Identifying Hidden Source Code Dependencies from Developer's Activity
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"There is more than just explicit dependencies."

HomeController ?

Database ?

Entity

DataService ?

HomePage

AccountPage

Implicit Dependencies
- Inspiration during development
- Copied or similar code
- Runtime dependencies
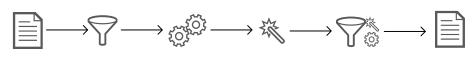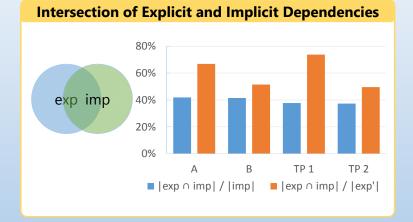
Source code files

Explicit Dependencies

Components

Identification Process

- Reconstructing documents and clipboard stack in IDE
- Identifying actions on documents based on changing currently opened document and copying code fragments
- Weighing and validation of actions
- Aggregating actions into single dependencies
- Filtering to selected weight threshold

Intersection of Explicit and Implicit Dependencies

exp imp

80%

60%

40%

20%

0%

A   B   TP 1   TP 2

■ |exp ∩ imp| / |imp| ■ |exp ∩ imp| / |exp'|

Syntactic Analysis

Source Code

Developer's Activity

What happened during development?
- Document operations – open, close, switch-to
- Copy-paste code fragment
- Check-in piece of work

Individual and team students projects

PerConIK

Correctness of Implicit Dependencies

Project	Implicit Dependencies	Precision
A 1	139	72,73%
A 2	55	58,33%
B	119	85,71%
TP 1	645	89,11%

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