML design Facade Design pattern

12. Using UML design Iterator Design pattern .
13. Using UML design Mediator Design pattern
14. Using UML design Proxy Design pattern
15. Using UML design Visitor Design pattern