

INDIRA GANDHI NATIONAL OPEN UNIVERSITY

Master of Computer Applications (MCA)

MCSL-222: Object Oriented Analysis and Design and Web Technologies Lab

Section 1: Object Oriented Analysis and Design

Semester: II **Sessions:** 10 **Exercises:** 23 **Source:** IGNOU lab manual, list of lab exercises

Instructions

1. Prepare a draft solution for every exercise before the session and implement it during the designated lab session.
2. For each exercise, write the problem description in about 300 to 500 words and list the basic assumptions. This limits the scope of your solution and helps the evaluator.
3. Draw diagrams with a UML tool (StarUML, ArgoUML or equivalent). Name every class, actor, message and state.
4. Sessions 8 to 10 may be implemented in C++, Java, Rust, Python or JavaScript; the class diagrams in the figures are the specification.

Session 1: Class and object diagrams

Q1. Draw Class Diagram for Online Shopping System (First, list the assumptions of the shopping system and then identify classes, and then draw the diagram).

Q2. Draw Class Diagram for Online Examination System.

Q3. Draw Object Diagram for Online Banking System.

Session 2: Use case diagrams

Q4. Draw Use Case Diagram for Online Shopping System.

Q5. Draw Use Case Diagram for Library Management System.

Session 3: Sequence diagrams

Q6. Draw Sequence Diagram for Online Shopping System.

Q7. Draw Sequence Diagram for Online Examination System.

Q8. Draw a Sequence diagram for Employee Management System.

Session 4: Collaboration (communication) diagrams

Q9. Draw Collaboration Diagram for Student Registration Process in Masters Program of a University.

Q10. Draw Collaboration Diagram for Online Banking System.

Q11. Draw a Collaboration diagram for Employee Management System.

Session 5: Activity diagrams

Q12. Activity Diagram Online Banking System.

Q13. Draw Activity Diagram for Online Examination System.

Session 6: State chart diagrams

Q14. State Chart Diagram for Online Examination System.

Q15. State Chart Diagram for Online Fund Transfer through Netbanking Banking System.

Session 7: Component and deployment diagrams

Q16. Draw Component Diagram for Online Examination System.

Q17. Draw Component Diagram for Order Processing Application.

Q18. Diagram Deployment Diagram for Online Student Admission System.

Session 8: Implementing class diagrams in code

Q19. Implement the following Class Diagram in C++/Java.

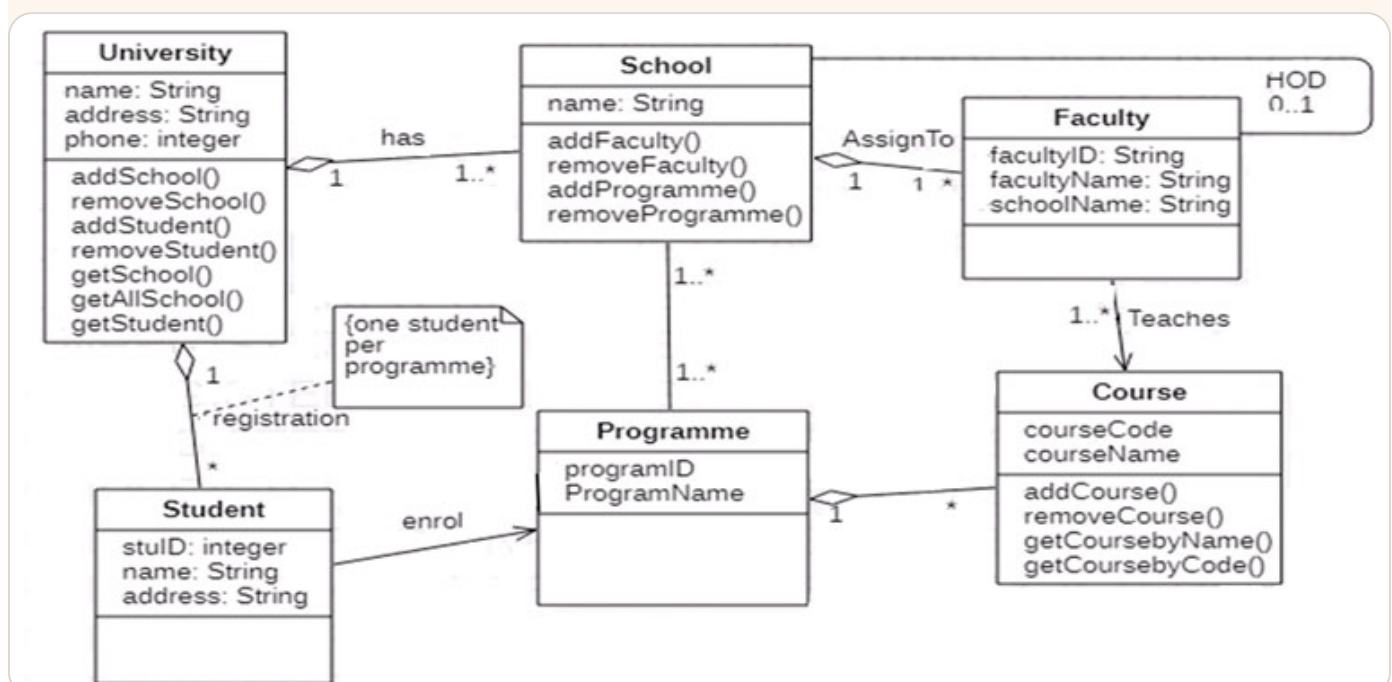


Figure 1.15: Class Diagram for Student Registration

Q20. Implement the Class Diagram of figure 1.18, in C++ or Java.

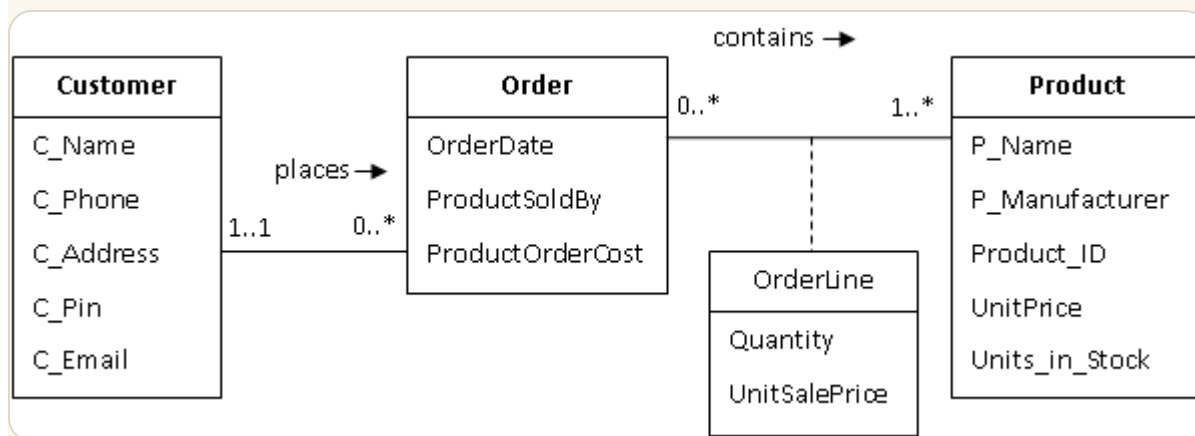


Figure 1.18: Customer Order Association Class

Session 9: Implementing associations

Q21. Implement the following Associations using C++/Java.

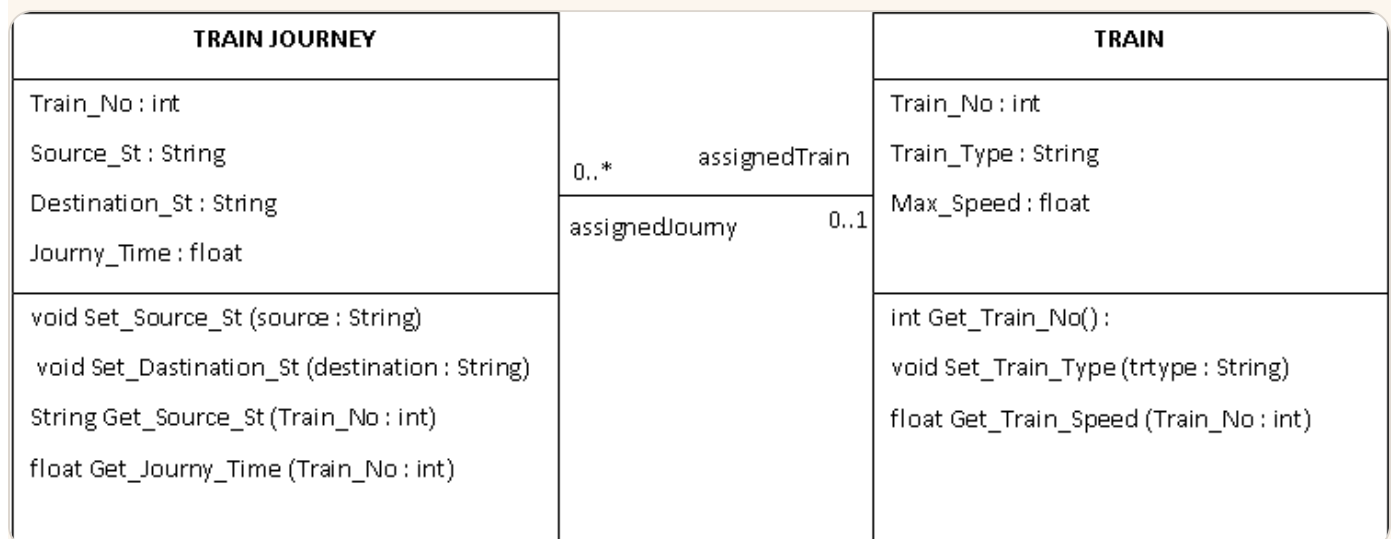


Figure 1.16: Train-Journey Association

Q22. Implement the following Associations using C++/Java.

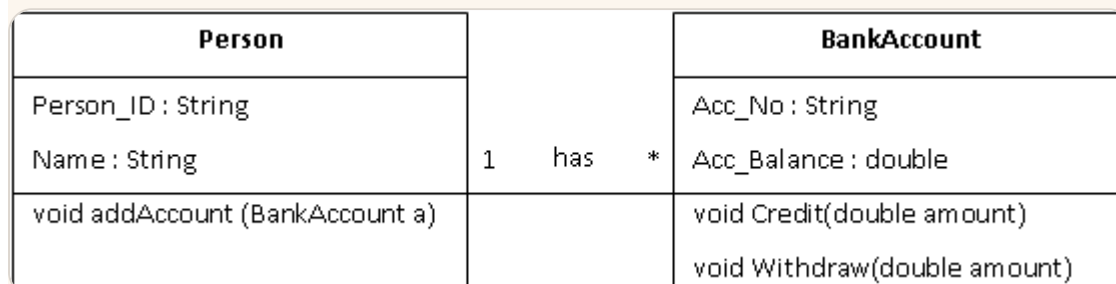


Figure 1.17: Person and Bank Account

Session 10: Mapping classes to database tables

Q23. Do mapping of the following Classes into database tables

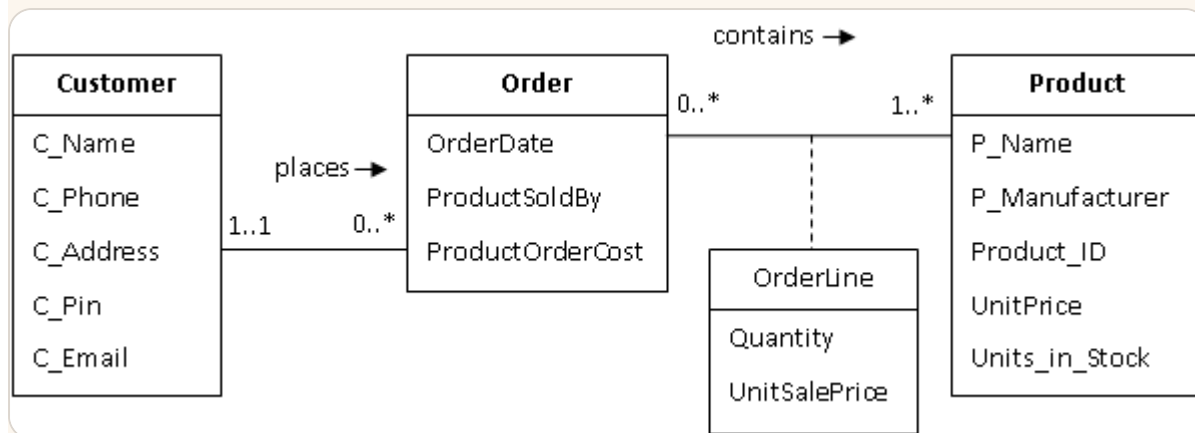


Figure 1.18: Customer Order Association Class

End of question paper. Worked solutions for every exercise: syntax.theether.in/mcs1-222/section-1/