Software Engineering, University of Oulu

**Lab 2: CI/CD**

*Disclosure: The material in this paper has not been reviewed, endorsed, or approved of by the Rust Foundation. For more information on the Rust Foundation Trademark Policy, click* [*here*](https://docs.google.com/document/d/1ErZlwz9bbSI43dNo-rgQdkovm2h5ycuW220mWSOAuok/edit)*.*

1. **CI/CD**

[CI/CD](https://en.wikipedia.org/wiki/CI/CD) refers to the combined practices of **continuous integration** and **continuous delivery**,forming a common approach to software development nowadays, particularly in collaborative environments. CI/CD promotes automation in building, testing and deployment. The goal is to increase early defect discovery, enhance productivity and speed up release cycles.

1. **GitHub Actions**

GitHub allows the implementation of powerful CI/CD pipelines via GitHub Actions.



GitHub Actions allow you to set custom workflows for your projects. The workflows define actions that are executed when a specific event occurs, such as a push to a repository. All the jobs can be defined in a .yml file inside a .github folder in your project. Separate scripts can also be included and accessed by the workflow file.

A screenshot of a computer

Description automatically generated

You can find a useful guide here: <https://docs.github.com/en/actions/quickstart>

1. **Exercise**
2. Create a GitHub classroom environment: <link here>
3. Add the following features to the CI/CD pipeline:
   * Set workflow to be executed on push to the repository.
   * Set the jobs to be run on the latest version of Ubuntu.
   * Add the following steps:
     + [Checkout](https://github.com/actions/checkout) the repository so the workflow can access it.
     + Run the program so that it prints “Hello, world!”.
     + Run *output\_check.sh* to check that the output matches the expectation.
4. Commit your changes and push them to the created remote repository.
5. Return a link to your repository in Moodle.

Note #1: Correctly implemented pipeline should result to a green checkmark:

A black background with white text

Description automatically generated

Note #2: If GitHub Actions runner encounters permission issues when trying to run a shell script, refer to this: <https://github.com/orgs/community/discussions/26239>