

CodeTopics: Which Topic am I Coding Now?

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Motivation

Requirements



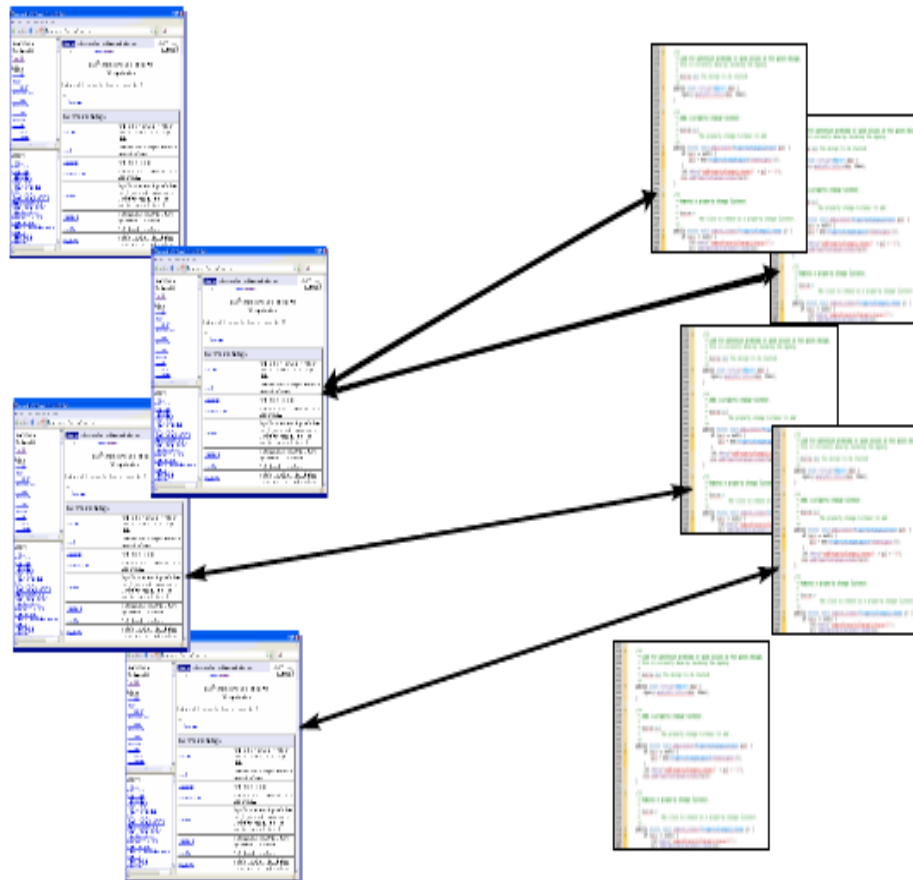
Source Code



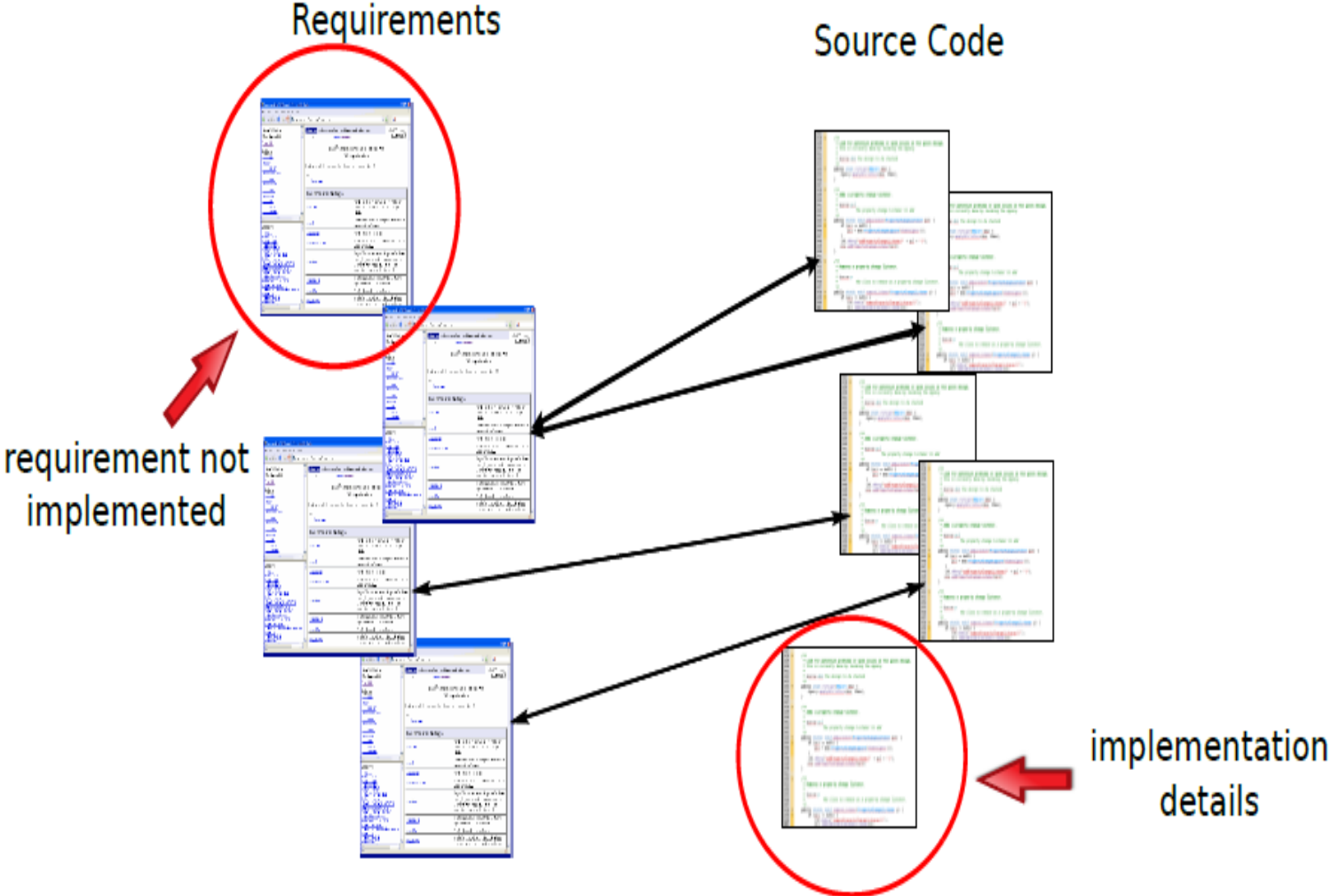
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Source Code



Motivation



Benefits to Developers

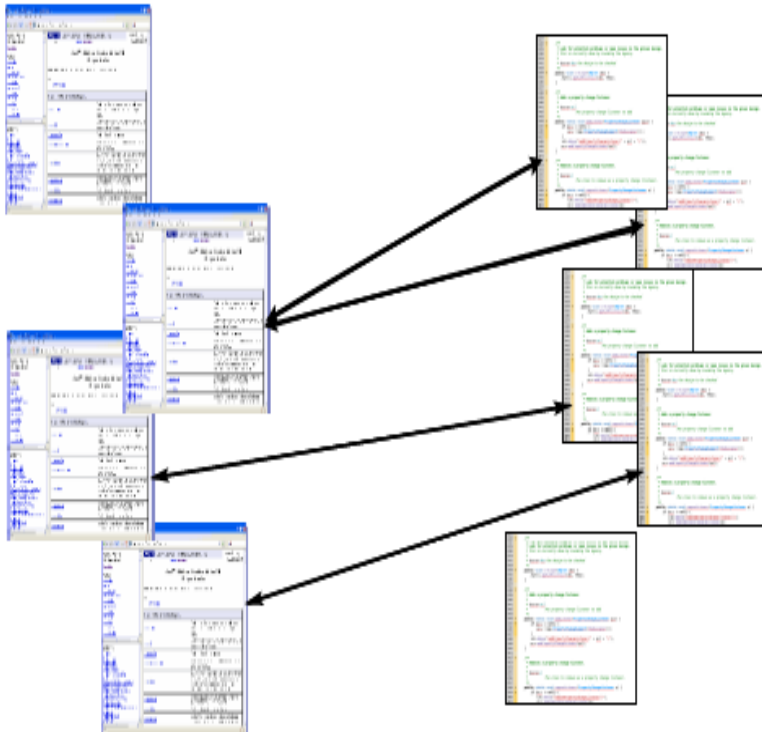
- Describes source code files with terms from related artifacts
- Helps the developer to check whether
 1. a requirement is not yet implemented
 2. a source code file contains low level details not reflected in requirements

Relational Topic Model (RTM)

Requirements

Source Code

Topics



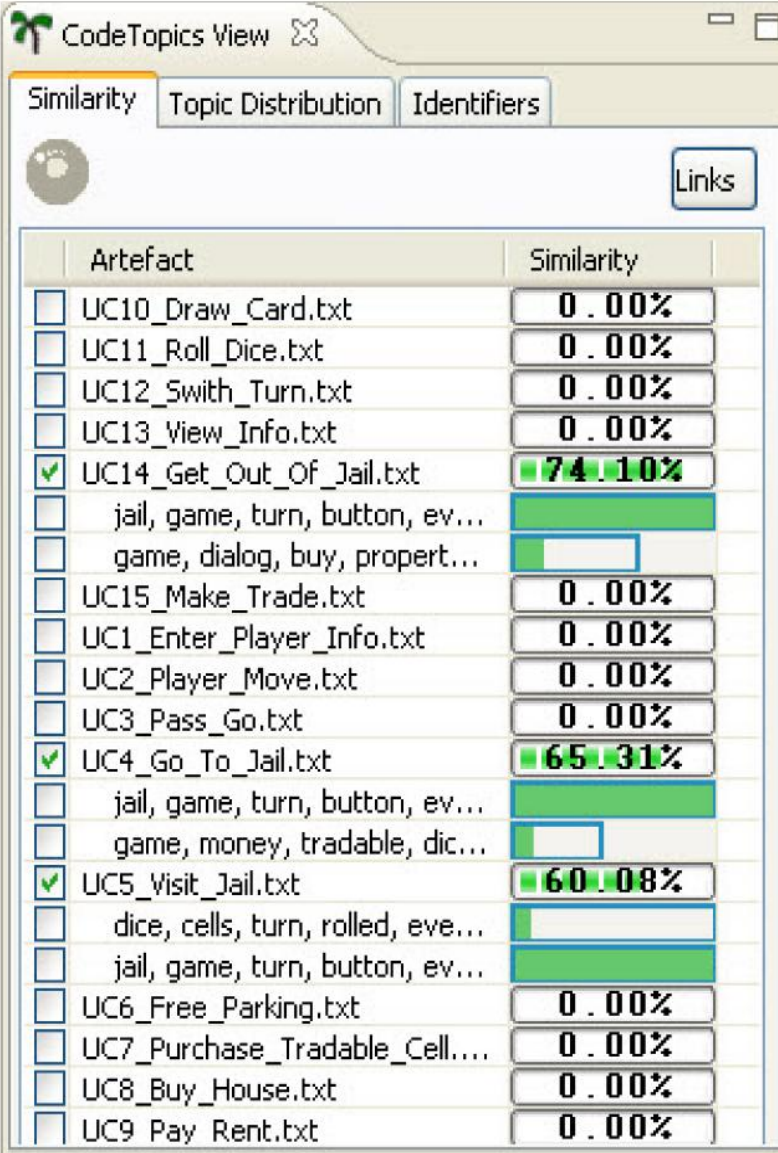
Relational Topic Model



Topic Extraction

- RTM topics are extracted from:
 - Requirements and Source Code corpus
 - Traceability Links
 - Semi-automatic Recovery (Latent Semantic Indexing)
 - Structural Dependencies (X-Ray)
 - User specified links

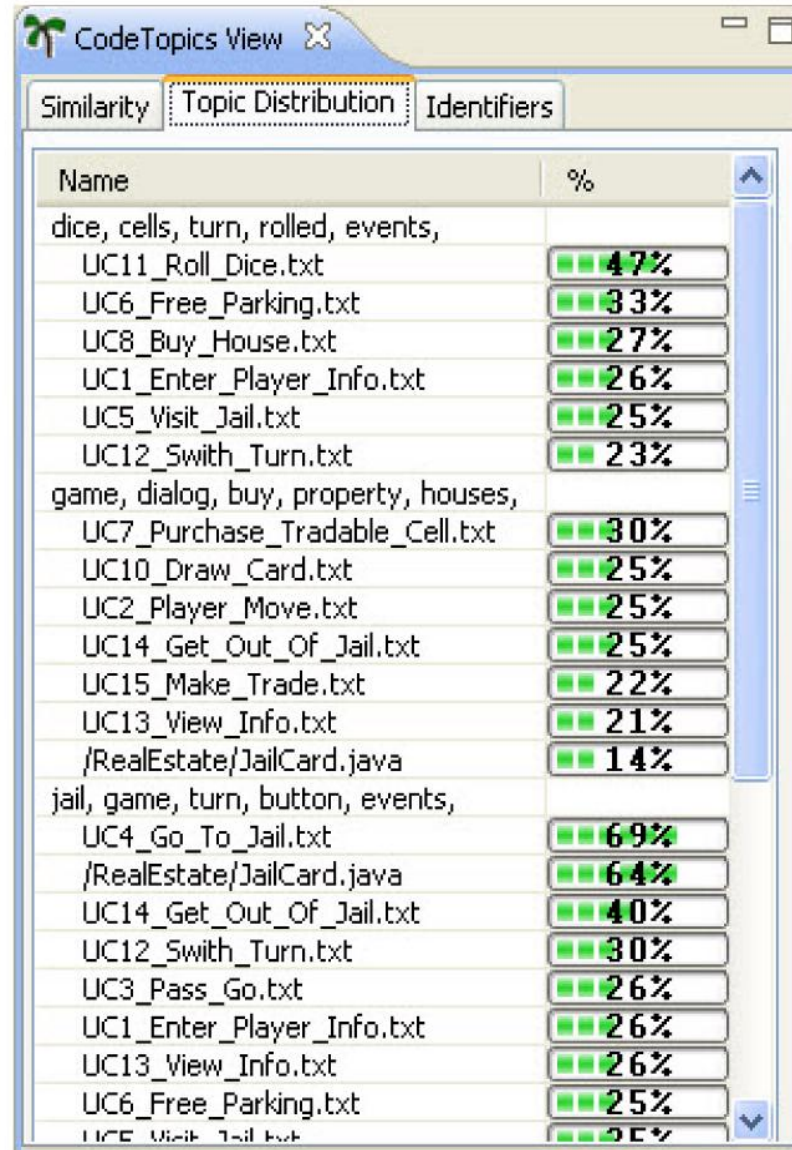
Similarity View



The screenshot shows a software window titled "CodeTopics View" with three tabs: "Similarity" (selected), "Topic Distribution", and "Identifiers". A "Links" button is visible in the top right. The main area contains a table with two columns: "Artefact" and "Similarity". Each row has a checkbox on the left. The similarity values are displayed in a box with a green bar representing the percentage. Some rows have additional text below the main artefact name, possibly representing related terms or sub-artefacts.

Artefact	Similarity
<input type="checkbox"/> UC10_Draw_Card.txt	0.00%
<input type="checkbox"/> UC11_Roll_Dice.txt	0.00%
<input type="checkbox"/> UC12_Swith_Turn.txt	0.00%
<input type="checkbox"/> UC13_View_Info.txt	0.00%
<input checked="" type="checkbox"/> UC14_Get_Out_Of_Jail.txt	74.10%
<input type="checkbox"/> jail, game, turn, button, ev...	
<input type="checkbox"/> game, dialog, buy, propert...	
<input type="checkbox"/> UC15_Make_Trade.txt	0.00%
<input type="checkbox"/> UC1_Enter_Player_Info.txt	0.00%
<input type="checkbox"/> UC2_Player_Move.txt	0.00%
<input type="checkbox"/> UC3_Pass_Go.txt	0.00%
<input checked="" type="checkbox"/> UC4_Go_To_Jail.txt	65.31%
<input type="checkbox"/> jail, game, turn, button, ev...	
<input type="checkbox"/> game, money, tradable, dic...	
<input checked="" type="checkbox"/> UC5_Visit_Jail.txt	60.08%
<input type="checkbox"/> dice, cells, turn, rolled, eve...	
<input type="checkbox"/> jail, game, turn, button, ev...	
<input type="checkbox"/> UC6_Free_Parking.txt	0.00%
<input type="checkbox"/> UC7_Purchase_Tradable_Cell....	0.00%
<input type="checkbox"/> UC8_Buy_House.txt	0.00%
<input type="checkbox"/> UC9_Pay_Rent.txt	0.00%

Topics Distribution View



Demonstration



Conclusion

- We present a tool which
 - helps newcomers to understand high level concepts associated with source code
 - provides a finer-grained level of traceability
 - highlights topics not covered by source code as well as those covered only by source code

Thank You



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