NANYANG TECHNOLOGICAL UNIVERSITY
SINGAPORE

School of Computer Science and Engineering
College of Engineering

Library Dependency Issues

An Study on Software Library Upgrade Dependency Issues

Student: Nicholas Yeo Ming Jie Supervisor: Asst. Prof. Li Yi

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Method Invocation: tf.nn.relu

Similarity Matrix:
          0         1         2
0  1.000000  0.666667  0.388889
1  0.666667  1.000000  0.333333
2  0.388889  0.333333  1.000000
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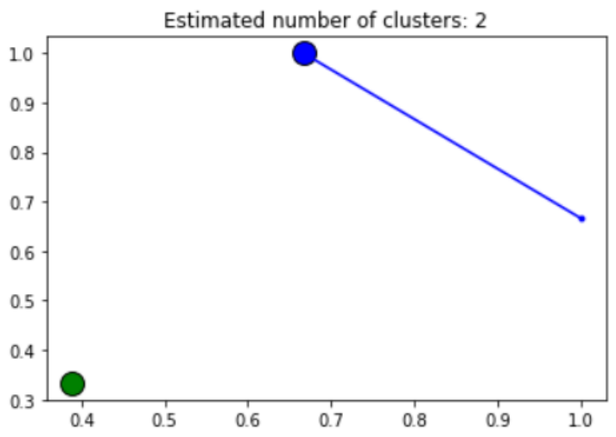


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Labels:
[0 0 1]
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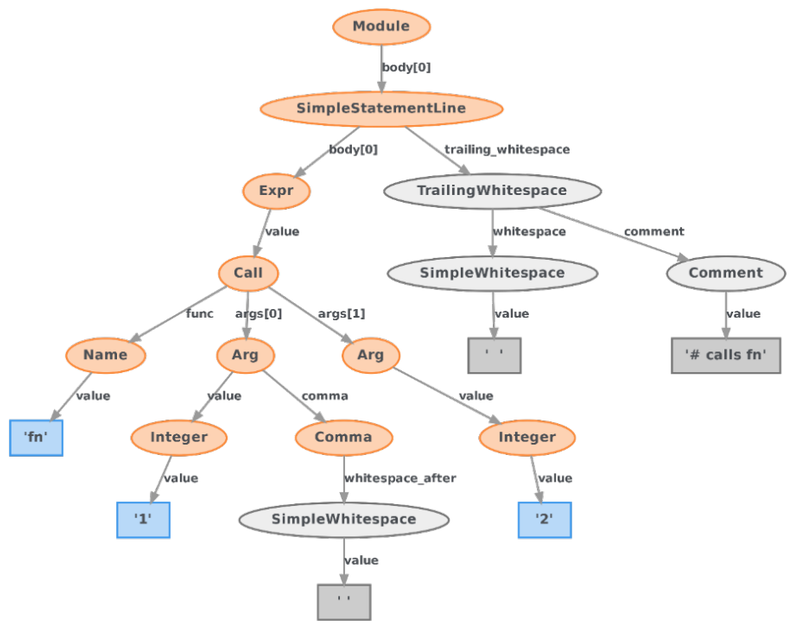
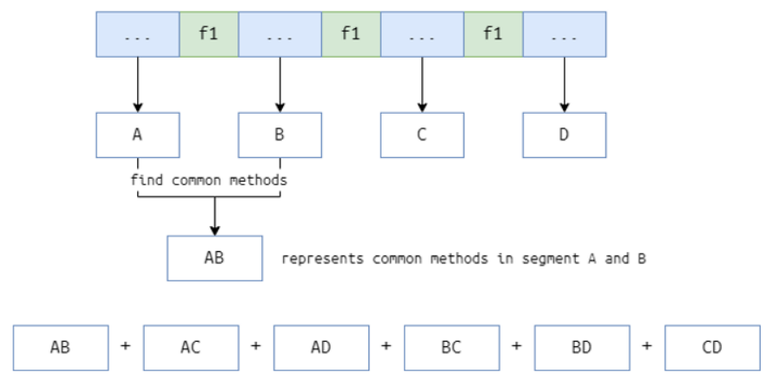


Targeted Method Invocation	**f1()**
Call Sequence	f3(), f4(), **f1()**, f2(), **f1()**, f2(), f5()
Pre-set	f2(), f3(), f4()
Accompany-set	f2()
Post-set	f2(), f5()



Project Objectives:

It is a standard practice for developers to “re-use” code written by third parties. These codes are tools provided by third-party software libraries. The reliance on these third-party software libraries is growing, causing the number of vulnerabilities found in software systems that incorporate them to increase. Third-party software libraries used in software systems are regarded as sources of vulnerabilities as they can be exploited by attackers. Moreover, compatibility issues between third-party software libraries and the software systems that utilizes them arises due to asynchronous updates and negligence of developers. This study will be proposing a method to detect these vulnerabilities. In addition, there will be a discussion on the level of third-party library dependency issues or how much software systems in the market are dependent on third party software libraries and the effort needed to detect, prevent, or mitigate these issues.

Approach:

1. Preparation of Data Analysis Tool
2. Identifying Method Invocations
3. Identifying Call Sequences
4. Identifying Usage Patterns
5. Identifying Sequence Clusters