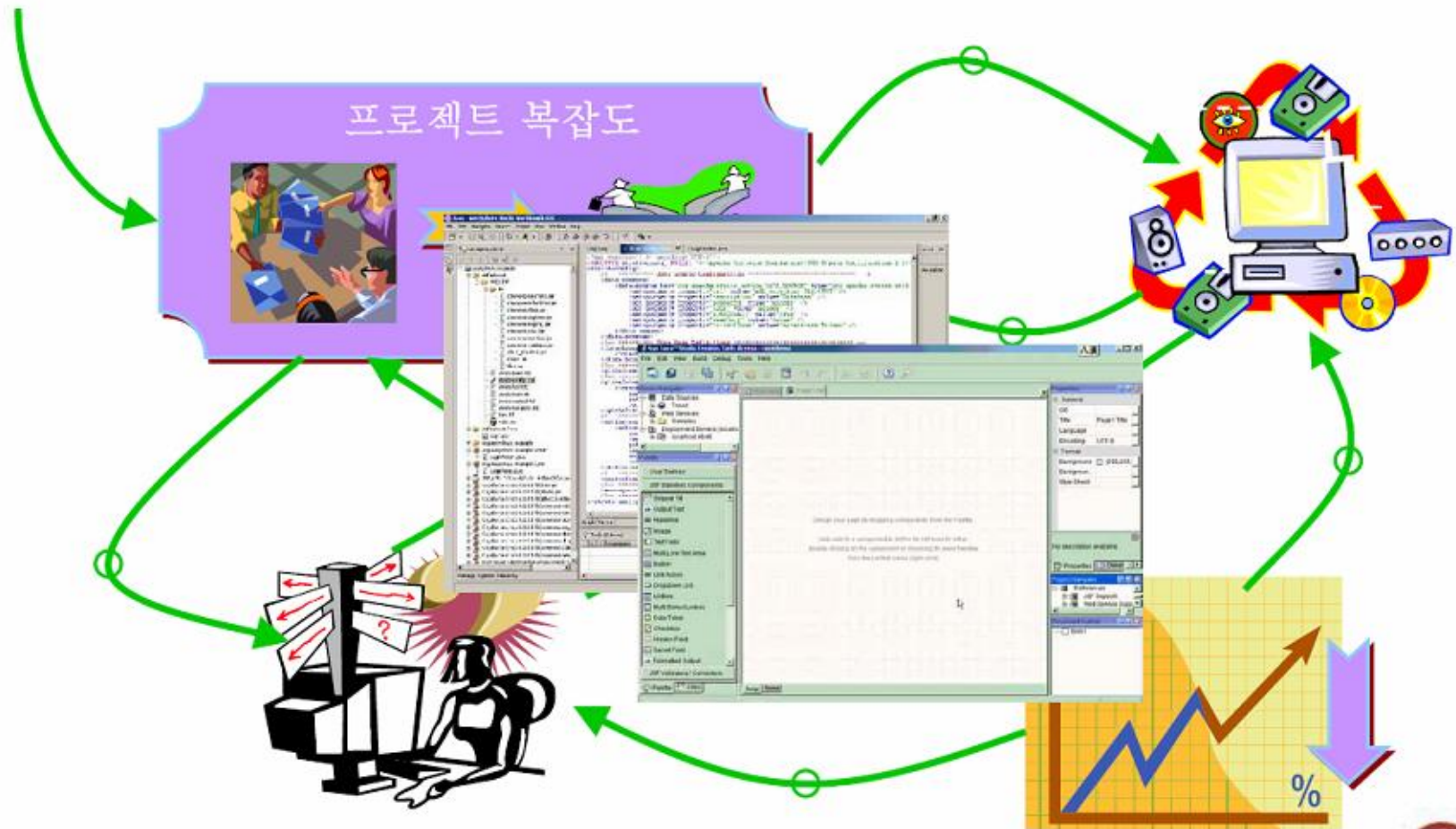




# OpenSource IDE NetBeans & Eclipse

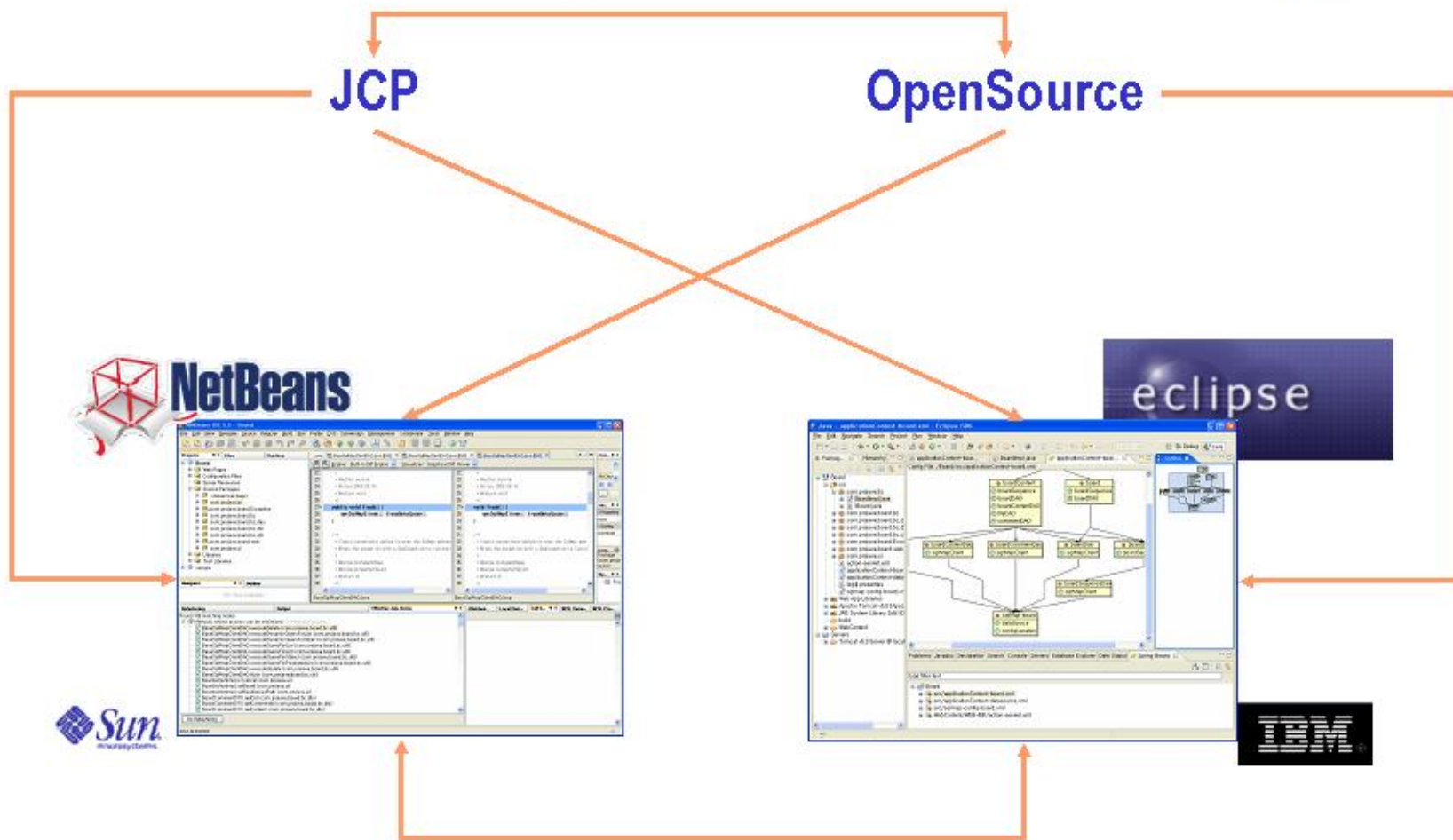
김태완(okcode@gmail.com)

# 프로젝트 복잡도와 IDE(2004)

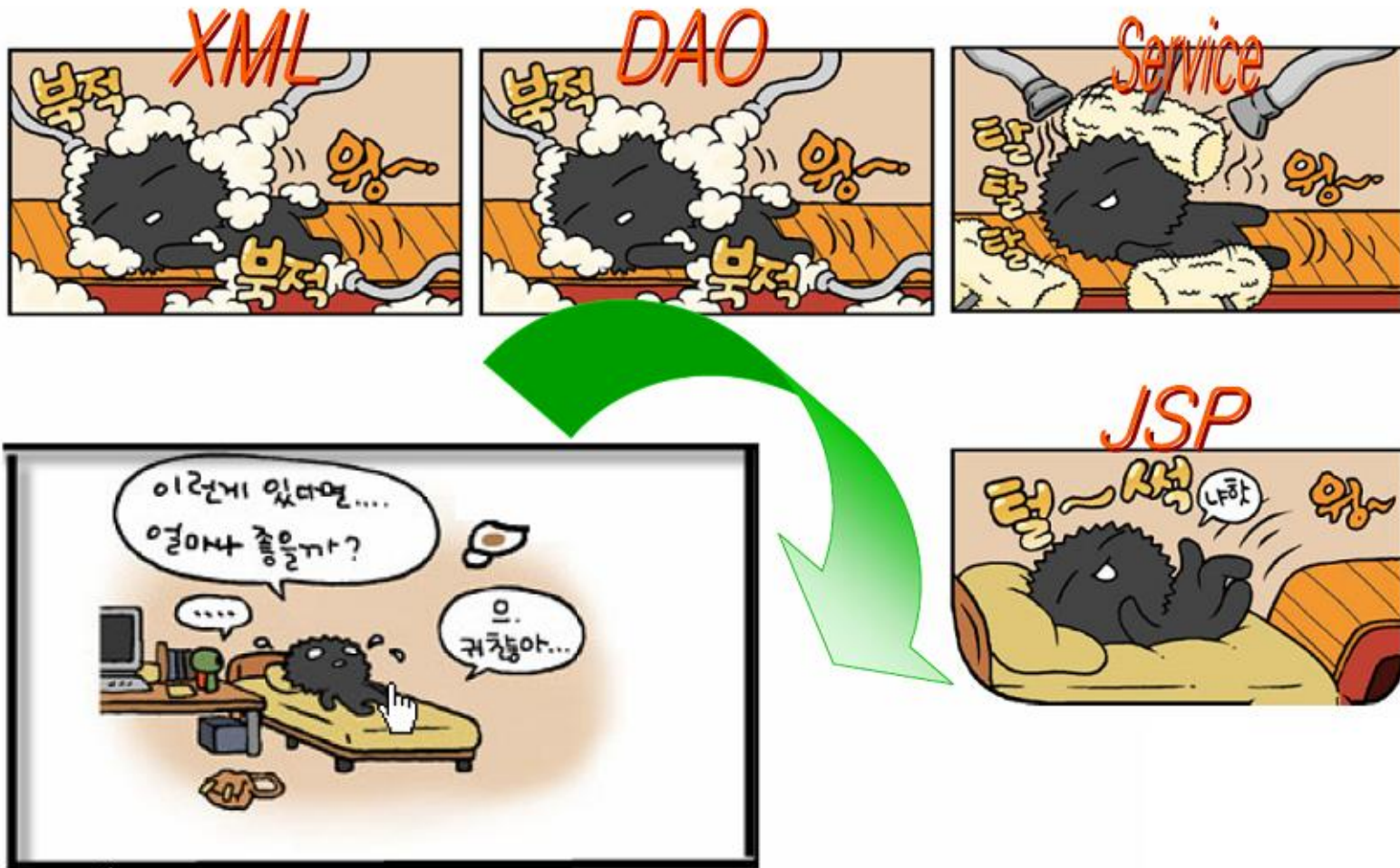


# Java Component

- 양성피드백 고리(Positive feedback loop)



# 개발툴의 생산성 향상?



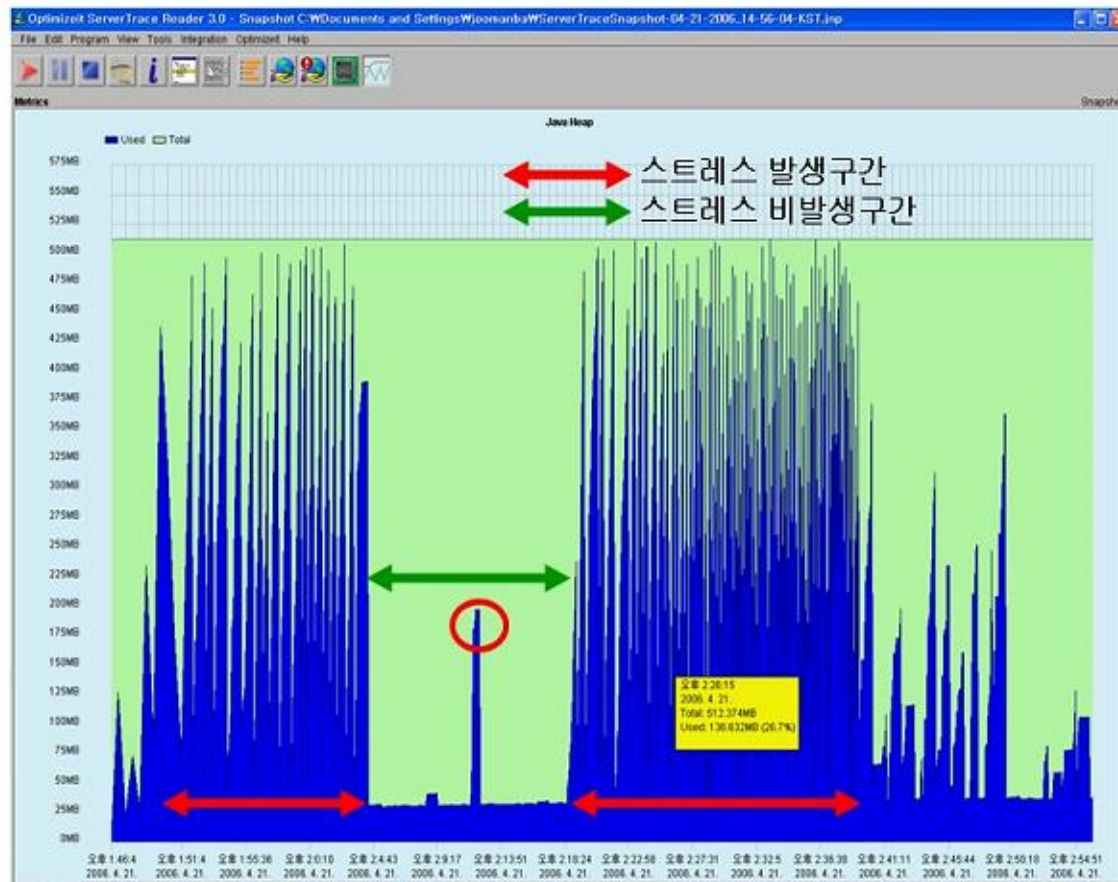
## 개발환경에 대한 가식성

- 개발 애플리케이션에 대한 가식성은?
  - > Private
  - > Protected
  - > Default
  - > Public



# What??? → I can't see it.

- Optimizeit ServerTrace



## 문제의 코드

|     |           |        |        |   |
|-----|-----------|--------|--------|---|
| 21  | 712,324   | 3.87%  | 8,359  | logger.debug("세션테이블 trace START =====");                              |
| 21  | 756       | 0.00%  | 21     | Iterator i = entrySet().iterator();                                   |
| 269 | 0         | 0.00%  | 0      | while (i.hasNext()) {   |
| 248 | 0         | 0.00%  | 0      | Map.Entry e = (Map.Entry) i.next();                                   |
| 248 | 8,463,700 | 45.98% | 99,283 | logger.debug("TABLE KEY : " + e.getKey() );                           |
| 248 | 8,518,988 | 46.28% | 98,839 | logger.debug("SESSION ID : " + ((HttpSession) e.getValue()).getId()); |
| 248 | 0         | 0.00%  | 0      | }   |
| 0   | 0         | 0.00%  | 0      | }catch(Exception e){  |
| 0   | 0         | 0.00%  | 0      | e.printStackTrace();  |
| 21  | 0         | 0.00%  | 0      | }   |
| 21  | 711,384   | 3.86%  | 8,358  | logger.debug("세션테이블 trace END =====");                                |
| 21  | 0         | 0.00%  | 0      | }   |

- 원인
  - > Non debugging 환경
  - > Log4j에 대한 표준 코드가 없음

# NetBeans – www.netbeans.org

- NetBeans IDE 5.5 + Sun Java System Application Server 9.0
- NetBeans IDE 5.5 + JBoss Application Server 4.0.4

## > 확장 팩



**NetBeans Mobility 5.5 Installer - [download](#)**  
(Windows/English)  
netbeans-mobility-5\_5-win.exe (23.5 MB)  
MD5: 8924317018d82c9b1f4a9aa9d694b5e6  
[Legal notice](#) | [Release Notes](#) | [Learn More](#)



**NetBeans Profiler 5.5 Installer - [download](#)**  
(Windows/English)  
netbeans-profiler-5\_5-win.exe (8.1 MB)  
MD5: b96cf83d490cdb879c4e21f0d7799a37  
[Legal notice](#) | [Release Notes](#) | [More Information & Downloads](#) | [Learn More](#)



**NetBeans Enterprise Pack 5.5 Installer - [download](#)**  
(Windows/English)  
netbeans-ent\_pack-5\_5-windows.exe (76.3 MB)  
MD5: 020c65577a79ab9da5934f7baa5f1398  
[Legal notice](#) | [Installation Instructions](#) | [Release Notes](#) | [Learn More](#)



**NetBeans C/C++ Pack 5.5 Beta 3 Installer - [download](#)**  
(Windows/English)  
netbeans-cnd-5\_5-beta3-windows.exe (8 MB)  
MD5: e150ac0d8f8b7e375c1431cdc237cc5a  
[Legal notice](#) | [Installation Guide](#) | [Learn More](#)



**NetBeans Visual Web Pack 5.5 Technology Preview Installer - [download](#)**  
(Windows/English)  
netbeans-visualweb-5\_5-tp-windows.exe (41.8 MB)  
MD5: 56f159e1573bfa3673daf29aa1958e85  
[Legal notice](#) | [Release Notes](#) | [Installation Instructions](#) | [Learn More](#)





## Eclipse 배포 – [www.eclipse.org](http://www.eclipse.org)

- Platform
- Business Intelligence and Reporting Tools(BIRT)
- Data Tools Platform(DTP)
- Test and Performance Tools Platform (TPTP)
- Visual Editor(VE)
- Web Tools Platform(WTP)

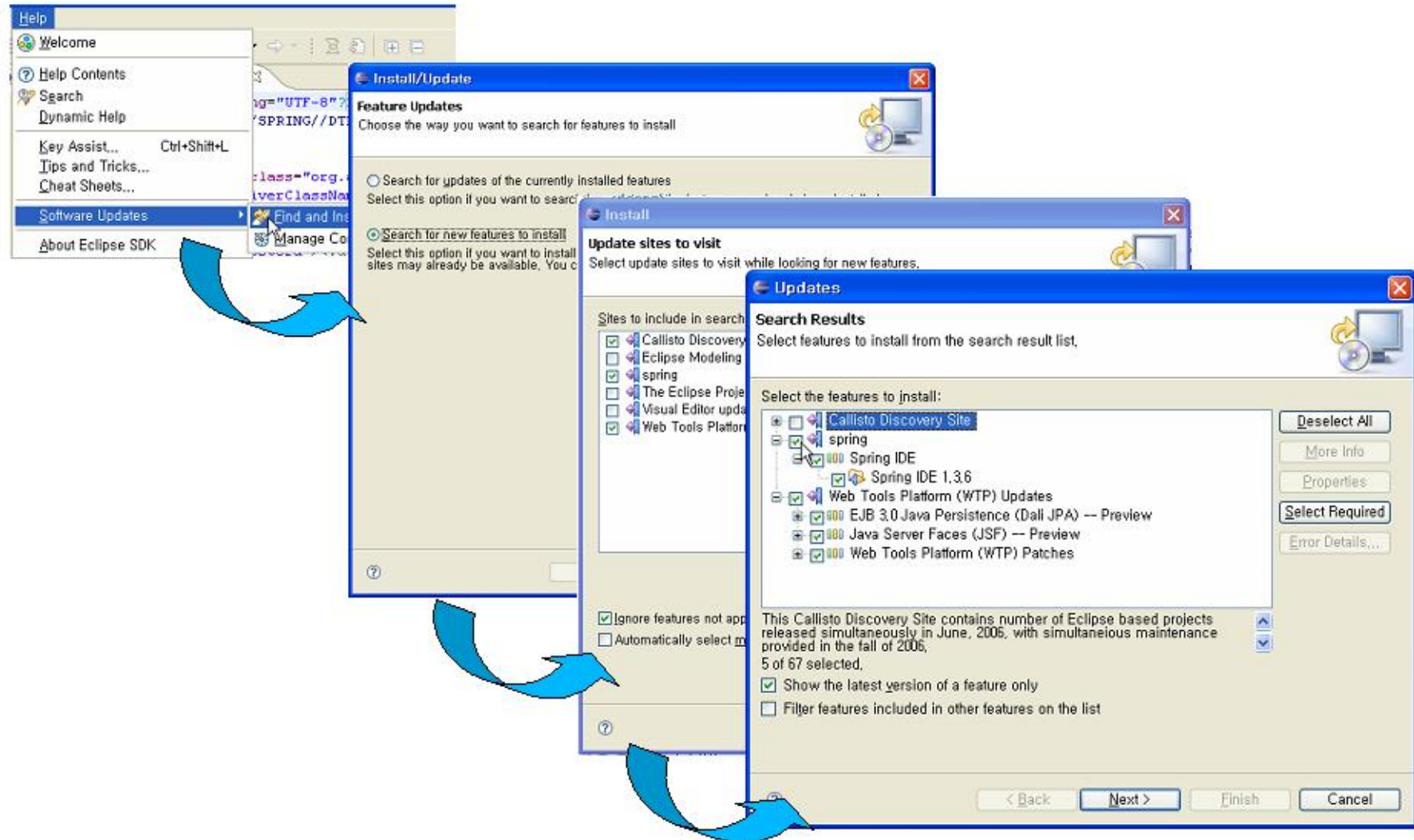
# OpenSource IDE의 목표

- NetBeans
  - > JavaEE의 모든 스펙을 충족하는 IDE
  - > 최고의 자바 개발툴.....
- Eclipse
  - > 자바 애플리케이션을 위한 표준 플랫폼
  - > 언어 중립적인 표준 IDE.....

## IDE의 확장

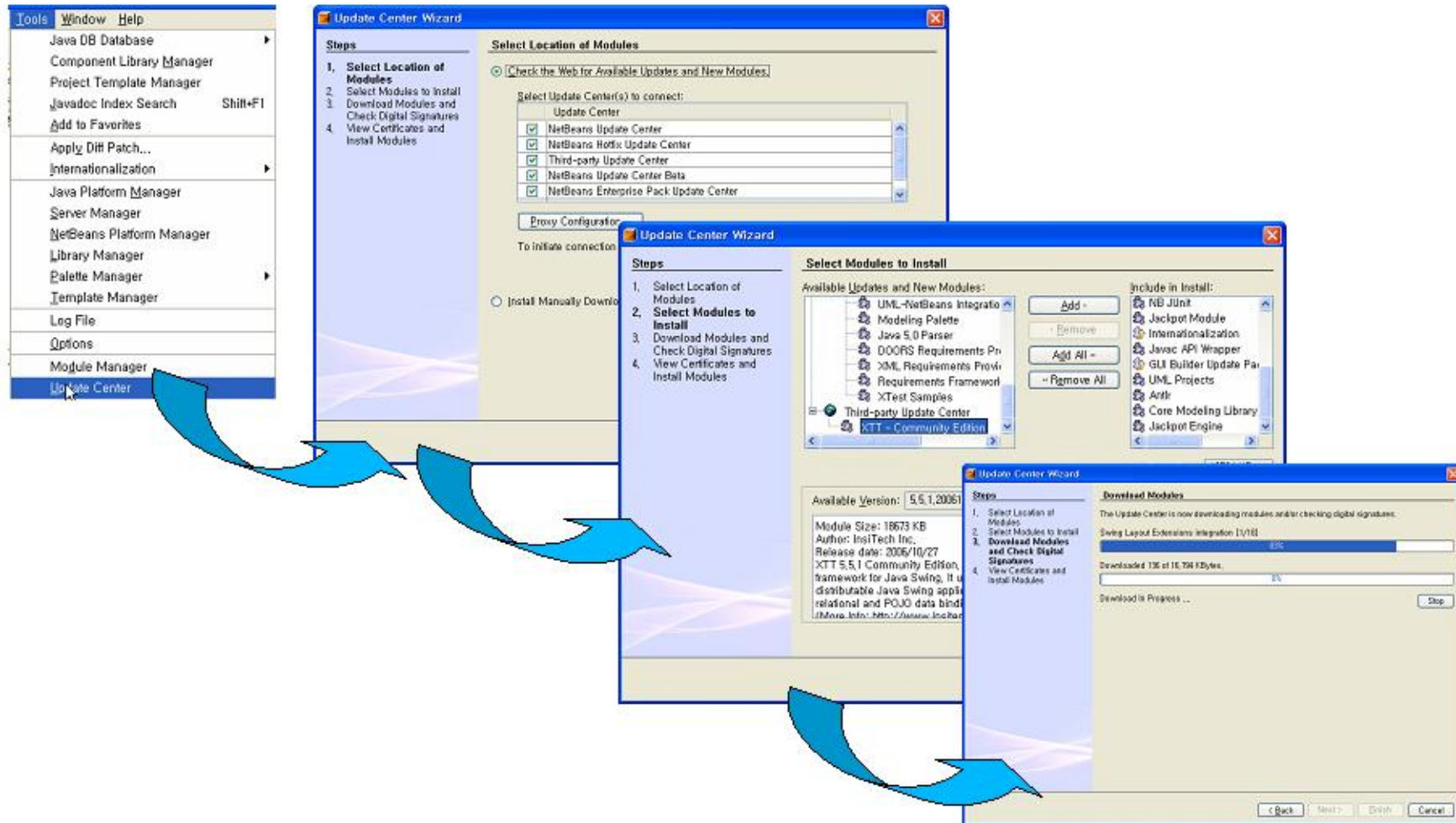
- 플러그인
  - > Eclipse, NetBeans
- Add-on Pack
  - > NetBeans

# Eclipse Patch 및 플러그인 설치



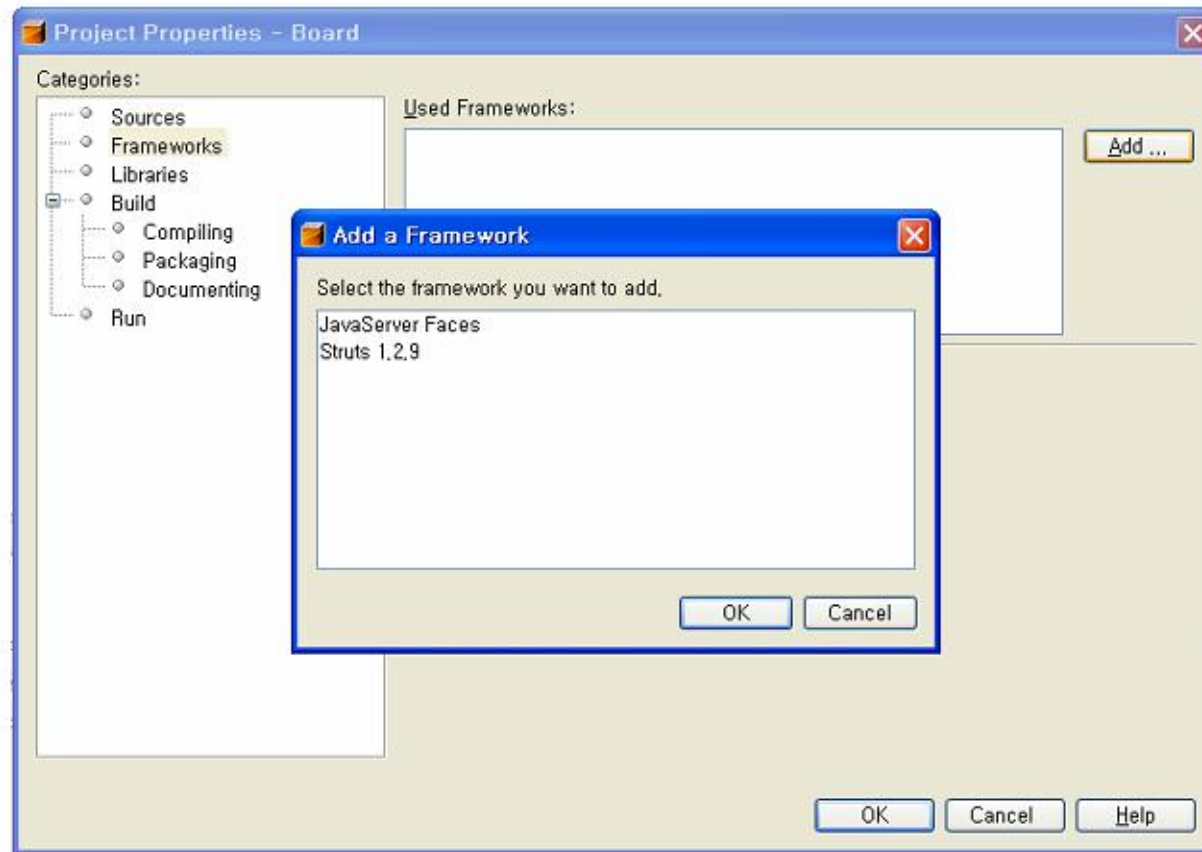


# NetBeans Patch 및 플러그인 설치



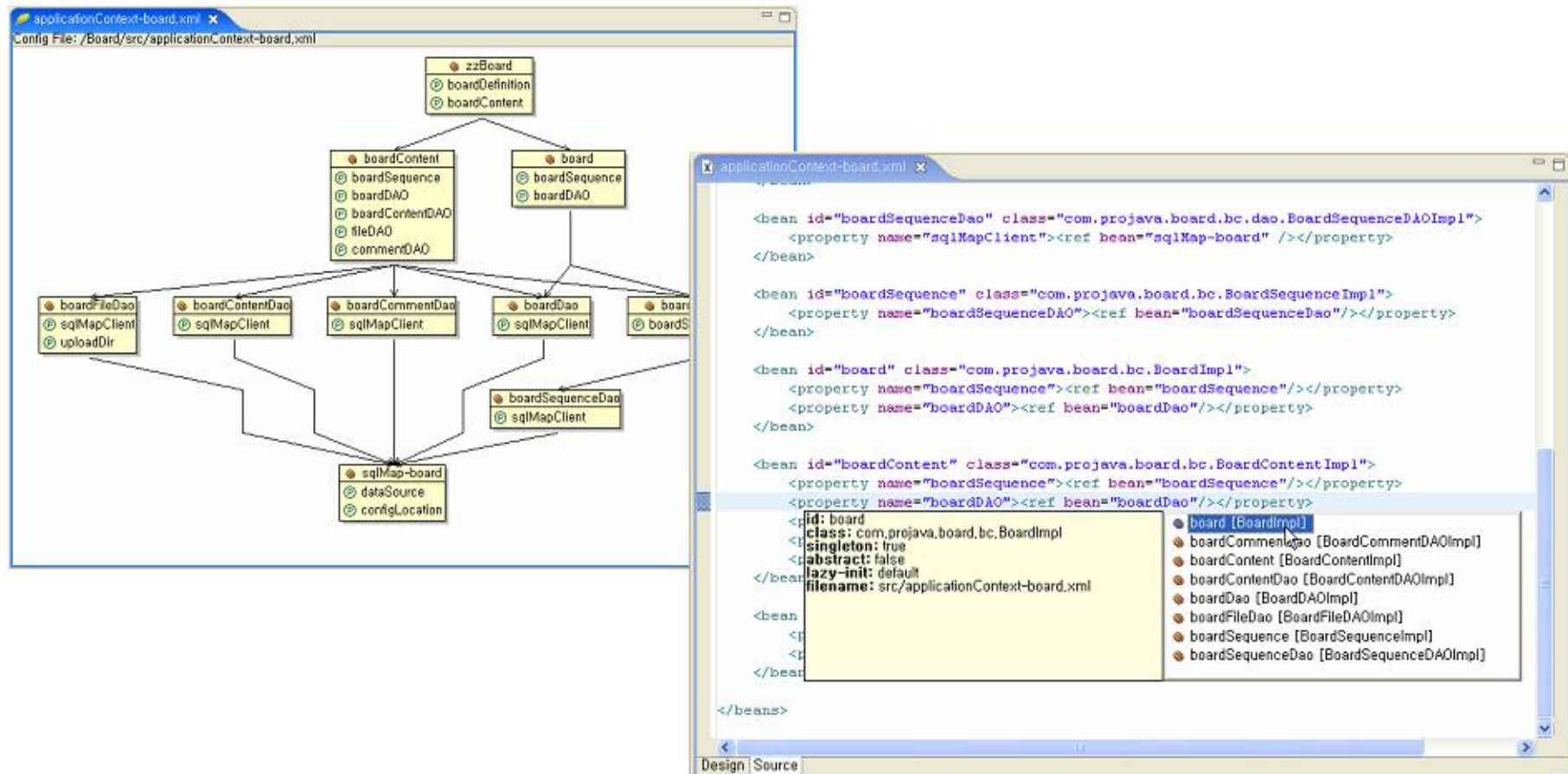
# Framework 지원

- NetBeans → Platform 에서 지원

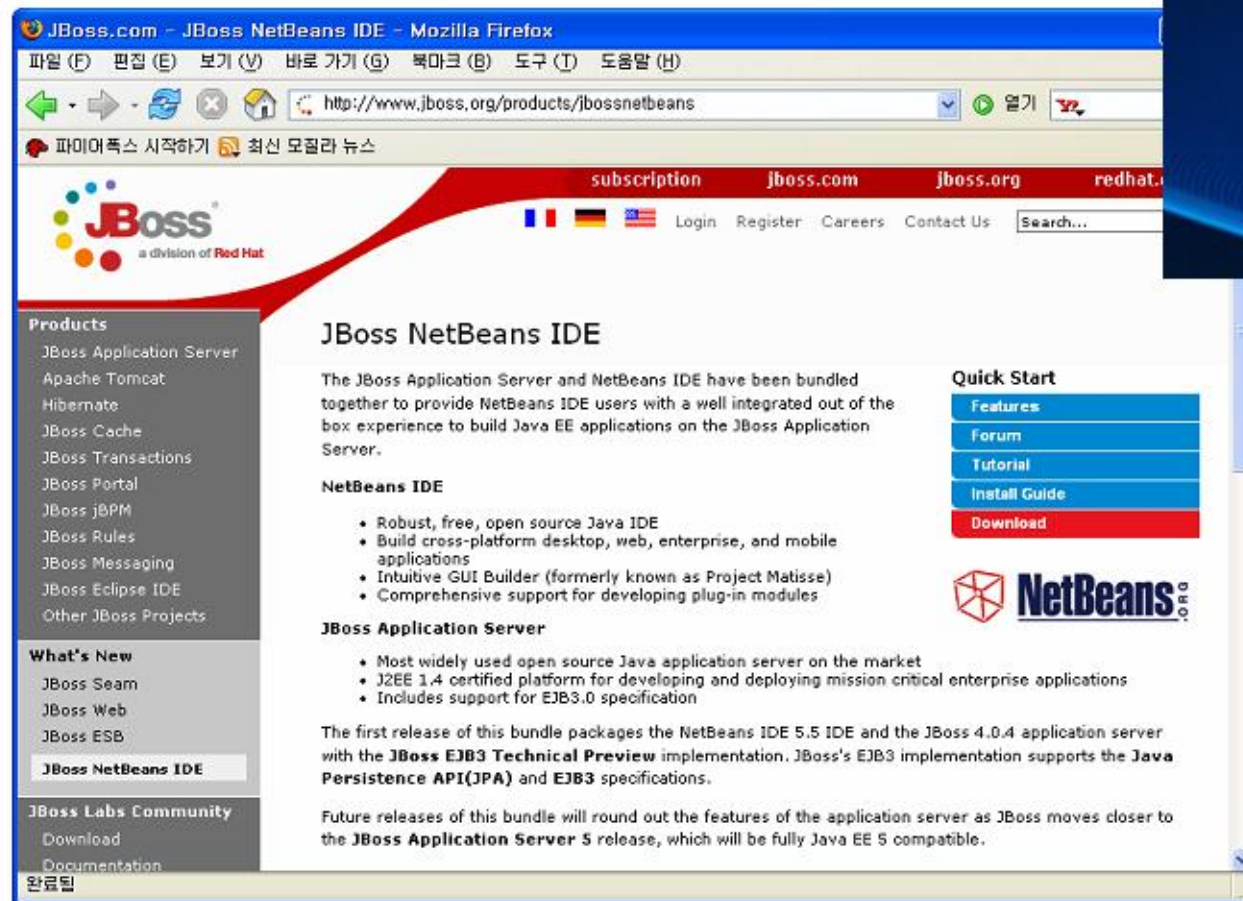


# Framework 지원

- Eclipse → Plugin 중심의 지원



# Jboss NetBeans IDE



The screenshot shows a Mozilla Firefox browser window displaying the JBoss website. The address bar shows the URL <http://www.jboss.org/products/jbossnetbeans>. The page features the JBoss logo (a division of Red Hat) and navigation links for 'subscription', 'jboss.com', 'jboss.org', and 'redhat.'. A sidebar on the left lists various products, with 'JBoss NetBeans IDE' highlighted. The main content area is titled 'JBoss NetBeans IDE' and contains the following text:

The JBoss Application Server and NetBeans IDE have been bundled together to provide NetBeans IDE users with a well integrated out of the box experience to build Java EE applications on the JBoss Application Server.

**NetBeans IDE**

- Robust, free, open source Java IDE
- Build cross-platform desktop, web, enterprise, and mobile applications
- Intuitive GUI Builder (formerly known as Project Matisse)
- Comprehensive support for developing plug-in modules

**JBoss Application Server**

- Most widely used open source Java application server on the market
- J2EE 1.4 certified platform for developing and deploying mission critical enterprise applications
- Includes support for EJB3.0 specification

The first release of this bundle packages the NetBeans IDE 5.5 IDE and the JBoss 4.0.4 application server with the **JBoss EJB3 Technical Preview** implementation. JBoss's EJB3 implementation supports the **Java Persistence API(JPA)** and **EJB3** specifications.

Future releases of this bundle will round out the features of the application server as JBoss moves closer to the **JBoss Application Server 5** release, which will be fully Java EE 5 compatible.

On the right side of the page, there is a 'Quick Start' section with buttons for 'Features', 'Forum', 'Tutorial', 'Install Guide', and 'Download'. The 'Download' button is highlighted in red. Below this section is the NetBeans logo.





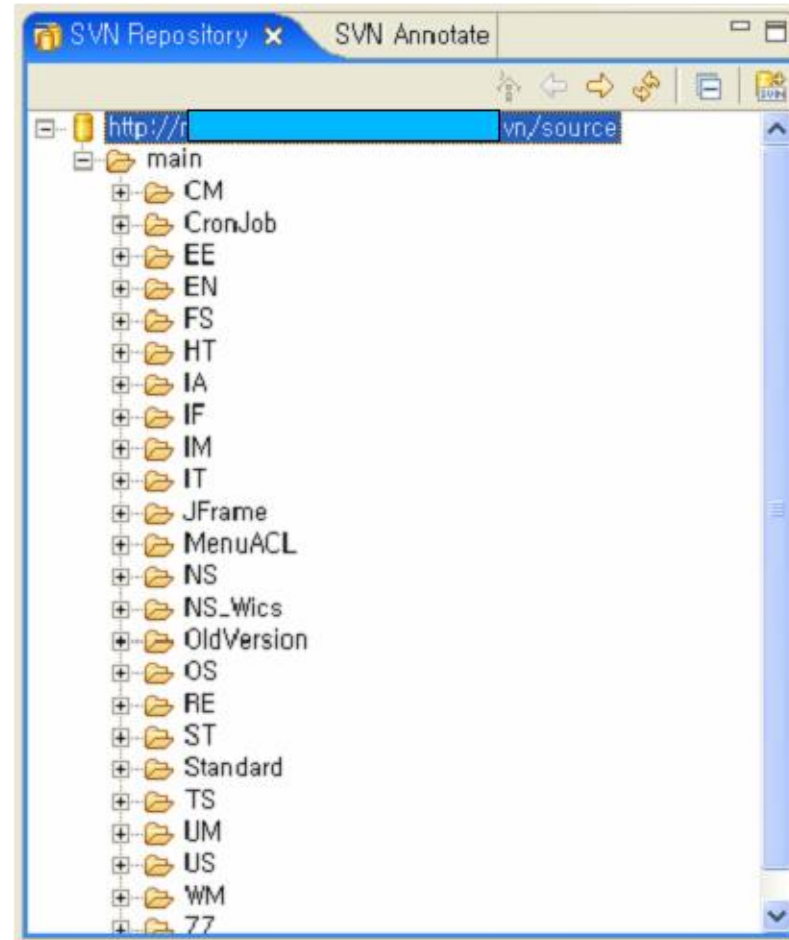
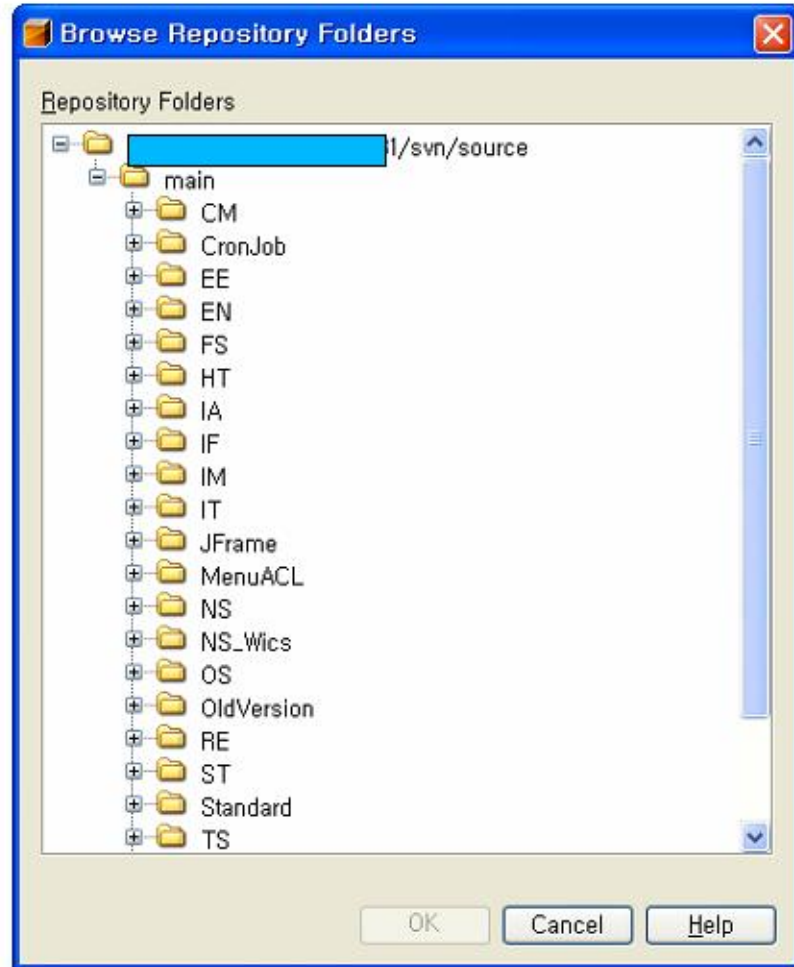
# NetBeans & Eclipse 프로젝트 공유

- Version Control 이용
  - > CVS, Subversion
- NetBeans 프로젝트 생성 기능 이용
  - > Import Project : Eclipse, Jbuilder 지원
  - > New Project
    - > Java Project with Existing Sources
    - > Web Application with Existing Sources

# Version Control

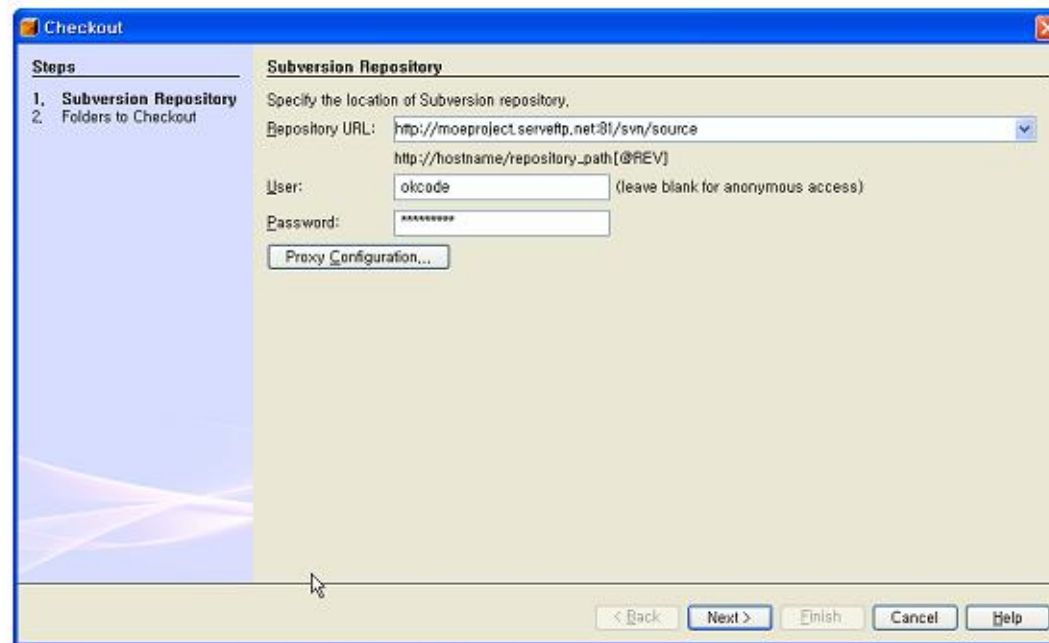
- Eclipse
  - > CVS: 기본 설정
  - > Subversion: 플러그인 (<http://subversion.tigris.org/>)
- NetBeans
  - > CVS: 기본 설정
  - > Subversion: 플러그인 (update center)
    - > Subversion 프로그램 설치

# Subversion Repository 리스트



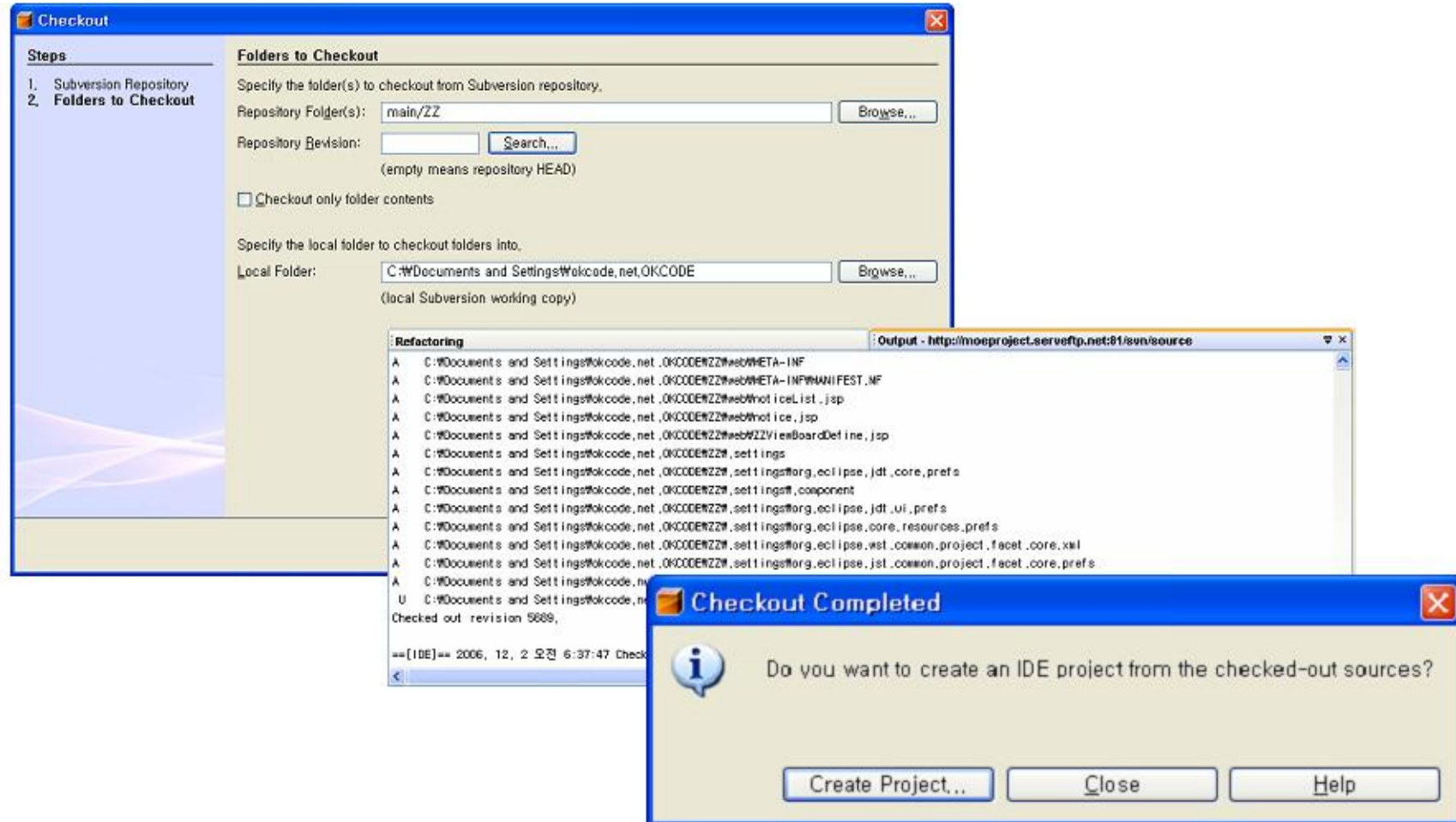
# Subversion을 통한 프로젝트 공유(1)

- > Eclipse WTP에서 web 프로젝트를 생성
- > Subversion에서 버전관리
- > Subversion을 통한 프로젝트 공유

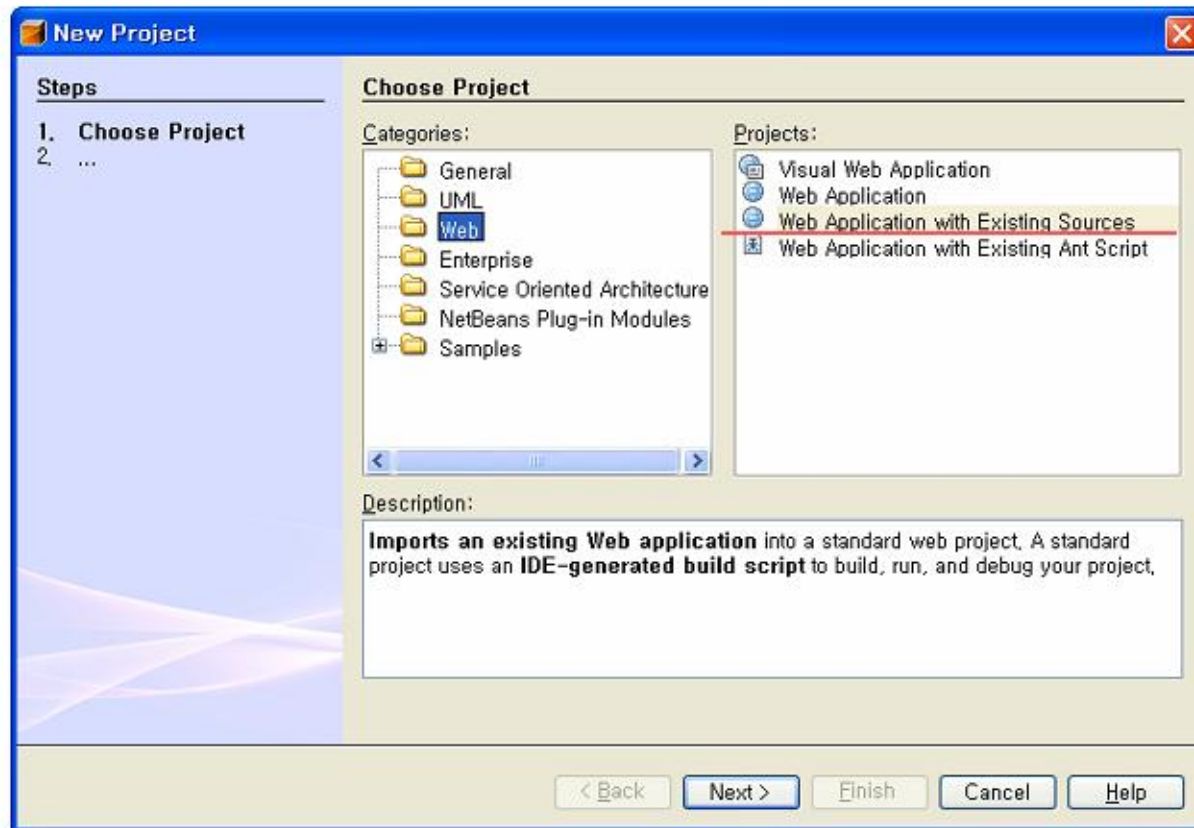




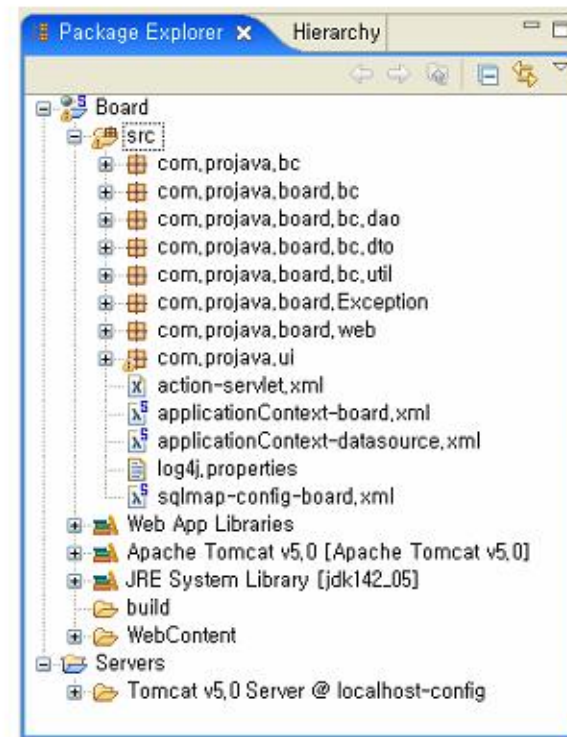
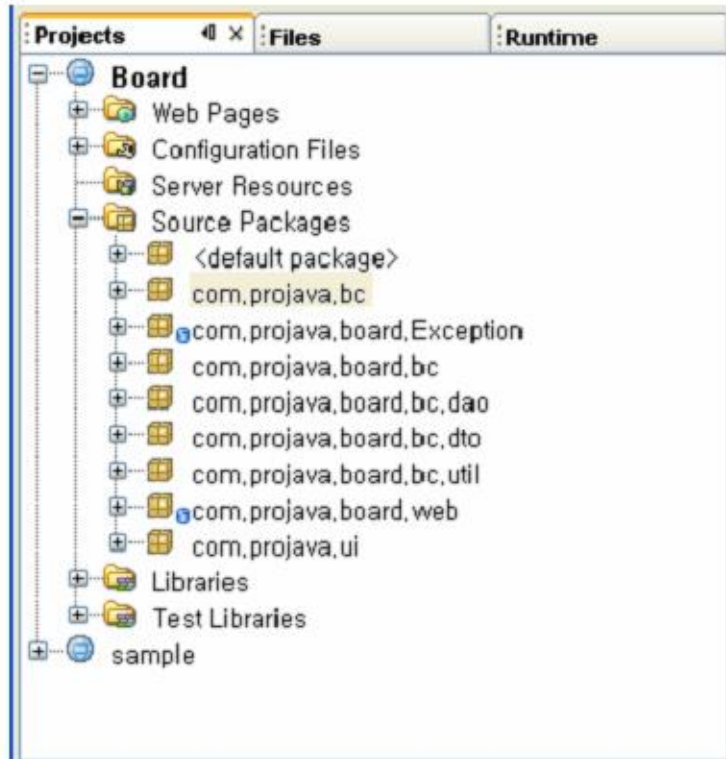
# Subversion을 통한 프로젝트 공유(2)



# Subversion을 통한 프로젝트 공유(3)



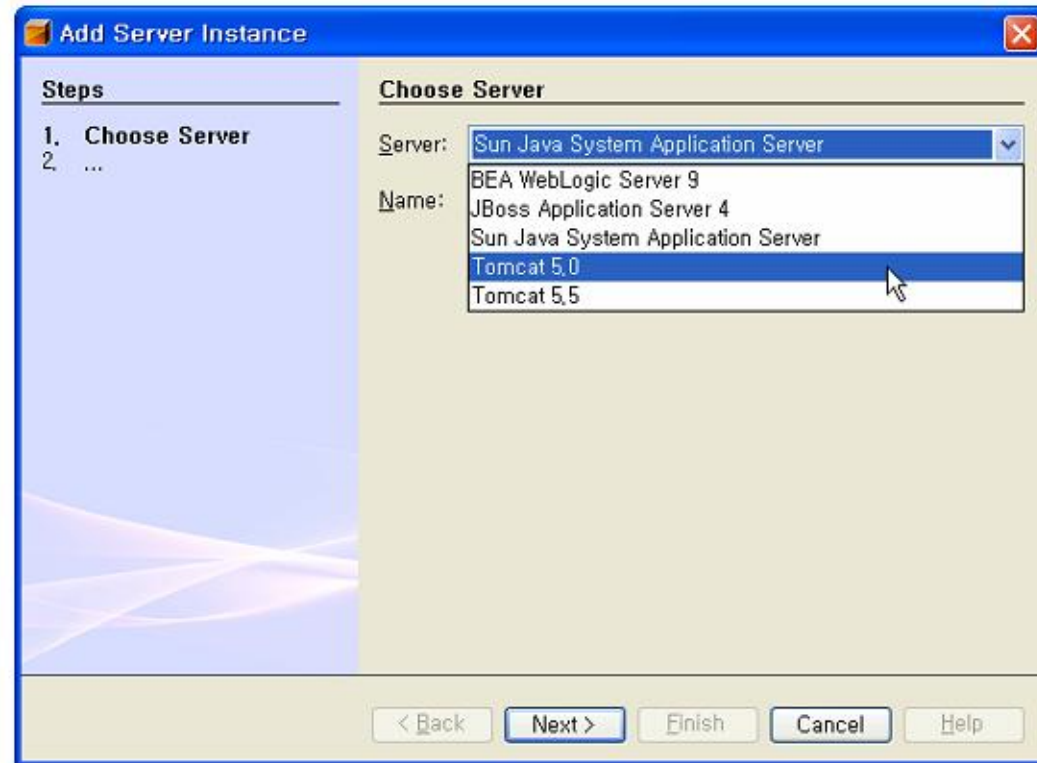
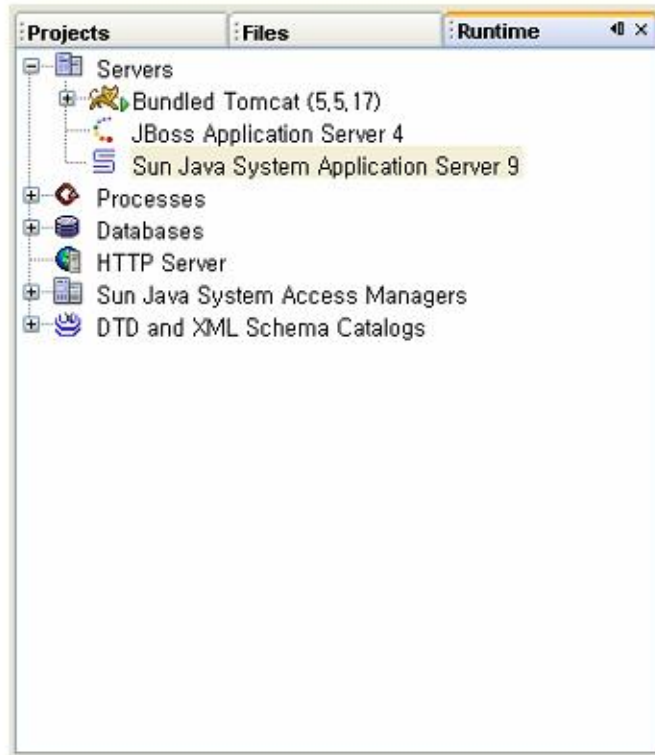
# Subversion을 통한 프로젝트 공유(4)



## IDE 서버 관리

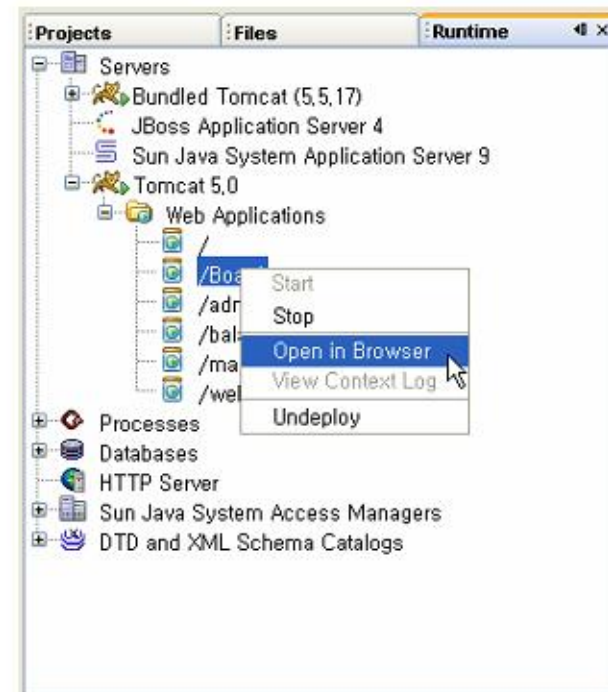
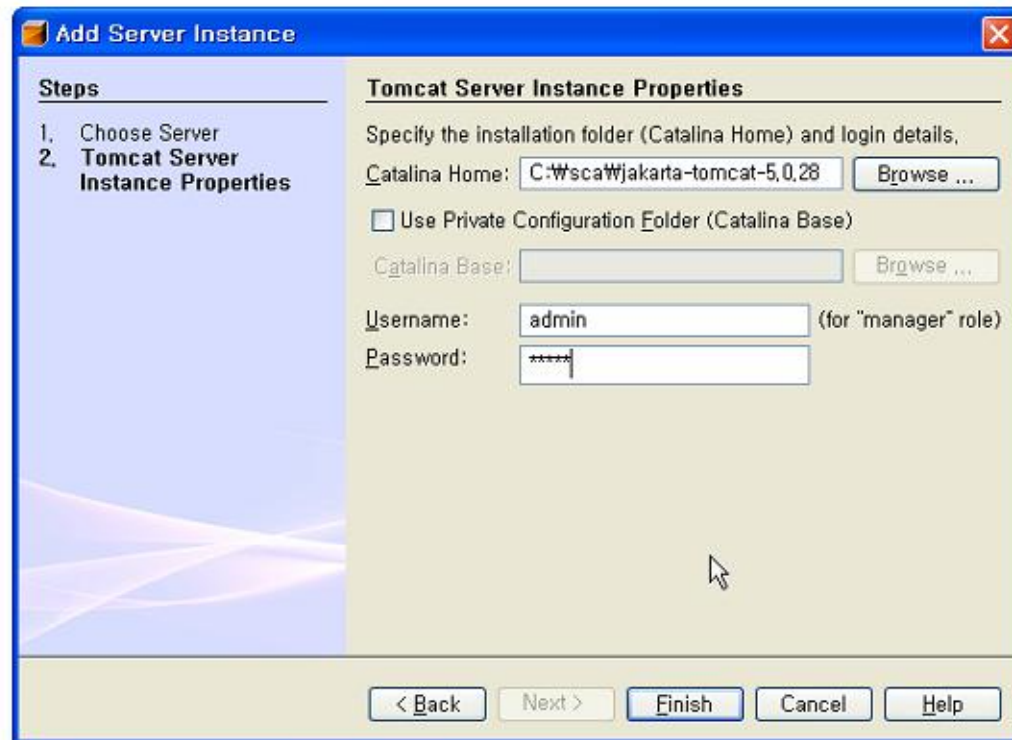
- NetBeans
  - > WAS
    - > Apache, Tomcat 4.x, 5.x, Jboss 4.0.4, WebLogic, Sun Application Server
  - > JDBC 기반 RDB
  - > Apach Derby
- Eclipse
  - > WAS: Tomcat, WebLogic, WebSphere, Jboss, JOnAS, OC4J
  - > JDBC 기반 RDB

# NetBeans5.5 Server Management(1)

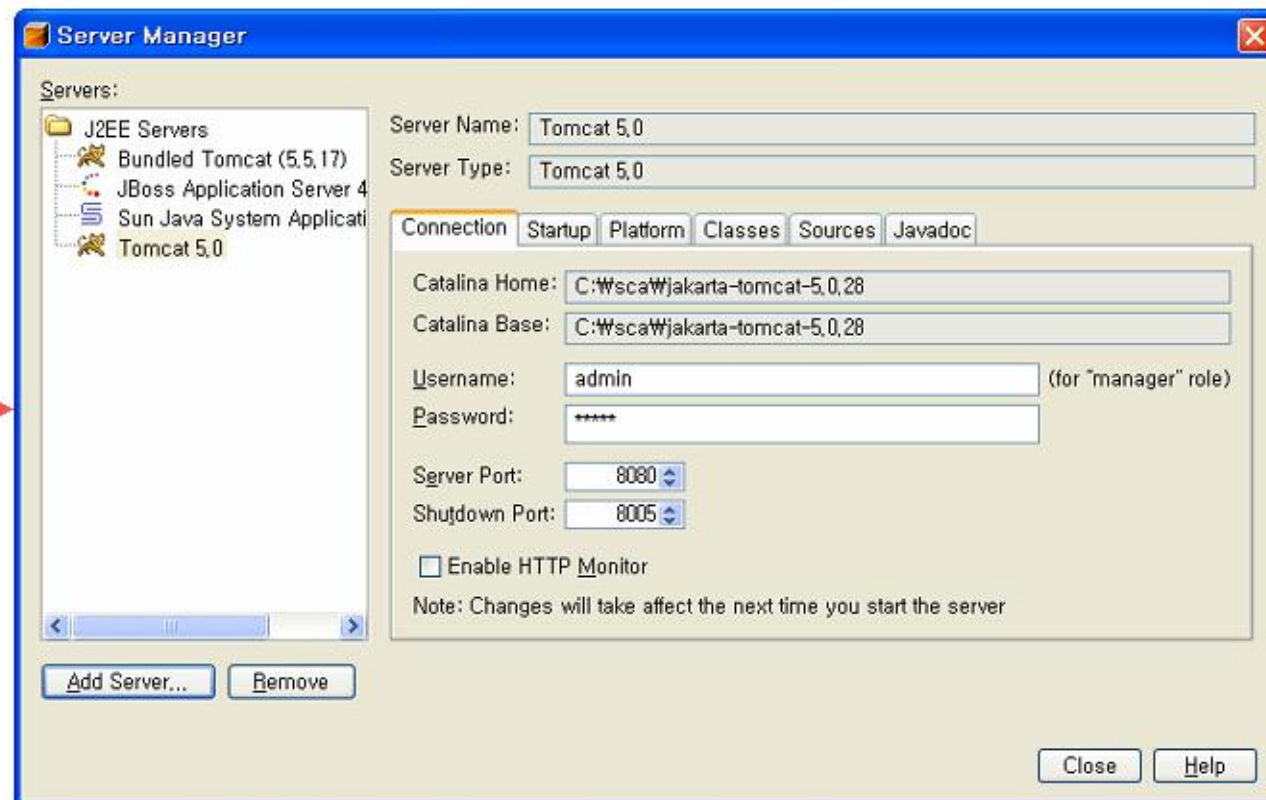
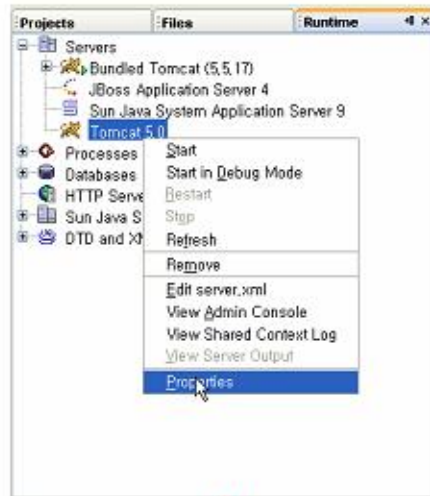




# NetBeans5.5 Server Management(2)



# NetBeans5.5 Server Management(3)



# Eclipse Server Management

The screenshot displays the Eclipse IDE interface. On the left, the 'New Server Runtime' dialog is open, showing a tree view of server runtime environments. The 'Oracle' folder is selected. Below the tree is a 'Description:' field. On the right, the 'Servers' view is open, showing a table of server runtimes.

**New Server Runtime Dialog:**

**New Server Runtime**  
Define a new installed server runtime environment

Runtimes are used at build time to compile projects.  
Select the type of runtime that you want to define:  
[Don't see your server listed? Click here](#)

- Apache
  - Apache Tomcat v3.2
  - Apache Tomcat v4.0
  - Apache Tomcat v4.1
  - Apache Tomcat v5.0
  - Apache Tomcat v5.5
- BEA Systems
- Basic
- IBM
- JBoss
- ObjectWeb
- Oracle**

Description:

< Back

**Servers View:**

| Server                         | Status  | State     |
|--------------------------------|---------|-----------|
| Tomcat v5.0 Server @ localhost | Stopped | Republish |

Board

# NetBeans5.5 Database Management

The screenshot displays the NetBeans 5.5 Database Management interface. The left sidebar shows a tree view of databases and tables. The 'board\_content' table is selected, and a context menu is open over it, with the 'Delete' option highlighted. The main window shows a SQL query editor with the query `select * from `board_content`` and a table view of the data.

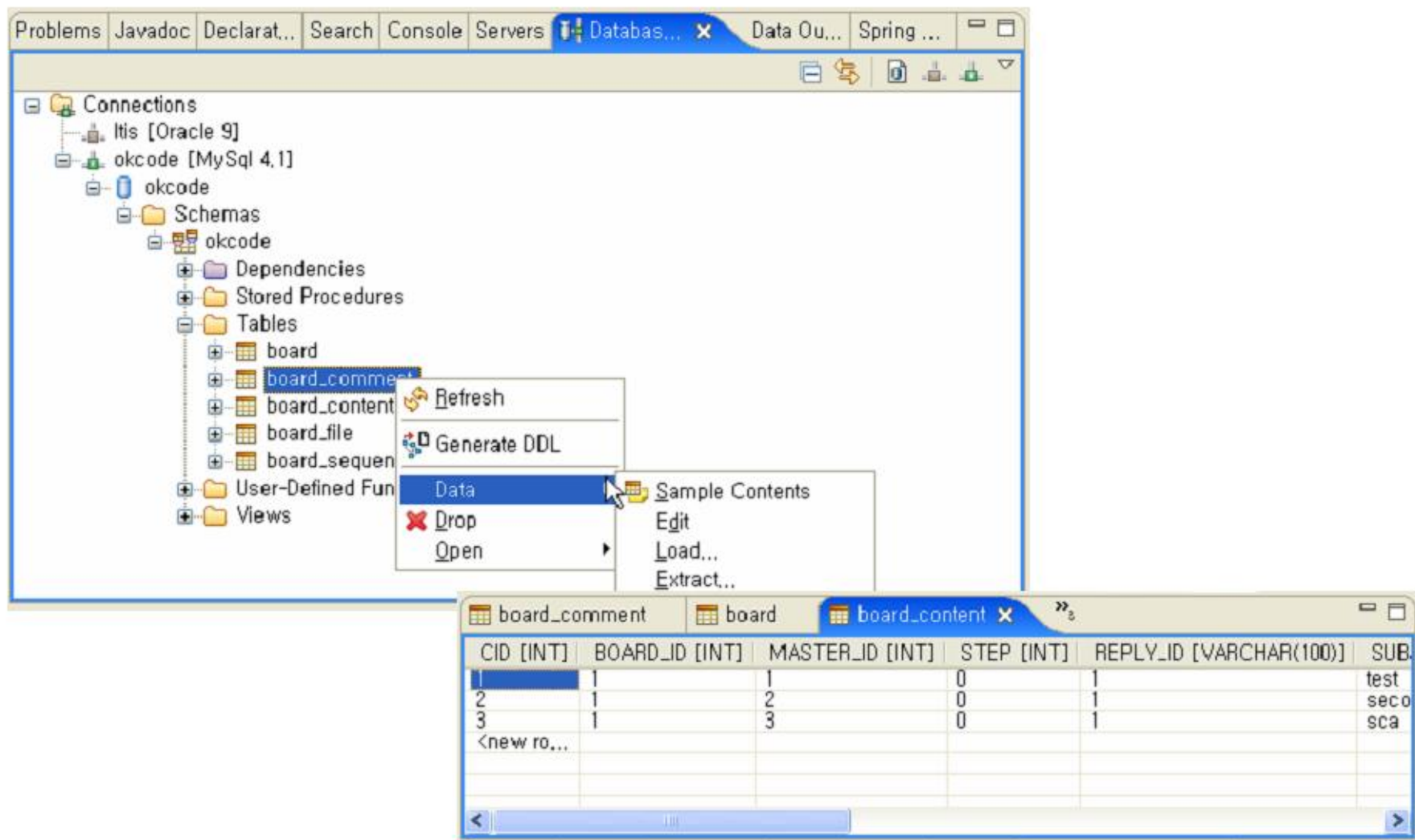
Connection: jdbc:mysql://local...

```
select * from `board_content`
```

| CID | BOARD_ID | MASTE... | STEP | REPLY_ID | SUBJECT | CONTE... | COUNT | CRDA      |
|-----|----------|----------|------|----------|---------|----------|-------|-----------|
| 1   | 1        | 1        | 1    | 01       | test    | ??       |       | 2,2006, 1 |
| 2   | 1        | 2        | 2    | 01       | second  |          |       | 1,2006, 1 |



# Eclipse Database Management



The screenshot displays the Eclipse IDE interface for database management. The 'Database Explorer' on the left shows a tree view of a MySQL database named 'okcode'. The 'board\_content' table is selected, and a context menu is open over it. The 'Data' option is highlighted, which has opened a data editor window in the foreground. The data editor shows a table with the following columns and data:

| CID [INT]  | BOARD_ID [INT] | MASTER_ID [INT] | STEP [INT] | REPLY_ID [VARCHAR(100)] | SUB. |
|------------|----------------|-----------------|------------|-------------------------|------|
| 1          | 1              | 1               | 0          | 1                       | test |
| 2          | 1              | 2               | 0          | 1                       | seco |
| 3          | 1              | 3               | 0          | 1                       | sca  |
| <new ro... |                |                 |            |                         |      |



# NetBeans 5.5 – Debug

The screenshot displays the NetBeans IDE interface during a debugging session. The main window shows the source code for `Controller.java`. The code includes a `while` loop that iterates over an enumeration of parameter names. The line `while (enumer.hasMoreElements()) {` is highlighted in red, indicating the current execution point. Below the loop, a `PageDTO` object is created and its properties are set. The `ModelAndView` object is also populated with the current state.

The **Local Variables** window is open, showing the state of the `list` variable. The `list` variable is of type `ArrayList` and contains two elements. The second element, at index 1, is of type `Board...` and has a value of `#2609`. A context menu is open over this element, with the **List Options** menu item selected, which has opened a sub-menu with options like **Sort** and **Change Visible Columns...**.

| Name           | Value | Type      |
|----------------|-------|-----------|
| index          | 0     | int       |
| list           | #2605 | ArrayList |
| [0]            | #2609 | Board...  |
| boardContents  |       |           |
| boardName      | "11"  | String    |
| commentAbility | "off" | String    |
| crdate         | #2613 | Date      |
| creator        | null  |           |
| id             | 1     | Integer   |
| pageSize       | 10    | Integer   |
| replyAbility   | "off" | String    |
| type           | null  |           |

# NetBeans vs Eclipse Remote Debug

The image displays two overlapping dialog boxes from the Eclipse IDE. The background dialog is the 'Debug' window, titled 'Create, manage, and run configurations'. It features a tree view on the left with categories like 'Apache Tomcat', 'Eclipse Application', and 'Remote Java Application'. The right pane shows configuration for 'WebLogic Remote Debug', including a project name 'LTIS-SRV', a connection type of 'Standard (Socket Attach)', and host/port details '10.60.177.9' and '22222'. The foreground dialog is the 'Attach' window, which is a sub-dialog for configuring the connection. It includes a 'Debugger' dropdown set to 'JPD A Debugger', a 'Connector' dropdown set to 'SocketAttach (Attaches by socket to other VMs)', and input fields for 'Transport' (dt\_socket), 'Host' (10.60.177.9), 'Port' (22222), and 'Timeout [ms]'. Both dialogs have 'OK' and 'Cancel' buttons at the bottom.

# Eclipse Remote Debugging

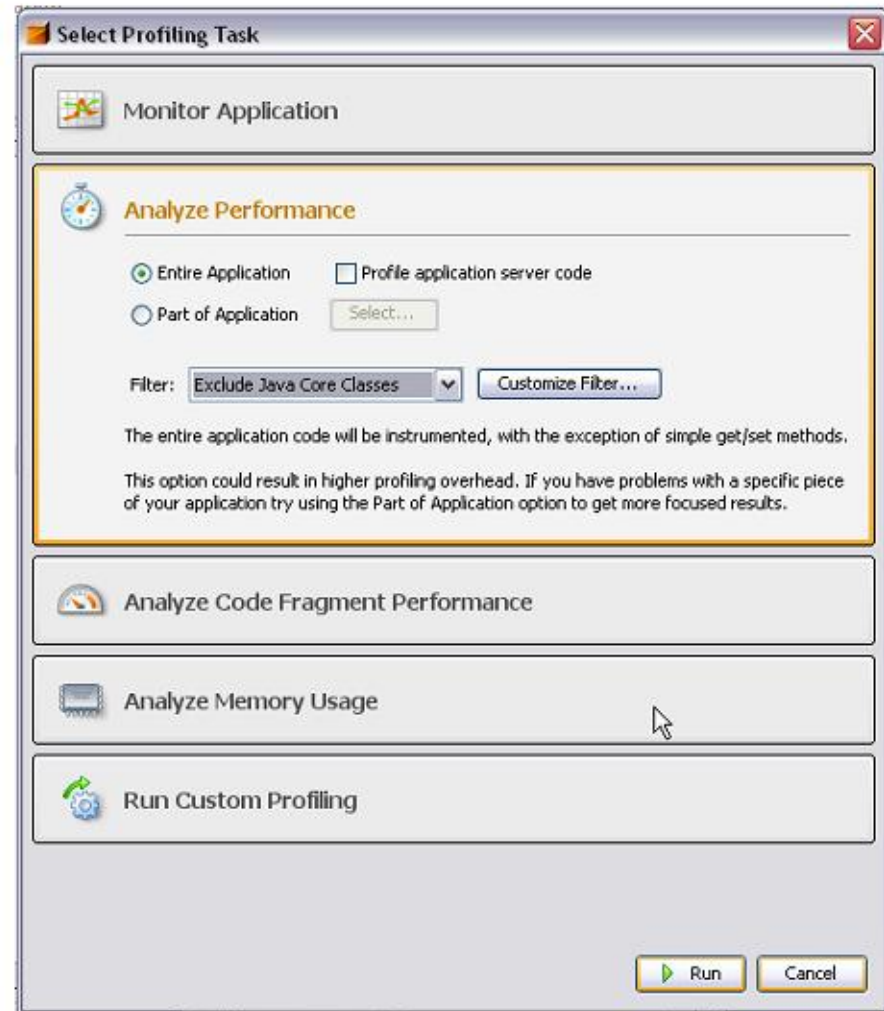
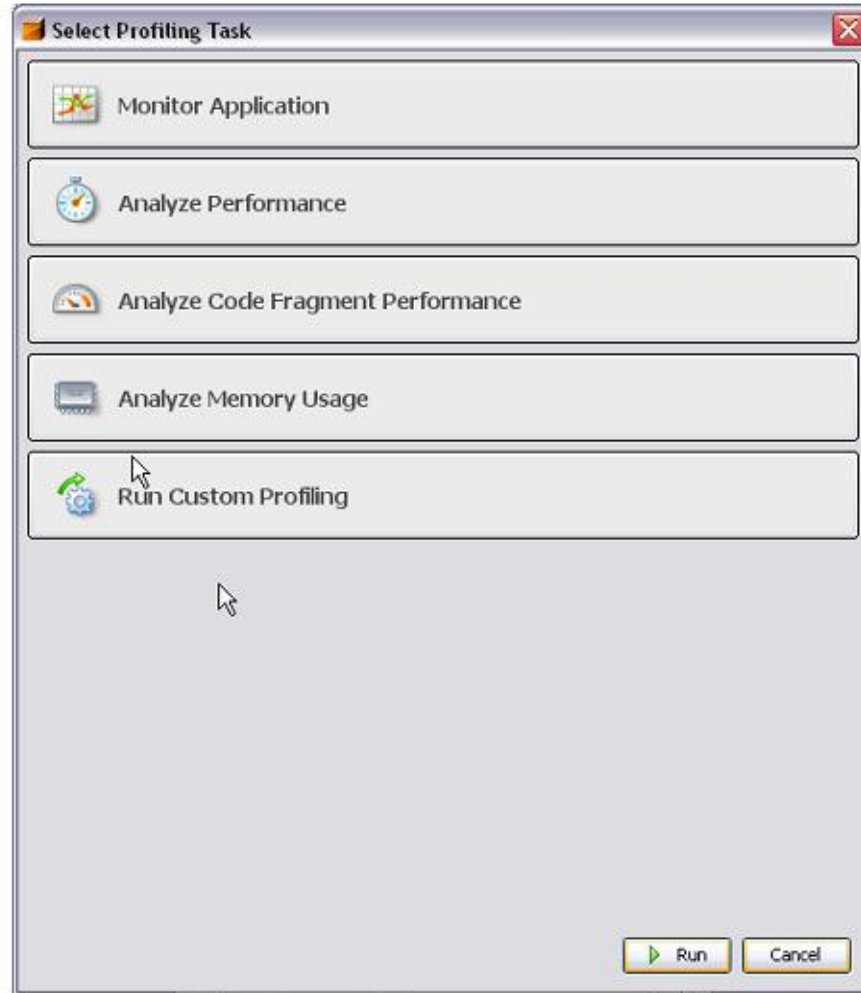
The screenshot displays the Eclipse IDE interface during a remote debugging session. The Package Explorer on the left shows the project structure, including a 'WebLogic Remote Debug' folder and a 'Java HotSpot(TM) Client VM' process. The Thread list in the center shows various threads, with 'NtierAC.getQueriesObjects(String) line: 654' selected. The Variables window on the right shows the state of the current thread, including variables like 'this', 'BLOCK\_SIZE', 'logger', 'ntierDC', 'xmlParam', and 'value'. The code editor at the bottom shows the source code for 'NtierAC.java', with the method 'getQueriesObjects' highlighted.

| Name                 | Value   |
|----------------------|---|
| this                 | NtierAC (id=85)                                     |
| BLOCK_SIZE           | 300   |
| logger               | Log4JLogger (id=141)                                |
| ntierDC              | NtierDC (id=144)                                    |
| externalTemplate     | false   |
| logger               | Log4JLogger (id=151)                                |
| logger               | Log4JLogger (id=151)                                |
| maxResults           | 50000   |
| sqlMapClientTemplate | SqlMapClientTemplate (id=152)                       |
| xmlParam             | "<?xml version='1.0' encoding='euc-kr?'><LTIS><COMM |
| count                | 359   |
| hash                 | 0   |
| offset               | 0   |
| value                | char[359] (id=156)                                  |

```
private SqlQueries getQueriesObjects(String xmlParam) {  
    // Object[] object1 = MappingManager.xmlToObject("COMMON", xmlParam);  
    Object[] object2 = MappingManager.xmlToObject("QUERIES", xmlParam);  
  
    // ComModel common = (ComModel)object1[0];  
    SqlQueries input = (SqlQueries) object2[0];  
  
    return input;  
}
```



# NetBeans Profiling(1)



# NetBeans Profiling(2)

The screenshot shows the NetBeans IDE interface with the Profiling Results window open. The Profiling Results window displays a table of Hot Spots - Method, showing the self time percentage, self time, and number of invocations for various methods. The method `com.test.QueueTest.mergeEvents` is the most significant hot spot, accounting for 90.3% of the self time.

| Hot Spots - Method   | Self time [%] | Self time | Invocations |
|--|---------------|-----------|-------------|
| <code>com.test.QueueTest.mergeEvents (java.util.List)</code>             | 90.3%         | 8160 ms   | 25          |
| <code>com.test.QueueTest.fullFill (java.util.List, int)</code>           | 5.3%          | 482 ms    | 25          |
| <code>com.test.QueueTest\$Event.&lt;init&gt; (com.test.QueueT...</code>  | 2.4%          | 216 ms    | 406700      |
| <code>com.test.QueueTest.removeEvents (java.util.List)</code>            | 1.9%          | 174 ms    | 25          |
| <code>com.test.QueueTest.test ()</code>                                  | 0%            | 2.74 ms   | 5           |
| <code>org.apache.naming.resources.FileDirContext.file (String)</code>    | 0%            | 0.918 ms  | 2           |
| <code>org.apache.naming.resources.FileDirContext\$FileResource...</code> | 0%            | 0.582 ms  | 1           |
| <code>org.apache.tomcat.util.compat.Jdk14Compat.getURI...</code>         | 0%            | 0.453 ms  | 1           |
| <code>org.apache.catalina.loader.WebappClassLoader.getPeri...</code>     | 0%            | 0.416 ms  | 1           |
| <code>org.apache.catalina.loader.WebappClassLoader.loadCla...</code>     | 0%            | 0.410 ms  | 3           |
| <code>org.apache.catalina.loader.WebappClassLoader.findCla...</code>     | 0%            | 0.371 ms  | 1           |
| <code>org.apache.catalina.loader.WebappClassLoader.findRes...</code>     | 0%            | 0.229 ms  | 1           |
| <code>org.apache.catalina.loader.WebappClassLoader.getURL...</code>      | 0%            | 0.225 ms  | 1           |
| <code>com.test.QueueTest.processRequest (javax.servle...</code>          | 0%            | 0.152 ms  | 6           |
| <code>org.apache.naming.resources.FileDirContext\$FileResource...</code> | 0%            | 0.139 ms  | 1           |
| <code>com.test.QueueTest.&lt;init&gt; ()</code>                          | 0%            | 0.134 ms  | 1           |
| <code>org.apache.naming.resources.FileDirContext.lookup ...</code>       | 0%            | 0.124 ms  | 1           |
| <code>org.apache.naming.resources.FileDirContext.normalize...</code>     | 0%            | 0.124 ms  | 4           |
| <code>org.apache.catalina.loader.WebappClassLoader.findRes...</code>     | 0%            | 0.110 ms  | 1           |
| <code>org.apache.naming.resources.FileDirContext\$FileResource...</code> | 0%            | 0.102 ms  | 1           |
| <code>com.test.QueueTest.flip (int[])</code>                             | 0%            | 0.059 ms  | 7           |
| <code>org.apache.naming.resources.ProxyDirContext.lookup...</code>       | 0%            | 0.045 ms  | 1           |
| <code>org.apache.catalina.loader.WebappClassLoader.findLoa...</code>     | 0%            | 0.025 ms  | 3           |



# NetBeans Profiling(3)

The screenshot shows the NetBeans Profiling Call Tree - Method view. The tree is rooted at 'All threads' and 'http-8080-Processor23'. The most significant method is 'com.projava.board.bc.BoardContentImpl.getBoardContent (int)', which accounts for 83.1% of the time. Below it, 'com.projava.board.bc.dao.BoardContentDAOImpl.getBoardContent (int)' accounts for 71.9%. Other methods include 'com.projava.board.bc.dao.BoardCommentDAOImpl.getListCommentsByCid (int)', 'com.projava.board.bc.dao.BoardDAOImpl.getBoard (int)', and 'com.projava.board.bc.dao.BoardFileDAOImpl.getListFileByBoardno (int)'. The table below summarizes the data shown in the screenshot.

| Method   | Time [%] | Time           | Invocations |
|--|----------|----------------|-------------|
| All threads  |          | 4186 ms (100%) | 1           |
| http-8080-Processor23  |          | 3094 ms (100%) | 1           |
| com.projava.board.bc.BoardContentImpl.getBoardContent (int)  | 83,1%    | 2572 ms        | 1           |
| com.projava.board.bc.dao.BoardContentDAOImpl.getBoardContent (int)                                   | 71,9%    | 2224 ms        | 1           |
| com.projava.board.bc.dao.BoardCommentDAOImpl.getListCommentsByCid (int)                              | 5,3%     | 163 ms         | 1           |
| com.projava.board.bc.dao.BoardDAOImpl.getBoard (int)   | 4,6%     | 143 ms         | 1           |
| com.projava.board.bc.dao.BoardFileDAOImpl.getListFileByBoardno (int)                                 | 1,3%     | 40,7 ms        | 1           |
| Self time  | 0%       | 0,284 ms       | 1           |
| java.util.HashSet.add (Object)   | 0%       | 0,054 ms       | 3           |
| java.lang.System.getSecurityManager ()   | 0%       | 0,001 ms       | 3           |
| com.projava.board.bc.BoardContentImpl.getBoardContentList (int, String, String, int)                 | 9,7%     | 298 ms         | 2           |
| com.projava.board.bc.dao.BoardContentDAOImpl.getBoardContentPaginatedList (int, String, String, int) | 5,7%     | 175 ms         | 2           |
| com.projava.board.bc.dao.BoardDAOImpl.getBoard (int)   | 3,9%     | 121 ms         | 2           |
| Self time  | 0%       | 0,033 ms       | 2           |
| java.util.HashMap.put (Object, Object)   | 0%       | 0,027 ms       | 6           |
| java.util.HashMap.<init> ()  | 0%       | 0,003 ms       | 2           |
| java.lang.Integer.<init> (int)   | 0%       | 0,002 ms       | 2           |
| com.projava.board.bc.BoardContentImpl.hasFile (int)  | 4,4%     | 134 ms         | 5           |
| com.projava.board.bc.dao.BoardFileDAOImpl.getListFileByBoardno (int)                                 | 4,4%     | 134 ms         | 5           |
| org.springframework.orm.ibatis.SqlMapClientTemplate.queryForList (String, Object)                    | 4,3%     | 133 ms         | 5           |
| org.apache.log4j.Category.debug (Object)   | 0,1%     | 1,61 ms        | 5           |
| Self time  | 0%       | 0,028 ms       | 5           |
| java.lang.StringBuffer.append (int)  | 0%       | 0,017 ms       | 5           |
| java.lang.StringBuffer.append (String)   | 0%       | 0,016 ms       | 10          |
| java.lang.Integer.<init> (int)   | 0%       | 0,013 ms       | 5           |

# 정적코드테스트 - Eclipse

- Eclipse 정적코드테스트 관련 플러그인
  - > PMD
    - > <http://md.sourceforge.net>
    - > <http://pmd.sf.net/eclipse>
  - > FindBug
    - > <http://findbugs.sourceforge.net>
    - > <http://findbugs.cs.umd.edu/eclipse>

# 정적코드테스트 – Eclipse - PMD

The image shows the Eclipse IDE interface with the PMD plugin configuration and a violations report. The 'Violations Outline' window lists various error messages, and the 'PMD Plugin' dialog shows the configuration for the 'UselessOverridingMethod' rule. The 'PMD report' window displays a table of problems found in the code.

**Violations Outline**

- System.out.print is used
- System.out.print is used
- Each class should declare at least one constructor
- This class name ends with 'Test' but contains no test cases
- Avoid variables with short names like no
- Perhaps 'age' could be replaced by a local variable.
- Found non-transient, non-static member. Please mark as transient or provide accessors.
- Parameter 'name' is not assigned and could be declared final
- Parameter 'no' is not assigned and could be declared final
- Avoid variables with short names like no
- Ensure you override both equals() and hashCode()
- Overriding method merely calls super
- Parameter 'args' is not assigned and could be declared final
- Local variable could be declared final
- Do not use if statements that are always true or always false

**PMD Plugin Configuration**

Rule name : UselessOverridingMethod  
Rule implementation class : net.sourceforge.pmd.rules.UselessOverridingMethod  
Message : Overriding method merely calls super  
Description : The overriding method merely calls the same method defined in a superclass

Example :

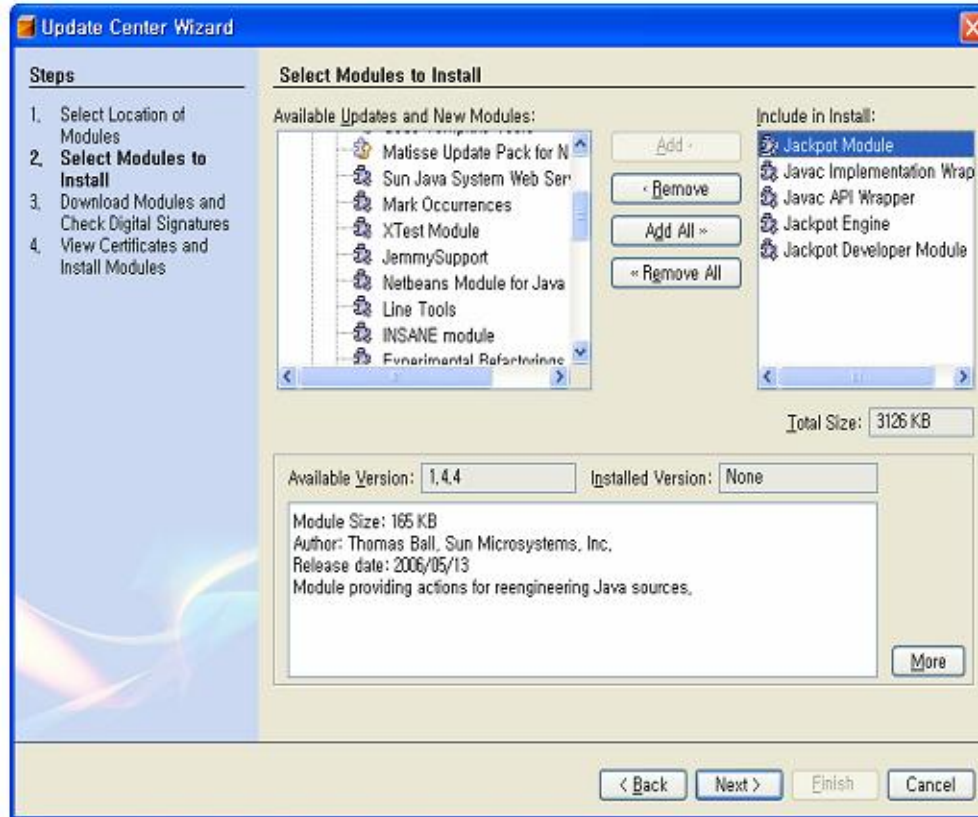
```
public String foo() {  
    return super.foo();  
}
```

**PMD report**

| #  | File                       | Line | Problem  |
|----|----------------------------|------|--|
| 1  | source/sample/PMDTest.java | 3    | Each class should declare at least one constructor                                     |
| 2  | source/sample/PMDTest.java | 3    | This class name ends with 'Test' but contains no test cases                            |
| 3  | source/sample/PMDTest.java | 4    | Avoid variables with short names like no   |
| 4  | source/sample/PMDTest.java | 6    | Found non-transient, non-static member. Please mark as transient or provide accessors. |
| 5  | source/sample/PMDTest.java | 6    | Perhaps 'age' could be replaced by a local variable.                                   |
| 6  | source/sample/PMDTest.java | 9    | Parameter 'name' is not assigned and could be declared final                           |
| 7  | source/sample/PMDTest.java | 11   | Avoid variables with short names like no   |
| 8  | source/sample/PMDTest.java | 11   | Parameter 'no' is not assigned and could be declared final                             |
| 9  | source/sample/PMDTest.java | 15   | Ensure you override both equals() and hashCode()                                       |
| 10 | source/sample/PMDTest.java | 15   | Overriding method merely calls super   |
| 11 | source/sample/PMDTest.java | 17   | Parameter 'args' is not assigned and could be declared final                           |
| 12 | source/sample/PMDTest.java | 18   | Local variable could be declared final   |
| 13 | source/sample/PMDTest.java | 20   | System.out.print is used   |
| 14 | source/sample/PMDTest.java | 21   | Do not use if statements that are always true or always false                          |
| 15 | source/sample/PMDTest.java | 22   | System.out.print is used   |

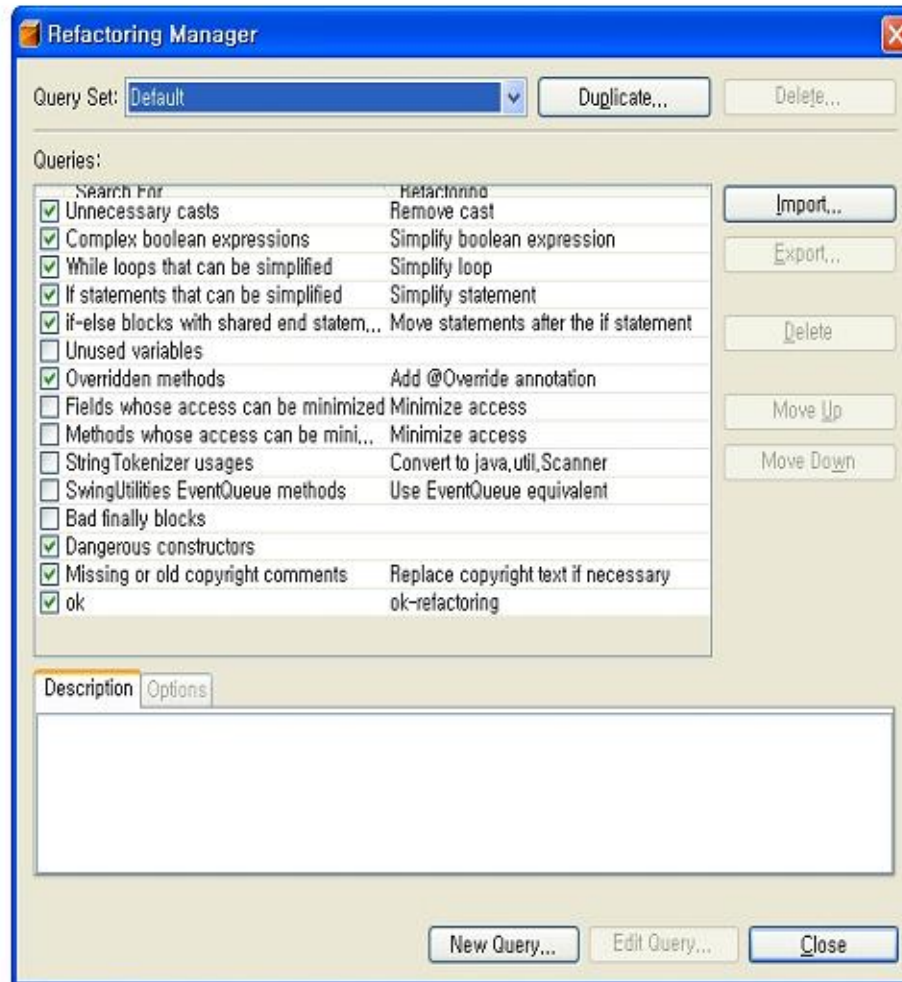
# 정적코드테스트 – NetBeans - Jackpot

- JackPot 모듈 : 자바코드 리엔지니어링
  - > 정적 코드 테스트 + Refactoring





# 정적코드테스트 – NetBeans – Jackpot(2)







**Q&A**