Defect Detection Efficiency: Test Case Based vs. Exploratory Testing

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**Proposed Study: The Effectiveness of Bug Magnet as a Support Tool for Exploratory Testing in Higher Education**

**Goal:**

This study aims to understand if the Bug Magnet tool can help students test software better when they use exploratory testing. The focus is on seeing if students can find more real bugs, avoid reporting wrong ones, and how they feel about using the tool. Bug Magnet is a small browser extension that helps testers by adding common tricky inputs that could lead to errors (like long words, special characters, or empty values) into form fields. These types of inputs often cause bugs in web applications. The tool is made to save time and make it easier to spot bugs that might be missed with normal testing. Even if professionals often use it, we don’t know yet if it’s helpful for students who are just learning how to test software.

**Questions of the study:**

Do students find more real bugs when they use Bug Magnet during exploratory testing? Does Bug Magnet help reduce the number of wrong or false bug reports? What do students think about using Bug Magnet—do they find it easy and helpful?

**Method:**

We will do an experiment with two groups of students from a software engineering class. Both groups will test the same web application that has some known bugs. One group will use Bug Magnet while testing, the other group will not use any extra tool. Each student will get the same time to test. After testing, we will look at how many correct bugs each student found, how many mistakes they made in bug reports, and how long it took them to find their first bug. Students will also fill out a short survey to share what they thought about using Bug Magnet.

**Metrics:**

Defect detection rate: Number of bugs fixed

False positives rate: Number of wrong or invalid bug reports

Time to first defect: How much time it took to find the first bug

User feedback: Ratings and comments from a short survey post-test