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Spring Boot 9AM
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Spring Boot : Data JPA

=> If we use Hibernate we should write code manually.
--Example---

```
try{
 SessionFactory sf = HibernateUtil.getSf();
 Session ses = sf.openSession();
 Transaction tx = ses.beginTransaction();
 tx.begin();

 Employee obj= new Employee();
 ...
 ses.save(obj);

 tx.commit();
}catch(Exception e) {
 sysout(e);
 //tx.rollback();
}
```

=> Hibernate 5 with JPA (Latest version)

```
try {
 EntityManagerFactory emf = HibernateUtil.getEmf();
 EntityManager em = emf.createEntityManager();
 EntityTransaction et = em.getTransaction();
 et.begin();

 Employee obj= new Employee();
 ...
 em.persist(obj);

 et.commit();
}catch(Exception e) {
  sysout(e);
  et.rollback();
}
```

---------Spring Data JPA----------------------------
1. Model class

```
package in.nareshit.raghu.model;

import javax.persistence.Column;
import javax.persistence.Entity;
import javax.persistence.Id;
import javax.persistence.Table;

import lombok.Data;

@Data
@Entity
@Table(name="emptab")
public class Employee {
        @Id
        @Column(name="eid")
        private Integer empId;

        @Column(name="ename")
        private String empName;

        @Column(name="esal")
        private Double empSal;
}
```

2.

```
public interface EmployeeRepository
  extends CrudRepository<Employee, Integer>
{

}
```

3. Runner class

```
package in.nareshit.raghu.runner;

import org.springframework.beans.factory.annotation.Autowired;
import org.springframework.boot.CommandLineRunner;
import org.springframework.stereotype.Component;

import in.nareshit.raghu.model.Employee;
import in.nareshit.raghu.repo.EmployeeRepository;

@Component
public class EmployeeTestRunner implements CommandLineRunner {

        @Autowired
        private EmployeeRepository repo;

        @Override
        public void run(String... args) throws Exception {
                //find out impl class name
                //System.out.println(repo.getClass().getName());

                Employee emp = new Employee();
                emp.setEmpId(100);
                emp.setEmpName("ABC");
                emp.setEmpSal(200.0);

                repo.save(emp);

        }

}
```

----

*) In Hibernate F/w Programmer is writing code for operations manually.

Now same code is going to be generated by Spring Data JPA.
But it is asking two inputs
a) Model class Name = T = Employee
b) PrimaryKey DataType = ID = Integer

*) At runtime one class is generated using your inputs,
ie called as Proxy. (Dynamic Proxy).

https://docs.oracle.com/javase/8/docs/technotes/guides/reflection/proxy.html

```
class $1  implements EmployeeRepo {

        public <S extends Employee> S save(S entity) {

                Assert.notNull(entity, "Entity must not be null.");

                if (entityInformation.isNew(entity)) {
                        em.persist(entity);
                        return entity;
                } else {
                        return em.merge(entity);
                }
        }

}
```

--Java 1.5 Generics concept---

*) S extends Employee means: Employee object or its sub class objects are allowed.

*) S super Employee means: Employee objects or its super class objects are allowed.

---Core Java---

Q) What is Reflection API?
Q) How to read members of a give class?
print fields/methods/constructor details ...
Q) What is Proxy class and object?
Q) What is Dyanmic Proxy?
https://docs.oracle.com/javase/8/docs/technotes/guides/reflection/proxy.html
https://github.com/javabyraghu/DynamicProxyExample

Q) What are Generics?
Q) What is Generic class, method, field?
Q) What is wild card Char in Genrics?
Q) What is <S extends T> and <S super T> in generics?

Q) What is camelCase Rule in Java?
Q) Difference between camel case and kebab case?

---JDBC----------------------------

Q) JDBC-4 # What Auto-Loading/Auto-Detection/Auto-Register of Driver class?

-SQL------------------------

Q) What is DDL, DML, TCL ...?

---Hibernate------------------------------

Q) Which DataType can be used to create primaryKey variable in Hibernate/Jpa?

---Spring --------------------

Q) What is @Repository? Where can we add this?

Q) Can we write @Autowired on interface variable?