Screenshot Automation for Jenkins Docs

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Project Abstract: The goal of this project would be to automate the screenshot capturing project for Jenkins Docs through the development of a new tool that will spin up new Jenkins instances and capture a screenshot of the desired section on the desired page.

Project Description:

The proposed project will extensively use the *Configuration-as-code plugin* to configure instances it will use to retrieve the desired screenshots. For each screenshot setup, a specific instance configuration (What themes to use? What users? etc.) will be exported with the plugin.

When the screenshot capturing tool launches, by looking at the instance configuration files from JCasC, it will load the Jenkins instances required to generate the screenshot(s) either by using a port available on the device or spinning up an isolated Jenkins container.

Once the Jenkins instances spun by the tool are live, the tool will capture any number of screenshot(s) specified in a screenshot command configuration file for that specific Jenkins instance. The tool will not only be able to capture full page screenshots but also screenshots of specific sections on the page.

After going over the various tools available for this kind of task, I would recommend using **aShot** — a WebDriver screenshot utility written in Java. aShot supports a wide array of different “strategies” to capture screenshots, as evident in its Github README file.

As part of this project, I will make sure to create clear documentation for the tool for the benefit of the Jenkins team and future contributors to this project; I think it is an essential part of contributing to free software.

Proposed Schedule:

- **Coding Period 1**: Determine the programming language that will be used (most likely Java), taking into account the wide range of languages available to use for web automation. Determine the architecture that will be used. Develop a proof of concept — it does not have to be the final version, but certainly a working product.
    - ☐ Set up project and development environment
    - ☐ Create sample configurations with JCasC
    - ☐ Spin up instances from code with the JCasC configurations
    - ☐ Automate browsing to the desired page on the instance with Selenium WebDriver
    - ☐ Automate screenshot-capturing strategy with aShot
- **Final Coding Period:** Working on the final product, which includes optimization, bug fixing/QA, and automatic testing (JUnit would come in handy here!). Test various scenarios needed for the documentation. Allow for more advanced use cases. Write documentation.
- **Finally, the project is completed! The code will be made available for the benefit of the Jenkins Project.**
- **Continued Involvement**: I would be happy to continue contributing to Jenkins after this project is over! I did not realize there was such a large community that actively contributes to the project. I have seen Jenkins used in all the companies I have been with, and I am starting to realize the huge impact Jenkins has on software development around the world.

Commitments: As of this time, I do not have any conflicts of interest or commitment, nor do I expect to have any. I will be able to dedicate myself fully to this project.

Relevant Background Experience: I have used Jenkins in the past for building and delivering .NET software. I additionally have experience in web automation, having worked on multiple similar projects in the past. Lastly, over the last seven years, I have had the opportunity to develop software with many different languages (C#, Java, Python, C++, VB, PHP, Typescript, Javascript, HTML) and tools and in many different environments (Visual Studio Community, Visual Studio Code, the full JetBrains fleet, and Eclipse on various operating systems). I believe my experience will allow me to deliver the best possible version of the tool.

Personal: I will be beginning my studies in Computer Science & Economics at the University of Toronto in Fall 2022. I am currently a senior student at Garth Webb S.S., located in Oakville, Canada.

By the same token, I have always been fascinated by DevOps and how many different ways there are to ensure that software gets deployed automatically and without human involvement. I can see

myself working in this field in the future, so I reckon that Jenkins is a powerful tool that will comprise a large part of my career as a DevOps Engineer.

Experience:

Free Software Contributions: I have fixed minor bugs in open source projects in the past, but I have not actively "contributed" to any open source project:

- ConfuserEx-Mod-By-Bed
  - https://github.com/BedTheGod/ConfuserEx-Mod-By-Bed/pull/3
  - https://github.com/BedTheGod/ConfuserEx-Mod-By-Bed/pull/9
- Rocket.Unturned
  - https://github.com/RocketMod/Rocket.Unturned/pull/56
- ZaupShop
  - https://github.com/RocketModPlugins/ZaupShop/pull/4

Language Skill Set: C#, Java, Python, C++ (both managed and unmanaged), Visual Basic, HTML, CSS, TypeScript, JavaScript, PHP.

Work Experience: My most recent work experience is at Otex Canada, where I served as Software Engineering Student Lead, overseeing three other students in a project system. I also undertook a co-op at a local startup, Social Robots Inc., where I developed Android apps for humanoid robots for a duration of two hundred hours. Lastly, I have been working as a freelancer since 2015, with hundreds of clients around the world currently using my software!

That is my proposal for Jenkins Docs — Google Summer of Code, 2022. If you have any questions, do not hesitate to contact me!

Thank you for your consideration,

Roy Berenshteyn

