

# 9.5. EJB

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## EJB overview

EJB J2EE Apache Geornimo

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- (MDB)
- RMI-IIOP JAXRPC
- Web ServiceMDB
- Web Service
- EJB JMXWeb
- CORBA EJB

## application

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1. swing
2. Web  
Geronimo

Account, Customer, ExchangeRate ExchangeRate US

- org.apache.geronimo.samples.bank.ejb
  - Account- ,DB account
  - BankManagerFacadeBean -
  - Customer -, DB Customer
  - ExchangeRate - , US
- org.apache.geronimo.samples.bank.web
  - CustomerServiceServlet - Web
  - CommonServiceServlet - Web

EAR EAR

solid |-Bank.ear |-BankEJB.jar |-META-INF |- persistence.xml |- openejb-jar.xml |-BankWeb.war |-jsp |- customer\_info.jsp |- customer\_main.jsp |- error.jsp |- exchange\_rates.jsp |- index.jsp |-WEB-INF |- web.xml |- geronimo-web.xml |- classes |-META-INF |- application.xml |- geronimo-application.xml

EJB

**openejb-jar.xml** Geronimo EJB

```
xmlsolidopenejb-jar.xml <?xml version="1.0" encoding="UTF-8"?> <openejb-jar xmlns="http://www.openejb.org/xml/ns/openejb-jar-2.1"> <dep:environment xmlns:dep="http://geronimo.apache.org/xml/ns/deployment-1.2"> <dep:moduleId> <dep:groupId>${pom.groupId}</dep:groupId> <dep:artifactId>${pom.artifactId}</dep:artifactId> <dep:version>${version}</dep:version> <dep:type>jar</dep:type> </dep:moduleId> <dep:dependencies> <dep:dependency> <dep:groupId>org.apache.geronimo.configs</dep:groupId> <dep:artifactId>openjpa</dep:artifactId> <dep:type>car</dep:type> </dep:dependency> </dep:dependencies> <dep:hidden-classes/> <dep:non-overrideable-classes/> </dep:environment> </openejb-jar>
```

**persistence.xml**BankPoolBankDBEntityMangerFactory <persistent-unit>EJB **SynchronizeMappings** jta-data-source non-jta-data-source

```

xmlesolidpersistence.xml <?xml version="1.0" encoding="UTF-8"?> <persistence xmlns="http://java.sun.com/xml/ns/persistence" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" version="1.0" xsi:schemaLocation="http://java.sun.com/xml/ns/persistence http://java.sun.com/xml/ns/persistence/persistence_1_0.xsd"> <persistence-unit name="BankPU"> <description>Entity Beans for Bank</description> <provider>org.apache.openjpa.persistence.PersistenceProviderImpl</provider> <class>org.apache.geronimo.samples.bank.ejb.Account</class> <class>org.apache.geronimo.samples.bank.ejb.Customer</class> <class>org.apache.geronimo.samples.bank.ejb.ExchangeRate</class> <properties> <property name="openjpa.jdbc.SynchronizeMappings" value="false" /> </properties> <jta-data-source>BankPool</jta-data-source> <non-jta-data-source>BankPool</non-jta-data-source> </persistence-unit> </persistence>

```

#### web.xml web-ap

```

xmlesolidweb.xml <?xml version="1.0" encoding="UTF-8"?> <web-app xmlns="http://java.sun.com/xml/ns/j2ee" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:schemaLocation="http://java.sun.com/xml/ns/j2ee http://java.sun.com/xml/ns/j2ee/web-app_2_5.xsd" version="2.5"> <welcome-file-list> <welcome-file>/index.html</welcome-file> </welcome-file-list> <servlet> <display-name>CustomerServiceServlet</display-name> <servlet-name>CustomerServiceServlet</servlet-name> <servlet-class>org.apache.geronimo.samples.bank.web.CustomerServiceServlet</servlet-class> </servlet> <servlet> <display-name>CommonServiceServlet</display-name> <servlet-name>CommonServiceServlet</servlet-name> <servlet-class>org.apache.geronimo.samples.bank.web.CommonServiceServlet</servlet-class> </servlet> <servlet-mapping> <servlet-name>CustomerServiceServlet</servlet-name> <url-pattern>/customer_info</url-pattern> </servlet-mapping> <servlet-mapping> <servlet-name>CommonServiceServlet</servlet-name> <url-pattern>/exchange_rates</url-pattern> </servlet-mapping> </web-app>

```

**geronimo-web.xml** is Geronimo URL <http://localhost:8080/Bank>

```

xmlesolidgeronimo-web.xml <web-app xmlns="http://geronimo.apache.org/xml/ns/j2ee/web-1.1" xmlns:naming="http://geronimo.apache.org/xml/ns/naming-1.1"> <dep:environment xmlns:dep="http://geronimo.apache.org/xml/ns/deployment-1.1"> <dep:moduleId> <dep:groupId>${pom.groupId}</dep:groupId> <dep:artifactId>${pom.artifactId}</dep:artifactId> <dep:version>${version}</dep:version> <dep:type>war</dep:type> </dep:moduleId> <dep:dependencies /> <dep:hidden-classes/> <dep:non-overridable-classes/> </dep:environment> <context-root>/Bank</context-root> </web-app>

```

**BankPool.xml** GeronimoDerby org.apache.geronimo.configs/system-database//car Derbysystem-database EAR

```

xmlesolidBankPool.xml <connector xmlns="http://geronimo.apache.org/xml/ns/j2ee/connector-1.1"> <dep:environment xmlns:dep="http://geronimo.apache.org/xml/ns/deployment-1.1"> <dep:moduleId> <dep:groupId>console.dbpool</dep:groupId> <dep:artifactId>BankPool</dep:artifactId> <dep:version>1.0</dep:version> <dep:type>rar</dep:type> </dep:moduleId> <dep:dependencies> <dep:dependency> <dep:groupId>org.apache.geronimo.configs</dep:groupId> <dep:artifactId>system-database</dep:artifactId> <dep:type>car</dep:type> </dep:dependency> </dep:dependencies> </dep:environment> <resourceadapter> <outbound-resourceadapter> <connection-definition> <connectionfactory-interface>javax.sql.DataSource</connectionfactory-interface> <connectiondefinition-instance> <name>BankPool</name> <config-property-setting name="Driver">org.apache.derby.jdbc.EmbeddedDriver</config-property-setting> <config-property-setting name="UserName">app</config-property-setting> <config-property-setting name="ConnectionURL">jdbc:derby:BankDB</config-property-setting> <connectionmanager> <local-transaction/> <single-pool> <max-size>10</max-size> <min-size>0</min-size> <match-one/> </single-pool> </connectionmanager> </connectiondefinition-instance> </connection-definition> </outbound-resourceadapter> </resourceadapter> </connector>

```

**geronimo-application.xml** BankPool.xml

```

xmlesolidgeronimo-application.xml <?xml version="1.0" encoding="UTF-8"?> <application xmlns="http://geronimo.apache.org/xml/ns/j2ee/application-1.2"> <environment xmlns="http://geronimo.apache.org/xml/ns/deployment-1.2"> <moduleId> <groupId>${pom.groupId}</groupId> <artifactId>${pom.artifactId}</artifactId> <version>${version}</version> <type>ear</type> </moduleId> </environment> <module> <connector>tranql-connector-ra-1.3.rar</connector> <alt-dd>BankPool.xml</alt-dd> </module> </application>

```

GeronimoDerbyBankDBCUSTOMER, ACCOUNT, EXCHANGE\_RATE

Table Name	Fields
CUSTOMER	customerId (PRIMARY KEY) name
ACCOUNT	accountNumber (PRIMARY KEY) accountType balance customerId
EXCHANGERATE	rateId (PRIMARY KEY) currency rate

CUSTOMERIDACCOUNT AccountcustomerIdCustomer EXCHANGERATE rateId EXCHANGERATE

## Apache Derby

Apache DBApache DerbyJavaJavaDerby Network Server

<http://db.apache.org/derby/index.html>

## Apache Maven 2

MavenJavaMavenAntmakeMaven1Maven2Maven2URL  
<http://maven.apache.org>

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## configure

[Bank](#)

**bank**

SVN

svn checkout <http://svn.apache.org/repos/asf/geronimo/samples/trunk/samples/bank>

### Bank DB Apache Geronimo

```
solidBankDB.sql CREATE TABLE Customer( customerId VARCHAR(255) PRIMARY KEY, name VARCHAR(255) ); CREATE TABLE Account(
accountNumber VARCHAR(255) PRIMARY KEY, accountType VARCHAR(255), balance DOUBLE, customerId VARCHAR(255), FOREIGN KEY
(customerId) REFERENCES customer ); CREATE TABLE ExchangeRate( rateId VARCHAR(255) PRIMARY KEY, currency VARCHAR(255), rate
DOUBLE ); INSERT INTO Customer(customerId, name) VALUES('12345','John Doe'); INSERT INTO Account(accountNumber, accountType, balance,
customerId) VALUES('1234567890','Savings',1005.35,'12345'); INSERT INTO Account(accountNumber, accountType, balance, customerId) VALUES
('2345678901','Current',999.95,'12345'); INSERT INTO ExchangeRate(rateId,currency,rate) VALUES('001','EURO',0.812); INSERT INTO ExchangeRate
(rateId,currency,rate) VALUES('002','YEN',111.15); INSERT INTO ExchangeRate(rateId,currency,rate) VALUES('003','SLR',99.18);
```

1. **Console Navigation DB Manager**
2. database name **BankDB Create**
3. **Use DB BankDB**
4. **bank BankDB.sql**
5. **BankDB.sql SQL Commands Run SQL**

**bank mvn install site bank bank-ear-2.0-SNAPSHOT.ear bankGeronimo**

1. **Console Navigation Deploy New**
2. **Archive bank bank-ear-2.0-SNAPSHOT.ear**
3. **Install .**

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## Banking Web

Web <http://localhost:8080/Bank> bankDBid('Bank')

## Customer Account Information

**Customer Id:** 12345  
**Customer Name:** John Doe

Account Number	Account Type	Balance
1234567890	Savings	1005.35
2345678901	Current	999.95

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Done

## summary

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