

# An Empirical Study of Using Source Code Snippets from Stack Overflow



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## Objectives

Study the impact of reusing source code from Stack Overflow (SO).

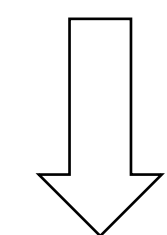
- Investigate how frequent the code has been reused from Stack Overflow.
- When was the reused code introduced in the project lifetime?
- Who modified the code after its introduction to the project?
- Defect-proneness of the Stack Overflow code.

## Motivating Example

▲ The accepted answer didn't work for me (always returns 0), I had to use the following code:

```
12 public static int getCheckedItemCount(ListView listView)
    {
        if (Build.VERSION.SDK_INT >= 11) return listView.getCheckedItemCount();
        else
        {
            int count = 0;
            for (int i = listView.getCount() - 1; i >= 0; i--)
                if (listView.isItemChecked(i)) count++;
            return count;
        }
    }
}
```

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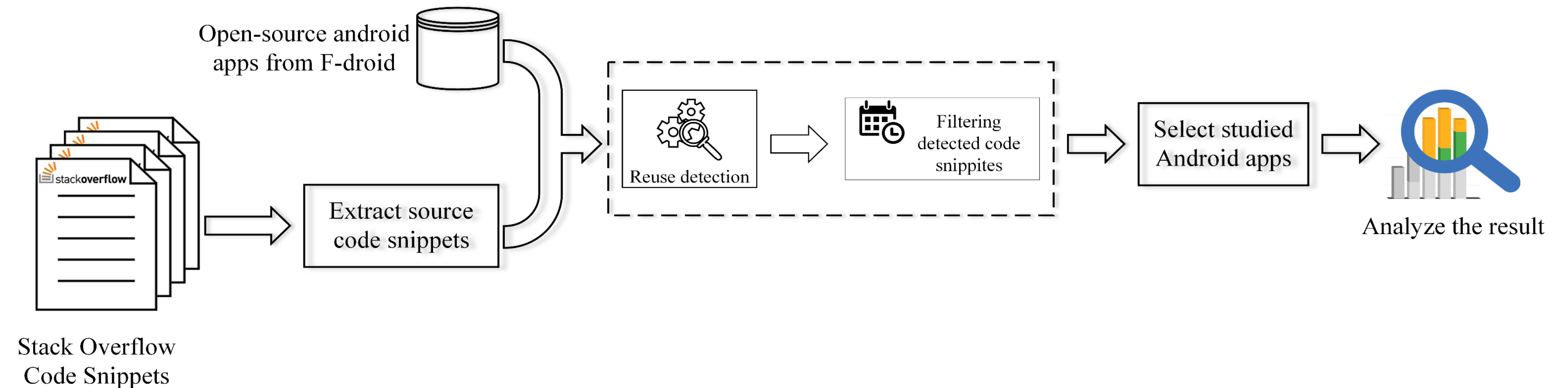
Description of a commit that reuse the code snippets

SHA1 ID: a6e3669c0101455e827e65c5c191fe7a0217d8bb  
Author: Dan Roundhill <dan@automattic.com> 2013-08-19 15:13:53  
Message: ListView.getCheckedItemCount() is a v11 or higher api. Added solution from <http://stackoverflow.com/questions/12330660/whats-the-equivalent-of-getcheckeditemcount-for-api-level-11> that loops through the list to get the checked item count on older devices.

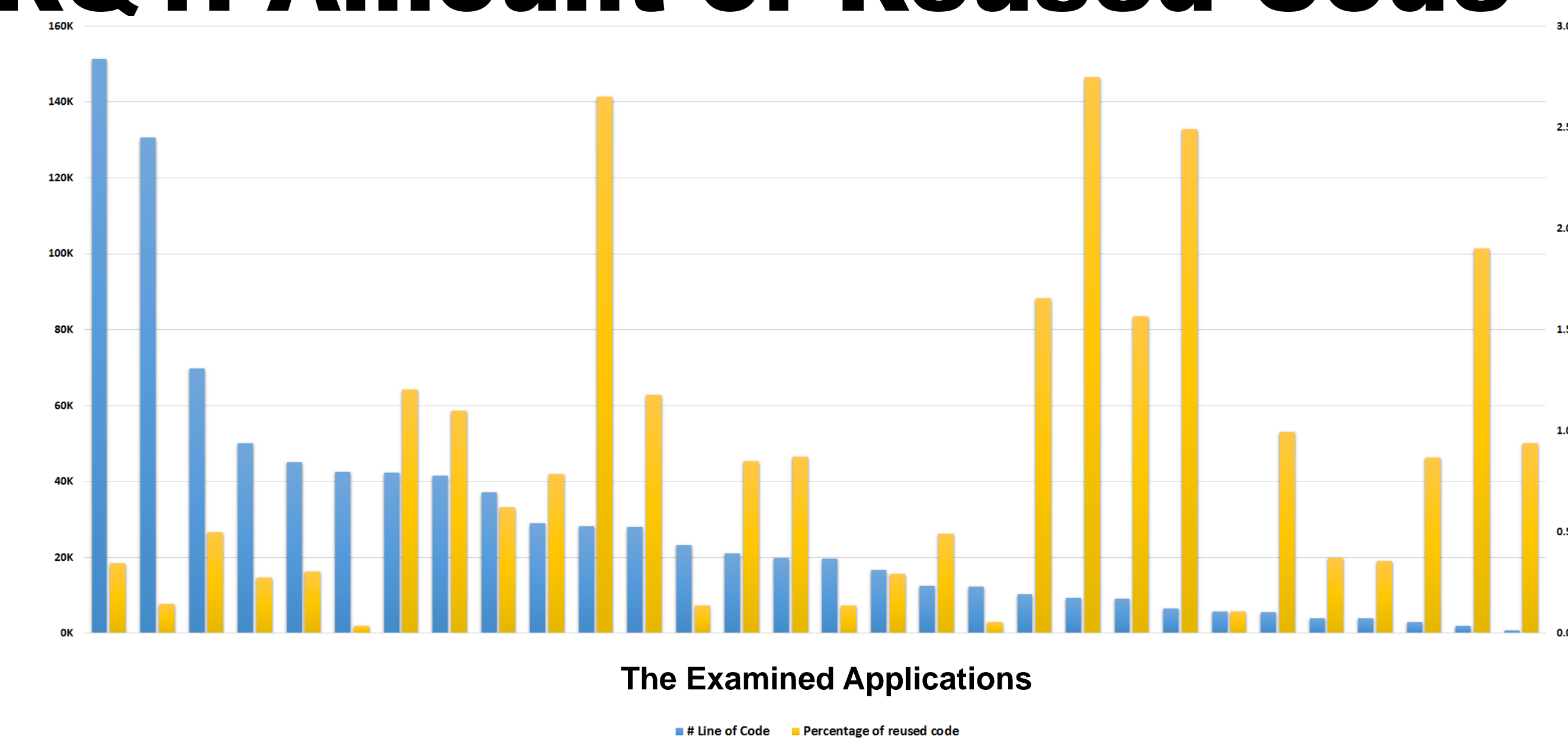
@@ -392,4 +393,16 @@ public class SelectCategoriesActivity extends SherlockListActivity {

```
+ private int getCheckedItemCount(ListView listView)
+ {
+     if (Build.VERSION.SDK_INT >= 11) return
listView.getCheckedItemCount();
+     else
+     {
+         int count = 0;
+         for (int i = listView.getCount() - 1; i >= 0; i--)
+             if (listView.isItemChecked(i)) count++;
+         return count;
+     }
+ }
```

## Approach

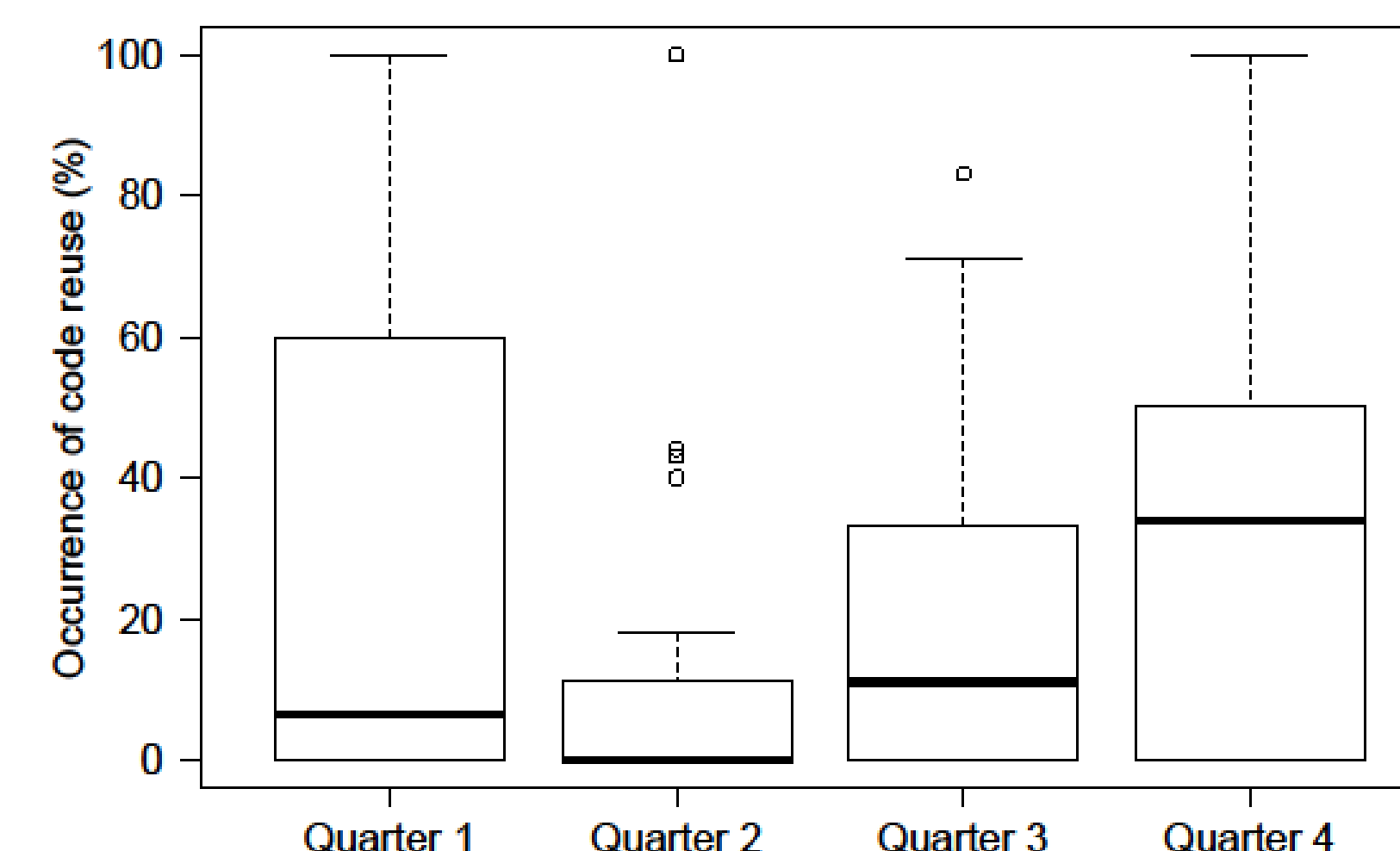


## RQ1: Amount of Reused Code



0.87% of the examined apps' source code comes from Stack Overflow. Additionally, small apps have higher percentage of reused code.

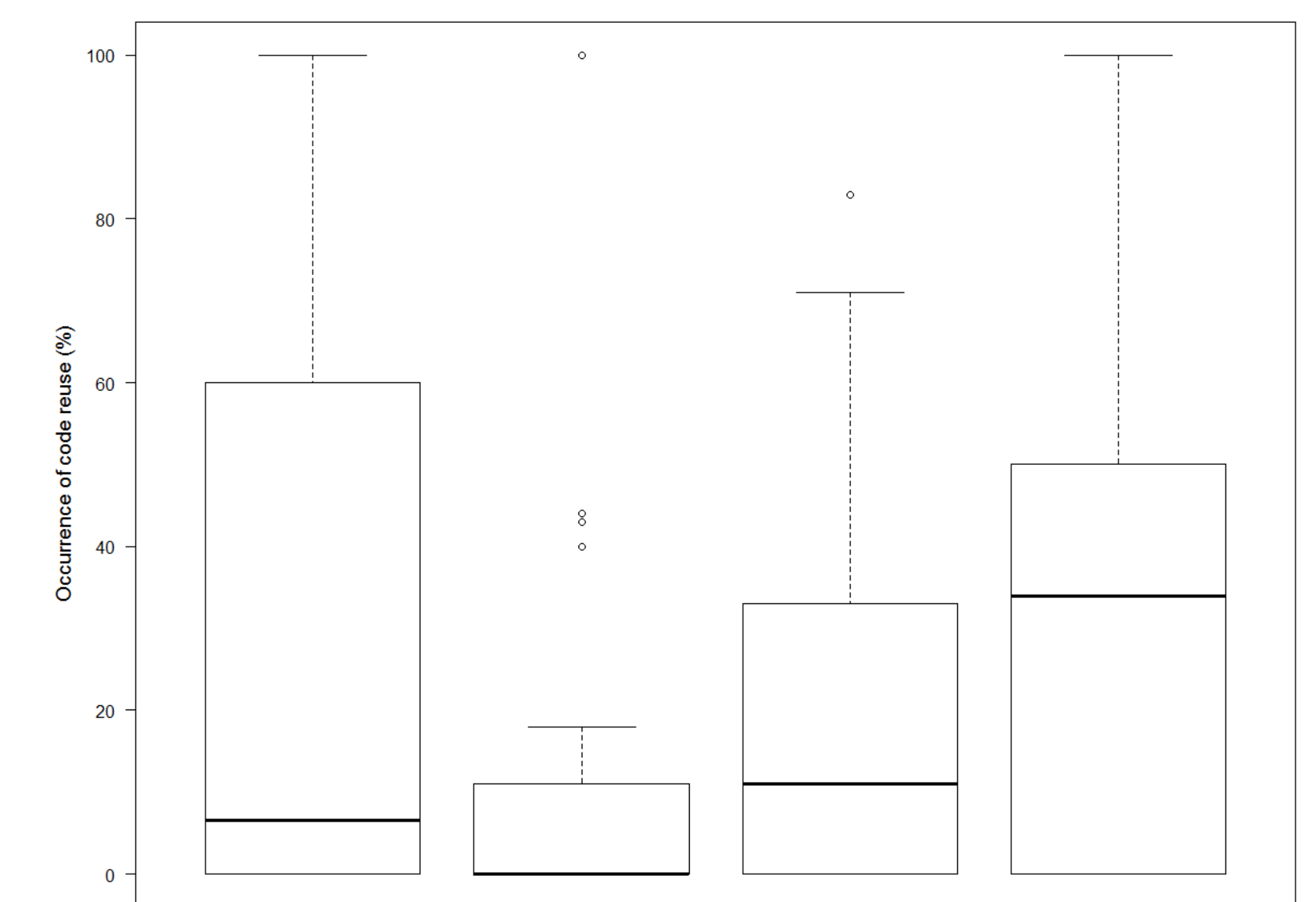
## RQ2: Developer Experience



More experienced developers reuse Stack Overflow code in small apps, and less experienced developers reuse SO code in larger teams/apps.

## RQ3: When is the Code Reused?

App	QTR 1	QTR 2	QTR 3	QTR 4
Web Opac	4%	4%	17%	74%
AdAway	0%	100%	0%	0%
ForPDA	83%	5%	12%	0%
WordPress	16%	16%	39%	29%



Percentage of reused code in all the projects per quarter

Software applications tend to reuse code form Stack Overflow later and early on in the project's life

## Future Research

- Why did the developer introduce SO code?
- Who modified the code after its introduction to the project?
- What is the change- and defect-proneness of the SO code vs. non-SO code?