

스프링으로 프로가 되자!



스프링 프레임워크는 내 손에 [스프1탄]

스프링 기초부터 보안까지 한번에 MASTER

TPC

생각하고(Thinking)-> 표현하고(Presentation)->코딩(Coding)하고

실습 : Spring MVC01

FrontController(DispatcherServlet) + Controller(POJO) loading

WEB Layer

web.xml

```

<servlet>
  <servlet-name>appServlet</servlet-name>
  <servlet-class>org.springframework.web.servlet.DispatcherServlet</servlet-class>
  <init-param>
    <param-name>contextConfigLocation</param-name>
    <param-value>/WEB-INF/spring/appServlet/servlet-context.xml</param-value>
  </init-param>
  <load-on-startup>1</load-on-startup>
</servlet>

```

servlet-context.xml

```

<context:component-scan base-package="kr.board.controller"/>

```

scan

```

package kr.board.controller;

```

```

@Controller

```

```

public class BoardController{

```

```

}

```

```

@Controller

```

```

public class MemberController{

```

```

}

```

```

- 객체생성 -

```

```

BoardController baordController=new BoardController();

```

```

MemberController baordController=new MemberController();

```



All request

FrontController
(DispatcherServlet)

HandlerMapping

BoardController

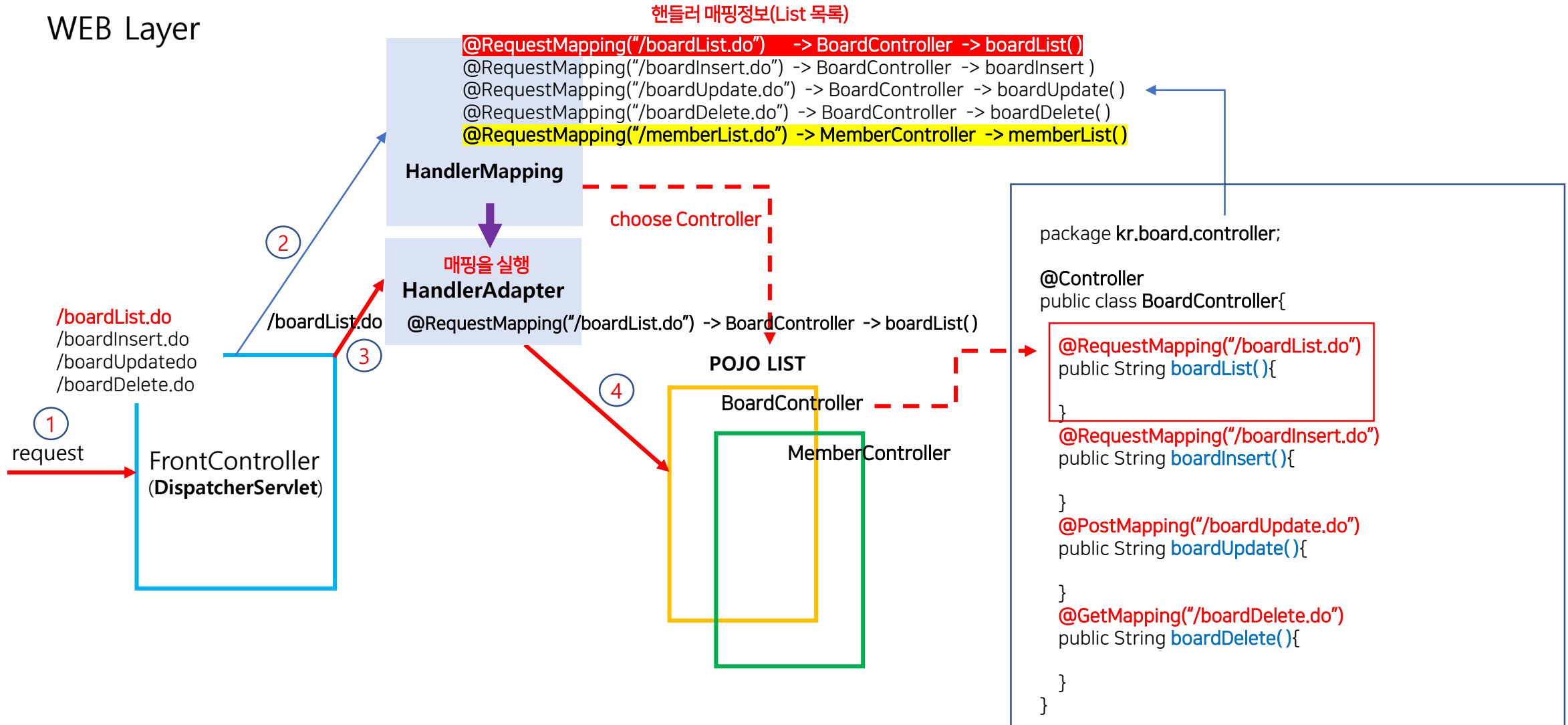
MemberController

ViewResolver



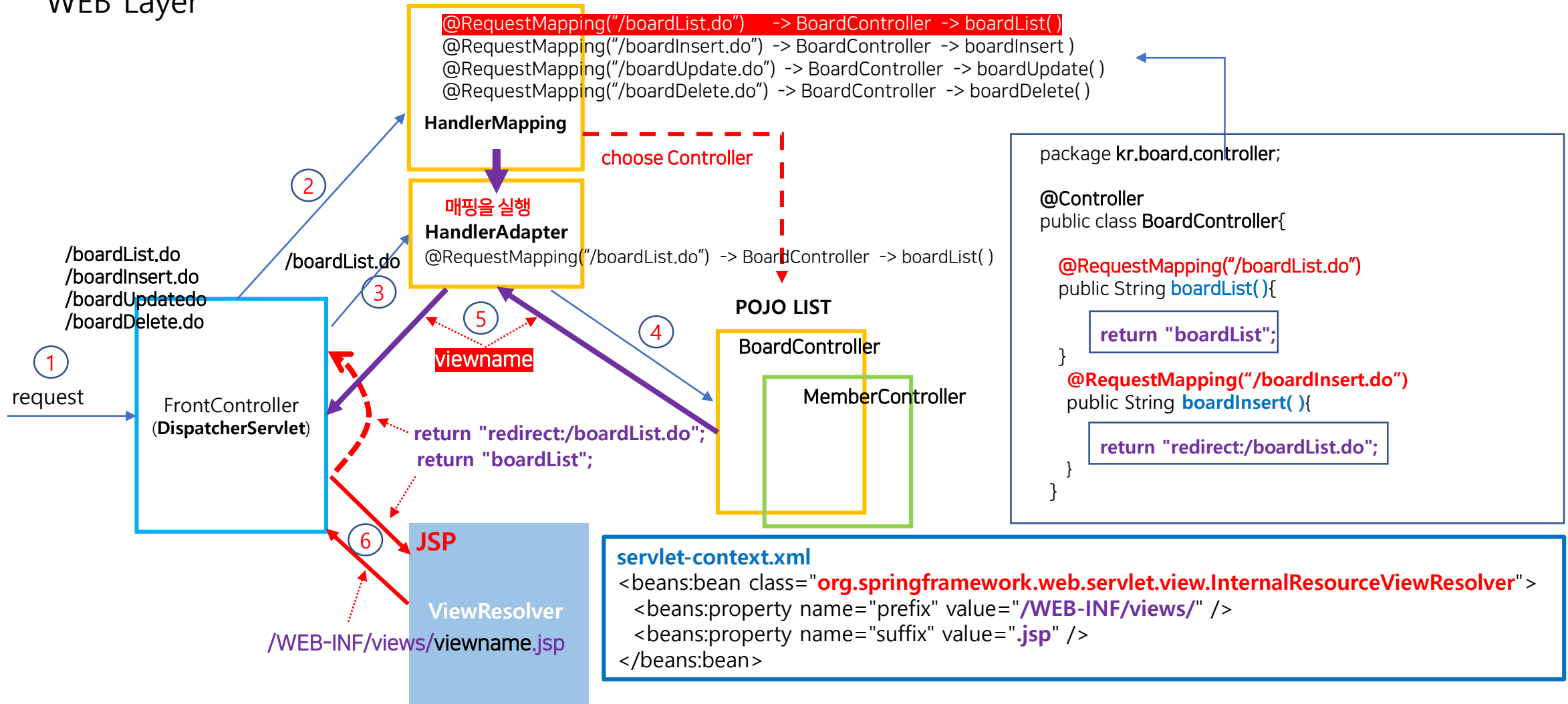
HandlerMapping, HandlerAdapter Loading (@RequestMapping, @GetMapping, @PostMapping)

WEB Layer



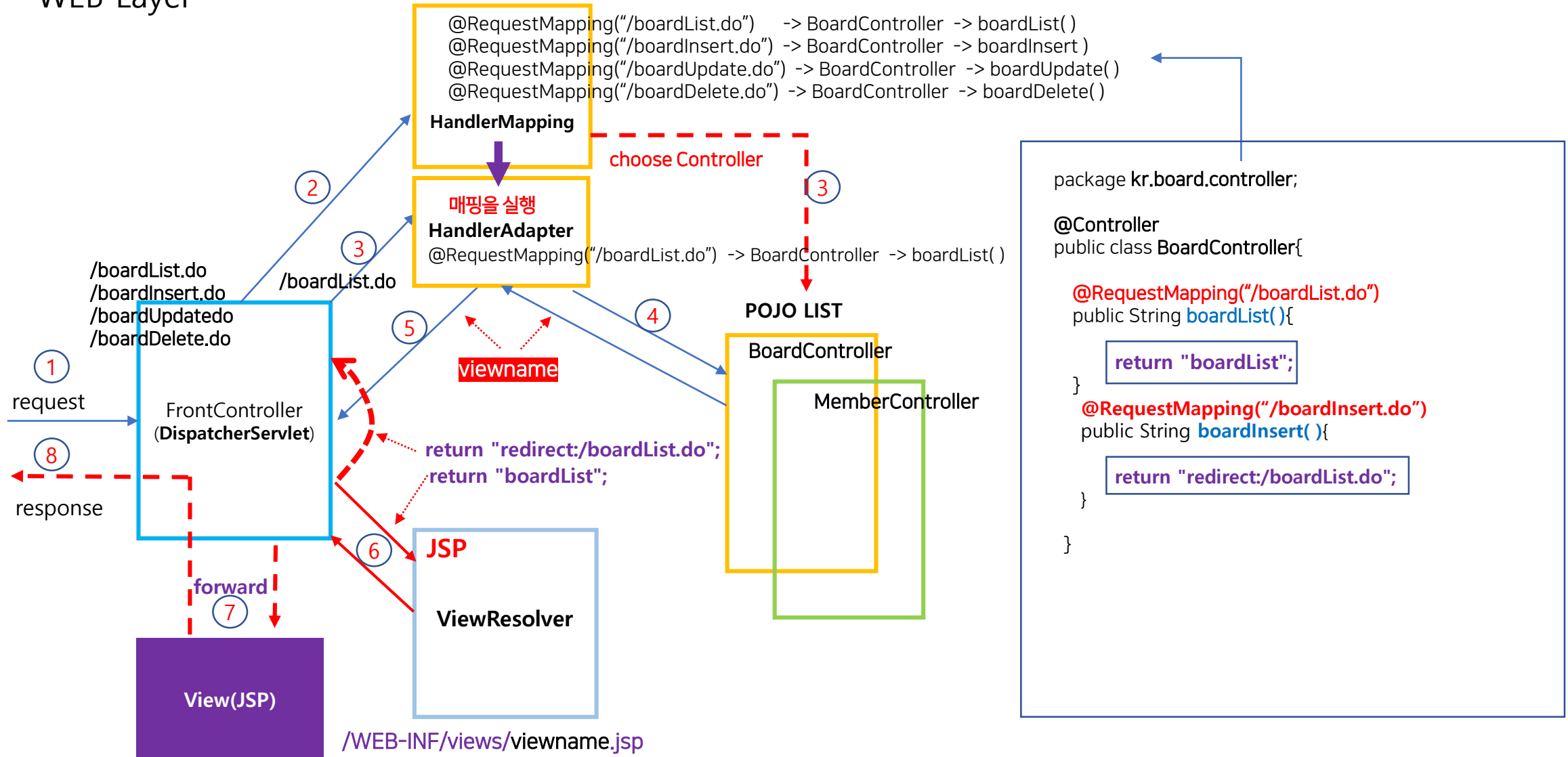
ViewResolver Loading (viewname->/WEB-INF/views/viewname.jsp)

WEB Layer



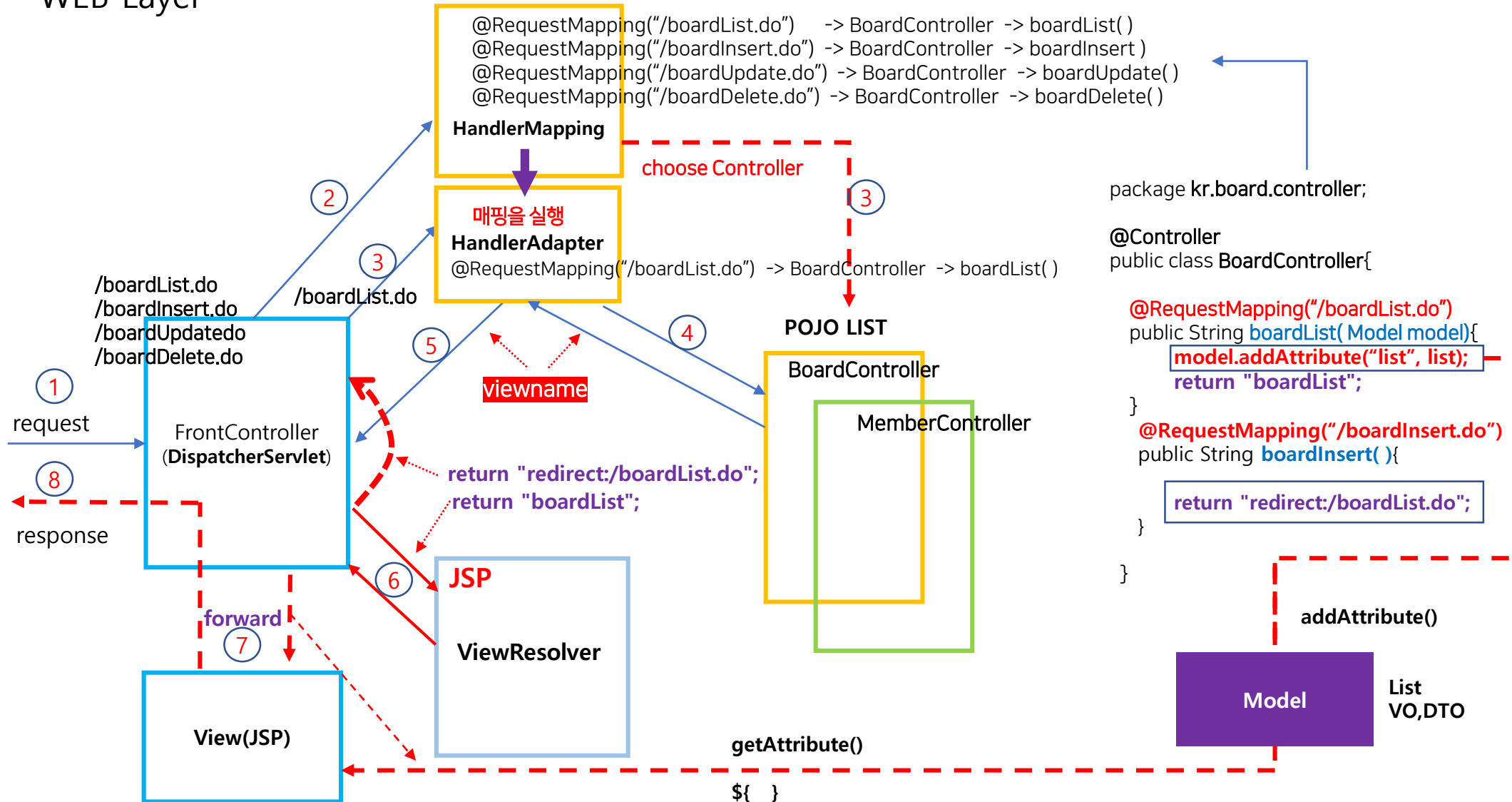
View page forward (viewname->/WEB-INF/views/viewname.jsp)

WEB Layer



객체바인딩(Model, HttpServletRequest, HttpSession)

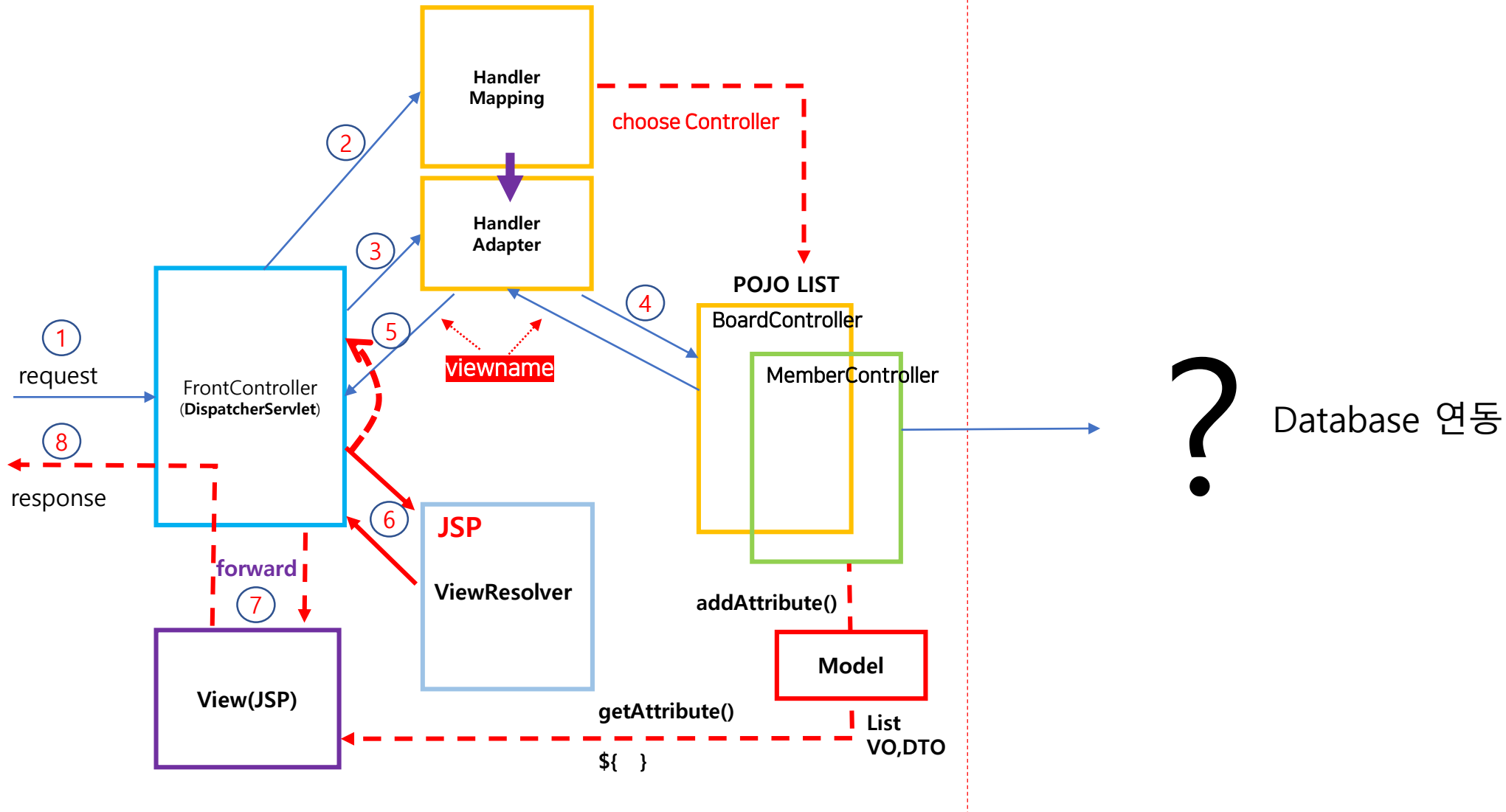
WEB Layer



WEB Layer + Persistence Layer

WEB Layer

Persistence Layer



Persistence Layer(Connection POOL 만들기 = DB연동)

Persistence Layer

web.xml

```

<!-- The definition of the Root Spring Container shared by all Servlets and Filters -->
<context-param>
  <param-name>contextConfigLocation</param-name>
  <param-value>/WEB-INF/spring/root-context.xml</param-value>
</context-param>

<!-- Creates the Spring Container shared by all Servlets and Filters -->
<listener>
  <listener-class>org.springframework.web.context.ContextLoaderListener</listener-class>
</listener>

```

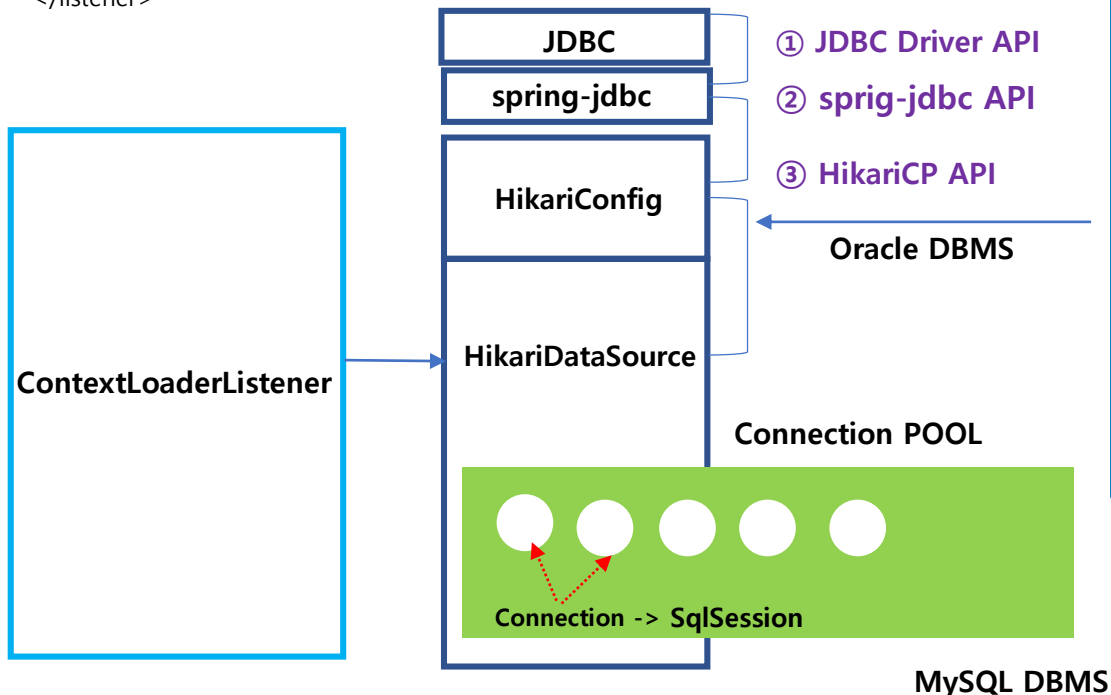
root-context.xml

```

<?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:mybatis-spring="http://mybatis.org/schema/mybatis-spring"
  xsi:schemaLocation="http://mybatis.org/schema/mybatis-spring http://mybatis.org/schema/mybatis-spring-1.2.xsd http://www.springframework.org/schema/beans https://www.springframework.org/schema/beans/spring-beans.xsd">

  <!-- Root Context: defines shared resources visible to all other web components -->
  <!-- API(HikariCP) -->
  <!-- bean : 객체를 생성하는 태그 -->
  <bean id="hikariConfig" class="com.zaxxer.hikari.HikariConfig">
    <property name="driverClassName" value="oracle.jdbc.driver.OracleDriver"/>
    <property name="jdbcUrl" value="jdbc:oracle:thin:@127.0.0.1:1521:XE"/>
    <property name="username" value="hr"/>
    <property name="password" value="hr"/>
  </bean>
  <!-- HikariDataSource(Connection POOL을 만드는 역할을 한다) -->
  <bean id="dataSource" class="com.zaxxer.hikari.HikariDataSource" destroy-method="close">
    <constructor-arg ref="hikariConfig" />
  </bean>
</beans>

```



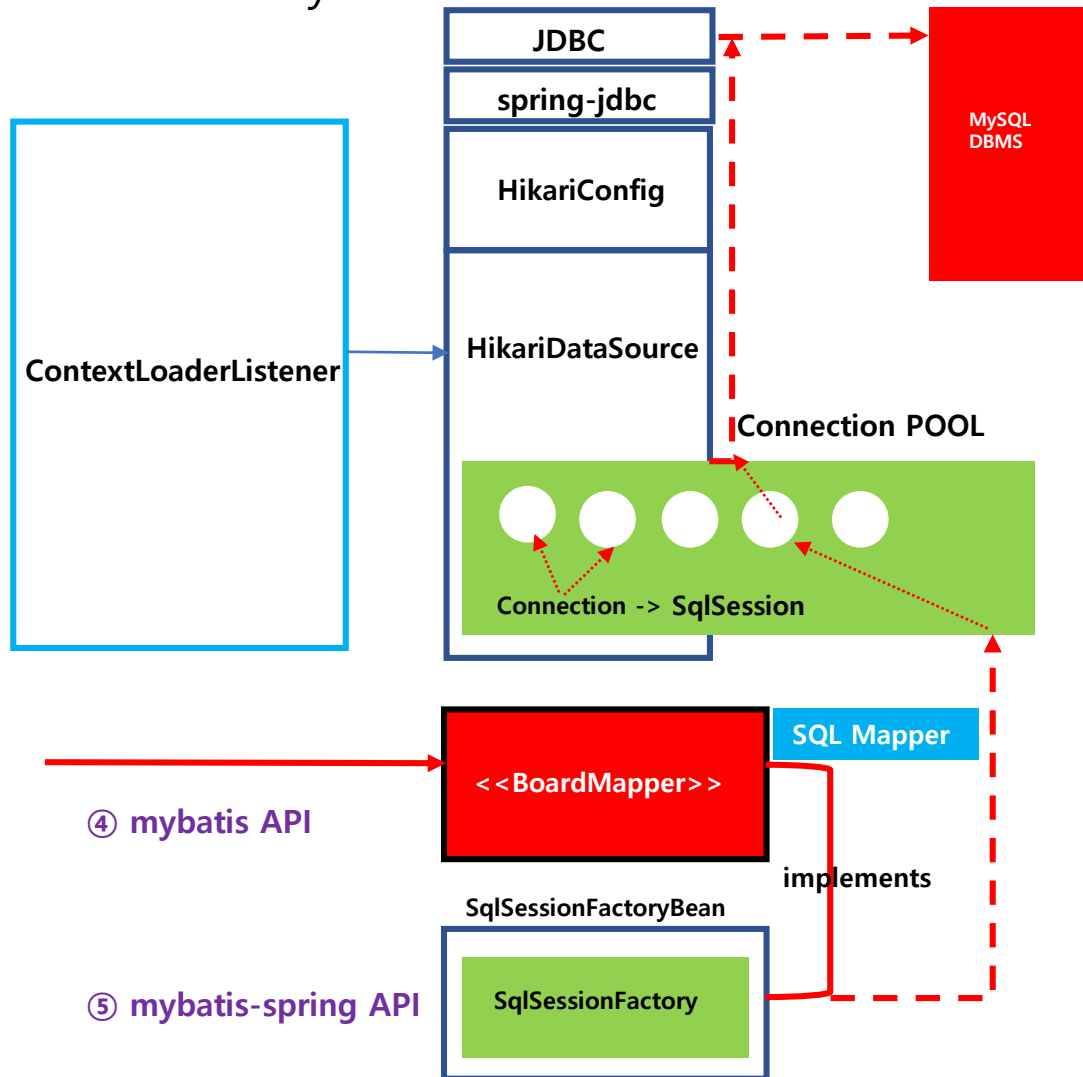
```

<bean id="hikariConfig" class="com.zaxxer.hikari.HikariConfig">
  <property name="driverClassName" value="com.mysql.jdbc.Driver"/>
  <property name="jdbcUrl" value="jdbc:mysql://localhost:3306/com?serverTimezone=UTC"/>
  <property name="username" value="com"/>
  <property name="password" value="com01"/>
</bean>

```

Persistence Layer(Mapper loading, MyBatis Framework와 연결)

Persistence Layer



BoardMapper.java

```
package kr.board.mapper;
@Mapper
public interface BoardMapper
{
}
```

BoardMapper.xml

```
<mapper
namespace="kr.board.mapper.BoardMapper">
```

scan

root-context.xml

```
<?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:mybatis-spring="http://mybatis.org/schema/mybatis-spring"
xsi:schemaLocation="http://mybatis.org/schema/mybatis-spring http://mybatis.org/schema/
mybatis-spring-1.2.xsd http://www.springframework.org/schema/beans https://www.springframe
work.org/schema/beans/spring-beans.xsd">
```

```
<!-- Mapper interface들을 메모리에 올리는 방법(scan) -->
<mybatis-spring:scan base-package="kr.board.mapper"/>
```

```
<!-- BoardMapper interface의 구현클래스 생성
SqlSessionFactoryBean(SQL을 실행하는 API) -->
<bean class="org.mybatis.spring.SqlSessionFactoryBean">
  <property name="dataSource" ref="dataSource" />
</bean>
</beans>
```

Mapper Interface와 Mapper file(SQL) 연결

BoardMapper.java

```
package kr.board.mapper;
@Mapper
public interface BoardMapper {
    public List<Board> getLists(); //추상메서드
    public void boardInsert(Board vo);
    public Board boardContent(int idx);

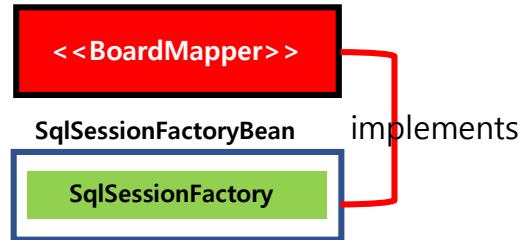
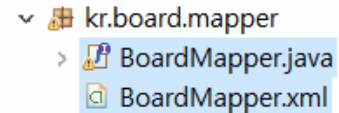
    @Delete("delete from board where idx=#{idx}")
    public void boardDelete(int idx); // delete SQL
    public void boardUpdate(Board vo); // update SQL
}
```

```
public class SqlSessionFactory implements BoardMapper {

    public List<Board> getLists(){

        // 게시판 전체리스트 가져오는 코드가 자동으로 만들어진다.

    }
}
```



BoardMapper.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="kr.board.mapper.BoardMapper">

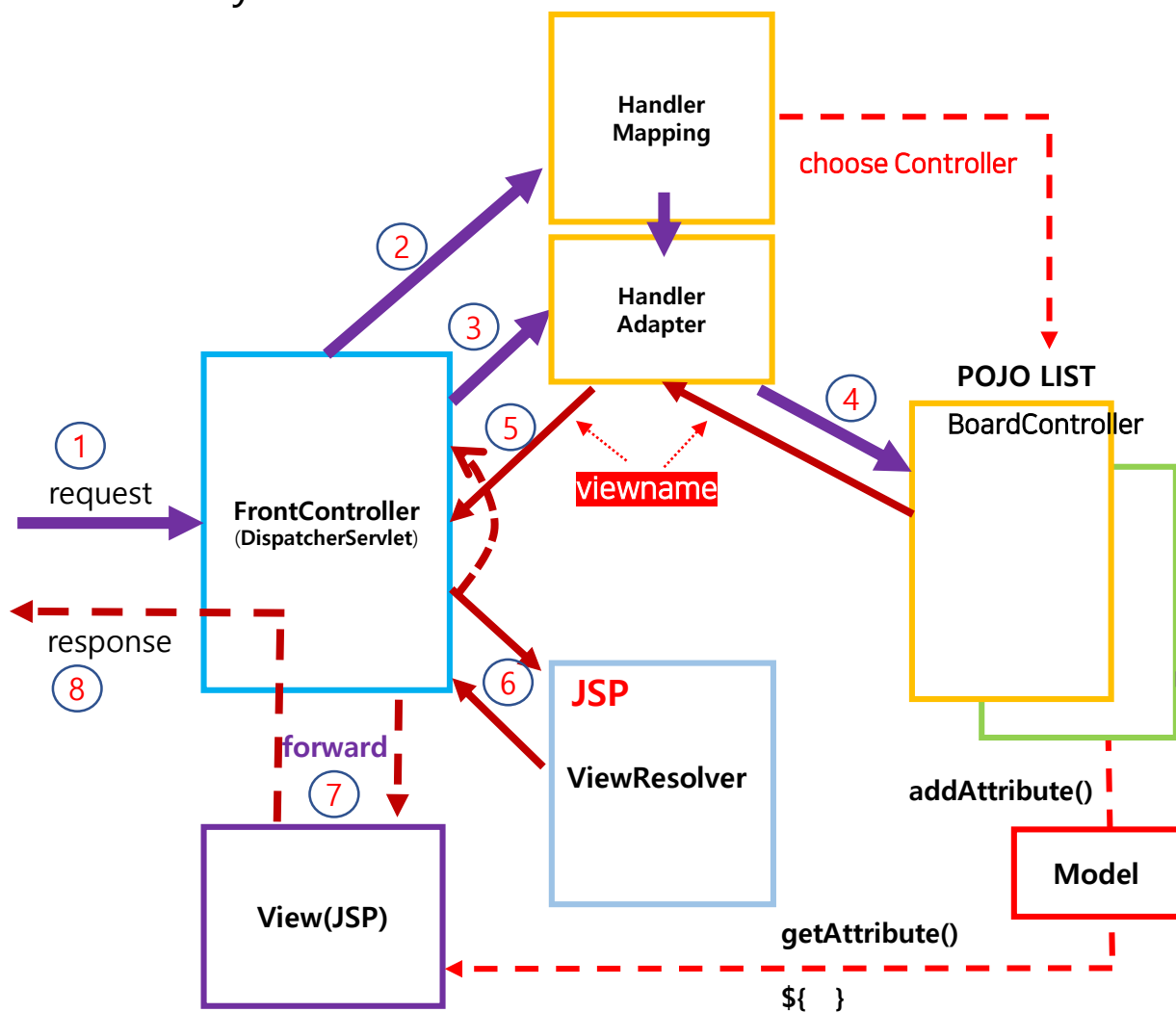
    <select id="getLists" resultType="kr.board.entity.Board">
        select * from board order by idx desc
    </select>
    <insert id="boardInsert" parameterType="kr.board.entity.Board">
        insert into board(idx, title, content, writer)
        values(board_idx.nextval,#{title},#{content},#{writer})
    </insert>

    <select id="boardContent"
        resultType="kr.board.entity.Board"
        parameterType="int">
        select * from board where idx=#{idx}
    </select>

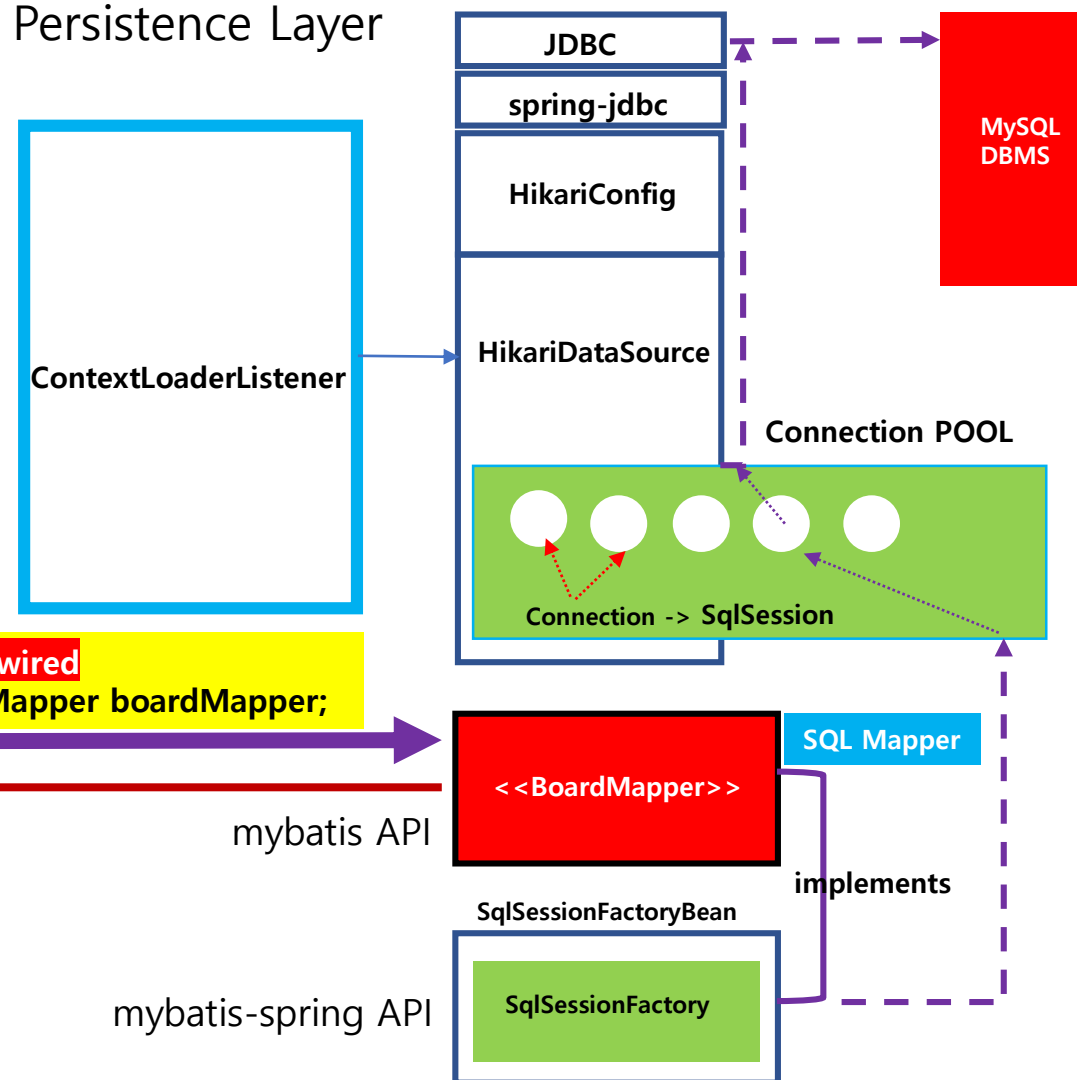
    <update id="boardUpdate" parameterType="kr.board.entity.Board">
        update board set title=#{title}, content=#{content}
        where idx=#{idx}
    </update>
</mapper>
```

WEB Layer + Persistence Layer 연결

WEB Layer



Persistence Layer



API 추가(pom.xml)

```

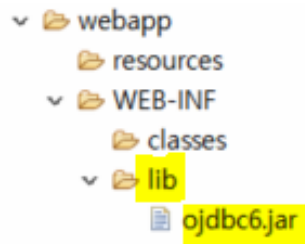
<dependency>
  <groupId>javax.servlet</groupId>
  <artifactId>javax.servlet-api</artifactId>
  <version>3.1.0</version>
  <scope>provided</scope>
</dependency>

<dependency>
  <groupId>javax.servlet.jsp</groupId>
  <artifactId>javax.servlet.jsp-api</artifactId>
  <version>2.3.1</version>
  <scope>provided</scope>
</dependency>

```

Oracle jdbc driver

MySQL jdbc driver



```

<dependency>
  <groupId>mysql</groupId>
  <artifactId>mysql-connector-java</artifactId>
  <version>5.1.42</version>
</dependency>

```

```

<dependency>
  <groupId>mysql</groupId>
  <artifactId>mysql-connector-java</artifactId>
  <version>8.0.16</version>
</dependency>
<dependency>
  <groupId>org.springframework</groupId>
  <artifactId>spring-jdbc</artifactId>
  <version>5.0.2.RELEASE</version>
</dependency>
<dependency>
  <groupId>com.zaxxer</groupId>
  <artifactId>HikariCP</artifactId>
  <version>3.4.1</version>
</dependency>
<dependency>
  <groupId>org.mybatis</groupId>
  <artifactId>mybatis</artifactId>
  <version>3.4.6</version>
</dependency>
<dependency>
  <groupId>org.mybatis</groupId>
  <artifactId>mybatis-spring</artifactId>
  <version>1.3.2</version>
</dependency>

```

MySQL DB 접속방법 - 1

□ 작업관리자 -> 서비스 들어가기 -> MySQL서비스 중지

1. Ctrl + Alt + Delete

2. 제어판 -> 시스템 및 보안 -> 관리도구 -> 서비스 -> MySQL80

The screenshot shows the Windows Control Panel with the 'System and Security' link highlighted. The 'System' link is also highlighted. The 'Administrative Tools' link is highlighted. The 'Services' link is highlighted. The 'MySQL80' service is highlighted in the list. The 'MySQL80' service is highlighted in the list. The 'MySQL80' service is highlighted in the list.

| 이름 | PID | 설명 | 상태 | 그룹 |
|------------------------------|-------|---|------|-------------------|
| LanmanWorkstation | 3920 | Workstation | 실행 중 | NetworkService |
| Ifsvc | 14648 | Geolocation Service | 실행 중 | netsvcs |
| LicenseManager | 20708 | Windows 라이선스 관리자 서비스 | 실행 중 | LocalService |
| ltdsvc | | Link-Layer Topology Discovery Mapper | 중지됨 | LocalService |
| lmhosts | 30236 | TCP/IP NetBIOS Helper | 실행 중 | LocalServiceNe... |
| LSM | 1084 | Local Session Manager | 실행 중 | DcomLaunch |
| LxpSvc | | 언어 환경 서비스 | 중지됨 | netsvcs |
| MACOURTSAFER_Svc | 4896 | MaCourtSAFER Service | 실행 중 | |
| MagicLine4NXSVC | 5200 | MagicLine4NX Service | 실행 중 | |
| MapsBroker | | Downloaded Maps Manager | 중지됨 | NetworkService |
| MessagingService | | MessagingService | 중지됨 | UnistackSvcGr... |
| MessagingService_56144 | | MessagingService_56144 | 중지됨 | UnistackSvcGr... |
| MicrosoftEdgeElevationSer... | | Microsoft Edge Elevation Service (MicrosoftEdgeE... | 중지됨 | |
| MixedRealityOpenXRSvc | | Windows Mixed Reality OpenXR Service | 중지됨 | LocalSystemNe... |
| mpssvc | 3780 | Windows Defender Firewall | 실행 중 | LocalServiceNo... |
| MSDTC | | Distributed Transaction Coordinator | 중지됨 | |
| MSISCSI | | Microsoft iSCSI Initiator Service | 중지됨 | netsvcs |
| msiserver | | Windows Installer | 중지됨 | |
| NaturalAuthentication | | 기본 인증 | 중지됨 | netsvcs |
| NcaSvc | | Network Connectivity Assistant | 중지됨 | NetSvcs |
| NcbService | 1600 | Network Connection Broker | 실행 중 | LocalSystemNe... |
| NcdAutoSetup | | Network Connected Devices Auto-Setup | 중지됨 | LocalServiceNo... |

MySQL80 서비스 열기

| 이름 | 설명 | 상태 | 작업 |
|--------------------------------|-----------|-------------|-------------|
| Microsoft Store 열기 서비스 | MICR... | 실행 중 | 수동 |
| Microsoft Update Health Se... | Main... | 사용 안 함 | 사용 안 함 |
| Microsoft Windows SMS 라... | 적절... | 수동(트리거 시... | 수동(트리거 시... |
| MySQL80 | | 자동 | 자동 |
| Net.Tcp Port Sharing Service | net.tc... | 사용 안 함 | 사용 안 함 |
| Netlogon | 사용... | 수동 | 수동 |
| Network Connected Devices... | 네트... | 수동(트리거 시... | 수동(트리거 시... |
| Network Connection Broker | Wind... | 실행 중 | 수동(트리거 시... |
| Network Connections | 네트... | 수동 | 수동 |
| Network Connectivity Assist... | UI 구... | 수동(트리거 시... | 수동(트리거 시... |

MySQL DB 접속방법 - 2

□ MySQL server start / stop

C:\WeGovFrame-4.0.0\bin\mysql-5.7.32

디렉토리에서 **startup.bat(실행)**, **stop.bat(중지)** 할 수 있다.

« eGovFrame-4.0.0 > bin > mysql-5.7.32

이름

bin
data
docs
include
lib
share
LICENSE
my.ini
my-default.ini
README

startup.bat
stop.bat

cd bin
mysqld.exe --console

cd bin
mysqladmin -uroot shutdown

```
C:\WeGovFrame-4.0.0\bin\mysql-5.7.32>cd bin
```

```
C:\WeGovFrame-4.0.0\bin\mysql-5.7.32\bin>mysqld.exe --console
```

```
mysqld: Could not create or access the registry key needed for the MySQL application to log to the Windows EventLog. Run the application with sufficient privileges once to create the key, add the key manually, or turn off logging for that application.
2022-05-22T09:37:48.641357Z 0 [Warning] TIMESTAMP with implicit DEFAULT value is deprecated (see documentation for more details).
2022-05-22T09:37:48.641582Z 0 [Note] --secure-file-priv is set to NULL. Operations without root access may be limited.
2022-05-22T09:37:48.645474Z 0 [ERROR] Cannot open Windows EventLog; check privileges.
2022-05-22T09:37:48.645520Z 0 [Note] mysqld.exe (mysqld 5.7.32-log) starting as process
2022-05-22T09:37:48.682128Z 0 [Note] InnoDB: Mutexes and rw_locks use Windows interlocked operations
2022-05-22T09:37:48.682394Z 0 [Note] InnoDB: Uses event mutexes
2022-05-22T09:37:48.683154Z 0 [Note] InnoDB: _mm_lfence() and _mm_sfence() are used for memory ordering
2022-05-22T09:37:48.683428Z 0 [Note] InnoDB: Compressed tables use zlib 1.2.11
2022-05-22T09:37:48.684439Z 0 [Note] InnoDB: Number of pools: 1
2022-05-22T09:37:48.685060Z 0 [Note] InnoDB: Not using CPU crc32 instructions
2022-05-22T09:37:48.693444Z 0 [Note] InnoDB: Initializing buffer pool, total size: 128M, segment size: 8M
2022-05-22T09:37:48.705364Z 0 [Note] InnoDB: Completed initialization of buffer pool
2022-05-22T09:37:48.778162Z 0 [Note] InnoDB: Highest supported file format is Barracuda
2022-05-22T09:37:50.230812Z 0 [Note] InnoDB: Creating shared tablespace for temporary tablespaces
2022-05-22T09:37:50.232185Z 0 [Note] InnoDB: Setting file 'C:\WeGovFrame-4.0.0\bin\mysql-5.7.32\bin\ibtmp1' size to 12 MB
2022-05-22T09:37:50.316854Z 0 [Note] InnoDB: File 'C:\WeGovFrame-4.0.0\bin\mysql-5.7.32\bin\ibtmp1' size is now 12 MB.
2022-05-22T09:37:50.341067Z 0 [Note] InnoDB: 96 redo rollback segment(s) found. 96 rollback segments are active.
2022-05-22T09:37:50.341586Z 0 [Note] InnoDB: 32 non-redo rollback segment(s) are active.
2022-05-22T09:37:50.345136Z 0 [Note] InnoDB: Waiting for purge to start
2022-05-22T09:37:50.411556Z 0 [Note] InnoDB: 5.7.32 started; log sequence number 12345678
2022-05-22T09:37:50.412917Z 0 [Note] Plugin 'FEDERATED' is disabled.
2022-05-22T09:37:50.414980Z 0 [Note] InnoDB: Loading buffer pool(s) from C:\WeGovFrame-4.0.0\bin\mysql-5.7.32\bin\ibdata1
2022-05-22T09:37:50.468823Z 0 [Note] Found ca.pem, server-cert.pem and server-key.pem in data directory.
2022-05-22T09:37:50.469585Z 0 [Note] Skipping generation of SSL certificates as certificate authority is not found.
2022-05-22T09:37:50.478484Z 0 [Warning] CA certificate ca.pem is self signed.
2022-05-22T09:37:50.479384Z 0 [Note] Skipping generation of RSA key pair as key file is missing from directory 'C:\WeGovFrame-4.0.0\bin\mysql-5.7.32\bin'.
2022-05-22T09:37:50.484382Z 0 [Note] Server hostname (bind-address): '*'; port: 3306
2022-05-22T09:37:50.487287Z 0 [Note] IPv6 is available.
2022-05-22T09:37:50.487675Z 0 [Note] - '::' resolves to '::';
2022-05-22T09:37:50.490030Z 0 [Note] Server socket created on IP: '::'.
2022-05-22T09:37:50.507262Z 0 [Note] InnoDB: Buffer pool(s) load completed at 220522093750
2022-05-22T09:37:50.591758Z 0 [Note] Failed to start slave threads for channel ''
2022-05-22T09:37:50.698025Z 0 [Note] Event Scheduler: Loaded 0 events
2022-05-22T09:37:50.698805Z 0 [Note] mysqld.exe: ready for connections
Version: '5.7.32-log' socket: '' port: 3306 MySQL Community Server (GPL)
```

MySQL DB 접속방법(cmd) - 3

□ MySQL 서버구동 후 MySQL 접속하기(mysql참고.txt)

mysql-5.7.32
* mysql ROOT 계정
root /

심플홈페이지 템플릿
db : sht
id : sht
pw : sht01

엔터프라이즈 비즈니스 템플릿
db : ebt
id : ebt
pw : ebt01

포털사이트 템플릿
db : pst
id : pst
pw : pst01

실습용 공통컴포넌트
db : com
id : com
pw : com01

공통컴포넌트 all-in-one
db : comall
id : com
pw : com01

모바일
db : mobile
id : mobile
pw : mobile01

디바이스API
db : hyb
id : hyb
pw : hyb01

Microsoft Windows [Version 10.0.19044.1706]
(c) Microsoft Corporation. All rights reserved.

C:\Users\GSM> **cd C:\WeGovFrame-4.0.0\bin\mysql-5.7.32\bin**

C:\WeGovFrame-4.0.0\bin\mysql-5.7.32\bin>

C:\WeGovFrame-4.0.0\bin\mysql-5.7.32\bin> **mysql -u com -p**

Enter password: *********

Welcome to the MySQL monitor. Commands end with ; or \g.

Your MySQL connection id is 9

Server version: 5.7.32-log MySQL Community Server (GPL)

Copyright (c) 2000, 2020, Oracle and/or its affiliates. All rights reserved.

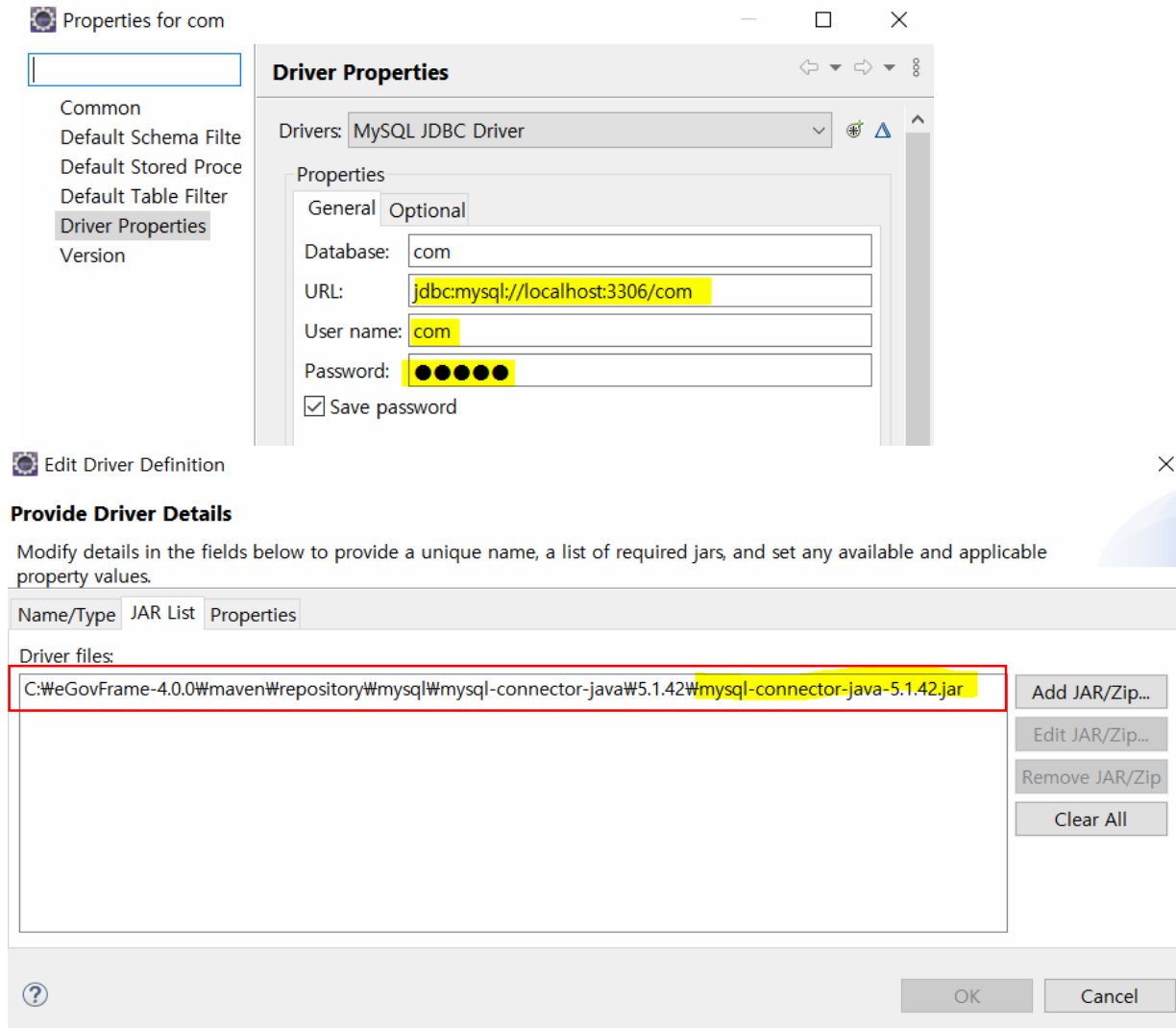
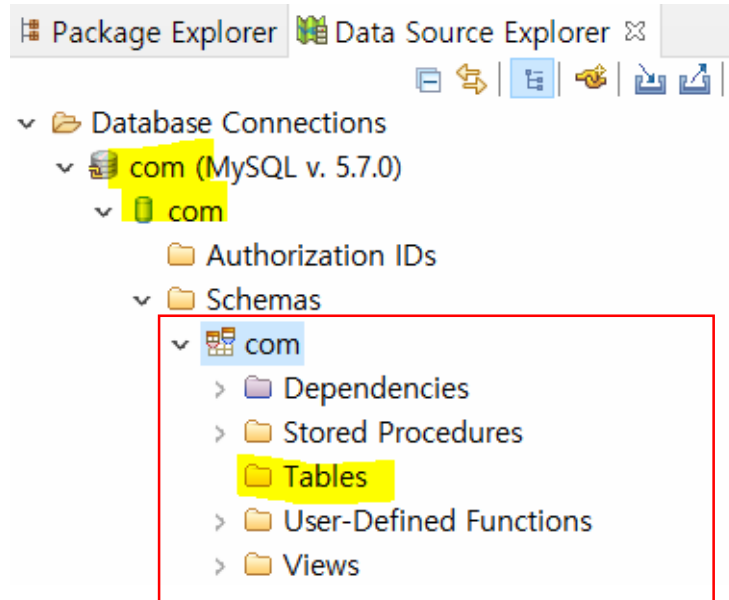
Oracle is a registered trademark of Oracle Corporation and/or its affiliates. Other names may be trademarks of their respective owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql>

MySQL DB 접속방법(eclipse) - 4

□ MySQL 서버구동 후 MySQL 접속하기



MySQL DB table 만들기 - 5

MySQL

```
create table myboard(
  idx int not null auto_increment,
  title varchar(100) not null,
  content varchar(2000) not null,
  writer varchar(30) not null,
  indate datetime default now(),
  count int default 0,
  primary key(idx)
);
```

```
insert into myboard(title,content,writer)
values('게시판 연습','게시판 연습','관리자');
insert into myboard(title,content,writer)
values('게시판 연습','게시판 연습','박매일');
insert into myboard(title,content,writer)
values('게시판 연습','게시판 연습','선생님');
```

```
select * from myboard order by idx desc;
```

Oracle

```
create table myboard(
  idx number not null,
  title varchar2(100) not null,
  content varchar2(2000) not null,
  writer varchar2(30) not null,
  indate date default sysdate,
  count number default 0,
  primary key(idx)
);
```

create sequence myboard_idx;

```
insert into myboard(idx, title, content, writer)
values(myboard_idx.nextval, '스프링게시판','스프링게시판','관리자');
insert into myboard(idx, title, content, writer)
values(myboard_idx.nextval, '스프링게시판','스프링게시판','박매일');
```

```
select * from myboard order by idx desc;
```

MySQL 접속 TEST(JUnit)

DBTest.java

□ MySQL 서버가 구동된 상태에서 실습

```
package kr.board.test;
import java.sql.Connection;
import java.sql.DriverManager;
```

```
import org.junit.Test;
```

```
public class DBTest {
```

@Test

```
public void testConnection() {
    try(Connection conn=DriverManager.getConnection
        ("jdbc:mysql://localhost:3306/com", "com", "com01")){
```

System.out.println(conn);

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

```
}
```

```
}
```

com.mysql.jdbc.JDBC4Connection@2d6e8792

```
C:\WeGovFrame-4.0.0\bin\mysql-5.7.32>cd bin
```

```
C:\WeGovFrame-4.0.0\bin\mysql-5.7.32\bin>mysqld.exe --console
```

```
mysqld: Could not create or access the registry key needed for the MySQL applicat
to log to the Windows EventLog. Run the application with sufficient
privileges once to create the key, add the key manually, or turn off
logging for that application.
```

```
2022-05-22T09:37:48.641357Z 0 [Warning] TIMESTAMP with implicit DEFAULT value is c
tion (see documentation for more details).
```

```
2022-05-22T09:37:48.641582Z 0 [Note] --secure-file-priv is set to NULL. Operations
```

```
2022-05-22T09:37:48.645474Z 0 [ERROR] Cannot open Windows EventLog; check privile
```

```
2022-05-22T09:37:48.645520Z 0 [Note] mysqld.exe (mysqld 5.7.32-log) starting as pi
```

```
2022-05-22T09:37:48.682128Z 0 [Note] InnoDB: Mutexes and rw_locks use Windows inte
```

```
2022-05-22T09:37:48.682394Z 0 [Note] InnoDB: Uses event mutexes
```

```
2022-05-22T09:37:48.683154Z 0 [Note] InnoDB: _mm_lfence() and _mm_sfence() are use
```

```
2022-05-22T09:37:48.683428Z 0 [Note] InnoDB: Compressed tables use zlib 1.2.11
```

```
2022-05-22T09:37:48.684439Z 0 [Note] InnoDB: Number of pools: 1
```

```
2022-05-22T09:37:48.685060Z 0 [Note] InnoDB: Not using CPU crc32 instructions
```

```
2022-05-22T09:37:48.693444Z 0 [Note] InnoDB: Initializing buffer pool, total size
```

```
2022-05-22T09:37:48.705364Z 0 [Note] InnoDB: Completed initialization of buffer po
```

```
2022-05-22T09:37:48.778162Z 0 [Note] InnoDB: Highest supported file format is Bar
```

```
2022-05-22T09:37:50.230812Z 0 [Note] InnoDB: Creating shared tablespace for temp
```

```
2022-05-22T09:37:50.232185Z 0 [Note] InnoDB: Setting file '.\ibtmp1' size to 12 MB
```

```
2022-05-22T09:37:50.316854Z 0 [Note] InnoDB: File '.\ibtmp1' size is now 12 MB.
```

```
2022-05-22T09:37:50.341067Z 0 [Note] InnoDB: 96 redo rollback segment(s) found. 96
```

```
2022-05-22T09:37:50.341586Z 0 [Note] InnoDB: 32 non-redo rollback segment(s) are
```

```
2022-05-22T09:37:50.345136Z 0 [Note] InnoDB: Waiting for purge to start
```

```
2022-05-22T09:37:50.411556Z 0 [Note] InnoDB: 5.7.32 started; log sequence number
```

```
2022-05-22T09:37:50.412917Z 0 [Note] Plugin 'FEDERATED' is disabled.
```

```
2022-05-22T09:37:50.414980Z 0 [Note] InnoDB: Loading buffer pool(s) from C:\WeGovFr
```

```
2022-05-22T09:37:50.468823Z 0 [Note] Found ca.pem, server-cert.pem and server-key
```

```
2022-05-22T09:37:50.469585Z 0 [Note] Skipping generation of SSL certificates as ce
```

```
2022-05-22T09:37:50.478484Z 0 [Warning] CA certificate ca.pem is self signed.
```

```
2022-05-22T09:37:50.479384Z 0 [Note] Skipping generation of RSA key pair as key f
```

```
2022-05-22T09:37:50.484382Z 0 [Note] Server hostname (bind-address): '*'; port: 33
```

```
2022-05-22T09:37:50.487287Z 0 [Note] IPv6 is available.
```

```
2022-05-22T09:37:50.487675Z 0 [Note] - '::' resolves to '::';
```

```
2022-05-22T09:37:50.490030Z 0 [Note] Server socket created on IP: '::'.
```

```
2022-05-22T09:37:50.507262Z 0 [Note] InnoDB: Buffer pool(s) load completed at 220
```

```
2022-05-22T09:37:50.591758Z 0 [Note] Failed to start slave threads for channel ''
```

```
2022-05-22T09:37:50.698025Z 0 [Note] Event Scheduler: Loaded 0 events
```

```
2022-05-22T09:37:50.698805Z 0 [Note] mysqld.exe: ready for connections.
```

```
Version: '5.7.32-log' socket: '' port: 3306 MySQL Community Server (GPL)
```

Lombok API 설치 - 1

```
package kr.board.entity;
```

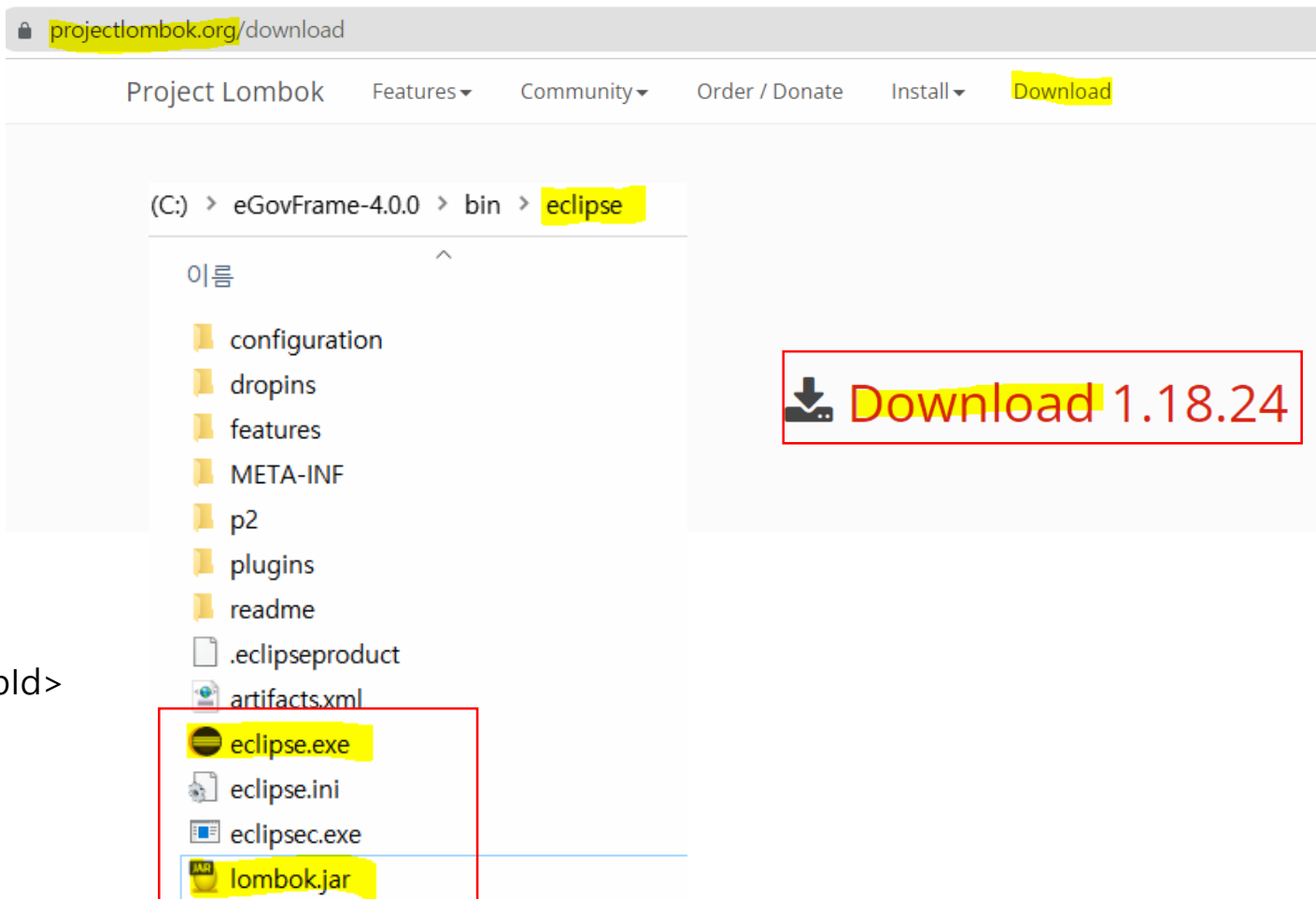
```
@Data //- Lombok API
```

```
public class Board {  
    private int idx; // 번호  
    private String title; // 제목  
    private String content; // 내용  
    private String writer; // 작성자  
    private String indate; // 작성일  
    private int count; // 조회수  
    // setter , getter  
}
```

pom.xml

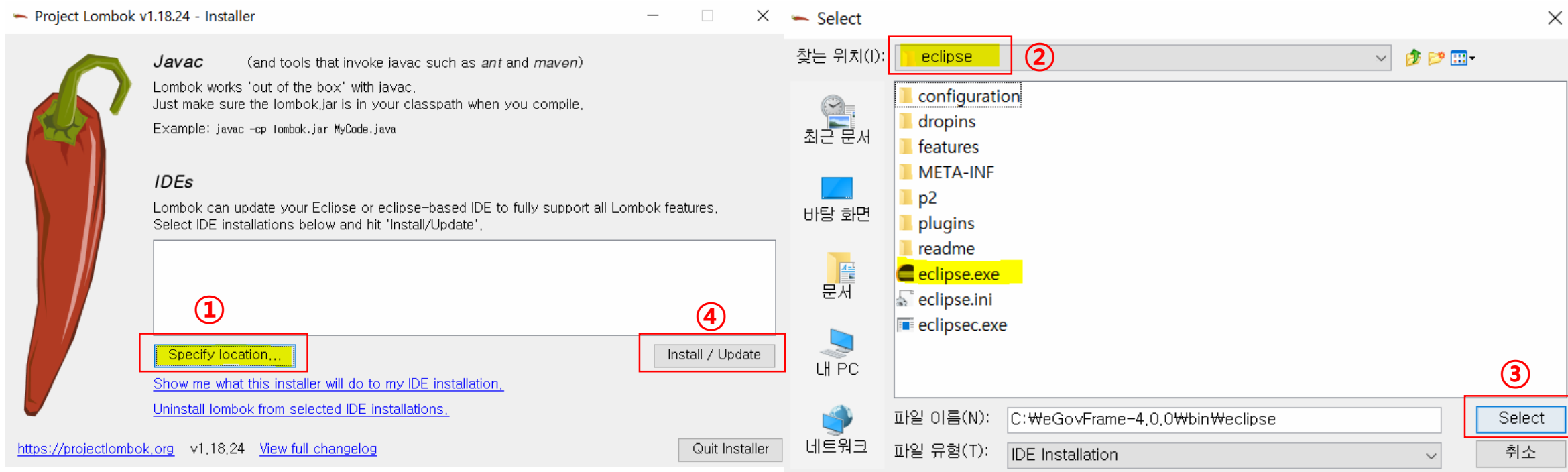
```
<dependency>  
    <groupId>org.projectlombok</groupId>  
    <artifactId>lombok</artifactId>  
    <version>1.18.12</version>  
    <scope>provided</scope>  
</dependency>
```

□ Lombok API 다운로드 및 설치(<https://projectlombok.org>)



Lombok API 설치(cmd) - 2

1. C:\Users\GSM> **cd C:\WeGovFrame-4.0.0\bin\jdk8u242-b08\bin**
2. C:\WeGovFrame-4.0.0\bin\jdk8u242-b08\bin> **java -jar C:\WeGovFrame-4.0.0\bin\weclipse\lombok.jar**



3. 이클립스를(eGovFram) 재시작 한다.

TPC

생각하고(Thinking)-> 표현하고(Presentation)->코딩(Coding)하고

실습 : Spring MVC02