Minimize Bug Fix Commits

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The Problem and Motivation

- Bug fixes often aren't isolated in commits

  - Refactorings and other code changes

- Problem when revisiting code or others try to understand fix

  - Focus on what fixed the bug

- Potentially unaware of what fixed bug

  - Could be combination of changes across multiple files

Current Solutions

Know Minimum Bug Fix

- Git add -patch
  - Interactively stage parts of a file

- Git rebase -i
  - Split old commits into multiple

Don't Know Minimum Bug Fix

- Manually remove lines

Our Approach

1. Git pre-commit hook
2. 2 phase detection and execution
   - Remove refactored lines
   - Remove subsets of changed lines until it finds the largest subset of lines it can remove without causing the test to fail.
3. Commit bug fix
4. Commit remaining code