Data-Enhanced Pex Exploration
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Motivation + Goals
Code Hunt is an online platform that encourages students to train their programming skills through gaming and software testing. Students solve a puzzle by implementing the hidden functional requirement. To achieve this, students get clues from test inputs generated by test generation tool, PEX.

Motivation: Code Hunt does not provide helpful hint, when implementations are incorrect.

Goal: Extend the Code Hunt engine to provide students with hints such as “Try multiplication” or “Try to include x in your return value”.

Procedure & Current Work

Student’s Implementation’s precondition is different.

\[ x \in \mathbb{Z} \text{ Solution } \{ x' = x \times 2 \} \]

\[ \{ x = 2 \mid x = 6 \} \text{ Student } \{ x' = x \times 2 \} \]

A suggested hint should help students make changes that lead to better preconditions (closer to solutions’)

Procedure & Current Work

Theoretical Fundamentals

Pex4Fun API

We use Pex4Fun API to run a pair test between student’s code and the solution. Then we collect the passing & failing path conditions and dump them into local files.

Future Plan

- Focus: Improve the hint providing algorithm. A few thoughts: importance rank of path conditions; include symbolic return value in our database.

- Extend Codehunt to provide better hints!