

# Lab 1

## Git and LaTeX Intro

Updated: January 13, 2020

### 1.1 Introduction

In this lab, you will learn about two tools that are especially suited for programming. Git is a version control software that helps you a) keep track of modifications you make to a code project and b) collaborate with others on that project. LaTeX is a typesetting language that can produce professional-looking documents and makes including code very easy.

### 1.2 Objectives

After completing this lab, you should be able to:

- Describe the basic Git process
- Use GitHub Desktop to synchronize local and remote files in a repository
- Describe the purpose of LaTeX
- Create a lab report in LaTeX that includes images, code, lists, tables, and section headings

### 1.3 Git and GitHub

Read and follow the steps in the GitHub Desktop Intro reference document to:

- Create a GitHub account
- Download and setup GitHub Desktop (GHD)
- Create your own repo
- Publish your repo to GitHub
- Download files from Canvas & commit them to your repo
- Push your updates to GitHub

### 1.4 LaTeX

Read the LaTeX Tutorial reference document, and use it to create your first report as outlined below.

### 1.5 Procedure

#### 1.5.1 Get Started

If you haven't already, download the files provided on Canvas and put them in your repo folder. Commit these to your repo and push them to GitHub.

Open the LaTeX report template in TeXstudio. Save it as "2137\_lab1\_report.tex". Update the title and author.

#### 1.5.2 Table and Figure

In the Results section, replicate the table and figure shown in Figure 1.1. Notes:

- All tables, figures, and code should be numbered (e.g. Figure 1) and have a caption.
- Use the method shown under Expected Results Table in the LaTeX Tutorial. It uses a single **figure** environment to ensure that the table and image do not get separated.
- For your LaTeX files, copying is *encouraged*! It's much easier to copy and modify than to try to remember how to write the code from scratch. Refer to the code in `latex_tutorial.tex` as well as the PDF it produces.
- Use the `trim` and `crop` options for the `\includegraphics` command to just get the part of the image you want.

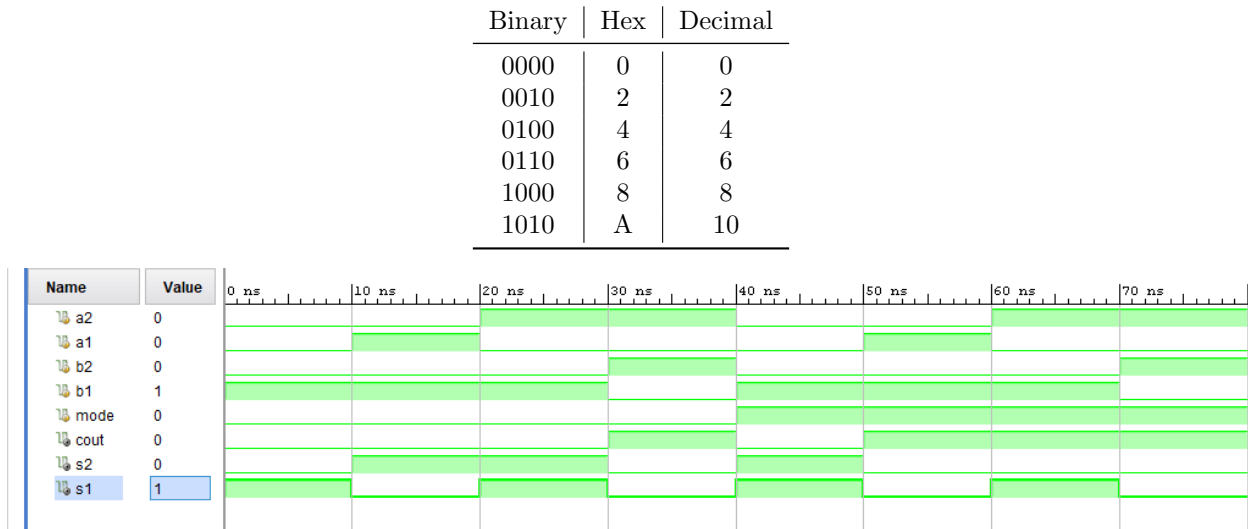


Figure 1.1: Table and simulation waveform to reproduce

### 1.5.3 Screenshot

Commit these changes to your repo and push them to GitHub. In GHD, click the History tab to show your all of your commits thus far. Take a screenshot of this and include it in your report. Center this image on the page. You should be able to read the name of your repo. *Tip:* If you make the window smaller before you take the screenshot, the text inside the window will be larger when you include it in your document.

### 1.5.4 Code

Include the code from `example_code.sv` in the Code section.

### 1.5.5 Questions

Under the Q&A section, answer the following questions in a numbered list:

1. What is your GitHub user name?
2. What LaTeX environment produces a bulleted (non-numbered) list?
3. Write the equation  $y(t) = 1/2 e^{-t}$  using LaTeX equation formatting.
4. What is the shortcut key for compiling your LaTeX document?

## 1.6 Deliverables

Commit and push these changes to your repo. Submit both the PDF and TeX files for your completed report on Canvas. (Normally, you will submit only the PDF.)