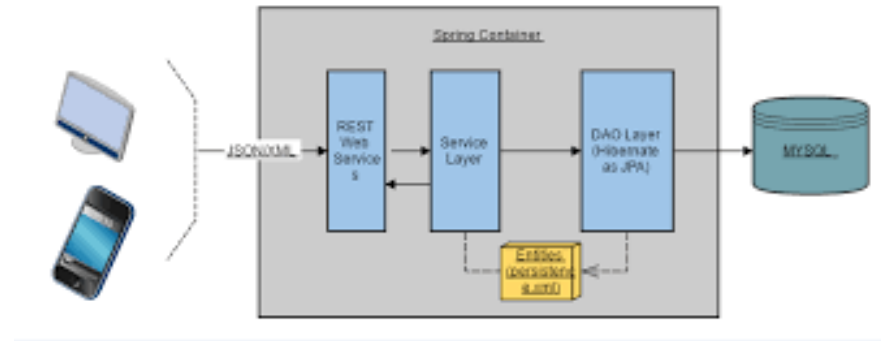


- ▼ bookappspringhib
  - ▶ Deployment Descriptor: bookappspringhib
  - ▶ JAX-WS Web Services
  - ▼ Java Resources
    - ▼ src
      - ▼ com.app.model.controller
        - ▶ BookController.java
      - ▼ com.app.model.dao
        - ▶ Book.java
        - ▶ BookDao.java
        - ▶ BookDaoImpl.java
      - ▼ com.app.model.service
        - ▶ BookService.java
        - ▶ BookServiceImpl.java
    - ▶ Libraries
    - ▶ JavaScript Resources
    - ▶ build
    - ▼ WebContent
      - ▶ META-INF
      - ▼ WEB-INF
        - ▶ lib
        - ▶ views
    - ▶ fc-configuration.xml



**book isbn book title book author book price**

1338 c is c@@22 gjhgjh 777.0 [delete](#) [update](#)

[Add new Book](#)

Step 1: DAO, DTO

# Dao Layer

```
import java.util.Date;

@Entity
@Table(name="b")
public class Book {
    @Id @GeneratedValue(strategy=GenerationType.IDENTITY)

    private int id;
    @Column(nullable=false, unique=true)
    private String isbn;
    private String title;
    private String author;
    private Double price;
    private Date pubDate;
}
```

```
public interface BookDao {
    public List<Book> getAll();
    public Book add(Book book);
    public Book delete(int bookId);
    public Book update(Book book);
    public Book getBookById(int bookId);
    public Book getBookByIsbn(String isbn);
}
```

# DaoImpl

```
1 import javax.persistence.*;
2
3 @Repository
4 public class BookDaoImpl implements BookDao {
5
6     @Autowired
7     private SessionFactory factory;
8
9     private Session getSession(){
10         return factory.getCurrentSession();
11     }
12
13     @Override
14     public List<Book> getAll() {
15         return getSession().createQuery("from Book").list();
16     }
17
18     @Override
19     public Book add(Book book) {
20         getSession().save(book);
21         return book;
22     }
23
24     @Override
25     public Book delete(int bookId) {
26         Book book=getBookById(bookId);
27         if(book!=null)
28             getSession().delete(book);
29         return book;
30     }
31 }
```

# DaoImpl

```
@Override
public Book update(Book book) {
    getSession().merge(book);
    return book;
}

@Override
public Book getBookById(int bookId) {
    return (Book) getSession().get(Book.class, bookId);
}

@Override
public Book getBookByIsbn(String isbn) {
    return null;
}
```

## Step 2: Service layer

# Service Layer

```
public interface BookService {  
    public List<Book> getAll();  
    public Book add(Book book);  
    public Book delete(int bookId);  
    public Book update(Book book);  
    public Book getBookById(int bookId);  
    public Book getBookByIsbn(String isbn);  
}
```

```
import java.util.List;  
11 @Service(value="bs")  
12 @Transactional  
13 public class BookServiceImpl implements BookService{  
14  
15     @Autowired  
16     private BookDao dao;  
17     @Override  
18     public List<Book> getAll() {  
19         return dao.getAll();  
20     }  
21  
22     @Override  
23     public Book add(Book book) {  
24         return dao.add(book);  
25     }  
26  
27     @Override
```

## Step 3: Spring Hibernate Configuration



# Configuration

```
<?xml version="1.0" encoding="UTF-8"?>
```

```
<beans xmlns="http://www.springframework.org/schema/beans"
```

```
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:aop="http://www.springframework.org/schema/aop"
```

```
xmlns:context="http://www.springframework.org/schema/context" xmlns:tx="http://www.springframework.org/schema/tx"
```

```
xsi:schemaLocation="http://www.springframework.org/schema/beans http://www.springframework.org/schema/beans/spring-beans.xsd
```

```
http://www.springframework.org/schema/context http://www.springframework.org/schema/context/spring-context.xsd
```

```
http://www.springframework.org/schema/aop http://www.springframework.org/schema/aop/spring-aop-4.0.xsd
```

```
http://www.springframework.org/schema/tx http://www.springframework.org/schema/tx/spring-tx-4.0.xsd">
```

```
<context:annotation-config />
```

```
<context:component-scan base-package="com.iris.bookapp"></context:component-scan>
```

```
<bean id="dataSource"
```

```
class="org.springframework.jdbc.datasource.DriverManagerDataSource">
```

```
<property name="url" value="jdbc:mysql://localhost:3306/iris2" />
```

```
<property name="driverClassName" value="com.mysql.jdbc.Driver" />
```

```
<property name="username" value="root" />
```

```
<property name="password" value="root" />
```

```
</bean>
```

```
<bean id="sessionFactory"
```

```
class="org.springframework.orm.hibernate4.LocalSessionFactoryBean">
```

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

```
<property name="packagesToScan">
```

```
<list>
```

```
<value>com.iris.bookapp.model.persistence</value>
```

```
</list>
```

```
</property>
```

```
<property name="hibernateProperties">
```

```
<props>
```

```
<prop key="hibernate.hbm2ddl.auto">update</prop>
```

```
<prop key="hibernate.dialect">org.hibernate.dialect.MySQLDialect</prop>
```

Data source configuration

Hibernate  
session factory  
configuration

```
1 driver=com.mysql.cj.jdbc.Driver
```

```
2 url=jdbc:mysql://localhost:3306/iris2?useSSL=false
```

```
3 username=root
```

```
4 password=root
```

# Configuration

```
16     <property name="username" value="root" />
17     <property name="password" value="root" />
18 </bean>
19 <bean id="sessionFactory"
20     class="org.springframework.orm.hibernate4.LocalSessionFactoryBean">
21     <property name="dataSource" ref="dataSource" />
22     <property name="packagesToScan">
23         <list>
24             <value>com.iris.bookapp.model.persistence</value>
25         </list>
26     </property>
27     <property name="hibernateProperties">
28         <props>
29             <prop key="hibernate.hbm2ddl.auto">update</prop>
30             <prop key="hibernate.dialect">org.hibernate.dialect.MySQLDialect</prop>
31             <prop key="hibernate.show_sql">true</prop>
32             <prop key="hibernate.format_sql">true</prop>
33         </props>
34     </property>
35 </bean>
36 <bean class="org.springframework.dao.annotation.PersistenceExceptionTranslationPostProcessor" />
37 <bean id="transactionManager"
38     class="org.springframework.orm.hibernate4.HibernateTransactionManager">
39     <property name="sessionFactory" ref="sessionFactory"></property>
40 </bean>
41
42 <tx:annotation-driven transaction-manager="transactionManager" />
43
44 </beans>
```

Hibernate factory configuration

Exception translation

Configuration of hibernate tx manager

asking spring for declarative tx

# Testing

```
1 public class Tester {
2
3     public static void main(String[] args) {
4
5         ApplicationContext ctx=new ClassPathXmlApplicationContext("beans.xml") ;
6         BookService bs=ctx.getBean("bs", BookService.class);
7
8         /*List<Book> allBooks=bs.getAll();
9         for(Book temp: allBooks){
10             System.out.println(temp);
11         }*/
12         Book book=new Book("454", "a" , "b", 99.0, new Date());
13         try{
14             bs.add(book);
15         }catch(DataAccessException ex){
16             System.out.println("handled...");
17         }
18     }
19 }
20 }
```

## Step 4: Spring Hibernate Java Configuration

```
@Configuration
@ComponentScan(basePackages={"com.bookapp"})
@EnableAspectJAutoProxy
@PropertySource(value="db.properties")
@EnableTransactionManagement
public class ModelConfig {

    @Autowired
    private Environment environment;

    @Bean(name="dataSource")
    public DataSource getDataSource(){
        DriverManagerDataSource ds=new DriverManagerDataSource();
        ds.setDriverClassName(environment.getProperty("driver"));
        ds.setUrl(environment.getProperty("url"));
        ds.setUsername(environment.getProperty("username"));
        ds.setPassword(environment.getProperty("password"));
        return ds;
    }

    @Bean
    public LocalSessionFactoryBean getSessionFactory(){
        LocalSessionFactoryBean sf=new LocalSessionFactoryBean();
        sf.setDataSource(getDataSource());
        sf.setPackagesToScan("com.bookapp.model.persistence");
        sf.setHibernateProperties(getHibernateProperties());
        return sf;
    }
}
```

```
public Properties getHibernateProperties() {  
    Properties properties=new Properties();  
    properties.setProperty("hibernate.hbm2ddl.auto", "validate");  
    properties.setProperty("hibernate.dialect", "org.hibernate.dialect.MySQLDialect");  
    properties.setProperty("hibernate.show_sql", "true");  
    properties.setProperty("hibernate.format_sql", "true");  
    return properties;  
}
```

```
@Bean  
public PersistenceExceptionTranslationPostProcessor  
getPersistenceExceptionTranslationPostProcessor(){  
    PersistenceExceptionTranslationPostProcessor ps=  
        new PersistenceExceptionTranslationPostProcessor();  
    return ps;  
}
```

```
@Bean(name="transactionManager")  
//@Autowired  
public HibernateTransactionManager getHibernateTransactionManager(SessionFactory factory){  
    HibernateTransactionManager tm=new HibernateTransactionManager();  
    tm.setSessionFactory(factory);  
    return tm;  
}
```

```
}
```

## Step 5: Spring MVC basics

# Hello world controller

*create hello world controller*

```
@Controller
@RequestMapping("/")
public class HelloWorldController {

    @RequestMapping(method = RequestMethod.GET)
    public String sayHello(ModelMap model) {
        model.addAttribute("greeting", "Hello World from Spring 4 MVC");
        return "welcome";
    }

    @RequestMapping(value="/helloagain", method = RequestMethod.GET)
    public String sayHelloAgain(ModelMap model) {
        model.addAttribute("greeting", "Hello World Again, from Spring 4 MVC");
        return "welcome";
    }
}
```



# Web layer configuration

```
<mvc:annotation-driven />
<context:component-scan base-package="com" />

<!-- CONFIG INTERNAL RESO BEAN RESOLVER -->
<bean
    class="org.springframework.web.servlet.view.InternalResourceViewResolver">
    <property name="prefix">
        <value>/WEB-INF/views/</value>
    </property>
    <property name="suffix">
        <value>.jsp</value>
    </property>
</bean>
```

# Front Controller Configuration

```
<?xml version="1.0" encoding="UTF-8"?>
<web-app xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns="http://java.sun.com/xml/ns/javaee"
  xsi:schemaLocation="http://java.sun.com/xml/ns/javaee http://java.sun.com/xml/ns/javaee/web-app_3_0.x
  version="3.0">
  <display-name>app</display-name>

  <servlet>
    <servlet-name>fc</servlet-name>
    <servlet-class>org.springframework.web.servlet.DispatcherServlet</servlet-class>
    <init-param>
      <param-name>contextConfigLocation</param-name>
      <param-value>/WEB-INF/fc-configuration.xml</param-value>
    </init-param>
  </servlet>
  <servlet-mapping>
    <servlet-name>fc</servlet-name>
    <url-pattern>/</url-pattern>
  </servlet-mapping>
</web-app>
```

@PathVariable vs @RequestParam

-----  
http://localhost:8080/app-01-spring/hello/delete/22  
-----

@Controller

@RequestMapping(value="/hello/\*")

public class Hello2Controller {

    @RequestMapping(value="/delete/{sid}", method=RequestMethod.GET)

    public String sayHello(@PathVariable ("sid")int s){

        Foo foo=new Foo();

        System.out.println(s);

        return "hello";

    }

}

-----  
foo?un=raj&pw=raj  
-----

@Controller

@RequestMapping("/foo")

public class AnotherController {

    @RequestMapping(method=RequestMethod.GET)

    public void foo(@RequestParam("un")String un, @RequestParam("pw")String pw){

        System.out.println("un"+un);

        System.out.println("pw"+pw);

    }

}

# ContextLoaderListner

*=> Use ContextLoaderListener (aka ServletContextListener ) that can load some extra configuration files for you!*

```
<context-param>  
    <param-name>contextConfigLocation</param-name>  
    <param-value>/WEB-INF/otherContext.xml</param-value>  
</context-param>  
  
<listener>  
    <listener-class>  
        org.springframework.web.context.ContextLoaderListener  
    </listener-class>  
</listener>
```

*=> NOW WE CAN DEFINE OUR MODEL AND SERVICE LAYER RELATED BEANS IN otherContext.xml*

## Step 6: Spring MVC java configuration

```
@Configuration // replacement of xml file, telling spring it is configuration file
@ComponentScan(basePackages={"com"})
@EnableWebMvc
public class AppConfig extends WebMvcConfigurerAdapter{

    @Bean
    public InternalResourceViewResolver getInternalResourceViewResolver() {
        InternalResourceViewResolver resolver = new InternalResourceViewResolver();
        resolver.setPrefix("/WEB-INF/pages/");
        resolver.setSuffix(".jsp");
        return resolver;
    }

    @Override
    public void addResourceHandlers(ResourceHandlerRegistry registry) {
        // Don't forget the ending "/" for location or you will hit 404.
        registry.addResourceHandler("/resources/**").addResourceLocations("/resources/");
    }
}
```

```
public class WebInitilizer extends
    AbstractAnnotationConfigDispatcherServletInitializer {

    @Override
    protected Class<?>[] getRootConfigClasses() {
        return null;
    }

    @Override
    protected Class<?>[] getServletConfigClasses() {

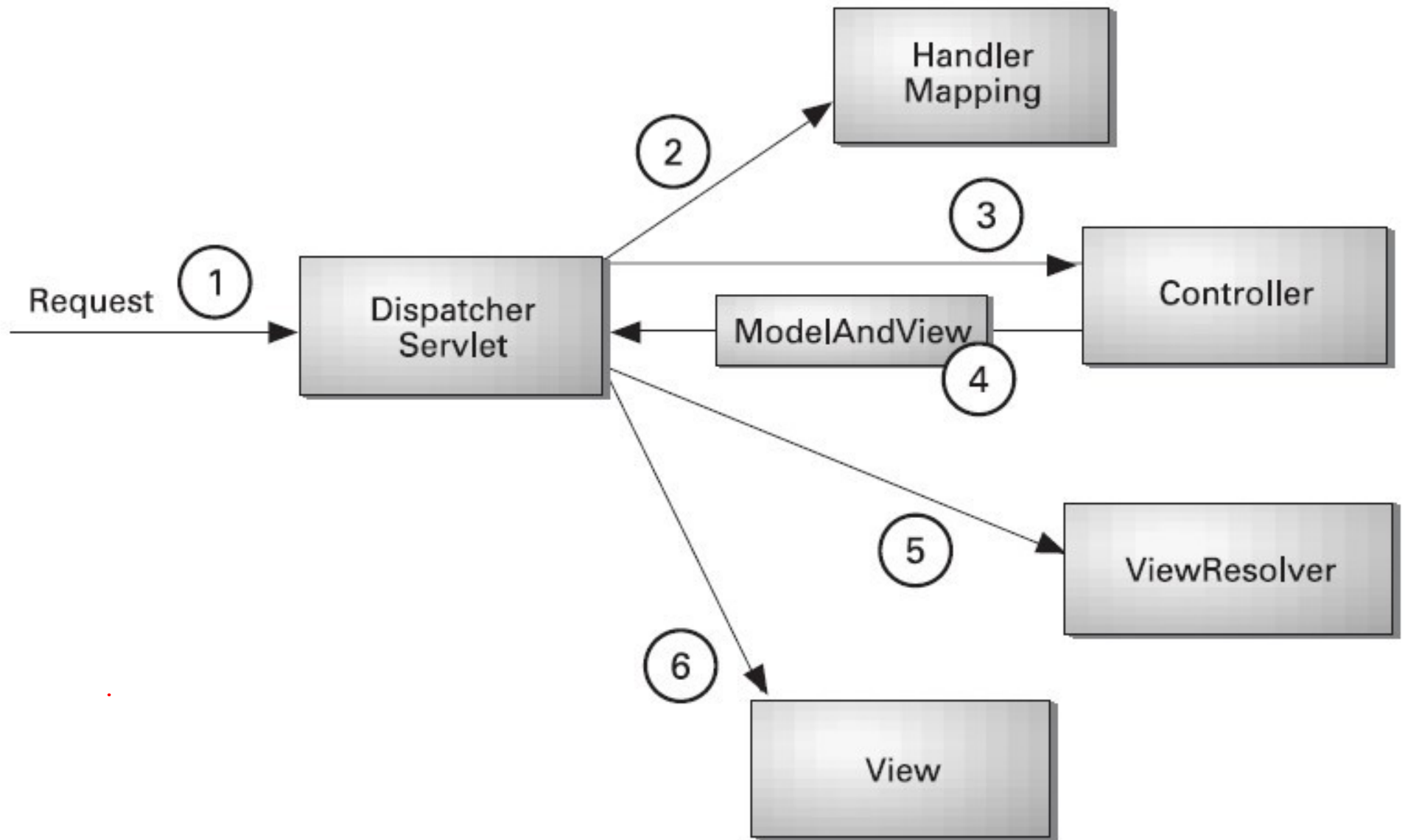
        return new Class[]{AppConfig.class};
    }

    @Override
    protected String[] getServletMappings() {

        return new String[]{"/"};
    }
}
```

## Step 7: Spring MVC, Hibernate





```

throws InterruptedException {
    long base = System.currentTimeMillis(); //x
    long now = 0;

    if (millis < 0) {
        throw new IllegalArgumentException("timeout value is negative");
    }

    if (millis == 0) {
        while (isAlive()) { //case 1: 0 or nothing
            wait(0);
        }
    } else {
        while (isAlive()) {
            long delay = millis - now; 700-0
            if (delay <= 0) { //+ve case
                break;
            }
            wait(delay);
            now = System.currentTimeMillis() - base;
        }
    }
}

```

$x \rightarrow x+1$

```

Thread.currentThread.join(0); ✓
hread.currentThread.join();

```

```

hread.currentThread.join(700);

```

```

7 @Controller
8 public class BookController {
9
10     @Autowired
11     private BookService bookService;
12
13     @RequestMapping(value="showallbooks", method=RequestMethod.GET)
14     public String showAllBooks(ModelMap map){
15         map.addAttribute("books", bookService.getAllBooks());
16         return "showallbooks";
17     }
18
19     @RequestMapping(value="addbook", method=RequestMethod.GET)
20     public String showBookForm(ModelMap map){
21         map.addAttribute("book", new Book());
22         return "addbook";
23     }
24
25     @RequestMapping(value="updatebook", method=RequestMethod.GET)
26     public String updateBook(ModelMap map, HttpServletRequest request){
27         int id=Integer.parseInt(request.getParameter("id"));
28         Book book=bookService.getBookById(id);
29         map.addAttribute("book", book);
30         return "addbook";
31     }
32 }

```

```
@RequestMapping(value="deletebook", method=RequestMethod.GET)
public String deleteBook(HttpServletRequest request){
    int id=Integer.parseInt(request.getParameter("id"));

    bookService.removeBook(id);
    return "redirect:/showallbooks";
}
//@valid must ==>BindingResult
@RequestMapping(value="addbook", method=RequestMethod.POST)
public String saveBook( @ModelAttribute(value="book") @Valid Book book, ModelMap map,
    BindingResult bindingResult ){
    if(bindingResult.hasErrors()){
        return "addbook";
    }else{
        if(book.getId()==0)
            bookService.addBook(book);
        else
            bookService.updateBook(book);
        return "redirect:/showallbooks";
    }
}
```

# Display All Books

```
<body>
<body>
  <table>
    <thead>
      <tr>
        <th>book isbn</th>
        <th>book title</th>
        <th>book author</th>
        <th>book price</th>
      </tr>
    </thead>
    <tbody>
      <c:forEach var="b" items="${books}">
        <tr>
          <td>${b.isbn}</td>
          <td>${b.title}</td>
          <td>${b.author}</td>
          <td>${b.price}</td>
          <td><a href="deletebook?id=${b.id}">delete</a></td>
          <td><a href="updatebook?id=${b.id}">update</a></td>
        </tr>
      </c:forEach>
    </tbody>
  </table>
  <a href="addbook">Add new Book</a>
</body>
```

# Add/ Edit a Book

```
3 <%@ taglib prefix="form" uri="http://www.springframework.org/tags/form" %>
4 <!DOCTYPE html PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN" "http://www.w3.org/TR/html4/loose.d
5 <html>
6 <head>
7 <meta http-equiv="Content-Type" content="text/html; charset=UTF-8">
8 <title>Insert title here</title>
9 </head>
10 <body>
11 <form:form action="addbook" method="post" modelAttribute="book">
12 <form:hidden path="id"/>
13     Enter book isbn:<form:input path="isbn"/><form:errors path="isbn" class="error"/><br/>
14     Enter book title:<form:input path="title"/><form:errors path="title" class="error"/><br/>
15     Enter book author:<form:input path="author"/><form:errors path="author" class="error"/><br/>
16     Enter book price:<form:input path="price"/><br/>
17     <input type="submit"/>
18 </form:form>
19 </body>
```

@Controller

public class HelloController {

    @RequestMapping("/welcome/{countryName}/{userName}")

    public ModelAndView helloWorld(@PathVariable Map<String,String> pathVars) {

        String name = pathVars.get("userName");

        String country = pathVars.get("countryName");

        ModelAndView model = new ModelAndView("HelloPage");

        model.addObject("msg","hello "+name+ " You are from "+country);

        return model;

    }

}

    @RequestMapping("/welcome/countryName/{userName}")

    public ModelAndView helloWorld(@PathVariable("userName") String name) {

        ModelAndView model = new ModelAndView("HelloPage");

        model.addObject("msg","hello "+name);

        return model;

    }

    @RequestMapping(value="/submitAdmissionForm.html", method = RequestMethod.POST)

    public ModelAndView submitAdmissionForm(@RequestParam("studentName") String name, @RequestParam("studentHobby") String

        ModelAndView model = new ModelAndView("AdmissionSuccess");

        model.addObject("msg","Details submitted by you:: Name: "+name+ ", Hobby: " + hobby);

        return model;

    }

some imp points:

-----  
for converting string ==> desire data formate  
-----

```
@DateTimeFormat(pattern = "dd/MM/yyyy")
```

must use <mvc:annotation-driven

auto populate some field:

-----  
Enter Book Type: <form:select path="pubName" items="\${pubNammes}"/><br/>

```
@ModelAttribute(value="pubNammes")  
    public List<String> getGender(){  
        return ....;  
    }
```

Putting messages from external file

-----  
messages.properties  
NotEmpty.book.isbn=isbn can not be blank

How spring come to know about it?

-----  
<bean id="messageSource" class="org.springframework.context.support.ResourceBundleMessageSource">  
 <property name="basename" value="messages" />  
</bean>



# JSR 303 Validation API

- **@NotNull** – validates that the annotated property value is not *null*
- **@AssertTrue** – validates that the annotated property value is *true*
- **@Size** – validates that the annotated property value has a size between the attributes *min* and *max*, can be applied to *String*, *Collection*, *Map*, and array properties
- **@Min** – validates that the annotated property has a value no smaller than the *value* attribute
- **@Max** – validates that the annotated property has a value no larger than the *value* attribute
- **@Email** – validates that the annotated property is a valid email address
  
- **@NotEmpty** – validates that the property is not null or empty; can be applied to *String*, *Collection*, *Map* or *Array* values
- **@NotBlank** – can be applied only to text values and validated that the property is not null or whitespace
- **@Positive** and **@PositiveOrZero** – apply to numeric values and validate that they are strictly positive, or positive including 0
- **@Negative** and **@NegativeOrZero** – apply to numeric values and validate that they are strictly negative, or negative including 0
- **@Past** and **@PastOrPresent** – validate that a date value is in the past or the past including the present; can be applied to date types including those added in Java 8
- **@Future** and **@FutureOrPresent** – validates that a date value is in the future, or in the future including the present

## 8. Spring REST



```

) @RestController// @RestController=@Controller + @ResponseBody
) public class BookResources {
    L
    !⊖ @Autowired
    } private BookService service;
    }
    !⊖ @RequestMapping(value = "/api/book", method = RequestMethod.GET,
    } produces = MediaType.APPLICATION_JSON_VALUE)
    } public ResponseEntity<Collection<Book>> getAllBooks() {
    } Collection<Book> greetings = service.getAllBooks();
    } return new ResponseEntity<Collection<Book>>(greetings, HttpStatus.OK);
    }
    L
    !⊖ @RequestMapping(value = "/api/book/{id}", method = RequestMethod.GET,
    } produces = MediaType.APPLICATION_JSON_VALUE)
    } public ResponseEntity<Book> getAnBook(@PathVariable Integer id) {
    } Book book = service.getBookById(id);
    } if (book == null) {
    } return new ResponseEntity<Book>(HttpStatus.NOT_FOUND);
    }
    }
    } return new ResponseEntity<Book>(book, HttpStatus.OK);
    L
    }
    }

```

```
@RequestMapping(value = "/api/book", method = RequestMethod.POST,
    consumes = MediaType.APPLICATION_JSON_VALUE, produces = MediaType.APPLICATION_JSON_VALUE)
public ResponseEntity<Book> createBook(@RequestBody Book book) {
    Book savedBook = service.addBook(book);
    return new ResponseEntity<Book>(savedBook, HttpStatus.CREATED);
}

@RequestMapping(value = "/api/book/{id}", method = RequestMethod.PUT,
    consumes = MediaType.APPLICATION_JSON_VALUE, produces = MediaType.APPLICATION_JSON_VALUE)
public ResponseEntity<Book> updateBook(@PathVariable Integer id,
    @RequestBody Book book) {

    service.updateBook(book);

    return new ResponseEntity<Book>(HttpStatus.OK);
}

@RequestMapping(value = "/api/book/{id}", method = RequestMethod.DELETE)
public ResponseEntity<Book> deleteBook(@PathVariable("id") Integer id)
    throws Exception {

    service.removeBook(id);

    return new ResponseEntity<Book>(HttpStatus.NO_CONTENT);
}
```

# Step 9: Spring Hibernate Testing basics

```
@RunWith(SpringJUnit4ClassRunner.class)
@ContextConfiguration(locations="classpath:spring-context.xml")
@TransactionConfiguration(defaultRollback=true,transactionManager="transactionManager")
public class EmployeeHibernateDAOImplTest {

    @Autowired
    private EmployeeDAO employeeDAO;

    @Test
    public void testGetEmployeeById() {
        Employee emp = employeeDAO.getEmployeeById(1L);

        assertNotNull(emp);
    }

    @Test
    public void testCreateEmployee()
    {
        Employee emp = new Employee();
        emp.setName("Emp123");
        Long key = employeeDAO.createEmployee(emp);

        assertEquals(2L, key.longValue());
    }
}
```