Improving IDE Recommendations by Considering Global Implications of Existing Recommendations

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IDE recommendations

Auto Complete

Quick Fix
IDE recommendations

- **Problem:** IDEs generate recommendations using local context
- **Today's contribution:** global context can make existing recommendations more powerful
Quick Fix works locally

```java
public class QFS_Demo {
    private String name;
    public void setArg(String name) {
        name = name;
    }
}
```

- Logical (root) error
- Dependent error
Quick Fix works locally

- Two sets of recommendations
- QF for root error includes desired recommendation
- QF for dependent error does not
Quick Fix works locally

- Two sets of recommendations
- QF for root error includes desired recommendation
- QF for dependent error does not
Problem with IDE recommendations

• Recommendations are **local**
• Resolving some errors requires **global** info

⇒ Improve recommendations by
  – Considering non-local recommendations
  – Sorting local recommendations with respect to global implications
Computing global implications of Quick Fix proposals
Computing global implications of Quick Fix proposals
Computing global implications of Quick Fix proposals
Quick Fix Scout offers the Quick Fix that resolves the logical error

```java
public class QFS_Demo {
    private String name_;

    public void setArg(String name) {
        name_ = name;
    }
}
```

Quick Fix Scout: http://www.quick-fix-scout.googlecode.com
Future work

• Dependent errors
  – frequency
  – developer preference for proposals with global implications?
• Do ranking and proposals with global implications increase developer speed?
• Extend our technique to other IDE recommendations
Contributions

• Local recommendations do not always resolve dependent errors
• Considering global implications can improve recommendations
• Our technique improves as the IDE recommendations improve

http://www.quick-fix-scout.googlecode.com
References


