Indices Gone Wild
(A case study)

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Project: A Case Study of the Index Checker

The Index Checker is a tool that uses an annotation-based type system to prevent IndexOutOfBoundsExceptions.

It has the potential to protect against this common runtime exception with a compile-time check, but it hasn't been thoroughly evaluated.

We intend to evaluate the Index Checker by applying it to a real-world, large-scale codebase and tracking prevented bugs and programmer time.

Motivation and Goals

Changing runtime errors to compile-time checks prevents programs from crashing. This project seeks to determine whether the Index Checker tool is useful in practice.

The goal is to implement a large-scale case study of the Index Checker to:

- Evaluate functionality: What cases the tool protect against?
- Evaluate soundness: Does the tool really offer this protection?
- Evaluate usability: Does using the tool save programmer time and/or headaches?

Approach

1) Familiarize ourselves with the tool.

2) Test the tool on small cases to verify its behavior.

3) Apply the tool to a large existing codebase, documenting the potential bugs fixed and programmer time expended.

4) Evaluate and report our results.

5) Implement any necessary improvements.