네트워크 프로그래밍 구현
수행평가 실습보고서

2022/11/07 박가영

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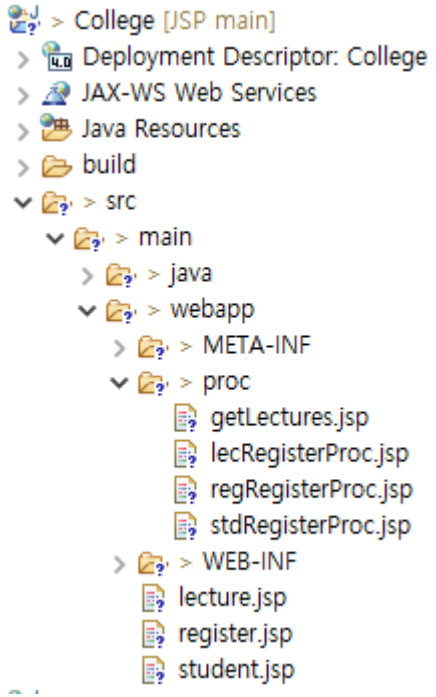
문제1-프로젝트 생성 및 구성

문제1

- 프로젝트명 : College
- WAS : Tomcat9
- DB : java2_college
- 개발도구 : Eclipse, Workbench



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Part 2

문제2-화면 구현

문제2

- lecture(강좌) 목록 화면 구현

문제2

- register(수강) 목록 화면 구현

문제2

- student(학생) 목록 화면 구현

강좌관리

강좌관리 수강관리 학생관리

강좌현황

등록

번호	강좌명	학점	시간	강의장
159	인지행동심리학	3	40	본304
167	운영체제론	3	25	본B05
234	중급 영문법	3	20	본201
239	세법개론	3	40	본204
248	빅데이터 개론	3	20	본B01
253	컴퓨팅사고와코딩	2	10	본B02
255	경영학개론	3	45	본255
256	자바	3	60	본201
280	초급 영문법	3	30	본B20
281	자바스크립트	3	60	본201

강좌등록

닫기

번호	
강좌명	
학점	
시간	
강의장	

추가

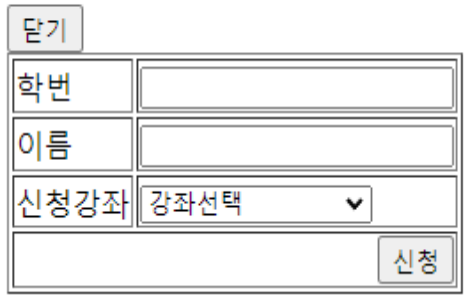
수강관리

강좌관리 수강관리 학생관리

수강현황

학번입력 검색 수강신청

학번	이름	강좌명	강좌코드	중간시험	기말시험	총점	등급
20201126	김춘추	중급 영문법	234	36	42	78	c
20201016	김유신	빅데이터 개론	248	24	62	86	B
20201016	김유신	운영체제론	167	18	38	56	F
20201126	김춘추	세법개론	239	37	57	94	A
20201016	김유신	운영체제론	167	18	38	56	F
20201126	김춘추	운영체제론	167	0	0	0	null
20201126	김춘추	인지행동심리학	159	0	0	0	null

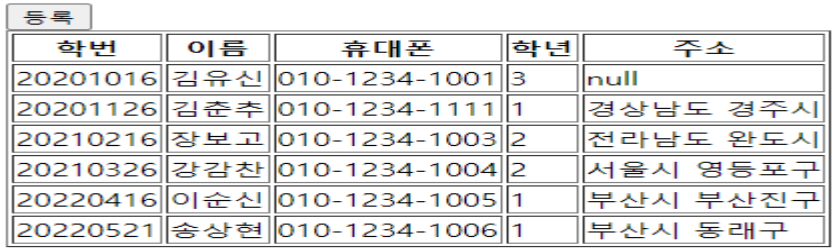


수강신청

닫기

학번	
이름	
신청강좌	강좌선택

신청



학생관리

강좌관리 수강관리 학생관리

학생목록

등록

학번	이름	휴대폰	학년	주소
20201016	김유신	010-1234-1001	3	null
20201126	김춘추	010-1234-1111	1	경상남도 경주시
20210216	장보고	010-1234-1003	2	전라남도 완도시
20210326	강감찬	010-1234-1004	2	서울시 영등포구
20220416	이순신	010-1234-1005	1	부산시 부산진구
20220521	송상현	010-1234-1006	1	부산시 동래구

학생등록

닫기

학번	
이름	
휴대폰	
학년	
주소	

등록

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문제3-기능 구현

문제3 – DBCP 커넥션, bean

```java
package dbcp;

import java.sql.Connection;

public class DBCP {

    private static DataSource ds = null;

    public static Connection getConnection() throws NamingException, SQLException {
        if(ds == null) {
            ds = (DataSource) new InitialContext().lookup("java:comp/env/dbcp_java2_college");
        }

        return ds.getConnection();
    }

}
```

```java
package bean;

public class registerBean {
    private String regStdNo;
    private String regLecNo;
    private int regMidScore;
    private int regFinalScore;
    private int regTotalScore;
    private String regGrade;
    private String stdName;
    private String lecName;

    public String getRegStdNo() {
        return regStdNo;
    }
    public void setRegStdNo(String regStdNo) {
        this.regStdNo = regStdNo;
    }
    public String getRegLecNo() {
        return regLecNo;
    }
    public void setRegLecNo(String regLecNo) {
        this.regLecNo = regLecNo;
    }
    public int getRegMidScore() {
        return regMidScore;
    }
    public void setRegMidScore(int regMidScore) {
        this.regMidScore = regMidScore;
    }
    public int getRegFinalScore() {
        return regFinalScore;
    }
    public void setRegFinalScore(int regFinalScore) {
        this.regFinalScore = regFinalScore;
    }
    public int getRegTotalScore() {
        return regTotalScore;
    }
    public void setRegTotalScore(int regTotalScore) {
        this.regTotalScore = regTotalScore;
    }
    public String getRegGrade() {
        return regGrade;
    }
    public void setRegGrade(String regGrade) {
        this.regGrade = regGrade;
    }
    public String getStdName() {
        return stdName;
    }
    public void setStdName(String stdName) {
        this.stdName = stdName;
    }
    public String getLecName() {
        return lecName;
    }
    public void setLecName(String lecName) {
        this.lecName = lecName;
    }
}
```

```java
package bean;

public class studentBean {
    private String stdNo;
    private String stdName;
    private String stdHp;
    private int stdYear;
    private String stdAddress;
    public String getStdNo() {
        return stdNo;
    }
    public void setStdNo(String stdNo) {
        this.stdNo = stdNo;
    }
    public String getStdName() {
        return stdName;
    }
    public void setStdName(String stdName) {
        this.stdName = stdName;
    }
    public String getStdHp() {
        return stdHp;
    }
    public void setStdHp(String stdHp) {
        this.stdHp = stdHp;
    }
    public int getStdYear() {
        return stdYear;
    }
    public void setStdYear(int stdYear) {
        this.stdYear = stdYear;
    }
    public String getStdAddress() {
        return stdAddress;
    }
    public void setStdAddress(String stdAddress) {
        this.stdAddress = stdAddress;
    }
}
```

```java
package bean;

public class lectureBean {

    private int lecNo;
    private String lecName;
    private int lecCredit;
    private int lecTime;
    private String lecClass;
    public int getLecNo() {
        return lecNo;
    }
    public void setLecNo(int lecNo) {
        this.lecNo = lecNo;
    }
    public String getLecName() {
        return lecName;
    }
    public void setLecName(String lecName) {
        this.lecName = lecName;
    }
    public int getLecCredit() {
        return lecCredit;
    }
    public void setLecCredit(int lecCredit) {
        this.lecCredit = lecCredit;
    }
    public int getLecTime() {
        return lecTime;
    }
    public void setLecTime(int lecTime) {
        this.lecTime = lecTime;
    }
    public String getLecClass() {
        return lecClass;
    }
    public void setLecClass(String lecClass) {
        this.lecClass = lecClass;
    }
}
```

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Part 3

문제3-기능 구현

문제3 – lecture(고객) 목록,등록하기 화면 기능 구현

```jsp
<%@page import="java.util.ArrayList"%>
<%@page import="bean.lectureBean"%>
<%@page import="java.util.List"%>
<%@page import="java.sql.ResultSet"%>
<%@page import="java.sql.Statement"%>
<%@page import="dbcp.DBCP"%>
<%@page import="java.sql.Connection"%>
<%@ page contentType="text/html;charset=UTF-8" pageEncoding="UTF-8"%>
<%

    List<lectureBean> lectures = new ArrayList<>();
    try{
        Connection conn = DBCP.getConnection();
        Statement stmt = conn.createStatement();

        ResultSet rs = stmt.executeQuery("select * from `lecture`");

        while(rs.next()){
            lectureBean lecture = new lectureBean();
            lecture.setLecNo(rs.getInt(1));
            lecture.setLecName(rs.getString(2));
            lecture.setLecCredit(rs.getInt(3));
            lecture.setLecTime(rs.getInt(4));
            lecture.setLecClass(rs.getString(5));

            lectures.add(lecture);
        }
        rs.close();
        stmt.close();
        conn.close();

    }catch(Exception e){
        e.printStackTrace();
    }

%>
```

```jsp
<!DOCTYPE html>
<html>
    <head>
        <meta charset="UTF-8">
        <title>강좌관리</title>
        <script src="https://ajax.googleapis.com/ajax/libs/jquery/3.6.1/jquery.min.js"></
        <script>
            $(function(){

                $(document).on('click', '.btnRegister', function(){
                    $('section').show();
                });

                $(document).on('click', '.btnClose', function(){
                    $('section').hide();
                });

                $(document).on('click', 'input[type=submit]', function(){
                    let lecNo = $('input[name=lecNo]').val();
                    let lecName = $('input[name=lecName]').val();
                    let lecCredit = $('input[name=lecCredit]').val();
                    let lecTime = $('input[name=lecTime]').val();
                    let lecClass = $('input[name=lecClass]').val();

                    let jsonData = {
                        "lecNo":lecNo,
                        "lecName":lecName,
                        "lecCredit":lecCredit,
                        "lecTime":lecTime,
                        "lecClass":lecClass
                    };

                    $.ajax({
                        url:'/College/proc/lecRegisterProc.jsp',
                        method: 'post',
                        data:jsonData,
                        dataType: 'json',
                        success: function(data){

                            let table = "<tr>";
                            table += "<td>"+data.lecNo+"</td>";
                            table += "<td>"+data.lecName+"</td>";
                            table += "<td>"+data.lecCredit+"</td>";
                            table += "<td>"+data.lecTime+"</td>";
                            table += "<td>"+data.lecClass+"</td>";
                            table += "</tr>";

                            $('#lecture').append(table);


                        }
                    });
                });
            });
        </script>
    </head>
```

```jsp
    <body>
        <h3>강좌관리</h3>
        <a href="/College/lecture.jsp">강좌관리</a>
        <a href="/College/register.jsp">수강관리</a>
        <a href="/College/student.jsp">학생관리</a>

        <h3>강좌현황</h3>
        <button class="btnRegister">등록</button>
        <table border="1" id="lecture">
            <tr>
                <th>번호</th>
                <th>강좌명</th>
                <th>학점</th>
                <th>시간</th>
                <th>강의장</th>
            </tr>
            <% for(lectureBean lecture : lectures){ %>
            <tr>
                <td><%= lecture.getLecNo() %></td>
                <td><%= lecture.getLecName() %></td>
                <td><%= lecture.getLecCredit() %></td>
                <td><%= lecture.getLecTime() %></td>
                <td><%= lecture.getLecClass() %></td>
            </tr>
            <% } %>
        </table>

        <section style="display:none;">
        <h3>강좌등록</h3>
            <button class="btnClose">닫기</button>
            <table border="1">
                <tr>
                    <td>번호</td>
                    <td><input type="number" name="lecNo"></td>
                </tr>
                <tr>
                    <td>강좌명</td>
                    <td><input type="text" name="lecName"></td>
                </tr>
                <tr>
                    <td>학점</td>
                    <td><input type="number" name="lecCredit"></td>
                </tr>
                <tr>
                    <td>시간</td>
                    <td><input type="number" name="lecTime"></td>
                </tr>
                <tr>
                    <td>강의장</td>
                    <td><input type="text" name="lecClass"></td>
                </tr>
                <tr>
                    <td align="right" colspan="2"><input type="submit" value="추가"/></td>
                </tr>
            </table>
        </section>
    </body>
</html>
```

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문제3-기능 구현

문제3 – lecture(고객) 목록,등록하기 화면 기능 구현: lecRegisterProc

```jsp
<%@page import="java.sql.ResultSet"%>
<%@page import="com.google.gson.Gson"%>
<%@page import="com.google.gson.JsonObject"%>
<%@page import="java.sql.PreparedStatement"%>
<%@page import="dbcp.DBCP"%>
<%@page import="java.sql.Connection"%>
<%@ page contentType="application/json;charset=UTF-8" pageEncoding="UTF-8"%>
<%
    request.setCharacterEncoding("utf-8");
    String lecNo = request.getParameter("lecNo");
    String lecName = request.getParameter("lecName");
    String lecCredit = request.getParameter("lecCredit");
    String lecTime = request.getParameter("lecTime");
    String lecClass = request.getParameter("lecClass");

    try{
        Connection conn = DBCP.getConnection();
        String sql = "insert into `lecture` set ";
               sql += "`lecNo`=?, ";
               sql += "`lecName`=?, ";
               sql += "`lecCredit`=?, ";
               sql += "`lecTime`=?, ";
               sql += "`lecClass`=?";

        PreparedStatement psmt = conn.prepareStatement(sql);
        psmt.setString(1, lecNo);
        psmt.setString(2, lecName);
        psmt.setString(3, lecCredit);
        psmt.setString(4, lecTime);
        psmt.setString(5, lecClass);

        psmt.executeUpdate();


        psmt.close();
        conn.close();

    }catch(Exception e){
        e.printStackTrace();
    }

    JsonObject json = new JsonObject();
    json.addProperty("lecNo", lecNo);
    json.addProperty("lecName", lecName);
    json.addProperty("lecCredit", lecCredit);
    json.addProperty("lecTime", lecTime);
    json.addProperty("lecClass", lecClass);

    out.print(json);
%>
```

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Part 3

문제3-기능 구현

문제3 – student(학생) 목록,등록하기 화면 기능 구현

```jsp
<%@page import="java.sql.ResultSet"%>
<%@page import="java.sql.Statement"%>
<%@page import="dbcp.DBCP"%>
<%@page import="java.sql.Connection"%>
<%@page import="java.util.ArrayList"%>
<%@page import="java.util.List"%>
<%@page import="bean.studentBean"%>
<%@ page contentType="text/html;charset=UTF-8" pageEncoding="UTF-8"%>
<%
    List<studentBean> students = new ArrayList<>();

    try{
        Connection conn = DBCP.getConnection();
        Statement stmt = conn.createStatement();

        ResultSet rs = stmt.executeQuery("select * from `student`");

        while(rs.next()){
            studentBean student = new studentBean();
            student.setStdNo(rs.getString(1));
            student.setStdName(rs.getString(2));
            student.setStdHp(rs.getString(3));
            student.setStdYear(rs.getInt(4));
            student.setStdAddress(rs.getString(5));

            students.add(student);
        }
        rs.close();
        stmt.close();
        conn.close();
    }catch(Exception e){
        e.printStackTrace();
    }
%>
```

```jsp
<!DOCTYPE html>
<html>
    <head>
        <meta charset="UTF-8">
        <title>학생관리</title>
        <script src="https://ajax.googleapis.com/ajax/libs/jquery/3.6.1/jquery.min.js"></script
        <script>
        $(function(){

            $(document).on('click', '.btnstdRegister', function(){
                $('section').show();
            });

            $(document).on('click', '.btnstdClose', function(){
                $('section').hide();
            });

            $(document).on('click', 'input[type=submit]', function(){
                let stdNo = $('input[name=stdNo]').val();
                let stdName = $('input[name=stdName]').val();
                let stdHp = $('input[name=stdHp]').val();
                let stdYear = $('input[name=stdYear]').val();
                let stdAddress = $('input[name=stdAddress]').val();

                let jsonData = {
                    "stdNo":stdNo,
                    "stdName":stdName,
                    "stdHp":stdHp,
                    "stdYear":stdYear,
                    "stdAddress":stdAddress
                };

                $.ajax({
                    url:'/College/proc/stdRegisterProc.jsp',
                    method: 'post',
                    data:jsonData,
                    dataType: 'json',
                    success: function(data){

                        let table = "<tr>";
                        table += "<td>"+data.stdNo+"</td>";
                        table += "<td>"+data.stdName+"</td>";
                        table += "<td>"+data.stdHp+"</td>";
                        table += "<td>"+data.stdYear+"</td>";
                        table += "<td>"+data.stdAddress+"</td>";
                        table += "</tr>";

                        $('#student').append(table);
                    }
                });
            });
        });
        </script>
    </head>
```

```jsp
    <body>
        <h3>학생관리</h3>
        <a href="/College/lecture.jsp">강좌관리</a>
        <a href="/College/register.jsp">수강관리</a>
        <a href="/College/student.jsp">학생관리</a>

        <h3>학생목록</h3>
        <button class="btnstdRegister">등록</button>
        <table border="1" id="student">
            <tr>
                <th>학번</th>
                <th>이름</th>
                <th>휴대폰</th>
                <th>학년</th>
                <th>주소</th>
            </tr>
            <% for(studentBean student : students){ %>
            <tr>
                <td><%= student.getStdNo() %></td>
                <td><%= student.getStdName() %></td>
                <td><%= student.getStdHp() %></td>
                <td><%= student.getStdYear() %></td>
                <td><%= student.getStdAddress() %></td>
            </tr>
            <% } %>
        </table>
        <section style="display:none;">
            <h3>학생등록</h3>
            <button class="btnstdClose">닫기</button>
            <table border="1">
                <tr>
                    <td>학번</td>
                    <td><input type="text" name="stdNo"></td>
                </tr>
                <tr>
                    <td>이름</td>
                    <td><input type="text" name="stdName"></td>
                </tr>
                <tr>
                    <td>휴대폰</td>
                    <td><input type="text" name="stdHp"></td>
                </tr>
                <tr>
                    <td>학년</td>
                    <td><input type="number" name="stdYear"></td>
                </tr>
                <tr>
                    <td>주소</td>
                    <td><input type="text" name="stdAddress"></td>
                </tr>
                <tr>
                    <td align="right" colspan="2"><input type="submit" value="등록"/></td>
                </tr>
            </table>
        </section>
    </body>
</html>
```

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문제3-기능 구현

문제3 - student(학생) 목록,등록하기 화면 기능 구현: stdRegisterProc

```jsp
<%@page import="java.sql.PreparedStatement"%>
<%@page import="dbcp.DBCP"%>
<%@page import="java.sql.Connection"%>
<%@page import="com.google.gson.JsonObject"%>
<%@ page contentType="application/json;charset=UTF-8" pageEncoding="UTF-8"%>
<%
    request.setCharacterEncoding("utf-8");
    String stdNo = request.getParameter("stdNo");
    String stdName = request.getParameter("stdName");
    String stdHp = request.getParameter("stdHp");
    String stdYear = request.getParameter("stdYear");
    String stdAddress = request.getParameter("stdAddress");

    try{
        Connection conn = DBCP.getConnection();
        String sql = "insert into `student` set ";
               sql += "`stdNo`=?, ";
               sql += "`stdName`=?, ";
               sql += "`stdHp`=?, ";
               sql += "`stdYear`=?, ";
               sql += "`stdAddress`=?";

        PreparedStatement psmt = conn.prepareStatement(sql);
        psmt.setString(1, stdNo);
        psmt.setString(2, stdName);
        psmt.setString(3, stdHp);
        psmt.setString(4, stdYear);
        psmt.setString(5, stdAddress);

        psmt.executeUpdate();


        psmt.close();
        conn.close();
    }catch(Exception e){
        e.printStackTrace();
    }

    JsonObject json = new JsonObject();
    json.addProperty("stdNo", stdNo);
    json.addProperty("stdName", stdName);
    json.addProperty("stdHp", stdHp);
    json.addProperty("stdYear", stdYear);
    json.addProperty("stdAddress", stdAddress);

    out.print(json);

%>
```

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문제3-기능 구현

문제3 – register(수강) 목록, 등록하기 화면 기능 구현

```
<%@page import="java.sql.PreparedStatement"%>
<%@page import="java.sql.ResultSet"%>
<%@page import="java.sql.Statement"%>
<%@page import="dbcp.DBCP"%>
<%@page import="java.sql.Connection"%>
<%@page import="java.util.ArrayList"%>
<%@page import="java.util.List"%>
<%@page import="bean.registerBean"%>
<%@ page contentType="text/html;charset=UTF-8" p
<%
    List<registerBean> registers = new ArrayList
    try{
        Connection conn = DBCP.getConnection();
        String sql = "SELECT a.*, b.`stdName`, c
               sql += "JOIN `student` AS b ON a.
               sql += "JOIN `lecture` AS c ON a.
        PreparedStatement psmt = conn.prepareSta

        ResultSet rs = psmt.executeQuery();

        while(rs.next()){
            registerBean register = new register
            register.setRegStdNo(rs.getString(1)
            register.setRegLecNo(rs.getString(2)
            register.setRegMidScore(rs.getInt(3)
            register.setRegFinalScore(rs.getInt(
            register.setRegTotalScore(rs.getInt(
            register.setRegGrade(rs.getString(6)
            register.setStdName(rs.getString(7))
            register.setLecName(rs.getString(8))

            registers.add(register);
        }
        rs.close();
        psmt.close();
        conn.close();
    }catch(Exception e){
        e.printStackTrace();
    }
%>
```

```
<!DOCTYPE html>
<html>
    <head>
        <meta charset="UTF-8">
        <title>수강관리</title>
        <script src="https://ajax.googleapis.com/ajax/libs/jquery/3.6.1/jquery.min.js"></script>
        <script>
        $(function(){

            $(document).on('click', '.btnregRegister', function(){
                $('section').show();
            });

            $(document).on('click', '.btnregClose', function(){
                $('section').hide();
            });

            $.get('/College/proc/getLectures.jsp',function(data){
                for(let lecture of data){
                    let lecName = "<option value='"+lecture.lecNo+"'>";
                        lecName += lecture.lecName;
                        lecName += "</option>";
                    $('select[name=lecName]').append(lecName);
                }
            });


            $(document).on('click', 'input[type=submit]', function(){
                let regStdNo = $('input[name=regStdNo]').val();
                let stdName = $('input[name=stdName]').val();
                let regLecNo = $('select[name=lecName]').val();

                let jsonData = {
                    "regStdNo":regStdNo,
                    "stdName":stdName,
                    "regLecNo":regLecNo,
                };
```

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문제3-기능 구현

문제3 – register(수강) 목록, 등록하기 화면 기능 구현

```
        $.ajax({
            url:'/College/proc/regRegisterProc.jsp',
            method: 'post',
            data:jsonData,
            dataType: 'json',
            success: function(data){

                let table = "<tr>";
                table += "<td>"+data.regStdNo+"</td>";
                table += "<td>"+data.stdName+"</td>";
                table += "<td>"+data.result+"</td>";
                table += "<td>"+data.regLecNo+"</td>";
                table += "<td></td>";
                table += "<td></td>";
                table += "<td></td>";
                table += "<td></td>";
                table += "</tr>";

                $('#register').append(table);
            }
        });
    });

    $(document).on('click', '.btnsearch', function(){

        $('#register .row').remove();
        let regStdNo = $('input[name=search]').val();

        let jsonData = {"regStdNo":regStdNo};

        //console.log(jsonData);

        $.ajax({
            url:'/College/proc/searchProc.jsp',
            method: 'get',
            data:jsonData,
            dataType: 'json',
            success: function(data){

                console.log(data);

                for(let register of data){
                    let table = "<tr>";
                    table += "<td>"+register.regStdNo+"</td>";
                    table += "<td>"+register.stdName+"</td>";
                    table += "<td>"+register.lecName+"</td>";
                    table += "<td>"+register.regLecNo+"</td>";
                    table += "<td>"+register.regMidScore+"</td>";
                    table += "<td>"+register.regFinalScore+"</td>";
                    table += "<td>"+register.regTotalScore+"</td>";
                    table += "<td>"+register.regGrade+"</td>";
                    table += "</tr>";

                    $('#register').append(table);
                }

            }
        });

    });
});
</script>
</head>
```

```
<body>
    <h3>수강관리</h3>
    <a href="/College/lecture.jsp">강좌관리</a>
    <a href="/College/register.jsp">수강관리</a>
    <a href="/College/student.jsp">학생관리</a>

    <h3>수강현황</h3>
    <input type="text" name="search" placeholder="학번입력"/>
    <button class="btnsearch">검색</button>
    <button class="btnregRegister">수강신청</button>
    <table border="1" id="register">
        <tr>
            <th>학번</th>
            <th>이름</th>
            <th>강좌명</th>
            <th>강좌코드</th>
            <th>중간시험</th>
            <th>기말시험</th>
            <th>총점</th>
            <th>등급</th>
        </tr>
        <% for(registerBean register : registers){ %>
        <tr class="row">
            <td><%= register.getRegStdNo() %></td>
            <td><%= register.getStdName() %></td>
            <td><%= register.getLecName() %></td>
            <td><%= register.getRegLecNo() %></td>
            <td><%= register.getRegMidScore() %></td>
            <td><%= register.getRegFinalScore() %></td>
            <td><%= register.getRegTotalScore() %></td>
            <td><%= register.getRegGrade() %></td>
        </tr>
        <% } %>
    </table>
```

```
    <section style="display:none;">
        <h3>수강신청</h3>
        <button class="btnregClose">닫기</button>
        <table border="1">
            <tr>
                <td>학번</td>
                <td><input type="text" name="regStdNo"></td>
            </tr>
            <tr>
                <td>이름</td>
                <td><input type="text" name="stdName"></td>
            </tr>
            <tr>
                <td>신청강좌</td>
                <td>
                    <select name="lecName">
                        <option>강좌선택</option>
                    </select>
                </td>
            </tr>
            <tr>
                <td align="right" colspan="2"><input type="submit" value="신청"/></td>
            </tr>
        </table>
    </section>
</body>
</html>
```

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문제3-기능 구현

문제3 – register(수강) 목록, 등록하기 화면 기능 구현: regRegisterProc, getLectures

```jsp
<%@page import="com.google.gson.JsonObject"%>
<%@page import="java.sql.PreparedStatement"%>
<%@page import="com.google.gson.Gson"%>
<%@page import="java.sql.ResultSet"%>
<%@page import="java.sql.Statement"%>
<%@page import="dbcp.DBCP"%>
<%@page import="java.sql.Connection"%>
<%@page import="java.util.ArrayList"%>
<%@page import="bean.lectureBean"%>
<%@page import="java.util.List"%>
<%@ page contentType="application/json;charset=UTF-8" pageEncoding="UTF-8"%>
<%
    request.setCharacterEncoding("utf-8");
    String regStdNo = request.getParameter("regStdNo");
    String stdName = request.getParameter("stdName");
    String regLecNo = request.getParameter("regLecNo");
    String result = "";

    try{
        Connection conn = DBCP.getConnection();
        String sql = "insert into `register` set `regStdNo`=?, `regLecNo`=?";
        String sql1 = "select `lecName` from `lecture` where `lecNo`=?";

        PreparedStatement psmt = conn.prepareStatement(sql);
        PreparedStatement psmt1 = conn.prepareStatement(sql1);
        psmt.setString(1, regStdNo);
        psmt.setString(2, regLecNo);
        psmt1.setString(1, regLecNo);

        psmt.executeUpdate();
        ResultSet rs = psmt1.executeQuery();

        if(rs.next()){
            result = rs.getString(1);
        }

        psmt.close();
        conn.close();
    }catch(Exception e){
        e.printStackTrace();
    }

    JsonObject json = new JsonObject();
    json.addProperty("regStdNo", regStdNo);
    json.addProperty("stdName", stdName);
    json.addProperty("regLecNo", regLecNo);
    json.addProperty("result", result);

    out.print(json);
%>
```

```jsp
<%@page import="com.google.gson.Gson"%>
<%@page import="java.sql.ResultSet"%>
<%@page import="java.sql.Statement"%>
<%@page import="java.sql.Connection"%>
<%@page import="dbcp.DBCP"%>
<%@page import="java.util.ArrayList"%>
<%@page import="bean.lectureBean"%>
<%@page import="java.util.List"%>
<%@ page contentType="application/json;charset=UTF-8" pageEncoding="UTF-8"%>
<%
    List<lectureBean> lectures = new ArrayList<>();
    try{
        Connection conn = DBCP.getConnection();
        Statement stmt = conn.createStatement();

        ResultSet rs = stmt.executeQuery("select * from `lecture`");

        while(rs.next()){
            lectureBean lecture = new lectureBean();
            lecture.setLecNo(rs.getInt(1));
            lecture.setLecName(rs.getString(2));
            lecture.setLecCredit(rs.getInt(3));
            lecture.setLecTime(rs.getInt(4));
            lecture.setLecClass(rs.getString(5));

            lectures.add(lecture);
        }
        rs.close();
        stmt.close();
        conn.close();

    }catch(Exception e){
        e.printStackTrace();
    }

    Gson gson = new Gson();
    String jsonData = gson.toJson(lectures);
    out.print(jsonData);

%>
```

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문제3-기능 구현

문제3 – register(수강) 검색하기 화면 기능 구현: searchProc

```jsp
<%@page import="com.google.gson.Gson"%>
<%@page import="java.util.ArrayList"%>
<%@page import="bean.registerBean"%>
<%@page import="java.util.List"%>
<%@page import="java.sql.ResultSet"%>
<%@page import="java.sql.PreparedStatement"%>
<%@page import="dbcp.DBCP"%>
<%@page import="java.sql.Connection"%>
<%@ page contentType="application/json;charset=UTF-8" pageEncoding="UTF-8"%>
<%
    request.setCharacterEncoding("utf-8");
    String regStdNo = request.getParameter("regStdNo");

    List<registerBean> registers = new ArrayList<>();

    try{
        Connection conn = DBCP.getConnection();
        String sql = "SELECT a.*, b.`stdName`, c.`lecName` from `register` AS a ";
           sql += "JOIN `student` AS b ON a.regStdNo = b.stdNo ";
           sql += "JOIN `lecture` AS c ON a.regLecNo = c.lecNo ";
           sql += "WHERE a.regStdNo=?";

        PreparedStatement psmt = conn.prepareStatement(sql);
        psmt.setString(1, regStdNo);

        ResultSet rs = psmt.executeQuery();

        while(rs.next()){
            registerBean register = new registerBean();
            register.setRegStdNo(rs.getString(1));
            register.setRegLecNo(rs.getString(2));
            register.setRegMidScore(rs.getInt(3));
            register.setRegFinalScore(rs.getInt(4));
            register.setRegTotalScore(rs.getInt(5));
            register.setRegGrade(rs.getString(6));
            register.setStdName(rs.getString(7));
            register.setLecName(rs.getString(8));

            registers.add(register);
        }

        psmt.close();
        conn.close();
    }catch(Exception e){
        e.printStackTrace();
    }
    Gson gson = new Gson();
    String jsonData = gson.toJson(registers);
    out.print(jsonData);
%>
```

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문제4-실행

문제4 – lecture(강좌) 등록 실행 화면

강좌관리

강좌관리 수강관리 학생관리

강좌현황

등록

번호	강좌명	학점	시간	강의장
159	인지행동심리학	3	40	본304
167	운영체제론	3	25	본B05
234	중급 영문법	3	20	본201
239	세법개론	3	40	본204
248	빅데이터 개론	3	20	본B01
253	컴퓨팅사고와코딩	2	10	본B02
255	경영학개론	3	45	본255
256	자바	3	60	본201
280	초급 영문법	3	30	본B20
281	자바스크립트	3	60	본201
337	고급 영문법	3	60	본255

강좌등록

닫기

번호	337
강좌명	고급 영문법
학점	3
시간	60
강의장	본255
	추가

문제4 – student(학생) 등록 실행 화면

학생관리

강좌관리 수강관리 학생관리

학생목록

등록

학번	이름	휴대폰	학년	주소
20201016	김유신	010-1234-1001	3	null
20201126	김춘추	010-1234-1111	1	경상남도 경주시
20210216	장보고	010-1234-1003	2	전라남도 완도시
20210326	강감찬	010-1234-1004	2	서울시 영등포구
20220416	이순신	010-1234-1005	1	부산시 부산진구
20220521	송상현	010-1234-1006	1	부산시 동래구
20201234	홍길자	010-3131-1222	3	부산시 명장동

학생등록

닫기

학번	20201234
이름	홍길자
휴대폰	010-3131-1222
학년	3
주소	부산시 명장동
	등록

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문제4-실행

문제4 – register(수강) 등록 실행 화면

수강관리

강좌관리 수강관리 학생관리

수강현황

수강신청

학번	이름	강좌명	강좌코드	중간시험	기말시험	총점	등급
20201126	김춘추	중급 영문법	234	36	42	78	c
20201016	김유신	빅데이터 개론	248	24	62	86	B
20201016	김유신	운영체제론	167	18	38	56	F
20201126	김춘추	세법개론	239	37	57	94	A
20201016	김유신	운영체제론	167	18	38	56	F
20201126	김춘추	운영체제론	167	0	0	0	null
20201126	김유신	인지행동심리학	159	-	-	-	-

수강신청

닫기

학번	20201126
이름	김유신
신청강좌	인지행동심리학
	신청

문제4 – register(수강) 검색 실행 화면

수강관리

강좌관리 수강관리 학생관리

수강현황

20201016 검색 수강신청

학번	이름	강좌명	강좌코드	중간시험	기말시험	총점	등급
20201016	김유신	빅데이터 개론	248	24	62	86	B
20201016	김유신	운영체제론	167	18	38	56	F
20201016	김유신	운영체제론	167	18	38	56	F

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