Category	Criteria	Score – Y/N	Comments
Code Formatting	Is the code consistently formatted (indentation, spacing)?	5	Consistent with proper identation and spacing
	Are line lengths reasonable and within guidelines?	5	Ensures no readability isssues
	Are there unnecessary blank lines or spaces?	5	NO blank lines, it keeps the code clean
Naming Conventions	Are variable and function names descriptive and meaningful?	5	Variable and function names are mostly descriptive.
	Are names chosen to reflect the actual role of the variable, function, or class?	5	Names generally reflect their roles
	Is naming consistent with typical conventions for that language (e.g., camelCase for variables in Java)?	5	The naming conventions are consistent with java standards
Comments and Documentation	Is the code self-explanatory, or are comments covering up poor code readability?	3	Some methods could use additional documentation to explain logic.
	Do comments explain **why** something is done, not just what is being done?	3	The comments focus on what is done rather than the reasoning behind decisions
	If comments/documentation exist, do they follow industry standards (e.g., Javadoc for Java)?	2	There is no formal documentation comments for methods. Javadoc could be used
Code Structure	Is the code modular and divided into logical functions/methods?	5	The code is modular
	Are there any long methods/functions that should be broken down?	4	ApplyDiscounts could benefit from further decomposition for clarity
	Is there any duplicated code that should be refactored?	5	There is no noticeable duplicated code
Logic and Functionality	Does the code function as intended?	5	The code functions correctly
	Are all the requirements fulfilled?	5	Most requirements are met
	Are there any obvious logic errors?	4	The discount logic could be clearer, for handling multiple discounts
	Are loop cases handled properly?	5	The loops are well handled, iterating correctly the items

Error Handling	Are errors and exceptions properly caught and handled?	3	Error handling is minimal. Validation for price and quantity would help prevent incorrect values from being set
	Is there any potential for unhandled exceptions?	3	Unhandled exceptions may occur if incorrect values are passed. Adding validation would improve reliability
Performance and Efficiency	Are there any obvious performance bottlenecks?	5	There are no noticeable performance bottlenecks
	Is the code optimized for performance where necessary?	5	There are no unnecessary computations or redundant code
Security	Are there any security vulnerabilities in the code?	3	Minimal input validation poses a risk if negative or unrealistic values are entered.
	Is input validation properly implemented?	3	Input validation is lacking, particularly for quantity and price fields, which could prevent invalid entries

Key Suggestions:

- **Error Handling:** Add validation for price and quantity in the Items constructor or setters to prevent unrealistic values (e.g., negative numbers).
- **Discount Logic:** Refactor the applyDiscounts method to split discount logic into individual methods for member and big spender discounts. This approach will clarify which discount is applied and in what order.

```
        // Improved applyDiscounts method with individual discount functions
double applyDiscounts(double subtotal, boolean isMember) {
    if (isMember) {
        subtotal = applyMemberDiscount(subtotal);
    }
    if (subtotal > 100) {
        subtotal = applyBigSpenderDiscount(subtotal);
    }
    return subtotal;
}
```

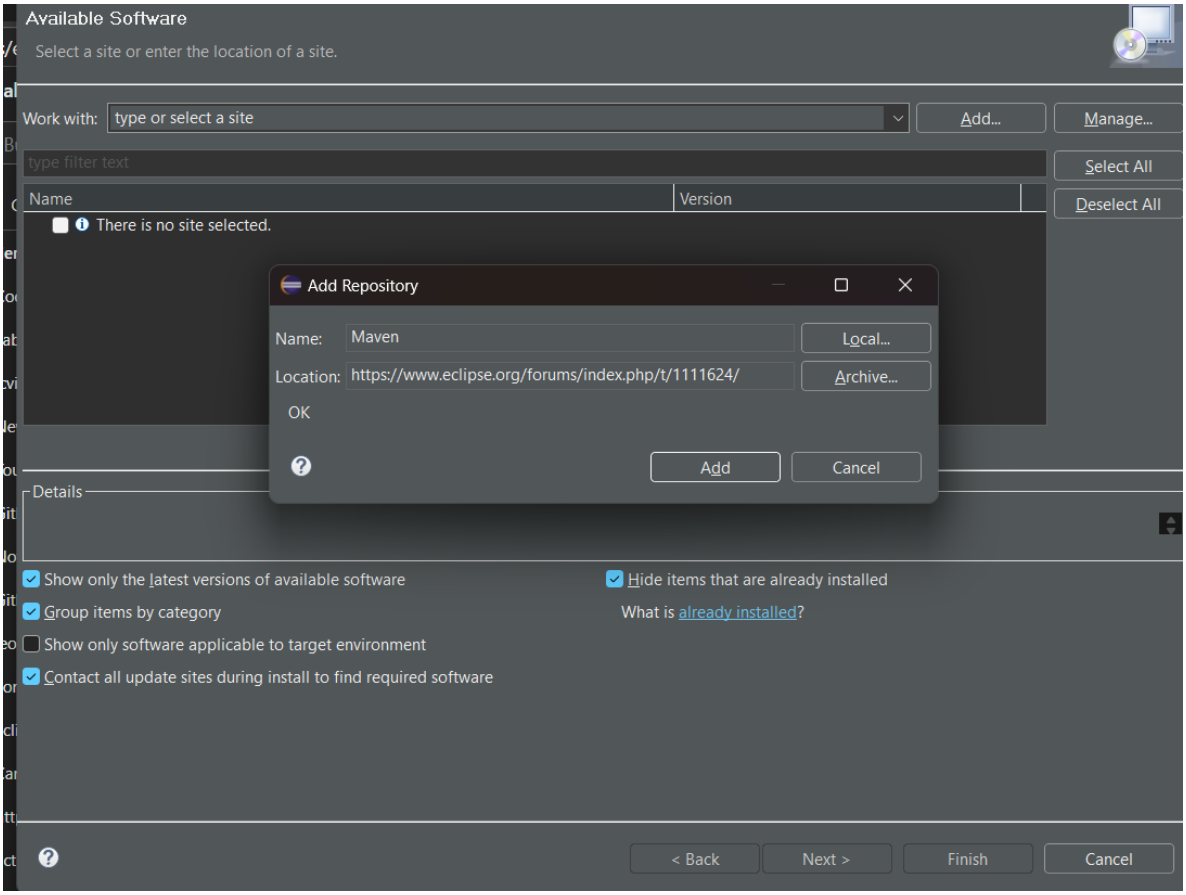
Breaking down applyDiscounts into smaller methods enhances readability by isolating each discount rule. Each method has a single responsibility, making the code more readable and easier to follow.

Implement basic validation for Items class:

```
if (price < 0 || qty < 0) {
    throw new IllegalArgumentException(s: "Price and quantity cannot be negative");
```

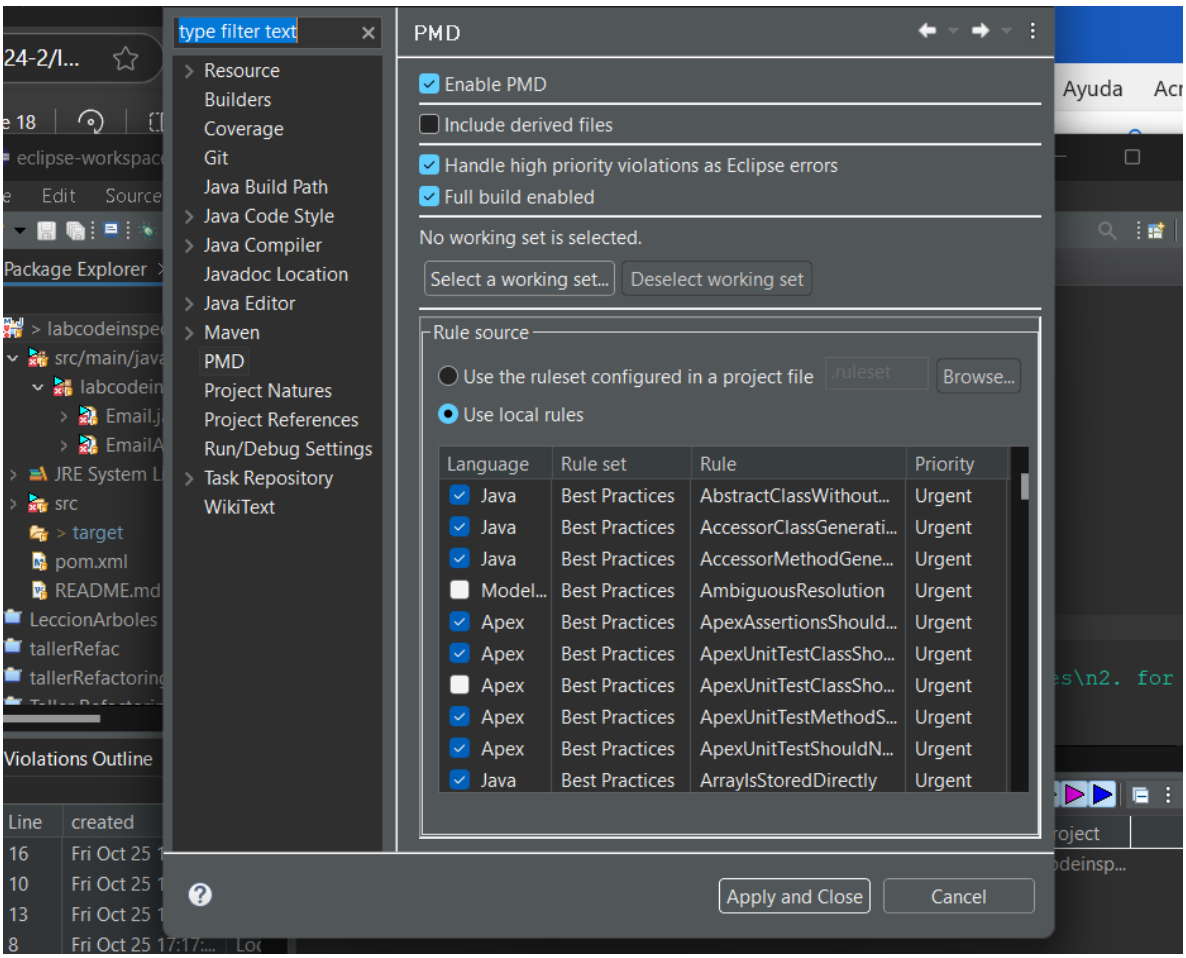
By adding the check if (price < 0 || qty < 0), we ensure that any attempt to create an Items object with invalid negative values for price or qty will throw an IllegalArgumentException, preventing the creation of objects with incorrect state.

Installing Maven

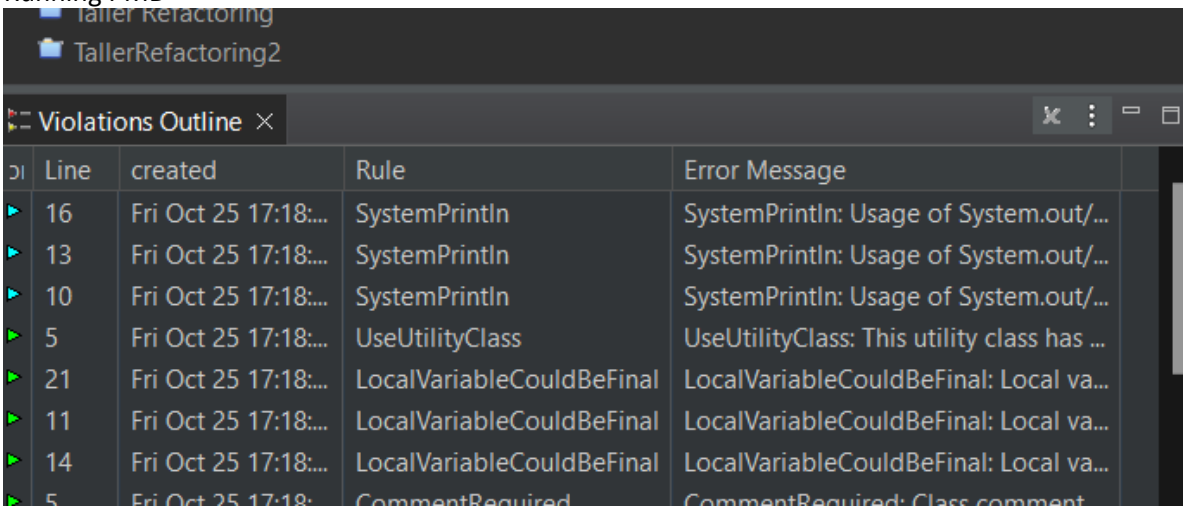


Installing PMD

Enabling PMD



Running PMD



Showing details of violations

Message: Usage of System.out/err
Location: labcodeinspection: src/main/java/labcodeinspection/EmailApp.java:16
Rule: SystemPrintln
Category: Best Practices
Priority: Medium High
Description:

References to System.(out|err).print are usually intended for debugging purposes and can remain in the codebase even in production code. By using a logger one can enable/disable this behaviour at will (and by priority) and avoid clogging the Standard out log.

Examples:

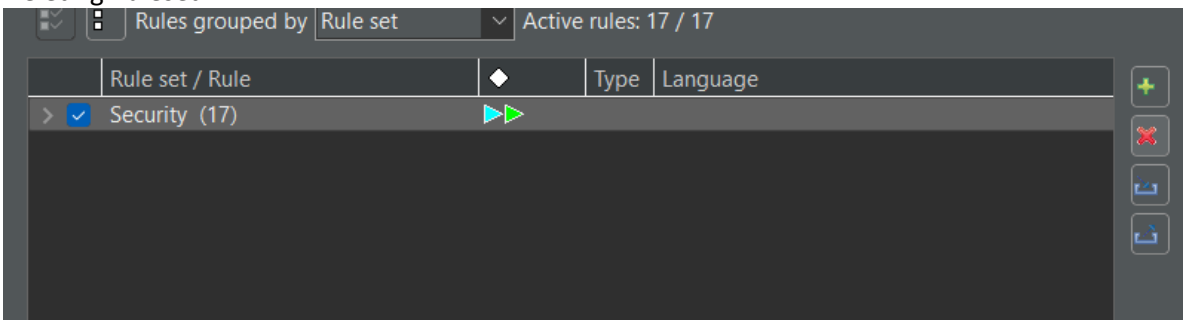
```
class Foo{
    Logger log = Logger.getLogger(Foo.class.getName());
    public void testA () {
        System.out.println("Entering test");
        // Better use this
        log.fine("Entering test");
    }
}
```

External Info URL: https://docs.pmd-code.org/pmd-doc-7.7.0/pmd_rules_java_bestpractices.html#systemprintln

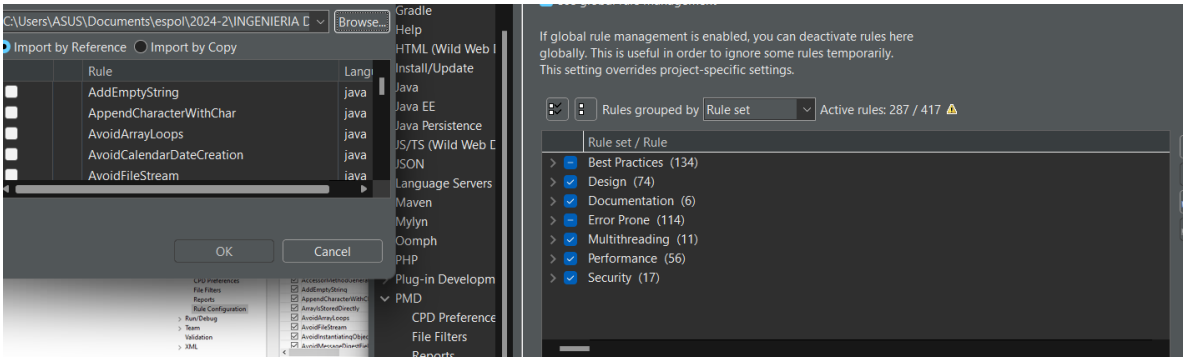
Close

Creation xml

Deleting Ruleset

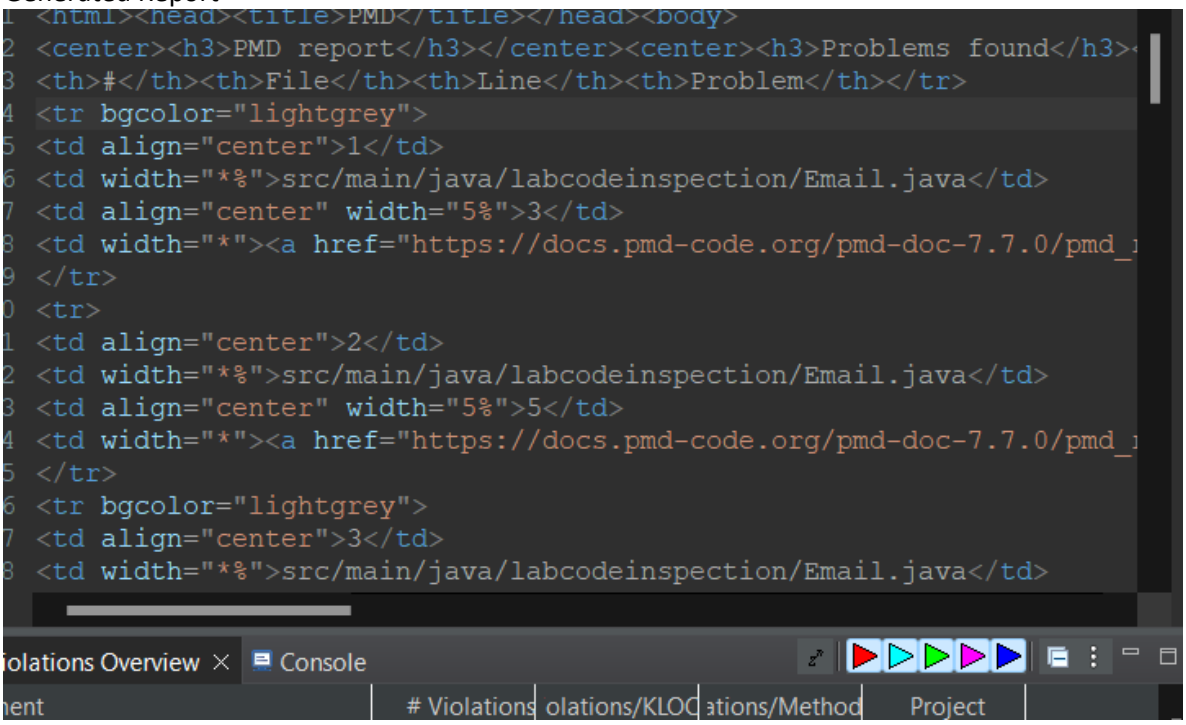


Importing my ruleset



Violations after my ruleset

Generated Report



Working on supressing pmd rules

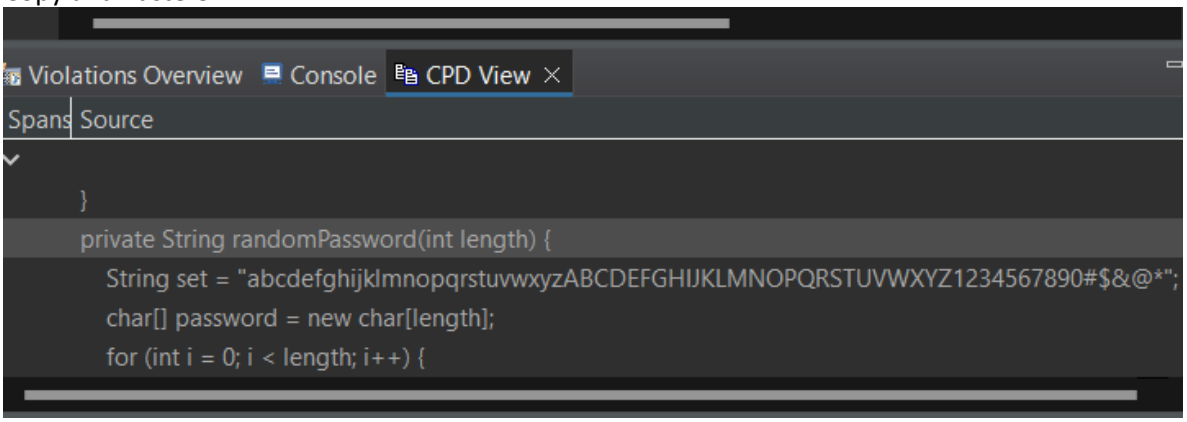
```java
import java.util.Scanner;

@SuppressWarnings("PMD.UseUtilityClass")
public class EmailApp {

    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);

        System.out.print("Enter your first name: ");
        String firstName = sc.nextLine();
```

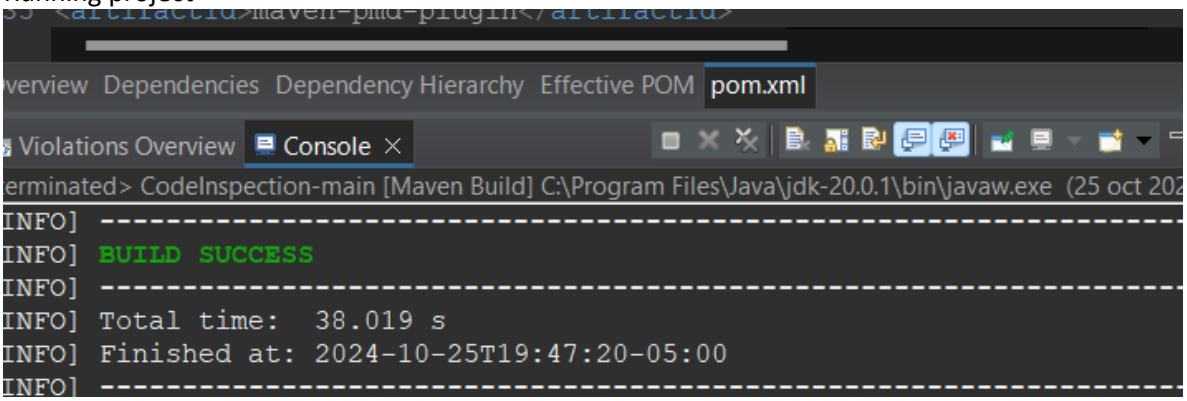
Copy and Paste CPD



Changing pom.xml

```xml
<groupId>org.apache.maven.plugins</groupId>
<artifactId>maven-pmd-plugin</artifactId>
<version>3.13.0</version>
<configuration>
<rulesets>
<ruleset>julio_ruleset.xml</ruleset>
</rulesets>
</configuration>
</plugin>
</plugins>
</reporting>
</project>
```

Running project



URL: https://github.com/jcvivas/tallerCodeIsnpections.git