2024년 상반기 K-디지털 트레이닝

서블릿 JDBC 답안

[KB] IT's Your Life

- 프로젝트명: **web02, 패키지명: com.multi.mvc02**

- 입력화면: want.jsp, 서블릿: PlaceServlet.java(어노테이션으로 서블릿 등록)

- **want.jsp**

```jsp
<%@ page contentType="text/html;charset=UTF-8" language="java" %>
<!DOCTYPE html>
<html>
<head>
    <meta charset="UTF-8">
    <title>장소 입력</title>
</head>
<body>
<h1>가고 싶은 곳 입력</h1>
<form action="place" method="post">
    <label>장소 1: <input type="text" name="place1" value="제주도"/></label><br>
    <label>장소 2: <input type="text" name="place2" value="부산" /></label><br>
    <label>장소 3: <input type="text" name="place3" value="울산" /></label><br>
    <input type="submit" value="제출" />
</form>
</body>
</html>

</html>
```

- **PlaceServlet.java**

```java
package com.multi.web02;

import java.io.IOException;
import java.io.PrintWriter;
import javax.servlet.ServletException;
import javax.servlet.annotation.WebServlet;
import javax.servlet.http.HttpServlet;
import javax.servlet.http.HttpServletRequest;
import javax.servlet.http.HttpServletResponse;

@WebServlet("/place")
public class PlaceServlet extends HttpServlet {
    private static final long serialVersionUID = 1L;

    protected void doPost(HttpServletRequest request, HttpServletResponse
response) throws ServletException, IOException {
        // 한글 인코딩 설정
        request.setCharacterEncoding("UTF-8");
        response.setContentType("text/html; charset=UTF-8");

        // 폼 데이터 가져오기
        String place1 = request.getParameter("place1");
        String place2 = request.getParameter("place2");
        String place3 = request.getParameter("place3");
```
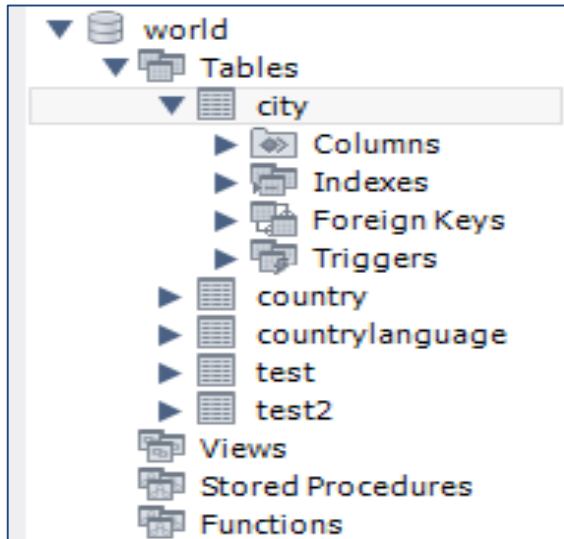
```java
        // 출력하기
        PrintWriter out = response.getWriter();
        out.println("<!DOCTYPE html>");
        out.println("<html>");
        out.println("<head>");
        out.println("<meta charset=\"UTF-8\">");
        out.println("<title>입력한 장소</title>");
        out.println("</head>");
        out.println("<body>");
        out.println("<h1>입력한 가고 싶은 곳</h1>");
        out.println("<p>장소 1: " + place1 + "</p>");
        out.println("<p>장소 2: " + place2 + "</p>");
        out.println("<p>장소 3: " + place3 + "</p>");
        out.println("</body>");
        out.println("</html>");
        out.close;
    }
}
```
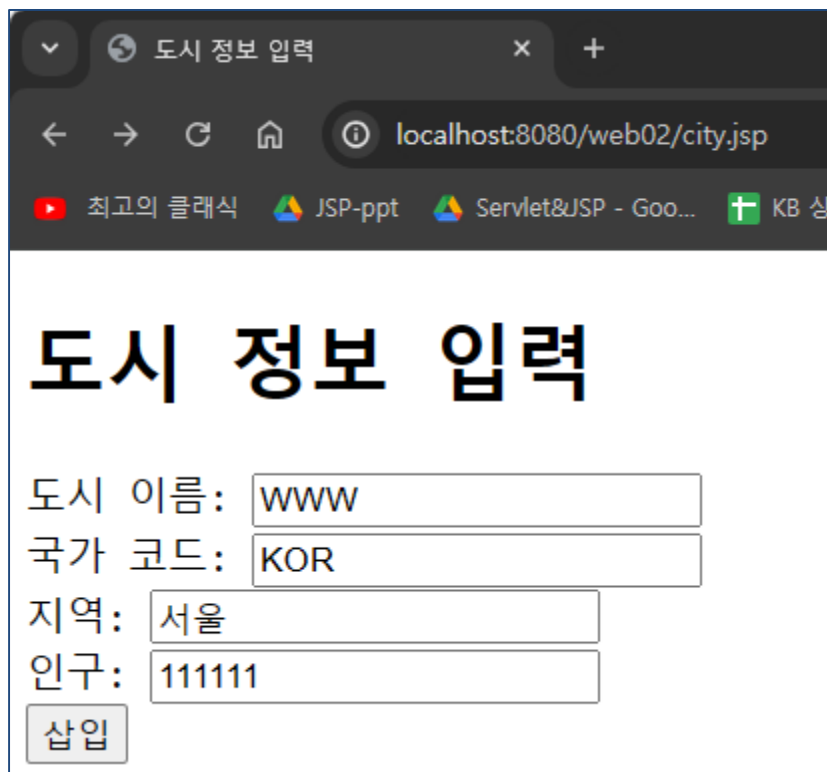
Q2 - 서블릿 JDBC

- **프로젝트명: web02, 패키지명: com.multi.mvc02**
- jsp에서 입력하여 다음과 같이 world db의 city테이블에 삽입되도록 처리하시오.
  - 입력화면 : city.jsp
  - 서블릿 파일: CityInsertServlet .java
  - DAO, VO파일: CityDAO.java, CityVO.java(lombok라이브러리 이용)

- **실행화면**

- **city.jsp**

```
<%@ page contentType="text/html;charset=UTF-8" language="java" %>
<!DOCTYPE html>
<html>
<head>
    <meta charset="UTF-8">
    <title>도시 정보 입력</title>
</head>
<body>
<h1>도시 정보 입력</h1>
<form action="cityInsert" method="post">
    <label>도시 이름: <input type="text" name="name" /></label><br>
    <label>국가 코드: <input type="text" name="countryCode" /></label><br>
    <label>지역: <input type="text" name="district" /></label><br>
    <label>인구: <input type="number" name="population" /></label><br>
    <input type="submit" value="삽입" />
</form>
</body>
</html>
```
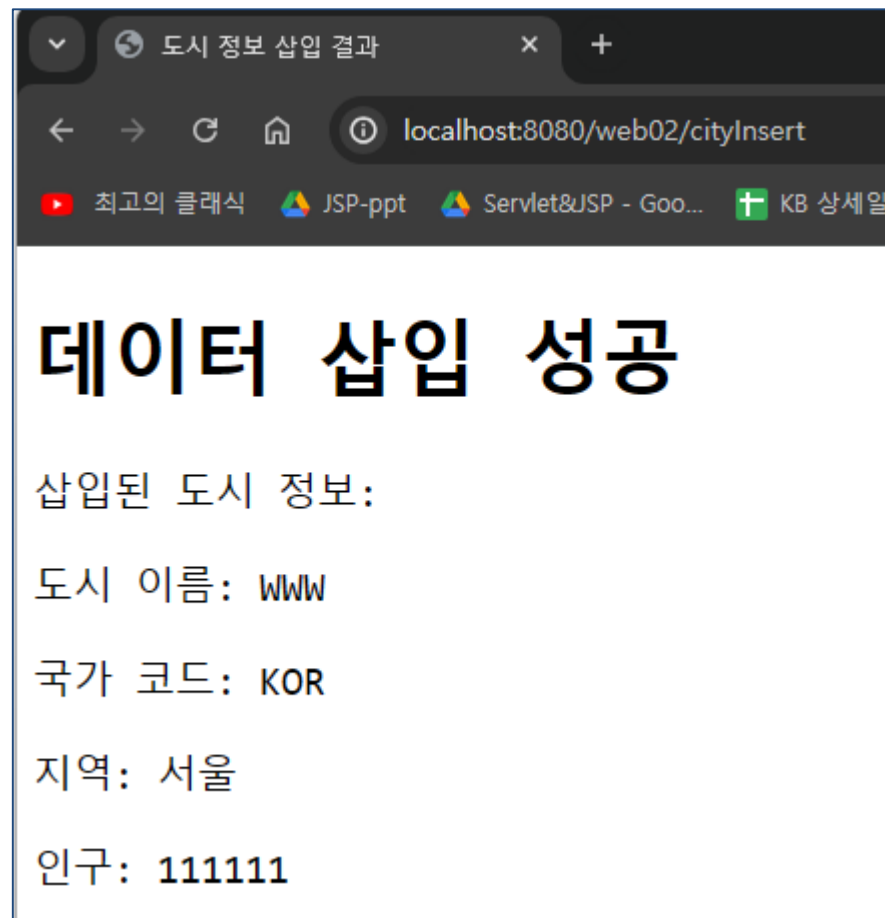
- **CityDAO.java**   Singleton을 사용해도 됩니다

```java
public class CityDAO {
    private static final String JDBC_URL = "jdbc:mysql://localhost:3306/world";
    private static final String DB_USER = "root";
    private static final String DB_PASS = "password";

    public String insert(CityVO city) {
        Connection conn = null;
        PreparedStatement pstmt = null;

        try {
            Class.forName("com.mysql.cj.jdbc.Driver");
            conn = DriverManager.getConnection(JDBC_URL, DB_USER, DB_PASS);

            String sql = "INSERT INTO city (Name, CountryCode, District, Population) VALUES
(?, ?, ?, ?)";
            pstmt = conn.prepareStatement(sql);
            pstmt.setString(1, city.getName());
            pstmt.setString(2, city.getCountryCode());
            pstmt.setString(3, city.getDistrict());
            pstmt.setInt(4, city.getPopulation());

            int result = pstmt.executeUpdate();
            if (result > 0) {
                return "success";
            } else {
                return "failure";
            }
        } catch (Exception e) {
            e.printStackTrace();
            return "error: " + e.getMessage();
        } finally {
            try {
                if (pstmt != null) pstmt.close();
                if (conn != null) conn.close();
            } catch (SQLException e) {
                e.printStackTrace();
            }
        }
    }
}
```

- **CityInsertServlet.java**

```java
@WebServlet("/cityInsert")
public class CityInsertServlet extends HttpServlet {
    private static final long serialVersionUID = 1L;

    protected void doPost(HttpServletRequest request, HttpServletResponse response)
throws ServletException, IOException {
        // 한글 인코딩 설정
        request.setCharacterEncoding("UTF-8");
        response.setContentType("text/html; charset=UTF-8");

        // 폼 데이터 가져오기
        String name = request.getParameter("name");
        String countryCode = request.getParameter("countryCode");
        String district = request.getParameter("district");
        int population = Integer.parseInt(request.getParameter("population"));

        // CityVO 객체 생성 및 데이터 설정
        CityVO city = new CityVO();
        city.setName(name);
        city.setCountryCode(countryCode);
        city.setDistrict(district);
        city.setPopulation(population);

        // CityDAO 객체 생성 및 데이터 삽입
        CityDAO dao = new CityDAO();
        String result = dao.insert(city);
        // 결과 출력
        PrintWriter out = response.getWriter();
        out.println("<!DOCTYPE html>");
        out.println("<html>");
        out.println("<head>");
        out.println("<meta charset=\"UTF-8\">");
        out.println("<title>도시 정보 삽입 결과</title>");
        out.println("</head>");
        out.println("<body>");
```

```java
        if (result.equals("success")) {
            out.println("<h1>데이터 삽입 성공</h1>");
            out.println("<p>삽입된 도시 정보:</p>");
            out.println("<p>도시 이름: " + city.getName() + "</p>");
            out.println("<p>국가 코드: " + city.getCountryCode() + "</p>");
            out.println("<p>지역: " + city.getDistrict() + "</p>");
            out.println("<p>인구: " + city.getPopulation() + "</p>");
        } else if (result.equals("failure")) {
            out.println("<h1>데이터 삽입 실패</h1>");
        } else {
            out.println("<h1>데이터 삽입 중 오류 발생</h1>");
            out.println("<p>" + result + "</p>");
        }
        out.println("</body>");
        out.println("</html>");
    }
}
```

- **CityVO.java**

```java
package com.multi.web02;

import lombok.Data;

@Data
public class CityVO {
    private int ID;
    private String name;
    private String countryCode;
    private String district;
    private int population;
}
```
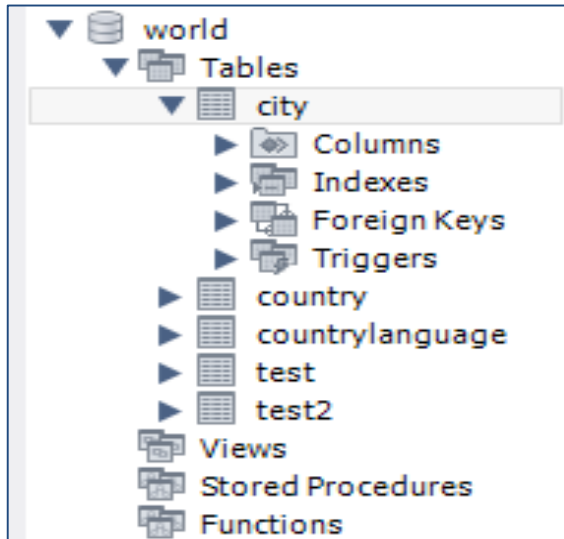
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- **프로젝트명: web02, 패키지명: com.multi.mvc02**
- jsp에서 입력하여 다음과 같이 world db의 city테이블에서 전체 city목록이 검색되도록 처리하시오.
  - 입력화면 city.jsp에 전체목록을 검색하도록 링크를 추가하시오.
  - 서블릿 파일: CityListServlet.java
  - DAO, VO파일: CityDAO.java, CityVO.java(lombok라이브러리 이용)

- **실행화면**

City 전체 목록

ID	도시 이름	국가 코드	지역	인구
4080	Ashgabat	TKM	Ahal	1000000
4081	Funafuti	TUV	Funafuti	6000
4082	GoodSite	PNG	National Capital	364125
4083	Dar es Salaam	TZA	Dar es Salaam	4364541
4084	Kathmandu	NPL	Bagmati	1000000
4085	Zurich	CHE	Zurich	402762
4086	Geneva	CHE	Geneva	201818
4087	Cairo	EGY	Cairo	9900000
4088	Banjul	GMB	Banjul	35701
4089	Muscat	OMN	Muscat	797000
4090	Antananarivo	MDG	Analamanga	1391433
4091	Win	OMN	Center	1000
4092	Cairo	EGY	Cairo Governorate	9500000
4093	Win	OMN	Center	1000
4095	WWW	KOR	서울	111111
4096	WWA	KOR	서울	111111

- city.jsp

```jsp
<%@ page contentType="text/html;charset=UTF-8" language="java" %>
<!DOCTYPE html>
<html>
<head>
    <meta charset="UTF-8">
    <title>도시 정보 입력</title>
</head>
<body>
<h1>도시 정보 입력</h1>
<form action="cityInsert" method="post">
    <label>도시 이름: <input type="text" name="name" value="WWW"/></label><br>
    <label>국가 코드: <input type="text" name="countryCode" value="KOR" /></label><br>
    <label>지역: <input type="text" name="district"  value="서울"/></label><br>
    <label>인구: <input type="number" name="population" value="111111"/></label><br>
    <input type="submit" value="삽입" />
</form>

<hr color="red">
<a href="cityList">City 전체 목록 검색</a>
</body>
</html>
```

- CityDAO.java   Singleton을 사용해도 됩니다

```java
public class CityDAO {
    private static final String JDBC_URL = "jdbc:mysql://localhost:3306/world";
    private static final String DB_USER = "root";
    private static final String DB_PASS = "1234";

    public List<CityVO> getAllCities() {
        List<CityVO> cities = new ArrayList<>();
        Connection conn = null;
        PreparedStatement pstmt = null;
        ResultSet rs = null;

        try {
            Class.forName("com.mysql.cj.jdbc.Driver");
            conn = DriverManager.getConnection(JDBC_URL, DB_USER, DB_PASS);

            String sql = "SELECT ID, Name, CountryCode, District, Population FROM city";
            pstmt = conn.prepareStatement(sql);
            rs = pstmt.executeQuery();

            while (rs.next()) {
                CityVO city = new CityVO();
                city.setID(rs.getInt("ID"));
                city.setName(rs.getString("Name"));
                city.setCountryCode(rs.getString("CountryCode"));
                city.setDistrict(rs.getString("District"));
                city.setPopulation(rs.getInt("Population"));
                cities.add(city);
            }
        } catch (Exception e) {
            e.printStackTrace();
        } finally {
            try {
                if (rs != null) rs.close();
                if (pstmt != null) pstmt.close();
                if (conn != null) conn.close();
            } catch (SQLException e) {
                e.printStackTrace();
            }
        }
        return cities;
    } //list 기능
}
```

- **CityListServlet.java**

```java
@WebServlet("/cityList")
public class CityListServlet extends HttpServlet {
    private static final long serialVersionUID = 1L;

    protected void doGet(HttpServletRequest request, HttpServletResponse response) throws ServletException, IOException {
        CityDAO dao = new CityDAO();
        List<CityVO> cities = dao.getAllCities();

        response.setContentType("text/html; charset=UTF-8");
        PrintWriter out = response.getWriter();

        out.println("<!DOCTYPE html>");
        out.println("<html>");
        out.println("<head>");
        out.println("<meta charset=\"UTF-8\">");
        out.println("<title>City 전체 목록</title>");
        out.println("</head>");
        out.println("<body>");
        out.println("<h1>City 전체 목록</h1>");
        out.println("<table border='1'>");
        out.println("<tr>");
        out.println("<th>ID</th>");
        out.println("<th>도시 이름</th>");
        out.println("<th>국가 코드</th>");
        out.println("<th>지역</th>");
        out.println("<th>인구</th>");
        out.println("</tr>");

        for (CityVO city : cities) {
            out.println("<tr>");
            out.println("<td>" + city.getID() + "</td>");
            out.println("<td>" + city.getName() + "</td>");
            out.println("<td>" + city.getCountryCode() + "</td>");
            out.println("<td>" + city.getDistrict() + "</td>");
            out.println("<td>" + city.getPopulation() + "</td>");
            out.println("</tr>");
        }

        out.println("</table>");
        out.println("</body>");
        out.println("</html>");
    }
}
```

- **CityVO.java**

```java
package com.multi.web02;

import lombok.Data;

@Data
public class CityVO {
    private int ID;
    private String name;
    private String countryCode;
    private String district;
    private int population;

}
```

KB 국민은행