



Trailblazer COMMUNITY GROUPS



Detect duplicate code in Salesforce

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Andrew Whitten

Andrewssi@gmail.com





Andrew Whitten

Salesforce Solution Architect

Department of Communities & Justice

SALESFORCE
CERTIFIED

Application Architect

Previously at Cognizant & Accenture



How to Copy & Paste

1. Identify a working piece of existing code
2. Copy it
3. Paste it somewhere else
4. Repeat as much as needed



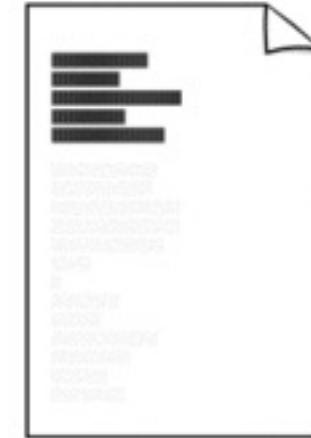
Why do developers Copy & Paste?

1. Faster delivery of business requirements
2. Fewer obvious defects (at first) – code has been tried and tested elsewhere
3. Why write new code when it has already been done before?
4. Less dependencies! Lower chance that someone is going to change your code in future.



Why should developers not Copy & Paste?

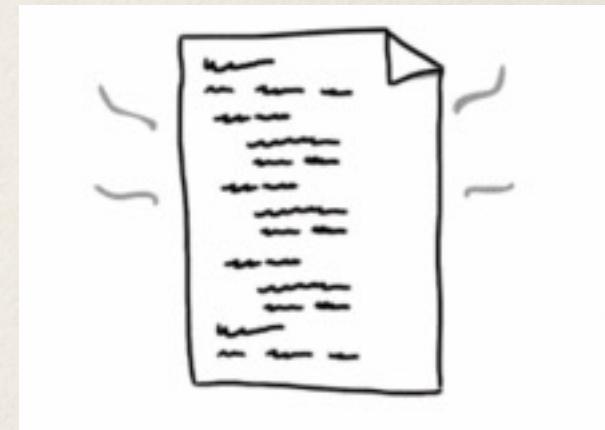
1. Errors and defects in the original code will propagate throughout your code base
2. Increase in overall LOC (Lines of Code) in your solution will contribute to corresponding increased maintenance costs



Original code fragment

Repetitive code should be refactored

1. Single place in code base to fix defects
2. Refactored code becomes more reliable over time
3. New functionality can be delivered faster by virtue of existing good quality functions
4. Fewer LOC makes solution quicker to read and understand



Solution – Copy Paste Detection Tool!

- Run against your code base
- Run against your team's Pull requests - Does new code have copy and paste instance?

PMD Duplicate Code Detector (v 5.2.3)

File View

Root source directory: /tmp/jdk8/java/lang

Report duplicate chunks larger than: 100

Language: Java

Extension: JAVA

Also scan subdirectories?

Ignore literals?

Ignore identifiers?

Ignore annotations?

File encoding (defaults based upon locale): UTF-8

Source	Matches	Lines
(2 separate files)	190	
(3 separate files)	3	108
.../CharacterData0.java		56
(2 separate files)		50
(2 separate files)		59
(2 separate files)		65
(3 separate files)	3	63
(3 separate files)	3	59
(2 separate files)		41
(3 separate files)	3	31
(3 separate files)	3	32
(2 separate files)		31
(3 separate files)	3	32
(2 separate files)		55
(2 separate files)		28
(2 separate files)		28
(2 separate files)		48
.../CharacterData0E.java		53
.../StringEncoding.java		17
.../StringEncoding.java		17
(3 separate files)	3	48
.../CharacterData0E.java		52
(2 separate files)		57
(2 separate files)	21	

Found a 190 line (752 tokens) duplication in the following files:
Starting at line 32 of /tmp/jdk8/java/lang/CharacterData0.java
Starting at line 32 of /tmp/jdk8/java/lang/CharacterData0E.java

class CharacterData0 extends CharacterData {
 /* The character properties are currently encoded into 32 bits in the following manner:
 * 1 bit mirrored property
 * 4 bits directionality property
 * 9 bits signed offset used for converting case
 * 1 bit if 1, adding the signed offset converts the character to lowercase
 * 1 bit if 1, subtracting the signed offset converts the character to uppercase
 * 1 bit if 1, this character has a titlecase equivalent (possibly itself)
 * 3 bits 0 may not be part of an identifier
 * 1 ignorable control; may continue a Unicode identifier or Java identifier
 * 2 may continue a Java identifier but not a Unicode identifier (unused)
 * 3 may continue a Unicode identifier or Java identifier
 * 4 is a Java whitespace character
 * 5 may start or continue a Java identifier;
 * 6 may continue but not start a Unicode identifier (underscores)
 * 7 may start or continue a Java identifier but not a Unicode identifier (\$)
 * 7 may start or continue a Unicode identifier or Java identifier
 Thus:
 5, 6, 7 may start a Java identifier
 1, 2, 3, 5, 6, 7 may continue a Java identifier
 7 may start a Unicode identifier
 1, 3, 5, 7 may continue a Unicode identifier



PMD CPD

- Open Source Project
- Java tool – runs on Windows, Mac, Linux
- <https://pmd.github.io/>
- Command line and GUI
- CPD finds duplicated code in
 - Salesforce Apex
 - Salesforce Visualforce
 - JavaScript
 - Also: Java, C, C++, C#, Groovy, PHP, Ruby, Fortran, JavaScript, PLSQL, Apache Velocity, Scala, Objective C, Matlab, Python, Go and Swift.



Demo



PMD Duplicate Code D

File View

Root source directory: /Users/andrew/source/CPDExample/CPDExample/f

Report duplicate chunks larger than: 25

Also scan subdirectories?

Ignore literals?

Ignore identifiers?

Ignore annotations?

Ignore usings?

Ignore literal sequences?

File encoding (defaults based upon locale): UTF-8

Source

EXPLORER

CPDEXAMPLE

- > .sfdx
- > .vscode
- > config
- > force-app/main/default
 - > applications
 - > aura
 - > classes
 - LoanCalculateHome.cls
 - LoanCalculateHome.cls-meta.xml
 - > contentassets
 - > flexipages
 - > layouts
 - > lwc
 - > objects
 - > permissionsets
 - > staticresources
 - > tabs
 - > triggers
 - > manifest
 - > scripts
 - eslintignore
 - forceignore
 - gitignore
 - prettierignore
 - prettierrc
 - jest.config.js
 - package.json
 - README.md
 - sfdx-project.json
- > OUTLINE
- > RUNNING TASKS
- > NPM SCRIPTS

... LoanCalculateHome.cls — CPDExample

force-app > main > default > classes > LoanCalculateHome.cls > ...

```
1 public with sharing class LoanCalculateHome {  
2  
3     // Calculate the loan  
4     public static Double calculate(Double loanAmmount, Integer years) {  
5  
6         Double yearlyRate = 4.5;  
7  
8         return LoanCalculateHome.getInterest(loanAmmount, yearlyRate,  
9             years);  
10    }  
11  
12    // Get the interest on a loan (simple)  
13    public static Double getInterest(Double principle, Double  
14        yearlyRate, Integer years) {  
15  
16        Double result = principle * yearlyRate * years;  
17        result = result / 100;  
18  
19    }  
20}
```

TERMINAL COMMENTS OUTPUT ...

Salesforce CLI

```
LoanCalculateCar ApexClass force-app/main/default/classes/LoanCalculateCar.cls  
LoanCalculateCar ApexClass force-app/main/default/classes/LoanCalculateCar.cls-meta.xml  
10:51:04.704 sfdx force:source:delete --sourcepath /Users/andrew/source/CPDExample/CPDExample/force-app/main/default/classes/LoanCalculateCar.cls --noprompt  
ended with exit code 0
```

Ln 10, Col 1 Spaces: 4 UTF-8 LF Apex Apex PMD ✓

- Get this deck : <https://github.com/andrewwhitten/Presentations>
- LinkedIn : <https://www.linkedin.com/in/andrew-whitten-8835b8/>



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Thank You!

