

- 添加课程，成功之后返回全部课程信息。
- 查询课程，通过id可以查询对应的课程信息。
- 修改课程，成功之后返回修改之后的全部课程信息。
- 删除课程，成功之后返回删除之后的全部课程信息。

Repository

```
package com.southwind.repository.impl;

import com.southwind.entity.Course;
import com.southwind.repository.CourseRepository;
import org.springframework.stereotype.Repository;

import java.util.Collection;
import java.util.HashMap;
import java.util.Map;

@Repository
public class CourseRepositoryImpl implements CourseRepository {

    private Map<Integer, Course> courseMap;

    public CourseRepositoryImpl() {
        courseMap = new HashMap<>();
        courseMap.put(1, new Course(1, "Java", 1000));
        courseMap.put(2, new Course(2, "数据结构", 10000));
        courseMap.put(3, new Course(3, "数据库", 10000));
    }

    @Override
    public Collection<Course> findAll() {
        return courseMap.values();
    }

    @Override
    public Course find(int id) {
        return courseMap.get(id);
    }

    @Override
    public void saveOrUpdate(Course course) {
        courseMap.put(course.getId(), course);
    }

    @Override
    public void delete(int id) {
```

```
        courseMap.remove(id);  
    }  
}
```

Service

```
package com.southwind.service.impl;  
  
import com.southwind.entity.Course;  
import com.southwind.repository.CourseRepository;  
import com.southwind.service.CourseService;  
import org.springframework.beans.factory.annotation.Autowired;  
import org.springframework.stereotype.Service;  
  
import java.util.Collection;  
  
@Service  
public class CourseServiceImpl implements CourseService {  
  
    @Autowired  
    private CourseRepository courseRepository;  
  
    @Override  
    public Collection<Course> findAll() {  
        return courseRepository.findAll();  
    }  
  
    @Override  
    public Course find(int id) {  
        return courseRepository.find(id);  
    }  
  
    @Override  
    public void saveOrUpdate(Course course) {  
        courseRepository.saveOrUpdate(course);  
    }  
  
    @Override  
    public void delete(int id) {  
        courseRepository.delete(id);  
    }  
}
```

```
package com.southwind.controller;  
  
import com.southwind.entity.Course;  
import com.southwind.service.CourseService;  
import org.springframework.beans.factory.annotation.Autowired;
```

```

import org.springframework.stereotype.Controller;
import org.springframework.web.bind.annotation.*;
import org.springframework.web.servlet.ModelAndView;

@Controller
public class CourseHandler {

    @Autowired
    private CourseService courseService;

    @GetMapping("/findAll")
    public ModelAndView findAll(){
        ModelAndView modelAndView = new ModelAndView();
        modelAndView.setViewName("index");
        modelAndView.addObject("list",courseService.findAll());
        return modelAndView;
    }

    @PostMapping("/save")
    public String save(Course course){
        courseService.saveOrUpdate(course);
        return "redirect:/findAll";
    }

    @DeleteMapping("/delete/{id}")
    public String delete(@PathVariable("id") int id){
        courseService.delete(id);
        return "redirect:/findAll";
    }

    @GetMapping("/find/{id}")
    public ModelAndView find(@PathVariable("id") int id){
        ModelAndView modelAndView = new ModelAndView();
        modelAndView.setViewName("update");
        modelAndView.addObject("course",courseService.find(id));
        return modelAndView;
    }

    @PutMapping("/update")
    public String update(Course course){
        courseService.saveOrUpdate(course);
        return "redirect:/findAll";
    }
}

```

index.jsp

```
<%--
```

Created by IntelliJ IDEA.

```
User: southwind
Date: 2019-01-23
Time: 20:24
To change this template use File | Settings | File Templates.
--%>
<%@ page contentType="text/html;charset=UTF-8" language="java" %>
<%@ taglib prefix="c" uri="http://java.sun.com/jsp/jstl/core" %>
<%@ page isELIgnored="false" %>
<html>
<head>
    <title>Title</title>
</head>
<body>
    <table>
        <tr>
            <th>课程编号</th>
            <th>课程名称</th>
            <th>课程价格</th>
            <th>操作</th>
        </tr>
        <c:forEach items="${requestScope.list}" var="course">
            <tr>
                <td>${course.id}</td>
                <td>${course.name}</td>
                <td>${course.price}</td>
                <td>
                    <form action="/delete/${course.id}" method="post">
                        <input type="hidden" name="_method" value="DELETE"/>
                        <input type="submit" value="删除"/>
                    </form>
                    <form action="/find/${course.id}" method="get">
                        <input type="submit" value="修改"/>
                    </form>
                </td>
            </tr>
        </c:forEach>
    </table>
</body>
</html>
```

Spring MVC文件上传下载

- 需要引入fileupload相关依赖。

```
<dependency>
  <groupId>commons-io</groupId>
  <artifactId>commons-io</artifactId>
  <version>1.3.2</version>
</dependency>

<dependency>
  <groupId>commons-fileupload</groupId>
  <artifactId>commons-fileupload</artifactId>
  <version>1.2.1</version>
</dependency>
```

- JSP
 - input的type设置为file。
 - form表单的method设置post。
 - form表单的enctype设置为multipart/form-data，以二进制的形式传输数据。