Google Summer of Code Proposal: Crash Reporter for Tor Browser
Nur-Magomed Dzhamiev, March 26, 2017
nmagoru@gmail.com

What project would you like to work on? Use our ideas lists as a starting point or make up your own idea. Your proposal should include high-level descriptions of what you're going to do, with more details about the parts you expect to be tricky. Your proposal should also try to break down the project into tasks of a fairly fine granularity, and convince us you have a plan for finishing it. A timeline for what you will be doing throughout the summer is highly recommended.

I would like to work on project “Crash Reporter for Tor Browser”. Crash Reporter will help developers to improve Tor browser, make it more stable and user-friendly for end users.
We already have Mozilla’s Crash Reporter (which currently disabled) based on BreakPad and also we have server side solution for collect data from Crash Reporter - Socorro. Our aim is to adapt these tools for Tor (browser) in other words make them anonymous.

**Project structure**

**Client side**

Client should be based on following principles:

1. Crash reports shouldn't have privacy-sensitive data, or combination of data that would threaten a user's privacy
2. Generated crash report should be immediately sent and/or deleted (from disk)
3. All crash reports should go through Tor network to .onion backend of Crash Reporter
4. If user deactivate Crash Reporter in settings, it should be completely deactivated.

After discussion with mentor, we arrived to point that we could focus on single platform - Linux, and create base that helps to continue developing for other platforms later. So all further text is bound with Linux version of Crash Reporter client.

At first, we have to define crash data fields that should be collected after crash, then to update generator of crash data according to defined data fields.
Also, we have to update crash client UI form texts that explaining to user what has happened and what he can do.
By default, checkbox “Tell Mozilla about this crash so they can fix it” (look image 1) activation depends on function bool ShouldEnableSending(), that return true/false according to random number, but I suppose in our implementation we should set
The checkbox “Include the address of the page was on” always should be deactivated too. We may set on form buttons (or radiobuttons) with captions like as “Send anonymously and Delete report” and “Don’t send just Delete”.

The Mozilla’s implementation of Crash Reporter client also store such data as last crashed time, date of browser install and etc. I’m not sure could it threaten to user’s privacy or not, but we have to find out.

In case “crash reports should go through Tor network” we have to be sure that crash sender is actually using Tor network as proxy.

Further, we have to adapt Server side according to updated crash data fields and test both sides.

**Server side**

In simple words, Socorro consists of several parts:

- Collector - saves all crash dumps and metadata as files from clients
- Processor - working on files that saved by Collector, it gets statistic data and puts it to DB
- Statistics viewer (based on Django) - shows all crashes statistic (on web-site)

We have to adapt these parts (for client side) in the order that they are shown above.
Timeline

Community Bonding Period:

- Contact with mentor and discuss about privacy-sensitive fields in Crash reports
- Work on crash reporter’s new design (UI form)
- Starting work on building Tor Browser with Crash Reporter

GSoC coding period starts on May 30 and ends on August 21 comprising a total of 12 weeks:

- **week 1-5**: Crash Reporter client side
  - **week 1+2**: Build Tor Browser with Crash reporter. Improving crash data minidumps generator (don’t save privacy data in reports)
  - **week 3**: Redesign report’s client UI form, making functionality to delete data after sent, removing not necessary UI functions
  - **week 4**: Adapting report’s sender for Tor network (sending through Tor network)
  - **week 5**: Testing and review code

- **week 6-11**: Crash Reporter server side based on Socorro
  - **week 6+7**: working on Collector, adapting it according to changed minidumps
  - **week 8+9**: updating DB structure, adapting Processor (for DB and for Collector’s reports)
  - **week 9+10**: Working on statistic site - updating design templates, ORM classes for DB, and etc.
  - **week 11**: Testing and review code. Setting up service on Tor network.

- **week 12**: Final testing, documentation

**Additional optional tasks**

- Text search and ways to remove some data from reports for users in client
- Trying to introduce Google Sanitizers [1] in Tor Browser

**Point us to a code sample: something good and clean to demonstrate that you know what you're doing, ideally from an existing project.**

My own implementation of Simple DES cryptoalgorithm [2], OpenQuery project (which I developed with my friend), and a lot of mini-projects like Telegram bots, time converters, realizations of algorithms such as sortings, search. Some of them available on GitHub. I like coding, and I’ve been coding since I was 14 years, at the beginning worked as freelancer (Web-sites, php, mysql, JS), after 3-4 years I've become interested with system programming (C++, Asm) and computer science, also worked in mobile dev field (java, android).
**Why do you want to work with The Tor Project in particular?**

There are few ways to feel freedom and stay anonymous in the Internet and the Tor project is the one most important and useful of them. In modern world the privacy is complex question, and Tor project give us a simple way to stay anonymous and express our thoughts overtly. Every day the government finds new ways to deanonymize users and therefore Tor Project needs a people who work hard to make Tor protocols and tools more secure. Before GSoC’s announced I had no idea that I could work on so interesting and great project as Tor and I would be thrilled to make it better.

**Tell us about your experiences in free software development environments. We especially want to hear examples of how you have collaborated with others rather than just working on a project by yourself.**

I haven't had experience with collaborative development, apart from the regular projects which I do with a group of friends, and I have been a supporter of free software (no coding).

My biggest project is English Lock - android application that helps to users to study English words every time when they unlocking their phone (2 words on screen and 1 correct answer (translate)). We worked on this project with my friend. I've made the algorithm that uses statistical analyze to make words learning better, designed database and server side - the web backend, where moderators can add new packs of words, edit, add transcriptions, see statistic and etc.

Unfortunately, my friend would not like to make its open-source, but English Lock is free app and it available on Google Play (on Russian).

I wish to develop open source projects the kind of them that could help to all people and make they life better.

**Will you be working full-time on the project for the summer, or will you have other commitments too (a second job, classes, etc)? If you won't be available full-time, please explain, and list timing if you know them for other major deadlines (e.g. exams). Having other activities isn't a deal-breaker, but we don't want to be surprised.**

If I give to my university the letter from Google (where indicated that I participating in GSoC), university will give me a chance to pass exams individually before GSoC will be started, and on summer I will can work up to 7-8 hours in day.

**Will your project need more work and/or maintenance after the summer ends? What are the chances you will stick around and help out with that and other related projects?**

Yes, I suppose this project needs more work on creating Windows/MacOS versions, also maybe it needs improving of server side: adapting API and etc. I would be glad to work with Tor after GSoC on this and other projects.
What is your ideal approach to keeping everybody informed of your progress, problems, and questions over the course of the project? Said another way, how much of a "manager" will you need your mentor to be?

I will keep in touch with you via Mail or IRC. I am going to blog about project, and also Mentor can view developing progress in version control system too.

What school are you attending? What year are you, and what's your major/degree/focus? If you're part of a research group, which one?

I'm 4th year student of the North-Caucasus Federal University (NCFU) in Stavropol, Russia. I receive specialist's degree in Computer Security. In NCFU we have pretty much mini research groups, and basically we work on directions such as network secure systems, cryptography, mathematics and analyze, OS and administration, programming of robots and etc. I like mathematics, programming, algorithms, cryptography and everything else associated with them.

How can we contact you to ask you further questions? Google doesn't share your contact details with us automatically, so you should include that in your application. In addition, what's your IRC nickname? Interacting with us on IRC will help us get to know you, and help you get to know our community.

E-Mail: nmagoru@gmail.com
IRC nickname: nmago (OFTC)
Time Zone: UTC+03:00

Are you applying to other projects for GSoC and, if so, what would be your preference if you're accepted to both? Having a stated preference helps with the deduplication process and will not impact if we accept your application or not.

No. I devoted whole time in Tor.

Is there anything else that we should know that will make us like your project more?

Crash Reporter may be adapted to other Tor projects to make them more stable.

Links

1. https://github.com/google/sanitizers
2. https://github.com/nmago/SimpleDES