

## **CSE4122: Object Oriented Design and Design Patterns Lab**

**Computer Science & Engineering Department  
University of Rajshahi, Bangladesh**

### **Lab Experiment List on Object Oriented Analysis and Design**

1. Write a Java Program that demonstrate **multiple interface/inheritance**. You are free to choose application for demonstrating multiple interface/inheritance.
2. Write a Java program to demonstrate a **PET management system**—which can be PET shop, PET care, PET service. You have to follow appropriate object-oriented design concept to implement the tasks.

### **Lab Experiment List on Design Pattern**

3. Write a Java program to demonstrate the implementation of a **facade design pattern** for a Banking Service with Checking, Saving, and Investment modules.
4. Write a Java program to demonstrate the implementation of a **composite design pattern** by using an example with a building composed of generic housing structures.
5. Write a Java program to demonstrate the implementation of a **proxy pattern** for an online retail store with global distribution and warehousing.
6. Write a Java program to demonstrate the implementation of a **decorator pattern** for a web page, which might display complex behavior, such as only allowing access to authorized users, or splitting search results across multiple pages.
7. Write a Java program to demonstrate the implementation of a **state design pattern** for a vending machine functionality on purchasing items.