



Code Transformation Summary by Amazon Q

🔧 Q has made the following changes during the transformation process.

📄 Lines of code in your application: 1575

🕒 Transformation duration: 31 min(s)

📦 Dependencies upgraded: 29 out of 33

➡️ There are no deprecated APIs detected in this app

📁 Files changed: 16

🔧 Build status in Java 21: **SUCCEEDED**

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Build log summary

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Amazon Q successfully built the upgraded code in Java 21. Here is a relevant snippet from the build log. To view the full build log, open `buildCommandOutput.log`

The build log indicates a successful Maven build process for a Java 21 web application. The compilation and resource processing steps completed without errors. Annotation processing was enabled during compilation, with a warning about potential future changes in this behavior.

Q Generated Summary and Recommendations

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Summary

Q has made the following changes during the transformation process. Please note that the summary is generated by GenAI.

1. **Dependency Updates:** Significant upgrades have been made to core dependencies, including:
 - JUnit upgrade from 3.8.1 to JUnit Jupiter 5.12.2
 - Spring Framework upgrade from 4.1.6.RELEASE to 6.2.3
 - MySQL Connector upgrade from 5.1.21 to MySQL Connector/J 9.2.0
 - Hibernate ORM upgrade from 4.1.6.Final to 6.6.9.Final
 - Spring Security upgrade from 3.2.5.RELEASE to 6.4.3

- SLF4J upgrade from 1.6.1 to 2.0.17 These upgrades bring the project up to date with the latest versions of critical dependencies, potentially improving performance, security, and feature set.
- 2. **Jakarta EE Migration:** The project has transitioned from `javax.persistence` to `jakarta.persistence` for all JPA annotations and related APIs. This includes updates in entity classes (`Shipping`, `Category`, `Feedback`, `Users`, `Products`, `Shoppingcart`, `Payment`, `Orders`, `OrderDetail`, and `Suppliers`) and the migration from `javax.ws.rs-api` 2.0 to `jakarta.ws.rs-api` 4.0.0. This change aligns with the move from Java EE to Jakarta EE, ensuring compatibility with newer Java EE specifications.
- 3. **ORM Framework Update:** The project has moved away from Spring's `HibernateDaoSupport` and `HibernateTemplate` to using Hibernate's `SessionFactory` directly. This change in the `EntityManagerDao` and `UserDaoImpl` classes indicates a shift towards more direct ORM operations, potentially improving performance and providing more control over database interactions.
- 4. **Query API Update:** The project has updated its query mechanisms, replacing Hibernate's `Criterion` with JPA's `Predicate`. This change in the `GenericDao` interface and its implementation suggests a move towards more standard JPA practices, which can improve code portability across different JPA providers.
- 5. **Test Framework Update:** The project has migrated from JUnit 3 (`junit.framework.TestCase`) to JUnit 5. This is evident from the changes in the `TestUser` class, where `@Test` annotations are now used instead of extending `TestCase`. This update allows for more modern testing practices and better integration with current build tools and IDEs.
- 6. **Logging Framework Change:** The project has moved from using Log4j 1.2.16 to Log4j 2.24.3. This is evident from the replacement of the `log4j` dependency with `log4j-slf4j-impl`. This update addresses security vulnerabilities in older Log4j versions and provides improved performance and features.
- 7. **Build Configuration Update:** The `pom.xml` now includes explicit Java compiler settings for Java 21:

```
<properties>
  <maven.compiler.source>21</maven.compiler.source>
  <maven.compiler.target>21</maven.compiler.target>
  <maven.compiler.release>21</maven.compiler.release>
</properties>
```

This configuration ensures that the project is compiled with Java 21, taking advantage of the latest language features and optimizations.

- 8. **Annotation-based Configuration:** The addition of `@Repository` and `@Transactional` annotations in the `EntityManagerDao` and `UserDaoImpl` classes suggests a move towards more annotation-based configuration, which is in line with modern Spring practices and can lead to cleaner, more maintainable code.
- 9. **Hibernate Annotations Processor:** The addition of `hibernate-jpamodelgen` dependency indicates that the project is now using Hibernate's static metamodel generator. This can improve type safety when working with JPA criteria queries.
- 10. **UserDao Interface Update:** The `UserDao` interface in `UserDao.java` has been modified. The method `retriveById(Users user)` has been replaced with `retriveById(Long userId)`. This change simplifies the method signature and improves type safety by using a specific `Long` type for the user ID instead of passing the entire `Users` object.

Recommendations

Q was able to compile the upgraded app successfully. Here are detailed recommendations to further improve the upgrade. Please note that these recommendations are generated by GenAI, apply them accordingly.

- 1. Please review and accept the code changes using the diff viewer. If you are using a Private Repository, please ensure that updated dependencies are available.

2. If this project uses **Maven CheckStyle, Enforcer, FindBugs or SpotBugs plugins**, Q disabled these plugins when building the project to verify proposed upgrades. Please enable them and verify the code again.
3. To help transform the rest of your code, you can use Amazon Q chat in the IDE. You can ask Amazon Q to review the partially updated files and provide new code to address issues, such as compilation errors. You can also use features like **/dev** and **@workspace** to include more of your project as context and get suggestions for multiple files at a time.

Planned dependencies replaced

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Amazon Q updated the following dependencies that it identified in the transformation plan

| Dependency | Action | Previous version in Java 8 | Current version in Java 21 |
|---|---------|----------------------------|----------------------------|
| com.mysql:mysql-connector-j | Added | - | 9.2.0 |
| commons-collections:commons-collections | Removed | 3.2.1 | - |
| jakarta.persistence:jakarta.persistence-api | Added | - | 3.2.0 |
| jakarta.ws.rs:jakarta.ws.rs-api | Added | - | 4.0.0 |
| javax.ws.rs:javax.ws.rs-api | Removed | 2.0 | - |
| junit:junit | Removed | 3.8.1 | - |
| log4j:log4j | Removed | 1.2.16 | - |
| mysql:mysql-connector-java | Removed | 5.1.21 | - |
| org.apache.commons:commons-collections4 | Added | - | 4.4 |
| org.apache.logging.log4j:log4j-slf4j-impl | Added | - | 2.24.3 |
| org.hibernate.orm:hibernate-core | Added | - | 6.6.9.Final |
| org.hibernate:hibernate-core | Removed | 4.1.6.Final | - |
| org.hibernate:hibernate-entitymanager | Removed | 4.1.6.Final | - |
| org.junit.jupiter:junit-jupiter | Added | - | 5.12.2 |
| org.slf4j:slf4j-log4j12 | Removed | 1.6.1 | - |

Additional dependencies added

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Amazon Q updated the following additional dependencies during the upgrade

| Dependency | Action | Previous version in Java 8 | Current version in Java 21 |
|---|---------|----------------------------|----------------------------|
| org.hibernate.orm:hibernate-jcache | Added | - | 6.6.9.Final |
| org.hibernate.orm:hibernate-jpamodelgen | Added | - | 6.6.9.Final |
| org.slf4j:jcl-over-slf4j | Updated | 1.6.1 | 2.0.17 |

| Dependency | Action | Previous version in Java 8 | Current version in Java 21 |
|---|---------|----------------------------|----------------------------|
| org.slf4j:slf4j-api | Updated | 1.6.1 | 2.0.17 |
| org.springframework.security:spring-security-config | Updated | 3.2.5.RELEASE | 6.4.3 |
| org.springframework.security:spring-security-core | Updated | 3.2.5.RELEASE | 6.4.3 |
| org.springframework.security:spring-security-web | Updated | 3.2.5.RELEASE | 6.4.3 |
| org.springframework:spring-aop | Updated | 4.1.6.RELEASE | 6.2.3 |
| org.springframework:spring-context | Updated | 4.1.6.RELEASE | 6.2.3 |
| org.springframework:spring-core | Updated | 4.1.6.RELEASE | 6.2.3 |
| org.springframework:spring-orm | Updated | 4.1.6.RELEASE | 6.2.3 |
| org.springframework:spring-test | Updated | 4.1.6.RELEASE | 6.2.3 |
| org.springframework:spring-tx | Updated | 4.1.6.RELEASE | 6.2.3 |
| org.springframework:spring-webmvc | Updated | 4.1.6.RELEASE | 6.2.3 |

Deprecated code replaced

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Amazon Q replaced the following instances of deprecated code. An instance with 0 files changed indicates Amazon Q wasn't able to replace the deprecated code.

| Deprecated code | Files changed |
|-----------------|---------------|
|-----------------|---------------|

Other changes

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All files changed

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| File | Action |
|--|---------|
| pom.xml | Updated |
| src/main/java/com/learnlogic/ecommerce/merabazar/database/common/dao/GenericDao.java | Updated |
| src/main/java/com/learnlogic/ecommerce/merabazar/database/common/daoImpl/EntityManagerDao.java | Updated |
| src/main/java/com/learnlogic/ecommerce/merabazar/database/dao/UserDao.java | Updated |
| src/main/java/com/learnlogic/ecommerce/merabazar/database/daoImpl/UserDaoImpl.java | Updated |
| src/main/java/com/learnlogic/ecommerce/merabazar/model/Category.java | Updated |
| src/main/java/com/learnlogic/ecommerce/merabazar/model/Feedback.java | Updated |
| src/main/java/com/learnlogic/ecommerce/merabazar/model/OrderDetail.java | Updated |
| src/main/java/com/learnlogic/ecommerce/merabazar/model/Orders.java | Updated |
| src/main/java/com/learnlogic/ecommerce/merabazar/model/Payment.java | Updated |

| File | Action |
|--|---------|
| src/main/java/com/learnlogic/ecommerce/merabazar/model/Products.java | Updated |
| src/main/java/com/learnlogic/ecommerce/merabazar/model/Shipping.java | Updated |
| src/main/java/com/learnlogic/ecommerce/merabazar/model/Shoppingcart.java | Updated |
| src/main/java/com/learnlogic/ecommerce/merabazar/model/Suppliers.java | Updated |
| src/main/java/com/learnlogic/ecommerce/merabazar/model/Users.java | Updated |
| src/test/java/merabazar/ecommerce/portal/TestUser.java | Updated |