

# MockDetector: A technique to identify mock objects created in unit tests

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## ABSTRACT

Software dependencies are ubiquitous and may pose problems during testing, because creating usable objects from dependencies is often complicated. Developers, therefore, often introduce mock objects to stand in for dependencies during testing. However, to our knowledge, no static analysis framework provides a tool to automatically identify mock objects created in the unit test cases. The lack of mock object detection can decrease the precision of static analyses, as they are unable to separate methods invoked on mock objects from methods invoked on actual objects.

In this paper, we introduce MockDetector, a technique to identify mock objects. It is able to detect common Java mock libraries' APIs that create mock objects, checking whether there is a call to a mock creation site and then a def-use chain reaching the point of use. Implications of understanding which objects are mock objects include helping static analysis tools identify which dependencies' methods are actually tested, versus mock methods being called.

## CCS CONCEPTS

• **Computer systems organization** → **Embedded systems**; *Redundancy*; Robotics; • **Networks** → Network reliability.

## KEYWORDS

static analysis, mock objects, unit tests

### ACM Reference Format:

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## 1 INTRODUCTION

## 2 APPROACH

## 3 EXPERIMENT SETUP

## 4 EVALUATION

## 5 CONCLUSION

## 6 MATH EQUATIONS

You may want to display math equations in three distinct styles: inline, numbered or non-numbered display. Each of the three are discussed in the next sections.

### 6.1 Inline (In-text) Equations

A formula that appears in the running text is called an inline or in-text formula. It is produced by the **math** environment, which can be invoked with the usual `\begin... \end` construction or with the short form `$...$`. You can use any of the symbols and structures, from  $\alpha$  to  $\omega$ , available in L<sup>A</sup>T<sub>E</sub>X [?]; this section will simply show a few examples of in-text equations in context. Notice how this equation:  $\lim_{n \rightarrow \infty} x = 0$ , set here in in-line math style, looks slightly different when set in display style. (See next section).

### 6.2 Display Equations

A numbered display equation—one set off by vertical space from the text and centered horizontally—is produced by the **equation** environment. An unnumbered display equation is produced by the **displaymath** environment.

Again, in either environment, you can use any of the symbols and structures available in L<sup>A</sup>T<sub>E</sub>X; this section will just give a couple of examples of display equations in context. First, consider the equation, shown as an inline equation above:

$$\lim_{n \rightarrow \infty} x = 0 \quad (1)$$

Notice how it is formatted somewhat differently in the **displaymath** environment. Now, we'll enter an unnumbered equation:

$$\sum_{i=0}^{\infty} x + 1$$

and follow it with another numbered equation:

$$\sum_{i=0}^{\infty} x_i = \int_0^{\pi+2} f \quad (2)$$

just to demonstrate L<sup>A</sup>T<sub>E</sub>X's able handling of numbering.

## 7 FIGURES

Your figures should contain a caption which describes the figure to the reader.

Figure captions are placed *below* the figure.

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  \includegraphics[width=\textwidth]{sampleteaser}
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```

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The use of L<sup>A</sup>T<sub>E</sub>X for the preparation and formatting of one's references is strongly recommended. Authors' names should be complete — use full first names (“Donald E. Knuth”) not initials (“D. E. Knuth”) — and the salient identifying features of a reference should be included: title, year, volume, number, pages, article DOI, etc.

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Citations and references are numbered by default. A small number of ACM publications have citations and references formatted in the “author year” style; for these exceptions,

please include this command in the **preamble** (before the command “`\begin{document}`”) of your L<sup>A</sup>T<sub>E</sub>X source:

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```

Some examples. A paginated journal article [? ], an enumerated journal article [? ], a reference to an entire issue [? ], a monograph (whole book) [? ], a monograph/whole book in a series (see 2a in spec. document) [? ], a divisible-book such as an anthology or compilation [? ] followed by the same example, however we only output the series if the volume number is given [? ] (so Editor00a's series should NOT be present since it has no vol. no.), a chapter in a divisible book [? ], a chapter in a divisible book in a series [? ], a multi-volume work as book [? ], a couple of articles in a proceedings (of a conference, symposium, workshop for example) (paginated proceedings article) [? ? ], a proceedings article with all possible elements [? ], an example of an enumerated proceedings article [? ], an informally published work [? ], a couple of preprints [? ? ], a doctoral dissertation [? ], a master's thesis: [? ], an online document / world wide web resource [? ? ? ], a video game (Case 1) [? ] and (Case 2) [? ] and [? ] and (Case 3) a patent [? ], work accepted for publication [? ], 'YYYYb'-test for prolific author [? ] and [? ]. Other cites might contain 'duplicate' DOI and URLs (some SIAM articles) [? ]. Boris / Barbara Beeton: multi-volume works as books [? ] and [? ]. A couple of citations with DOIs: [? ? ]. Online citations: [? ? ? ]. Artifacts: [? ] and [? ].

## 9 ACKNOWLEDGMENTS

Identification of funding sources and other support, and thanks to individuals and groups that assisted in the research and the preparation of the work should be included in an acknowledgment section, which is placed just before the reference section in your document.

This section has a special environment:

```
\begin{acks}
...
\end{acks}
```

so that the information contained therein can be more easily collected during the article metadata extraction phase, and to ensure consistency in the spelling of the section heading.

Authors should not prepare this section as a numbered or unnumbered `\section`; please use the “acks” environment.

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Start the appendix with the “appendix” command:

```
\appendix
```

and note that in the appendix, sections are lettered, not numbered. This document has two appendices, demonstrating the section and subsection identification method.

## 11 SIGCHI EXTENDED ABSTRACTS

The “sigchi-a” template style (available only in L<sup>A</sup>T<sub>E</sub>X and not in Word) produces a landscape-orientation formatted

article, with a wide left margin. Three environments are available for use with the “**sigchi-a**” template style, and produce formatted output in the margin:

- **sidebar**: Place formatted text in the margin.
- **marginfigure**: Place a figure in the margin.
- **marginable**: Place a table in the margin.

## ACKNOWLEDGMENTS

To Robert, for the bagels and explaining CMYK and color spaces.

## A RESEARCH METHODS

### A.1 Part One

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### A.2 Part Two

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## B ONLINE RESOURCES

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