Lecture 02&03: Hibernate Introduction

What is Hibernate?

- **Definition**: Hibernate is an Object-Relational Mapping (ORM) framework for Java
- **Purpose**: To increase developer productivity by simplifying database operations
- **Core Concept**: Java is object-oriented programming, so we should work with objects rather than SQL statements directly

Problem Without Hibernate

When working without Hibernate, developers must:

- Write complex SQL queries manually
- Handle database connections explicitly
- Manage data type conversions between Java objects and database tables
- Write boilerplate code for CRUD operations

Example of a manual approach:

```
String sql = "INSERT INTO student (rollNo, name, age) VALUES (?, ?, ?)";
PreparedStatement pstmt = connection.prepareStatement(sql);
pstmt.setInt(1, student.getRollNo());
pstmt.setString(2, student.getName());
pstmt.setInt(3, student.getAge());

pstmt.executeUpdate();
```

ORM Mapping Concept

- **Object**: Java classes and their instances
- **Relational**: Database tables and rows
- **Mapping**: Automatic conversion between objects and database records

The ORM mapping shows how a Student class maps to a student table:

- Class fields → Table columns
- Object instances → Table rows
- Java data types → SQL data types