
Time-Traveling Queries for Faster Debugging and Program Comprehension

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Résumé

Efficiently debugging a program requires program comprehension. To acquire it, developers explore the program execution, a task often performed using interactive debuggers. Unfortunately, exploring a program execution through standard interactive debuggers is a tedious and costly task. In this poster, we propose Time-Traveling Queries (TTQs) to ease program exploration. TTQs is a mechanism that automatically explores program executions to collect execution data. These data are used to time-travel through execution states, facilitating the exploration of program executions. We built a set of key TTQs based on typical questions developers ask when trying to understand programs. We conducted a user study with 34 participants to evaluate the impact of our queries on program comprehension activities. Results show that, compared to traditional debugging tools, TTQs significantly improve developers' precision, while reducing required time and efforts when performing program comprehension tasks. Link to the demo : <https://drive.google.com/file/d/12MIQZO9X1WN7e1LUqm5p0E-x8VJXQz0h/view>

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