

# **Project Report**

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# **Introduction**

In growing technological fields like Computer Science, Artificial Intelligence, Machine Learning, etc. It is not only reliant on theory, resources and knowledge but having practical knowledge, skills and hands on experience is quite important but the various topics to be covered in this module were meant to teach just that. I will be briefing over all of the topics that were covered in this module in this report.

## **Week 1**

We were introduced to the course and we started with the first and most important requirement for getting a job in technical field which is an online portfolio. Basically they are online resumes that contain details about projects done by us which truly showcases our capabilities and helps to stand out against the crowd and land an interview at some famous tech giants. Then we were shown what are some of the do's and don't's to create a portfolio of such level and what do employers look for in such a portfolio? Later to get much better idea of how portfolios should / should not be, we looked at a variety of portfolios of some people and gave our opinions by using the tips we learned to spot mistakes and good tricks that lead to a favourable portfolio.

## **Week 2**

We were taught a skill that is also important and useful to have apart from a compelling portfolio that is Touch Typing. But before we looked in to that we started all the way in the back from when keyboards were being introduced and developed. What problems did they face and how did they address them by changing the layouts as per the needs of the people. Then we came on to typing styles out of which two of them are the most prevalent, touch typing and hunt-peck method. The former being the superior than the latter. The less favourable method is exactly as the name suggests you hunt for keys and peck them on the keyboard which significantly lowers the typing speed and increases the effort and time required to do any tasks related to typing. A much more efficient way is to adopt to touch typing also called blind typing / touch keyboarding. It is exactly as it sounds like emphasizing muscle memory for typing without using sight to find the keys. We then used websites like typingacademy to test our typing speeds before practising and adopting touch typing method to find whether it makes any difference or not. Although it might seem like it hardly makes any difference if its +-10 wpm but in the long run even it can cost us hours and weeks which can be lost or saved depending on how seriously we take it .

## **Week 3**

I always used to create documents like resume, essays, etc using Microsoft Word or using templates from websites online until recently, when we learned about LaTeX

which is a software used for making such documents and to be precise it is a tool for typesetting professional documents. It uses a method in which document gets separated from content and its style which allows it to be easily changed as per the requirements. All LaTeX files use a .tex file-naming convention. Everything that appears before the .tex file is called the preamble. Documents can be commented using a percentage symbol which does not affect that part of the document. It also consists of commands to format it in bold, italics or underlined styles. An emphasize argument is used to italicise a text. It consists of two environments for unordered or ordered lists depending on the requirement itemize or enumerate can be used. One of the biggest advantages of LaTeX is the ease with which mathematical expressions can be written. It has two delimiter pairs typeset namely inline and display modes. It even has paragraphs, lines, abstracts and sectioning commands. It supports images, tables and bibliography management. Fun fact: This project report has been written using LaTeX as well!

```
% This is a comment it is ignored by the compiler
\documentclass{article} % This command is used to set the type of document you are working on such as an article, book, or presentation

\usepackage{geometry} % This package allows the editing of the page layout
\usepackage{amsmath} % This package allows the use of a large range of mathematical formula, commands, and symbols
\usepackage{graphicx} % This package allows the importing of images

\title{Understanding the \LaTeX Preamble} % This is the documents title
\author{Matthew Frenkel} % This is the authors name
\date{} % This allows you to set the date (in the case the date will be left blank)

\begin{document}
```

---

## **Week 4**

Next we learned Linux shell which is a command line interface and sort of a descendent to Unix. It has many distros out of which the most famous world wide is Ubuntu because of its simplicity and the features and capability it offers are at par with any of large scale operating systems dominating today while being less resource intensive. There are specific commands that need to be used in order to operate and navigate through the operating system.

```
intellipaat@DESKTOP-SPC6JQB MINGW64 ~/ProjectGit1  
$ cd
```

```
intellipaat@DESKTOP-SPC6JQB MINGW64 ~  
$ cd ProjectGit1
```

```
intellipaat@DESKTOP-SPC6JQB MINGW64 ~/ProjectGit1  
$ git init  
Initialized empty Git repository in C:/Users/intellipaat/ProjectGit1/.git/
```

```
intellipaat@DESKTOP-SPC6JQB MINGW64 ~/ProjectGit1 (master)  
$ |
```

## Week 5

This helped to brush up some existing knowledge of HTML and CSS . They are the fundamental building blocks of web development. It is a markup language used to structure the content of web pages, whereas CSS is a style sheet language used to describe the presentation and layout of HTML elements. HTML provides a set of tags that define the structure and semantic meaning of elements like headings, paragraphs, images, links, and more. CSS, on the other hand, allows developers to control the appearance of these HTML elements by specifying properties such as colors, fonts, margins, and positioning.

By combining HTML and CSS, web developers can create visually appealing and interactive web pages. HTML provides the structure and content of the page, while CSS defines the visual aspects, such as layout, colors, and typography. This separation of concerns between structure and presentation enables efficient and modular web development. HTML and CSS are essential skills for anyone looking to build websites or web applications, and understanding how they work together is crucial for creating engaging and user-friendly online experiences.

```

1  <!DOCTYPE html>
2  <html data-require="math math-format">
3  <head>
4      <meta http-equiv="Content-Type" content="text/html; charset=UTF-8
5      ">
6      <title>Adding and subtracting fractions</title>
7      <script src="../../khan-exercise.js"></script>
8  </head>
9  <body>
10     <div class="exercise">
11         <div class="vars" data-ensure="D1 !== D2">
12             <var id="N1">randRangeNonZero( -9, 9 )</var>
13             <var id="N2">randRangeNonZero( -9, 9 )</var>
14             <var id="D1">randRangeExclude( 2, 9, [ N1, -N1 ] )</var>
15             <var id="D2">randRangeExclude( 2, 9, [ N2, -N2 ] )</var>
16             <var id="LCM">getLCM( D1, D2 )</var>
17         </div>
18         <div class="problems">
19             <div>
20                 <div class="question">
21                     <p><code><var>fraction( N1, D1 )</var> + <var>
22                     fraction( N2, D2 )</var> = {?}</code></p>
23                 </div>
24                 <div class="solution" data-type="rational"><var>N1 / D1
25                 + N2 / D2</var></div>
26             </div>
27         </div>
28         <div class="hints">
29             <p>First, we need to find a common denominator. The least
30             common multiple of <code><var>D1</var></code> and <code><var>
31             D2</var></code> is the smallest possible common denominator.
32             </p>
33         </div>
34     </body>
35 </html>

```



```
// SPDX-License-Identifier: GPL-2.0
/*
 * Performance events core code:
 *
 * Copyright (C) 2008 Thomas Gleixner <tglx@linutronix.de>
 * Copyright (C) 2008-2011 Red Hat, Inc., Ingo Molnar
 * Copyright (C) 2008-2011 Red Hat, Inc., Peter Zijlstra
 * Copyright © 2009 Paul Mackerras, IBM Corp. <paulus@au1.ibm.com>
 */

#include <linux/fs.h>
#include <linux/mm.h>
#include <linux/cpu.h>
#include <linux/smp.h>
#include <linux/ldr.h>
#include <linux/file.h>
#include <linux/poll.h>
#include <linux/slab.h>
#include <linux/hash.h>
#include <linux/tick.h>
core.c
```

KALYN NAKANO



HELLO, WORLD! I'M A DEVELOPER AND DESIGNER.

ABOUT

RÉSUMÉ

WORK

```
> Kalyn.origin
=> "Palo Alto, CA"

> Kalyn.education
=> "University of Southern California"

> Kalyn.major
=> "Computer Science"

> Kalyn.expectedGraduation
=> "May 2014"

> Kalyn.interests
=> ["Design", "Code", "coffee", "typography", "music", "bicycles", "brunch"]
```

## **Week 6**

Jupyter is an open-source web application that allows users to create and share documents called notebooks. These notebooks can contain live code, visualizations, explanatory text, and equations. It supports multiple programming languages like Python, R, and Julia, making it a versatile tool for data analysis, scientific computing, and machine learning. It provides an interactive environment where code can be executed and results can be observed in real-time. Jupyter notebooks have gained popularity in the data science community for their ability to combine code, visualizations, and narrative explanations, making them a powerful tool for exploration, experimentation, and sharing of computational workflows.

## The matplotlib object-oriented API

The main idea with object-oriented programming is to have objects that one can apply functions and actions on, and no object or program states should be global (such as the MATLAB-like API). The real advantage of this approach becomes apparent when more than one figure is created, or when a figure contains more than one subplot.

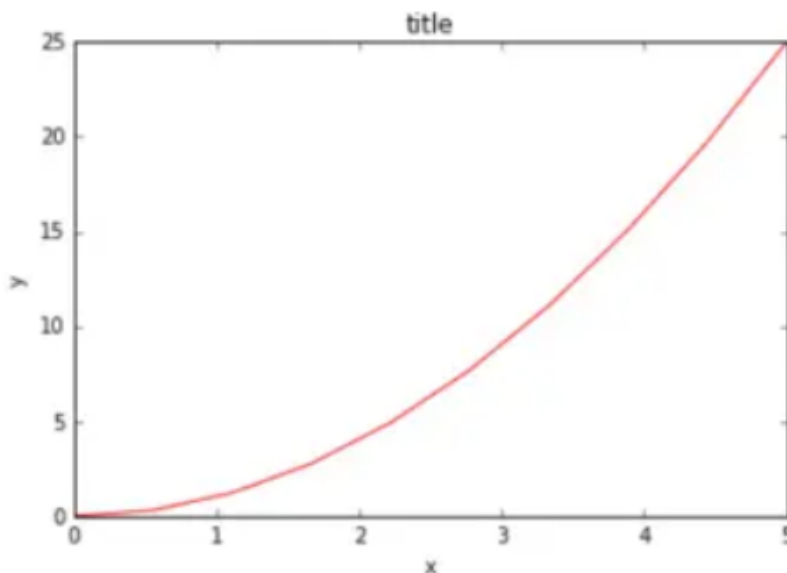
To use the object-oriented API we start out very much like in the previous example, but instead of creating a new global figure instance we store a reference to the newly created figure instance in the `fig` variable, and from it we create a new axis instance `axes` using the `add_axes` method in the `Figure` class instance `fig`:

```
In [9]: fig = plt.figure()

axes = fig.add_axes([0.1, 0.1, 0.8, 0.8]) # left, bottom, width, height (range 0

axes.plot(x, y, 'r')

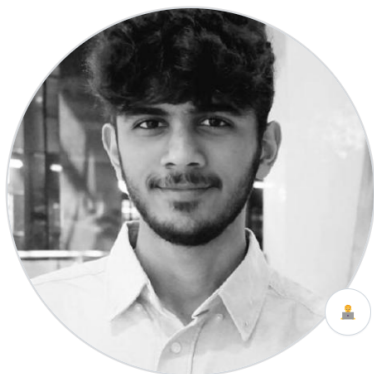
axes.set_xlabel('x')
axes.set_ylabel('y')
axes.set_title('title');
```



## Week 7 and 8

Finally we touched the most hot topics in coding world Git and Github and all about managing repositories. I even created my very own repository for Computer Science Lab which consists of files for all the exercises done till date which can be accessed via this link

<https://www.github.com/harshttechnoboy/Computer-Science-Lab-Exercises> .  
Github offers a neat feature that allows users to create a special repository that hosts the website through html and css files that are stored in it. I used the skills from HTML and CSS class to create my very own portfolio website which can be visited through this link <https://harshttechnoboy.github.io>



Harsh Dani  
harshtechboy

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harshtechboy / README.md

Hi 🙋 I'm Harsh

- I'm currently learning app/game development and creating a NFT
- Ask me about new technology, car and bike related stuff
- My portfolio website can be viewed at [harshdani.com](https://harshdani.com)
- I write automotive articles on [motortribute.com](https://motortribute.com)

Socials:

[Be Behance](#) [LinkedIn](#) [Stackoverflow](#)

Tech Stack:

[C++](#) [css3](#) [html5](#) [java](#) [python](#) [mysql](#) [Adobe After Effects](#) [adobeillustrator](#) [Adobe Lightroom](#)  
[adobe photoshop](#) [Adobe Premiere Pro](#) [blender](#) [figma](#) [Canva](#) [pandas](#) [Plotly](#) [Linux](#) [Arduino](#) [Notion](#)

GitHub Stats:

## **Week 9**

Open Source Contribution is the key to enhancing knowledge and skills in a way that works both ways, helps the person contributing by getting experience of working on a new project and the receiver benefits from getting feedback and opinions of people with different ideas and approaches to that particular problem. We were given the task where a team leader would create a collaborative blog and add an article.html file to it and others would fork that projects repository create their own branch with their article.html file in it and create a pull request to merge that with the master branch. I would like to say that was a fun and unique experience and I am happy to have been a part of that project.

## **Conclusion**

In summary, the computer science lab class has been a crucial part of our education, offering practical experience, technical skills, and a deeper understanding of computer science concepts. Through hands-on projects, we improved our coding abilities, analytical thinking, and logical reasoning. The class encouraged innovation, guided by knowledgeable instructors, and exposed us to industry tools and software.

Additionally, teamwork and collaboration were emphasized, enhancing our interpersonal skills. Overall, the lab class has prepared us for real-world challenges and equipped us with valuable skills for successful careers in computer science.