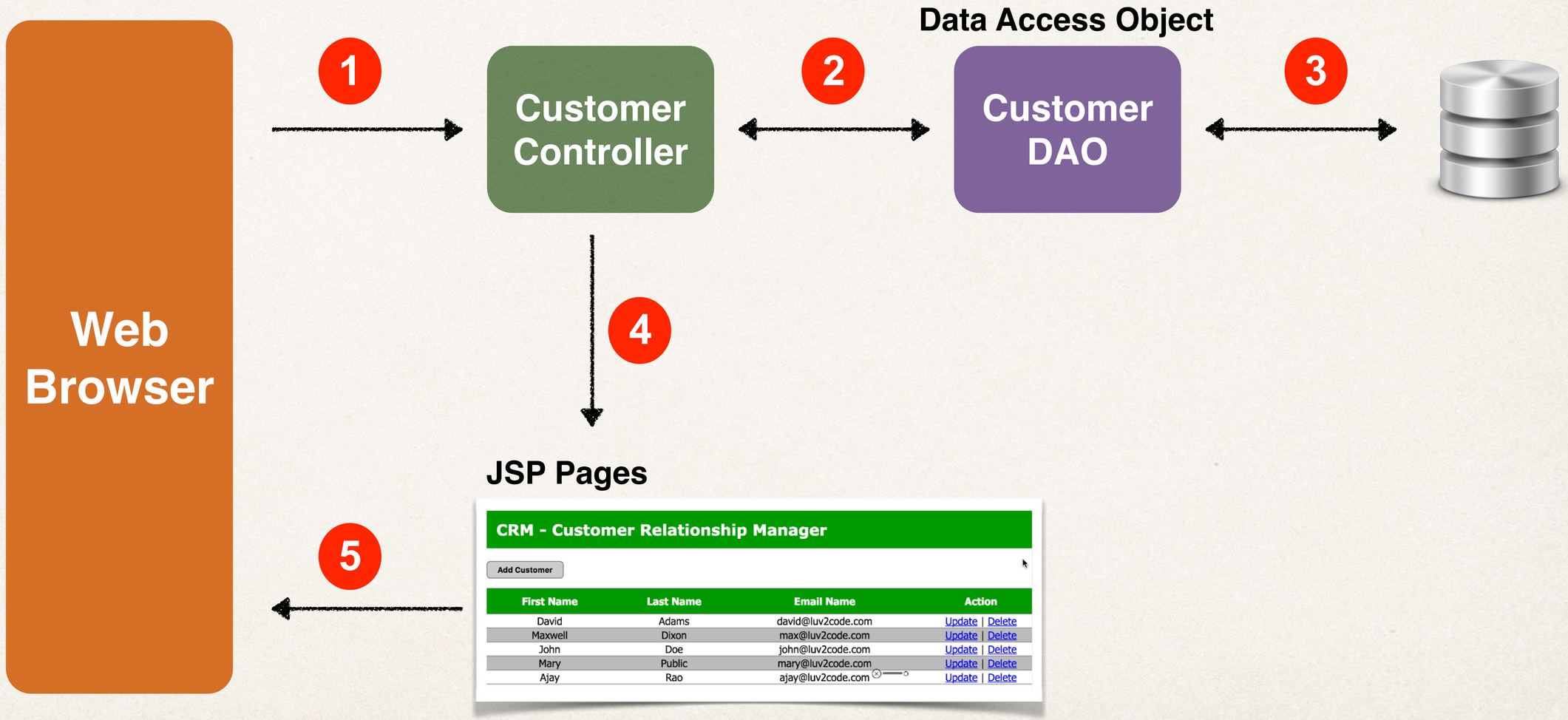
luv2code

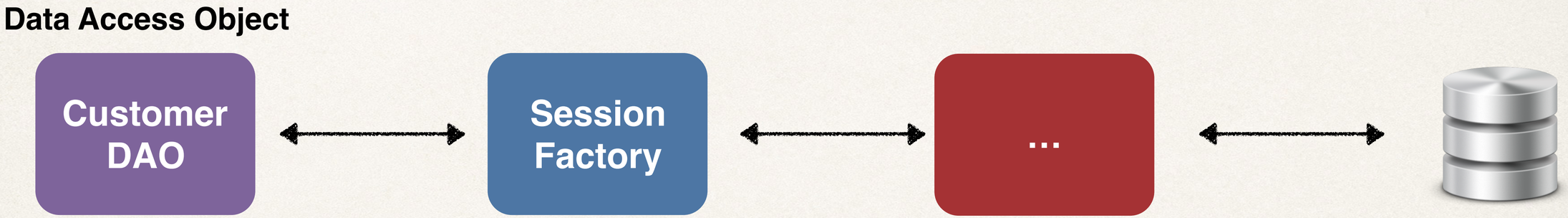
Define Data Access Object

Big Picture


Data Access Object
Web Browser
1
Customer Controller
2
Customer DAO
3
4
JSP Pages
5
CRM - Customer Relationship Manager
Add Customer
First Name
Last Name
Email Name
Action
David
Adams
david@luv2code.com
Update | Delete
Maxwell
Dixon
max@luv2code.com
Update | Delete
John
Doe
john@luv2code.com
Update | Delete
Mary
Public
mary@luv2code.com
Update | Delete
Ajay
Rao
ajay@luv2code.com
Update | Delete

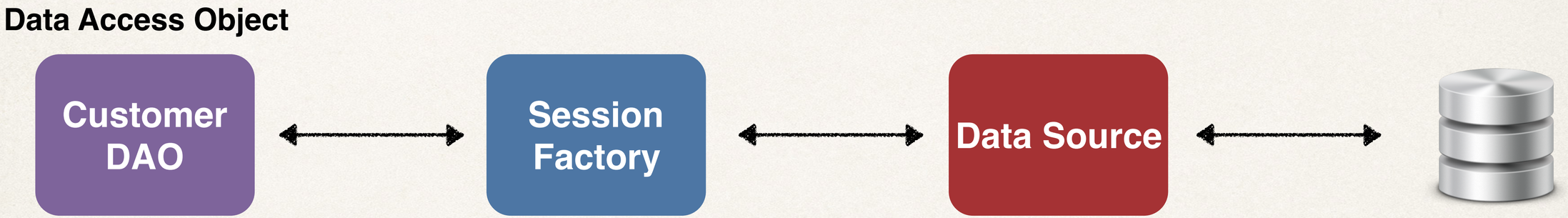
Customer Data Access Object

- For Hibernate, our DAO needs a Hibernate SessionFactory



Hibernate Session Factory

- Our Hibernate Session Factory needs a Data Source
  - The data source defines database connection info



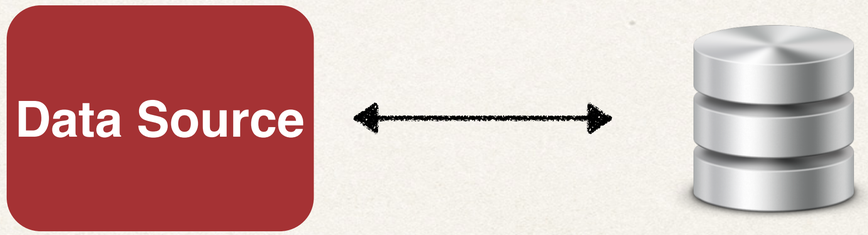
Dependencies

These are all dependencies!

We will wire them together with Dependency Injection (DI)

Data Source

```
<bean id="myDataSource" class="com.mchange.v2.c3p0.ComboPooledDataSource"
      destroy-method="close">

 <property name="driverClass" value="com.mysql.jdbc.Driver" />
 <property name="jdbcUrl"
                value="jdbc:mysql://localhost:3306/web_customer_tracker?useSSL=false" />

      … user id, password etc …
</bean>
```



Session Factory

```
<bean id="sessionFactory"
   class="org.springframework.orm.hibernate5.LocalSessionFactoryBean">

   <property name="dataSource" ref="myDataSource" />

   ...

</bean>
```

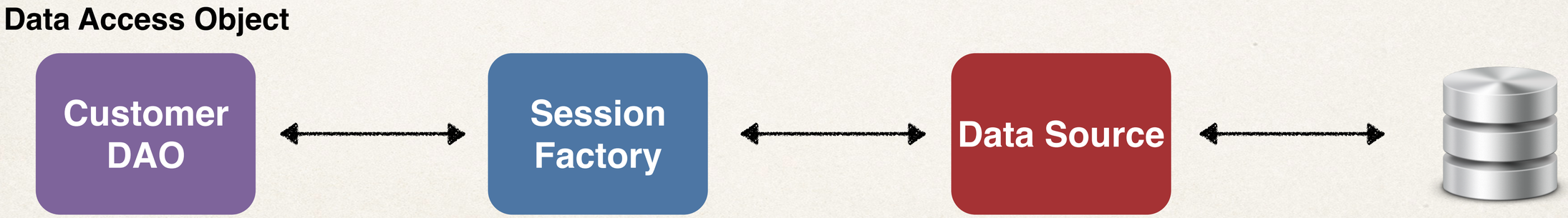
Customer DAO

Step-By-Step

1. Define DAO interface

2. Define DAO implementation

   - Inject the session factory



Step 1: Define DAO interface

```
public interface CustomerDAO {

   public List<Customer> getCustomers();

}
```

Step 2: Define DAO implementation

```
public class CustomerDAOImpl implements CustomerDAO {

   @Autowired
   private SessionFactory sessionFactory;

   public List<Customer> getCustomers() {
     ...
   }

}
```

Spring @Transactional

- Spring provides an **@Transactional** annotation

- **Automagically** begin and end a transaction for your Hibernate code
  - No need for you to explicitly do this in your code

- This Spring **magic** happens behind the scenes

Flash back - Standalone Hibernate code

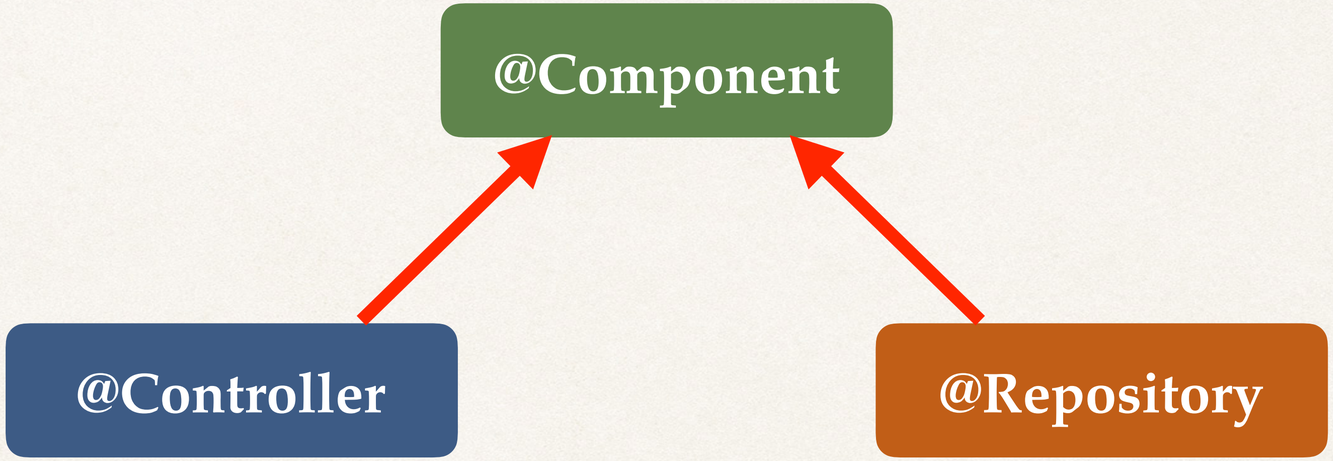
```
// start a transaction
session.beginTransaction();


// DO YOUR HIBERNATE STUFF HERE
// ...


// commit transaction
session.getTransaction().commit();
```

Spring @Transactional Magic

```
@Transactional
public List<Customer> getCustomers() {

    // get the current hibernate session
    Session currentSession = sessionFactory.getCurrentSession();

    // create a query
    Query<Customer> theQuery =
          currentSession.createQuery("from Customer", Customer.class);

    // get the result list
    List<Customer> customers = theQuery.getResultList();

    return customers;
}
```

Specialized Annotation for DAOs

- Spring provides the **@Repository** annotation



Specialized Annotation for DAOs

- Applied to DAO implementations
- Spring will automatically register the DAO implementation
  - thanks to component-scanning
- Spring also provides translation of any JDBC related exceptions

Updates for the DAO implementation

```
@Repository
public class CustomerDAOImpl implements CustomerDAO {

   @Autowired
   private SessionFactory sessionFactory;

  @Transactional
   public List<Customer> getCustomers() {
     ...
   }

}
```