武汉纺织大学

Web应用开发课程设计

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# 1 需求分析

使用bootstrap table组件设计一个查询显示页面，要求：

1. 数据来自于数据库
2. 可进行组合查询
3. 某些字段支持模糊查询
4. 分页显示



出于对数据库复杂程度的考虑，在以往简单项目的基础上，按照同要求采用SSm框架+bootstrap设计了一个关于员工信息查询的类似的网页。

# **2 系统设计**

## 2.1 ER图

数据库设计2张表，职员表，部门表，对应的ER图如图3-1所示。

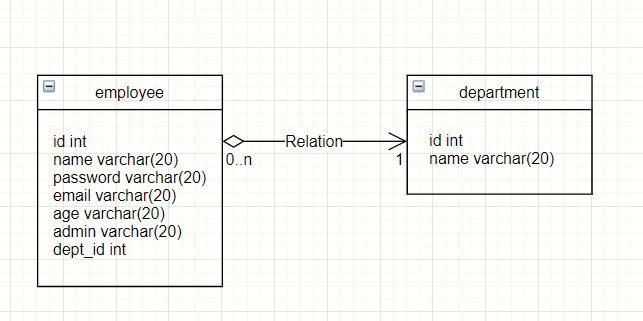
%3CmxGraphModel%3E%3Croot%3E%3CmxCell%20id%3D%220%22%2F%3E%3CmxCell%20id%3D%221%22%20parent%3D%220%22%2F%3E%3Cmysql.table%20entity.table.tableName%3D%22uses%22%20label%3D%22uses%22%20id%3D%222%22%3E%3CmxCell%20style%3D%22swimlane%3BfontStyle%3D0%3BchildLayout%3DstackLayout%3Bhorizontal%3D1%3Bhtml%3D1%3BstartSize%3D26%3BfillColor%3D%23b0e3e6%3BhorizontalStack%3D0%3BresizeParent%3D1%3BresizeParentMax%3D0%3BresizeLast%3D0%3Bcollapsible%3D1%3BmarginBottom%3D0%3BswimlaneFillColor%3D%23ffffff%3Balign%3Dcenter%3BfontSize%3D13%3BstrokeColor%3D%230e8088%3Brounded%3D0%3Bshadow%3D1%3Bcomic%3D0%3Bglass%3D0%3BgradientDirection%3Dsouth%3BgradientColor%3D%23ffffff%3B%22%20vertex%3D%221%22%20connectable%3D%220%22%20parent%3D%221%22%3E%3CmxGeometry%20x%3D%2260%22%20y%3D%2250%22%20width%3D%22310%22%20height%3D%22130%22%20as%3D%22geometry%22%2F%3E%3C%2FmxCell%3E%3C%2Fmysql.table%3E%3Cmysql.column%20entity.column.tableName%3D%22uses%22%20entity.column.name%3D%22userName%22%20entity.column.dataType%3D%22VARCHAR%22%20entity.column.PK%3D%22true%22%20label%3D%22%26lt%3Bimg%20title%3D%26quot%3BPrimary%20Key%26quot%3B%20src%3D%26quot%3Bimg%2Fdb%2Fkey1.png%26quot%3B%20width%3D%26quot%3B16%26quot%3B%20height%3D%26quot%3B16%26quot%3B%20align%3D%26quot%3Btop%26quot%3B%26gt%3B%26amp%3Bnbsp%3B%26lt%3Bfont%20size%3D%26quot%3B1%26quot%3B%20face%3D%26quot%3BTahoma%26quot%3B%26gt%3B%26lt%3Bspan%20style%3D%26quot%3Bfont-size%3A%2013px%26quot%3B%26gt%3B%26lt%3Bb%26gt%3Bid%20int%20primary%20key%26lt%3B%2Fb%26gt%3B%26lt%3B%2Fspan%26gt%3B%26lt%3B%2Ffont%26gt%3B%22%20entity.column.oldName%3D%22id%22%20entity.column.datalen%3D%2220%22%20entity.column.decimals%3D%22%22%20entity.column.autoIncreament%3D%22%22%20entity.column.unsigned%3D%22%22%20entity.column.bin%3D%22%22%20entity.column.ascii%3D%22%22%20entity.column.unicode%3D%22%22%20entity.column.unique%3D%22%22%20entity.column.isNotNull%3D%22NOT%20NULL%22%20entity.column.defaultValue%3D%22%22%20entity.column.comment%3D%22%22%20entity.column.enum%3D%22%22%20entity.column.set%3D%22%22%20entity.column.enumSetValue%3D%22%22%20id%3D%223%22%3E%3CmxCell%20style%3D%22text%3Bhtml%3D1%3BstrokeColor%3Dnone%3BfillColor%3Dnone%3BspacingLeft%3D4%3BspacingRight%3D4%3Boverflow%3Dhidden%3Brotatable%3D0%3BportConstraint%3Deastwest%3BfontSize%3D12%3BverticalAlign%3Dmiddle%3B%22%20vertex%3D%221%22%20parent%3D%222%22%3E%3CmxGeometry%20y%3D%2226%22%20width%3D%22310%22%20height%3D%2226%22%20as%3D%22geometry%22%2F%3E%3C%2FmxCell%3E%3C%2Fmysql.column%3E%3Cmysql.column%20entity.column.tableName%3D%22uses%22%20entity.column.name%3D%22chrName%22%20entity.column.datalen%3D%2220%22%20entity.column.dataType%3D%22VARCHAR%22%20label%3D%22%26lt%3Bimg%20title%3D%26quot%3BPrimary%20Key%26quot%3B%20src%3D%26quot%3Bimages%2Fspacer.gif%26quot%3B%20width%3D%26quot%3B16%26quot%3B%20height%3D%26quot%3B16%26quot%3B%20align%3D%26quot%3Btop%26quot%3B%26gt%3B%26amp%3Bnbsp%3B%26lt%3Bfont%20size%3D%26quot%3B1%26quot%3B%20face%3D%26quot%3BTahoma%26quot%3B%26gt%3B%26lt%3Bspan%20style%3D%26quot%3Bfont-size%3A%2013px%26quot%3B%26gt%3B%26lt%3Bb%26gt%3Bname%20varchar(10)%26lt%3B%2Fb%26gt%3B%26lt%3B%2Fspan%26gt%3B%26lt%3B%2Ffont%26gt%3B%22%20entity.column.oldName%3D%22name%22%20entity.column.decimals%3D%22%22%20entity.column.autoIncreament%3D%22%22%20entity.column.unsigned%3D%22%22%20entity.column.bin%3D%22%22%20entity.column.ascii%3D%22%22%20entity.column.unicode%3D%22%22%20entity.column.PK%3D%22false%22%20entity.column.unique%3D%22%22%20entity.column.isNotNull%3D%22%22%20entity.column.defaultValue%3D%22%22%20entity.column.comment%3D%22%22%20entity.column.enum%3D%22%22%20entity.column.set%3D%22%22%20entity.column.enumSetValue%3D%22%22%20id%3D%224%22%3E%3CmxCell%20style%3D%22text%3Bhtml%3D1%3BstrokeColor%3Dnone%3BfillColor%3Dnone%3BspacingLeft%3D4%3BspacingRight%3D4%3Boverflow%3Dhidden%3Brotatable%3D0%3BportConstraint%3Deastwest%3BfontSize%3D12%3BverticalAlign%3Dmiddle%3B%22%20vertex%3D%221%22%20parent%3D%222%22%3E%3CmxGeometry%20y%3D%2252%22%20width%3D%22310%22%20height%3D%2226%22%20as%3D%22geometry%22%2F%3E%3C%2FmxCell%3E%3C%2Fmysql.column%3E%3Cmysql.column%20entity.column.tableName%3D%22uses%22%20entity.column.name%3D%22password%22%20entity.column.datalen%3D%2250%22%20entity.column.dataType%3D%22VARCHAR%22%20label%3D%22%26lt%3Bimg%20title%3D%26quot%3BPrimary%20Key%26quot%3B%20src%3D%26quot%3Bimages%2Fspacer.gif%26quot%3B%20width%3D%26quot%3B16%26quot%3B%20height%3D%26quot%3B16%26quot%3B%20align%3D%26quot%3Btop%26quot%3B%26gt%3B%26amp%3Bnbsp%3B%26lt%3Bfont%20size%3D%26quot%3B1%26quot%3B%20face%3D%26quot%3BTahoma%26quot%3B%26gt%3B%26lt%3Bspan%20style%3D%26quot%3Bfont-size%3A%2013px%26quot%3B%26gt%3B%26lt%3Bb%26gt%3Bname%20varchar(10)%26lt%3B%2Fb%26gt%3B%26lt%3B%2Fspan%26gt%3B%26lt%3B%2Ffont%26gt%3B%22%20entity.column.oldName%3D%22chrName%22%20entity.column.decimals%3D%22%22%20entity.column.autoIncreament%3D%22%22%20entity.column.unsigned%3D%22%22%20entity.column.bin%3D%22%22%20entity.column.ascii%3D%22%22%20entity.column.unicode%3D%22%22%20entity.col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ty.column.datalen%3D%22%22%20entity.column.dataType%3D%22DATETIME%22%20label%3D%22%26lt%3Bimg%20title%3D%26quot%3BPrimary%20Key%26quot%3B%20src%3D%26quot%3Bimages%2Fspacer.gif%26quot%3B%20width%3D%26quot%3B16%26quot%3B%20height%3D%26quot%3B16%26quot%3B%20align%3D%26quot%3Btop%26quot%3B%26gt%3B%26amp%3Bnbsp%3B%26lt%3Bfont%20size%3D%26quot%3B1%26quot%3B%20face%3D%26quot%3BTahoma%26quot%3B%26gt%3B%26lt%3Bspan%20style%3D%26quot%3Bfont-size%3A%2013px%26quot%3B%26gt%3B%26lt%3Bb%26gt%3Bname%20varchar(10)%26lt%3B%2Fb%26gt%3B%26lt%3B%2Fspan%26gt%3B%26lt%3B%2Ffont%26gt%3B%22%20entity.column.oldName%3D%22count%22%20entity.column.decimals%3D%22%22%20entity.column.autoIncreament%3D%22%22%20entity.column.unsigned%3D%22%22%20entity.column.bin%3D%22%22%20entity.column.ascii%3D%22%22%20entity.column.unicode%3D%22%22%20entity.column.PK%3D%22false%22%20entity.column.unique%3D%22%22%20entity.column.isNotNull%3D%22%22%20entity.column.defaultValue%3D%22%22%20entity.column.comment%3D%22%22%20entity.column.enum%3D%22%22%20entity.column.set%3D%22%22%20entity.column.enumSetValue%3D%22%22%20id%3D%2219%22%3E%3CmxCell%20style%3D%22text%3Bhtml%3D1%3BstrokeColor%3Dnone%3BfillColor%3Dnone%3BspacingLeft%3D4%3BspacingRight%3D4%3Boverflow%3Dhidden%3Brotatable%3D0%3BportConstraint%3Deastwest%3BfontSize%3D12%3BverticalAlign%3Dmiddle%3B%22%20vertex%3D%221%22%20parent%3D%2212%22%3E%3CmxGeometry%20y%3D%22182%22%20width%3D%22280%22%20height%3D%2226%22%20as%3D%22geometry%22%2F%3E%3C%2FmxCell%3E%3C%2Fmysql.column%3E%3CmxCell%20id%3D%2220%22%20value%3D%221..n%22%20style%3D%22edgeStyle%3DentityRelationEdgeStyle%3BfontSize%3D12%3Bhtml%3D1%3BendArrow%3DERoneToMany%3BstrokeWidth%3D2%3BstrokeColor%3D%236c8ebf%3BexitX%3D1%3BexitY%3D0.25%3BentryX%3D0%3BentryY%3D0.5%3B%22%20edge%3D%221%22%20source%3D%224%22%20target%3D%2214%22%20parent%3D%221%22%3E%3CmxGeometry%20relative%3D%221%22%20as%3D%22geometry%22%2F%3E%3C%2FmxCell%3E%3CmxCell%20id%3D%2221%22%20value%3D%221..n%22%20style%3D%22edgeStyle%3DentityRelationEdgeStyle%3BfontSize%3D12%3Bhtml%3D1%3BendArrow%3DERoneToMany%3BstrokeWidth%3D2%3BstrokeColor%3D%236c8ebf%3BexitX%3D1%3BexitY%3D0.5%3BentryX%3D0%3BentryY%3D0.5%3B%22%20edge%3D%221%22%20source%3D%228%22%20target%3D%2216%22%20parent%3D%221%22%3E%3CmxGeometry%20relative%3D%221%22%20as%3D%22geometry%22%2F%3E%3C%2FmxCell%3E%3C%2Froot%3E%3C%2FmxGraphModel%3E

图2-1 数据库ER图

## 2.3 UML类图（Class Diagram）

* DAO接口类IEmployeeDao,IDepartmentDao：通过工厂类取得一个DAO的实例化对象
* MyBatis的映射文件EmployeeMapping.xml，DepartmentMapping.xml：MyBatis框架中映射文件也就是dao接口的实现类。
* Service接口类IEmployeeService，IDepartmentService：提供接口。
* Service接口实现类EmployeeServiceImpl，DepartmentServiceImpl .
* VO实体类Employee，Department，EmployeeQueryObject，PageResult，QueryObject：与数据库结构进行映射的类。主要由属性，setter, getter方法组成，VO类中的属性与表中的字段相对应，每一个VO类的对象都表示表中的每一条记录

各类的结构及类之间的关系如图2-5所示：

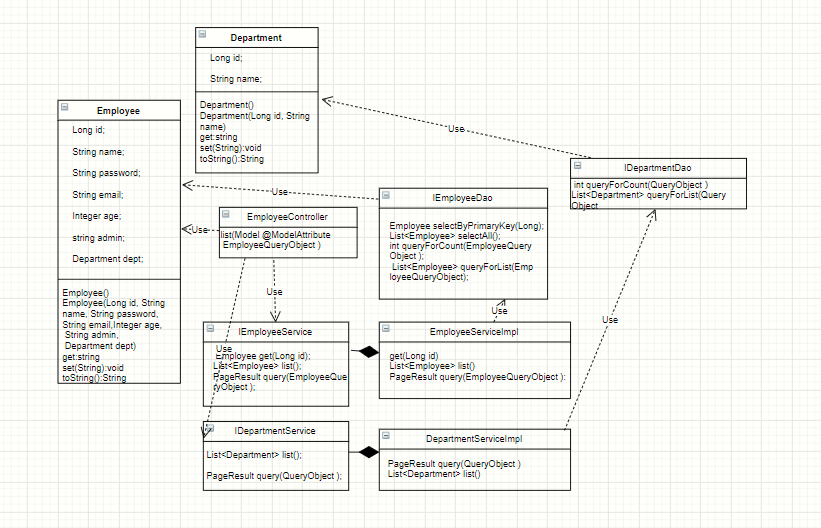
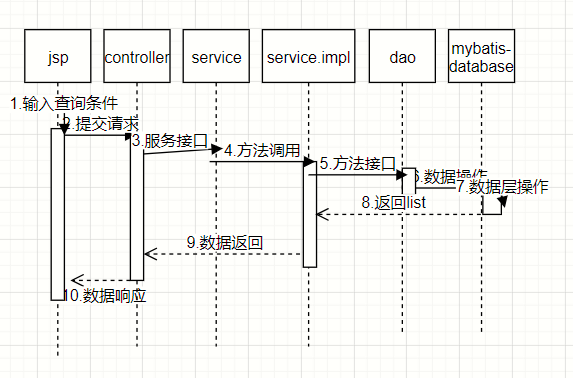


图2-3 用户功能类图

## 2.4 UML时序图（Sequence Diagram）



### 图2-4 时序图

## 2.5 UML活动图（Activity Diagram）

查询操作需要进行条件输入，可进行条件组合查询，点击查询后，页面会分页显示数据库中符合条件的数据结果。

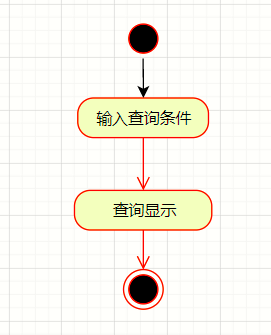
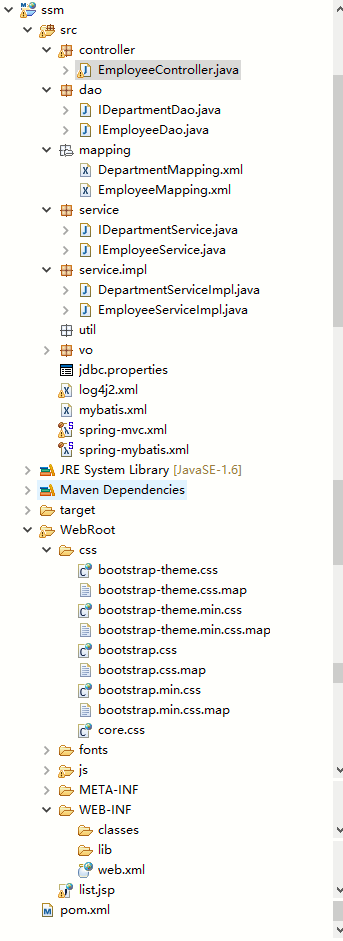


图2-5 登录流程图

# **3 系统实现**

## 3.1 项目结构



## 3.2 配置文件

### 3.2.1 jdbc.properties文件

该配置文件主要是以文件形式保存数据库的驱动类名称，连接数据库的URL地址，访问数据库的用户名及对应的密码，程序运行时会读取该文件相关信息，避免硬编码，当相关信息发生变化时，只需修改配置文件而不用修改源代码，增加程序的可扩展型。

driver=com.mysql.jdbc.Driver

url=jdbc:mysql://localhost:3306/ssm?useUnicode=true&characterEncoding=utf-8&useSSL=false&serverTimezone=UTC

username=root

password=root

initialSize=0

maxActive=20

minIdle=1

maxWait=60000

validationQuery =SELECT 1

### 3.2.2 log4j.properties文件

为了方便调试，一般都会使用日志来输出信息，Log4j2是[Apache](http://baike.baidu.com/subview/28283/5418753.htm" \t "_blank)的一个开放源代码项目，通过使用Log4j2，我们可以控制[日志](http://baike.baidu.com/view/269351.htm" \t "_blank)信息输送的目的地是[控制台](http://baike.baidu.com/view/135167.htm" \t "_blank)、文件等；也可以控制每一条日志的输出格式；通过定义每一条日志信息的级别，能够更加细致地控制日志的生成过程。

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

<!--日志级别以及优先级排序: OFF > FATAL > ERROR > WARN > INFO > DEBUG > TRACE > ALL -->

<!-- status配置Log4j2启动和加载配置文件时的日志输出登记 -->

<Configuration status=*"info"*>

<!--appenders:定义输出内容,输出格式,输出方式,日志保存策略等,常用其下三种标签[console,File,RollingFile] -->

<!--Appender可以理解为日志的输出目的地 -->

<Appenders>

<!--console :控制台输出的配置 -->

<Console name=*"Console"* target=*"SYSTEM\_OUT"*>

<!--

%d 输出日志时间点的日期或时间

%t 输出产生该日志事件的线程名

%p 输出优先级，即DEBUG,INFO,WARN,ERROR,FATAL

%F 输出日志消息产生时所在的文件名称

%c 输出所属的类目,通常就是所在类的全名

%L 输出代码中的行号

-->

<PatternLayout pattern=*"%d{YYYY-MM-dd HH:mm:ss} %-5p [%c,%L]- %msg%n"* />

</Console>

<RollingFile name=*"RollingFile"* filename=*"log/ZycTest.log"*

filepattern=*"${logPath}/%d{YYYYMMddHHmmss}-fargo.log"*>

<PatternLayout pattern=*"%d{YYYY-MM-dd HH:mm:ss} %-5p [%c,%L] - %msg%n"* />

<Policies>

<SizeBasedTriggeringPolicy size=*"100 MB"* />

</Policies>

<DefaultRolloverStrategy max=*"20"* />

</RollingFile>

</Appenders>

<!--定义logger，只有定义了logger并引入的appender，appender才会生效 -->

<Loggers>

<!-- Logger节点用来单独指定日志的形式，可以为通过name属性设置指定包下的class指定不同的日志级别等 ,

可以设置Logger的additivity="false"只在自定义的Appender中进行输出 -->

<logger name=*"dao"* level=*"debug"* additivity=*"false"*>

<appender-ref ref=*"Console"* />

</logger>

<!-- Root节点用来指定项目的根日志，如果没有单独指定Logger，那么就会默认使用该Root日志输出 -->

<Root level=*"info"*>

<AppenderRef ref=*"Console"* />

<AppenderRef ref=*"RollingFile"* />

</Root>

</Loggers>

</Configuration>

### 3.2.3 mybatis.xml文件

该文件是可选的配置文件，在3.4一节中的spring-mybatis.xml文件中已经完成了mybatis的基本配置（数据源设置，mapper的扫描等）如果需要进行其他额外的设置（如typeAliases等）才需要该文件

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

<!DOCTYPE configuration PUBLIC "-//mybatis.org//DTD Config 3.0//EN" "http://mybatis.org/dtd/mybatis-3-config.dtd">

<configuration>

<settings>

<setting name=*"logImpl"* value=*"LOG4J2"* />

</settings>

</configuration>

### 3.2.4 spring-mvc.xml文件

<?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:context=*"http://www.springframework.org/schema/context"*

xmlns:mvc=*"http://www.springframework.org/schema/mvc"* xmlns:aop=*"http://www.springframework.org/schema/aop"*

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/mvc*

*http://www.springframework.org/schema/mvc/spring-mvc.xsd*

*http://www.springframework.org/schema/tx*

*http://www.springframework.org/schema/tx/spring-tx.xsd*

*http://www.springframework.org/schema/aop*

*http://www.springframework.org/schema/aop/spring-aop.xsd"*>

<mvc:annotation-driven />

<!-- 扫描类包，将标注Spring注解的类自动转化Bean，同时完成Bean的注入 -->

<context:component-scan base-package=*"controller"* />

<context:component-scan base-package=*"service"* />

<!--配置视图解析器 -->

<!-- ViewResolver 视图解析器 用于将返回的ModelAndView对象进行分离

InternalResourceViewResolver：用于支持Servlet、JSP视图解析；

viewClass：JstlView表示JSP模板页面需要使用JSTL标签库，classpath中必须包含jstl的相关jar包； prefix和suffix：查找视图页面的前缀和后缀（前缀[逻辑视图名]后缀），

比如传进来的逻辑视图名为hello，则该该jsp视图页面应该存放在“/hello.jsp”； -->

<bean

class=*"org.springframework.web.servlet.view.InternalResourceViewResolver"*>

<property name=*"prefix"* value=*"/"*></property> <!-- 视图放在webroot/下 -->

<property name=*"suffix"* value=*".jsp"*></property>

</bean>

</beans>

### 3.2.5 spring-mybatis.xml文件

这个文件主要用来完成spring和mybatis的整合的。主要的就是自动扫描，自动注入，配置数据库。

<?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:context=*"http://www.springframework.org/schema/context"*

xmlns:mvc=*"http://www.springframework.org/schema/mvc"*

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/mvc*

*http://www.springframework.org/schema/mvc/spring-mvc.xsd"*>

<!-- 扫描类包，将标注Spring注解的类自动转化Bean，同时完成Bean的注入 -->

<context:component-scan base-package=*"service"* />

<!-- 引入jdbc配置文件 -->

<bean id=*"propertyConfigurer"*

class=*"org.springframework.beans.factory.config.PropertyPlaceholderConfigurer"*>

<property name=*"location"* value=*"classpath:jdbc.properties"* />

</bean>

<!-- 数据库连接池 -->

<bean id=*"dataSource"* class=*"com.alibaba.druid.pool.DruidDataSource"*

destroy-method=*"close"*>

<property name=*"driverClassName"* value=*"${driver}"* />

<property name=*"url"* value=*"${url}"* />

<property name=*"username"* value=*"${username}"* />

<property name=*"password"* value=*"${password}"* />

<!-- 初始化连接大小 -->

<property name=*"initialSize"* value=*"${initialSize}"*></property>

<!-- 连接池最大数量 -->

<property name=*"maxActive"* value=*"${maxActive}"*></property>

<!-- 连接池最小空闲 -->

<property name=*"minIdle"* value=*"${minIdle}"*></property>

<!-- 获取连接最大等待时间 -->

<property name=*"maxWait"* value=*"${maxWait}"*></property>

<!-- 验证连接是否可用，使用的SQL语句 -->

<property name=*"validationQuery"* value=*"SELECT 1"*></property>

</bean>

<!-- spring和MyBatis整合，不需要mybatis的配置映射文件 -->

<bean id=*"sqlSessionFactory"* class=*"org.mybatis.spring.SqlSessionFactoryBean"*>

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

<property name=*"configLocation"* value=*"classpath:mybatis.xml"*></property>

<!-- 自动扫描mapping.xml文件 -->

<property name=*"mapperLocations"* value=*"classpath:mapping/\*.xml"*></property>

</bean>

<!-- DAO接口所在包名，Spring会自动查找其下的类 -->

<bean class=*"org.mybatis.spring.mapper.MapperScannerConfigurer"*>

<property name=*"basePackage"* value=*"dao"* />

<property name=*"sqlSessionFactoryBeanName"* value=*"sqlSessionFactory"*></property>

</bean>

<!-- (事务管理)transaction manager-->

<bean id=*"transactionManager"*

class=*"org.springframework.jdbc.datasource.DataSourceTransactionManager"*>

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

</bean>

</beans>

### 3.2.6 web.xml

<?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.xsd"*

id=*"WebApp\_ID"* version=*"3.0"*>

<display-name>SSMDemo</display-name>

<welcome-file-list>

<welcome-file>index.html</welcome-file>

<welcome-file>index.jsp</welcome-file>

</welcome-file-list>

<!-- Spring和mybatis的配置文件 -->

<context-param>

<param-name>contextConfigLocation</param-name>

<param-value>classpath:spring-mybatis.xml</param-value>

</context-param>

<!-- log4j2的配置文件 -->

<context-param>

<param-name>log4jConfigLocation</param-name>

<param-value>classpath:log4j2.xml</param-value>

</context-param>

<!-- 编码过滤器 -->

<filter>

<filter-name>encodingFilter</filter-name>

<filter-class>org.springframework.web.filter.CharacterEncodingFilter</filter-class>

<async-supported>true</async-supported>

<init-param>

<param-name>encoding</param-name>

<param-value>UTF-8</param-value>

</init-param>

</filter>

<filter-mapping>

<filter-name>encodingFilter</filter-name>

<url-pattern>/\*</url-pattern>

</filter-mapping>

<!-- Spring监听器 -->

<listener>

<listener-class>org.springframework.web.context.ContextLoaderListener</listener-class>

</listener>

<!-- 防止Spring内存溢出监听器 -->

<listener>

<listener-class>org.springframework.web.util.IntrospectorCleanupListener</listener-class>

</listener>

<servlet>

<servlet-name>SpringMVC</servlet-name>

<servlet-class>org.springframework.web.servlet.DispatcherServlet</servlet-class>

<init-param>

<param-name>contextConfigLocation</param-name>

<param-value>classpath:spring-mvc.xml</param-value>

</init-param>

<load-on-startup>1</load-on-startup>

<async-supported>true</async-supported>

</servlet>

<servlet-mapping>

<servlet-name>SpringMVC</servlet-name>

<url-pattern>\*.do</url-pattern>

</servlet-mapping>

</web-app>

### 3.2.7 pom.xml

增加所需包的依赖

<project xmlns=*"http://maven.apache.org/POM/4.0.0"* xmlns:xsi=*"http://www.w3.org/2001/XMLSchema-instance"* xsi:schemaLocation=*"http://maven.apache.org/POM/4.0.0 http://maven.apache.org/xsd/maven-4.0.0.xsd"*>

<modelVersion>4.0.0</modelVersion>

<groupId>ssm</groupId>

<artifactId>ssm</artifactId>

<version>0.0.1-SNAPSHOT</version>

<packaging>war</packaging>

<name>ssm</name>

<description/>

<!-- 自定义maven属性 -->

<properties>

<project.build.sourceEncoding>UTF-8</project.build.sourceEncoding>

<springversion>5.0.0.RELEASE</springversion> <!-- spring版本号  -->

<mybatisversion>3.3.0</mybatisversion> <!-- mybatis版本号  -->

<log4jversion>2.11.2</log4jversion> <!-- log4j版本号  -->

</properties>

<!-- 项目所需依赖包 -->

<dependencies>

<dependency>

<groupId>javax.servlet</groupId>

<artifactId>javax.servlet-api</artifactId>

<version>3.0.1</version>

<!-- 用于编译和测试的环境，将不会被打包到lib目录下。 -->

<scope>provided</scope>

</dependency>

<!--springframework -->

<dependency>

<groupId>org.springframework</groupId>

<artifactId>spring-aop</artifactId>

<version>${springversion}</version>

</dependency>

<dependency>

<groupId>org.springframework</groupId>

<artifactId>spring-beans</artifactId>

<version>${springversion}</version>

</dependency>

<dependency>

<groupId>org.springframework</groupId>

<artifactId>spring-context</artifactId>

<version>${springversion}</version>

</dependency>

<dependency>

<groupId>org.springframework</groupId>

<artifactId>spring-core</artifactId>

<version>${springversion}</version>

</dependency>

<dependency>

<groupId>org.springframework</groupId>

<artifactId>spring-expression</artifactId>

<version>${springversion}</version>

</dependency>

<dependency>

<groupId>org.springframework</groupId>

<artifactId>spring-web</artifactId>

<version>${springversion}</version>

</dependency>

<dependency>

<groupId>org.springframework</groupId>

<artifactId>spring-webmvc</artifactId>

<version>${springversion}</version>

</dependency>

<dependency>

<groupId>org.springframework</groupId>

<artifactId>spring-test</artifactId>

<version>${springversion}</version>

</dependency>

<dependency>

<groupId>org.springframework</groupId>

<artifactId>spring-tx</artifactId>

<version>${springversion}</version>

</dependency>

<dependency>

<groupId>org.springframework</groupId>

<artifactId>spring-jdbc</artifactId>

<version>${springversion}</version>

</dependency>

<!-- log4j2，用于日志管理 -->

<dependency>

<groupId>org.apache.logging.log4j</groupId>

<artifactId>log4j-api</artifactId>

<version>${log4jversion}</version>

</dependency>

<dependency>

<groupId>org.apache.logging.log4j</groupId>

<artifactId>log4j-core</artifactId>

<version>${log4jversion}</version>

</dependency>

<dependency>

<groupId>org.apache.logging.log4j</groupId>

<artifactId>log4j-web</artifactId>

<version>${log4jversion}</version>

</dependency>

<!-- junit单元测试 -->

<dependency>

<groupId>junit</groupId>

<artifactId>junit</artifactId>

<version>4.12</version>

<!-- 表示开发的时候引入，发布的时候不会加载此包  -->

<scope>test</scope>

</dependency>

<!-- 用于spingMVC中的java对象和json自动转换 -->

<dependency>

<groupId>com.fasterxml.jackson.core</groupId>

<artifactId>jackson-databind</artifactId>

<version>2.9.1</version>

</dependency>

<!-- mybatis核心包  -->

<dependency>

<groupId>org.mybatis</groupId>

<artifactId>mybatis</artifactId>

<version>${mybatisversion}</version>

</dependency>

<!-- mybatis/spring包  -->

<dependency>

<groupId>org.mybatis</groupId>

<artifactId>mybatis-spring</artifactId>

<version>1.2.2</version>

</dependency>

<!--mysql驱动包 -->

<dependency>

<groupId>mysql</groupId>

<artifactId>mysql-connector-java</artifactId>

<version>5.1.49</version>

</dependency>

<!-- 连接池，用来加载DruidDataSource -->

<dependency>

<groupId>com.alibaba</groupId>

<artifactId>druid</artifactId>

<version>1.0.9</version>

</dependency>

<!-- JSTL标签库 -->

<dependency>

<groupId>jstl</groupId>

<artifactId>jstl</artifactId>

<version>1.2</version>

</dependency>

</dependencies>

<build>

<sourceDirectory>src</sourceDirectory>

<resources>

<resource>

<directory>src</directory>

<excludes>

<exclude>\*\*/\*.java</exclude>

</excludes>

</resource>

</resources>

<plugins>

<plugin>

<artifactId>maven-compiler-plugin</artifactId>

<version>2.3.2</version>

<configuration>

<source>1.6</source>

<target>1.6</target>

</configuration>

</plugin>

<plugin>

<artifactId>maven-war-plugin</artifactId>

<version>2.2</version>

<configuration>

<warSourceDirectory>${basedir}/WebRoot</warSourceDirectory>

<version>3.0</version>

<failOnMissingWebXml>false</failOnMissingWebXml>

</configuration>

</plugin>

</plugins>

</build>

</project>

## 3.3前端

### 3.3.1 css

bootstrap组件包自带css+core.css

设置页面样式

*#menu*>**li***.active* {

background: *none*;

border: *1px* *solid* *#ddd*;

}

*#menu*>**li***.list-group-item* {

padding: *0px*;

}

*#menu*>**li**>**a** {

outline: *none*;

display: *block*;

padding: *10px* *15px*;

background: *#F5F5F5*;

text-decoration: *none*;

}

*#menu*>**li***:first-child*>**a** {

border-top-left-radius: *4px*;

border-top-right-radius: *4px*;

}

*#menu*>**li***.active*>**a** {

background: *#337ab7*;

color: *#FFFFFF*;

border-color: *#337ab7*;

}

*#menu*>**li**>**ul** {

border-top: *1px* *solid* *#ddd*;

padding-left: *0px*;

list-style: *none*;

}

*#menu*>**li**>**ul**>**li** {

height: *40px*;

padding-left: *40px*;

line-height: *40px*;

}

*#menu*>**li**>**ul**>**li***.active* {

background-color: *#337ab7*;

}

*#menu*>**li**>**ul**>**li***.active* **a** {

color: *#fff*;

}

*.page-head-line* {

font-size: *30px*;

text-transform: *uppercase*;

color: *#337ab7*;

font-weight: *800*;

padding-bottom: *20px*;

border-bottom: *2px* *solid* *#00a7ff*;

margin-bottom: *10px*;

}

### 3.3.2 js

bootstrap组件包自带js+jquery库

### 3.3.3 jsp页面

包含js部分，完成前端显示

<%@ page language=*"java"* import=*"java.util.\*"* pageEncoding=*"UTF-8"*%>

<%

String path = request.getContextPath();

String basePath = request.getScheme()+"://"+request.getServerName()+":"+request.getServerPort()+path+"/";

%>

<html lang=*"en"*>

<head>

<meta charset=*"UTF-8"*>

<title>Title</title>

<meta name=*"viewport"* content=*"width=device-width, initial-scale=1"*>

<link rel=*"stylesheet"* href=*"/css/bootstrap.css"* type=*"text/css"* />

<link rel=*"stylesheet"* href=*"/css/core.css"* type=*"text/css"* />

<script type=*"text/javascript"* src=*"/js/jquery-3.3.1.min.js"*></script>

<script type=*"text/javascript"* src=*"/js/bootstrap.js"*></script>

<script type=*"text/javascript"*>

$(**function**(){

$("#pagination").twbsPagination({

totalPages:${result.totalPage},

visiblePages:${result.pageSize},

startPage:${qo.currentPage},

first:"首页",

prev:"上一页",

next:"下一页",

last:"尾页",

onPageClick:**function**(event,page){

$("#currentPage").val(page);

$("#searchForm").submit();

}

});

$("#query").click(**function**(){

$("#currentPage").val(1);

$("#searchForm").submit();

});

$("#cancel").click(**function** () {

$("#dept").val("-1");

$("#keyword").val("");

$("#currentPage").val(1);

$("#searchForm").submit();

});

});

</script>

</head>

<body>

<h1 class=*"page-head-line"*>员工管理</h1>

<!--高级查询--->

<form class=*"form-inline"* id=*"searchForm"* action=*"/employee/list.do"* method=*"post"*>

<input type=*"hidden"* name=*"currentPage"* id=*"currentPage"* value=*"*${qo.currentPage}*"*>

<input type=*"hidden"* name=*"pageSize"* id=*"pageSize"* value=*"*${qo.pageSize}*"*>

<div class=*"form-group"*>

<label for=*"keyword"*>关键字:</label>

<input type=*"text"* class=*"form-control"* id=*"keyword"* name=*"keyword"* placeholder=*"请输入姓名/邮箱"* value=*"*${qo.keyword}*"*>

</div>

<div class=*"form-group"*>

<label for=*"dept"*>部门:</label>

<select class=*"form-control"* id=*"dept"* name=*"deptId"*>

<option value=*"-1"*>全部</option>

<c:forEach items="${depts}" var=*"d"*>

<option value=*"*${d.id}*"* ${qo.deptId == d.id? 'selected':''}>${d.name}</option>

</c:forEach>

</select>

</div>

<button type=*"button"* id=*"query"* class=*"btn btn-default"*>查询</button>

<button type=*"button"* id=*"cancel"* class=*"btn btn-default"* >重置</button>

</form>

<table class=*"table table-striped table-hover"* >

<thead>

<tr>

<th>编号</th>

<th>名称</th>

<th>email</th>

<th>年龄</th>

<th>部门</th>

</tr>

</thead>

<c:forEach items="${result.list}" var=*"e"* varStatus=*"vs"*>

<tr>

<td>${vs.count}</td>

<td>${e.name}</td>

<td>${e.email}</td>

<td>${e.age}</td>

<td>${e.dept.name}</td>

</tr>

</c:forEach>

</table>

<div style="text-align: *center*;">

<ul id=*"pagination"* class=*"pagination"*></ul>

</div>

</div>

</div>

</div>

</body>

</html>

## 3.4 VO类

### 3.4.1Employee.java

**package** vo;

**public** **class** Employee {

**private** Long id;

**private** String name;

**private** String password;

**private** String email;

**private** Integer age;

**private** **boolean** admin;

**private** Department dept;

**public** Employee() {

**super**();

// **TODO** Auto-generated constructor stub

}

**public** Employee(Long id, String name, String password, String email,

Integer age, **boolean** admin, Department dept) {

**super**();

**this**.id = id;

**this**.name = name;

**this**.password = password;

**this**.email = email;

**this**.age = age;

**this**.admin = admin;

**this**.dept = dept;

}

**public** Long getId() {

**return** id;

}

**public** **void** setId(Long id) {

**this**.id = id;

}

**public** String getName() {

**return** name;

}

**public** **void** setName(String name) {

**this**.name = name;

}

**public** String getPassword() {

**return** password;

}

**public** **void** setPassword(String password) {

**this**.password = password;

}

**public** String getEmail() {

**return** email;

}

**public** **void** setEmail(String email) {

**this**.email = email;

}

**public** Integer getAge() {

**return** age;

}

**public** **void** setAge(Integer age) {

**this**.age = age;

}

**public** **boolean** isAdmin() {

**return** admin;

}

**public** **void** setAdmin(**boolean** admin) {

**this**.admin = admin;

}

**public** Department getDept() {

**return** dept;

}

**public** **void** setDept(Department dept) {

**this**.dept = dept;

}

}

### 3.4.2 Department.java

**package** vo;

**public** **class** Department {

**private** Long id;

**private** String name;

**public** Department() {

**super**();

// **TODO** Auto-generated constructor stub

}

**public** Department(Long id, String name) {

**super**();

**this**.id = id;

**this**.name = name;

}

**public** Long getId() {

**return** id;

}

**public** **void** setId(Long id) {

**this**.id = id;

}

**public** String getName() {

**return** name;

}

**public** **void** setName(String name) {

**this**.name = name;

}

}

### 3.4.3EmployeeQueryObject.java

package vo;

public class EmployeeQueryObject extends QueryObject {

private String keyword;

private Long deptId = -1L;

public String getKeyword() {

return keyword;

}

public void setKeyword(String keyword) {

this.keyword = keyword;

}

public Long getDeptId() {

return deptId;

}

public void setDeptId(Long deptId) {

this.deptId = deptId;

}

}

### 3.4.4 PageResult.java

package vo;

import java.util.Collections;

import java.util.List;

//分页封装对象

public class PageResult {

public static PageResult getEmptyPageResult() {

return EMPTY\_PAGE\_RESULT;

}

public int getCurrentPage() {

return currentPage;

}

public int getPageSize() {

return pageSize;

}

public int getTotalCount() {

return totalCount;

}

public List<?> getList() {

return list;

}

public int getPrevPage() {

return prevPage;

}

public int getNextPage() {

return nextPage;

}

public int getTotalPage() {

return totalPage;

}

//空分页对象

public static final PageResult EMPTY\_PAGE\_RESULT =

new PageResult(Collections.emptyList(), 0, 1, 3);

//页面传入

private int currentPage;

private int pageSize;

//sql查询

private int totalCount;

private List<?> list;

//计算

private int prevPage; //上一页

private int nextPage; //下一页

private int totalPage; //总页数

public PageResult(List<?> list, int totalCount, int currentPage, int pageSize){

this.list = list;

this.totalCount = totalCount;

this.currentPage = currentPage;

this.pageSize = pageSize;

if(totalCount <= pageSize){

this.prevPage = 1;

this.nextPage = 1;

this.totalPage = 1;

return;

}

this.totalPage = totalCount % pageSize == 0 ?

totalCount / pageSize : totalCount / pageSize + 1;

this.prevPage = currentPage - 1 > 0 ? currentPage - 1 : 1;

this.nextPage = currentPage + 1 > totalPage ? totalPage : currentPage + 1;

}

}

### 3.4.5 QueryObject.java

**package** vo;

**public** **class** QueryObject {

**private** **int** currentPage = 1;

**private** **int** pageSize = 5;

**public** **int** getCurrentPage() {

**return** currentPage;

}

**public** **void** setCurrentPage(**int** currentPage) {

**this**.currentPage = currentPage;

}

**public** **int** getPageSize() {

**return** pageSize;

}

**public** **void** setPageSize(**int** pageSize) {

**this**.pageSize = pageSize;

}

**public** **int** getStartIndex(){

**return** pageSize \* (currentPage - 1);

}

}

## 3.5 controller控制器EmployeeController.Java

package controller;

import org.springframework.beans.factory.annotation.Autowired;

import org.springframework.stereotype.Controller;

import org.springframework.ui.Model;

import org.springframework.web.bind.annotation.ModelAttribute;

import org.springframework.web.bind.annotation.RequestMapping;

import service.IDepartmentService;

import service.IEmployeeService;

import vo.Employee;

import vo.EmployeeQueryObject;

@Controller

@RequestMapping("employee")

public class EmployeeController {

@Autowired

private IEmployeeService employeeService;

@Autowired

private IDepartmentService departmentService;

@RequestMapping("list")

public String list(Model model, @ModelAttribute("qo") EmployeeQueryObject qo) throws Exception{

model.addAttribute("result", employeeService.query(qo));

model.addAttribute("currentMenu", "employee");

model.addAttribute("depts", departmentService.list());

return "employee/list";

}

}

## 3.6 service包

### 3.6.1 IEmployeeService.java

**package** service;

**import** java.util.List;

**import** vo.Employee;

**import** vo.EmployeeQueryObject;

**import** vo.PageResult;

**public** **interface** IEmployeeService {

Employee get(Long id);

List<Employee> list();

PageResult query(EmployeeQueryObject qo);

}

### 3.6.2 IDepartmentService.java

package service;

import java.util.List;

import vo.Department;

import vo.PageResult;

import vo.QueryObject;

public interface IDepartmentService {

List<Department> list();

PageResult query(QueryObject qo);

}

## 3.7 service.impl

### 3.7.1 EmployeeServiceImpl.java

package service.impl;

import vo.Employee;

import vo.EmployeeQueryObject;

import vo.PageResult;

import java.util.List;

import dao.IEmployeeDao;

import service.IEmployeeService;

public class EmployeeServiceImpl implements IEmployeeService {

private IEmployeeDao employeeMapper;

@Override

public Employee get(Long id) {

return employeeMapper.selectByPrimaryKey(id);

}

@Override

public List<Employee> list() {

return employeeMapper.selectAll();

}

@Override

public PageResult query(EmployeeQueryObject qo) {

int totalCount = employeeMapper.queryForCount(qo);

if(totalCount == 0){

return PageResult.EMPTY\_PAGE\_RESULT;

}

List<Employee> list = employeeMapper.queryForList(qo);

return new PageResult(list, totalCount, qo.getCurrentPage(), qo.getPageSize());

}

}

### 3.7.2 DepartmentServiceImpl.java

**package** service.impl;

**import** java.util.List;

**import** dao.IDepartmentDao;

**import** service.IDepartmentService;

**import** vo.Department;

**import** vo.PageResult;

**import** vo.QueryObject;

**public** **class** DepartmentServiceImpl **implements** IDepartmentService {

**private** IDepartmentDao departmentdao;

@Override

**public** PageResult query(QueryObject qo) {

**int** totalCount = departmentdao.queryForCount(qo);

**if**(totalCount == 0){

**return** PageResult.*EMPTY\_PAGE\_RESULT*;

}

List<Department> list = departmentdao.queryForList(qo);

**return** **new** PageResult(list, totalCount, qo.getCurrentPage(), qo.getPageSize());

}

@Override

**public** List<Department> list() {

// **TODO** Auto-generated method stub

**return** **null**;

}

}

## 3.8 dao

### 3.8.1 IEmployeeDao.java

package dao;

import java.util.List;

import vo.Employee;

import vo.EmployeeQueryObject;

public interface IEmployeeDao {

Employee selectByPrimaryKey(Long id);

List<Employee> selectAll();

//分页查询：查总数

int queryForCount(EmployeeQueryObject qo);

//分页查询：查数据

List<Employee> queryForList(EmployeeQueryObject qo);

}

### 3.8.2 IDepartmentDao.java

package dao;

import java.util.List;

import vo.Department;

import vo.QueryObject;

public interface IDepartmentDao {

//分页查询：查总数

int queryForCount(QueryObject qo);

//分页查询：查数据

List<Department> queryForList(QueryObject qo);

}

## 3.9 mapping

### 3.9.1 EmployeeMapping.xml

MyBatis框架中映射文件也就是dao接口的实现类

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

<!DOCTYPE mapper PUBLIC "-//mybatis.org//DTD Mapper 3.0//EN" "http://mybatis.org/dtd/mybatis-3-mapper.dtd">

<mapper namespace=*"dao.IEmployeeDao"*>

<resultMap id=*"BaseResultMap"* type=*"vo.Employee"*>

<id column=*"id"* property=*"id"* />

<result column=*"name"* property=*"name"* />

<result column=*"password"* property=*"password"* />

<result column=*"email"* property=*"email"* />

<result column=*"age"* property=*"age"* />

<result column=*"admin"* property=*"admin"* />

<association property=*"dept"* columnPrefix=*"d\_"* javaType=*"Department"*>

<id column=*"id"* property=*"id"* />

<result column=*"name"* property=*"name"* />

</association>

</resultMap>

<select id=*"selectByPrimaryKey"* resultMap=*"BaseResultMap"*>

select

e.id, e.name, e.password, e.email, e.age, e.admin,

d.id d\_id, d.name d\_name

from employee e LEFT JOIN department d on e.dept\_id = d.id

where e.id = #{id}

</select>

<select id=*"selectAll"* resultMap=*"BaseResultMap"*>

select id, name, password, email, age, admin, dept\_id

from employee

</select>

<!--where 条件-->

<sql id=*"base\_where"*>

<where>

<if test=*"keyword != null"*>

and (e.name like concat("%",#{keyword} ,"%") or e.email like concat("%",#{keyword} ,"%"))

</if>

<if test=*"deptId > 0"*>

and e.dept\_id = #{deptId}

</if>

</where>

</sql>

<!--查总数-->

<select id=*"queryForCount"* resultType=*"int"*>

select count(e.id) from employee e

<include refid=*"base\_where"*/>

</select>

<!--查数据-->

<select id=*"queryForList"* resultMap=*"BaseResultMap"*>

select

e.id, e.name, e.password, e.email, e.age, e.admin,

d.id d\_id, d.name d\_name

from employee e LEFT JOIN department d on e.dept\_id = d.id

<include refid=*"base\_where"*/>

limit #{startIndex}, #{pageSize}

</select>

</mapper>

### 3.9.2 DepartmentMapping.xml

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

<!DOCTYPE mapper PUBLIC "-//mybatis.org//DTD Mapper 3.0//EN" "http://mybatis.org/dtd/mybatis-3-mapper.dtd">

<mapper namespace=*"dao.IDepartmentDao"*>

<resultMap id=*"BaseResultMap"* type=*"vo.Department"*>

<id column=*"id"* property=*"id"* />

<result column=*"name"* property=*"name"* />

</resultMap>

<select id=*"queryForCount"* resultType=*"int"*>

select count(e.id) from department e

</select>

<!--查数据-->

<select id=*"queryForList"* resultMap=*"BaseResultMap"*>

select id, name limit #{startIndex}, #{pageSize}

</select>

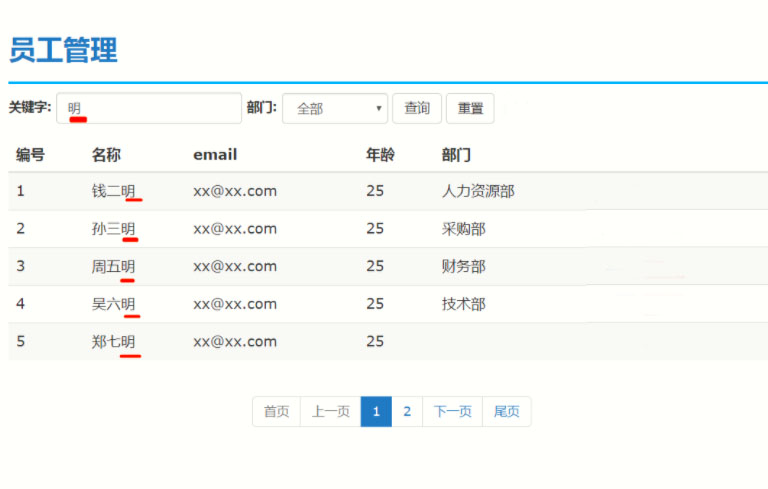
</mapper>

# **4 系统测试**

页面显示如下：



输入“明”显示如下：



# **5 系统总结**

在设计过程中出现过没有数据显示的问题，经过一段时间去找寻问题，发现是映射文件中sql语句及页面后端传值中的细节问题，经过这次课程设计的完成，对ssm框架有了更深层次的理解，同时也初步掌握bootstrap的运用。希望在以后的学习工作中能对web开发方面有更多的学习运用的机会。