Information Sheet for Participation in a Research Study

Principal Investigator: Dr. Godmar Back
IRB# and Title of Study: 21-874, Computer Science MS Thesis Research: CS 3214 Student Project Usage - Multithreaded Web Server Fuzz-Testing Suite
Sponsor: N/A

You are invited to participate in a research study. This form includes information about the study and contact information if you have any questions.

My name is Connor Shugg. I am a graduate student at Virginia Tech, and I am conducting this research as part of my course work.

➢ WHAT SHOULD I KNOW?

If you decide to participate in this study, you will work on the assignment normally. When you wish to perform fuzz-testing on your server, you may use the fuzzing tools provided and described in the project documentation. No software needs to be installed; the tool is ready for use on rlogin, the CS department's computing nodes you have been working on for the duration of the semester.

The first part of the study will be to run the fuzzing tool. You'll navigate to your project source code directory and run the correct script (specified in the project documentation). The script will ask you to grant or deny consent to have your code and test results collected for research purposes. You may freely choose either option, then continue using the tool regardless of your choice. The tool will compile your source code and run the fuzzer for a specific duration of time specified by you. At this point, you may let it run until it's complete – it does not require your direct attention while running. This will take between 5 and 60 minutes.

Once finished, you'll be presented with a directory containing any bugs it found in your code. You may freely use these results to help debug your program. If you chose to

grant consent at the start of fuzzing, your code and the fuzz-testing results will be collected and stored on the VT CS RLogin computing nodes in a location accessible only by Dr. Back and Connor Shugg. This data will never be moved outside of these computing nodes, and Dr. Back and Connor Shugg will not view this data until grades have been turned in and the fall 2021 semester has concluded.

You may run the fuzzer as many times as you wish. Each time, you'll be prompted to grant consent. You have the freedom to choose *which* runs will collect your data, if you granted consent. If you choose to withdraw consent, your data will be deleted permanently. **NOTE:** this fuzzing tool is available for you to use *regardless* of consent status. Granting or denying consent only changes whether or not the tool will collect your source code and fuzzing results for research purposes.

Once you are finished using the fuzzer, you may additionally choose to take a Qualtrics survey to provide feedback on the usefulness of the tool. The survey will be administered through Virginia Tech's Qualtrics subscription and should only take a few minutes. The survey questions will ask for your thoughts on the tool's usefulness, whether or not it caught any bugs in your code, and how helpful it was in completing project 4. Completing this survey will take between 5 and 5 minutes.

The amount of time this study will take is determined by how long you wish to run the fuzzer. The fuzzer, when running, does not require your direct attention. Participating in this study will take between 15 minutes to 90 minutes of your time.

When your source code and fuzzing results are collected, should you decide to grant consent, any occurrence of your Virginia Tech PID will be removed from your source code. However, other unexpected identifiable information (such as your name or email address) may be unintentionally collected when your source code is stored for research purposes. Please be aware of this when making a decision to participate in research. You are free to remove any identifiable information from your code before consenting to data collection. All recorded data is stored securely on the CS department computing nodes, accessible only by Dr. Godmar Back and Connor Shugg. These computing nodes are located in Blacksburg VA on the Virginia Tech campus and are professionally managed by the CS department. Aside from unintentional collection of identifiable information in your source code, we do not anticipate any other risks from completing this study.

You can choose whether to be in this study or not. If you volunteer to be in this study, you may withdraw at any time without consequences of any kind. You may also refuse to answer any questions you don't want to answer and remain in the study. The investigator may withdraw you from this research if circumstances arise which warrant doing so.

➢ CONFIDENTIALITY

We will do our best to protect the confidentiality of the information we gather from you, but we cannot guarantee 100% confidentiality.

The survey responses are anonymous and confidential. Qualtrics will be configured to not collect IP addresses.

The source code and test results collected by the tool will only be accessible by Connor Shugg and Dr. Back, and will only be examined for research purposes. Your collected data will be stored anonymously, save for the risk of unexpected identifiable information within your source code. We plan to keep the results indefinitely, stored securely on the CS departmental computing nodes. It's possible the IRB (Institutional Review Board) may view this study's collected data for auditing purposes. The IRB is responsible for the approval and oversight of the protection of human subjects involved in research such as this.

➢ WHO CAN I TALK TO?

If you have any questions or concerns about the research, please feel free to contact Connor Shugg (cwshugg@vt.edu) and/or Dr. Godmar Back (gback@vt.edu). You are not waiving any legal claims, rights or remedies because of your participation in this research study. If you have questions regarding your rights as a research participant, contact the Virginia Tech HRPP Office at 540-231-3732 (irb@vt.edu).