COMPSCI 1XC3 Week 2 Tutorial Notes

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Contents

Assumptions and Comments

This tutorial note is based on COMPSCI 1XC3 lecture note contents. To view the lecture notes, please look at `https://github.com/pedrampasandide1993/Computer-Science-Practice-and-Experience-Development-Basics/blob/main/COMPSCI%201XC3%20Lectures.pdf` This includes all necessary course contents

If you see any possible problems, please contact Jingze for corrections as soon as possible.
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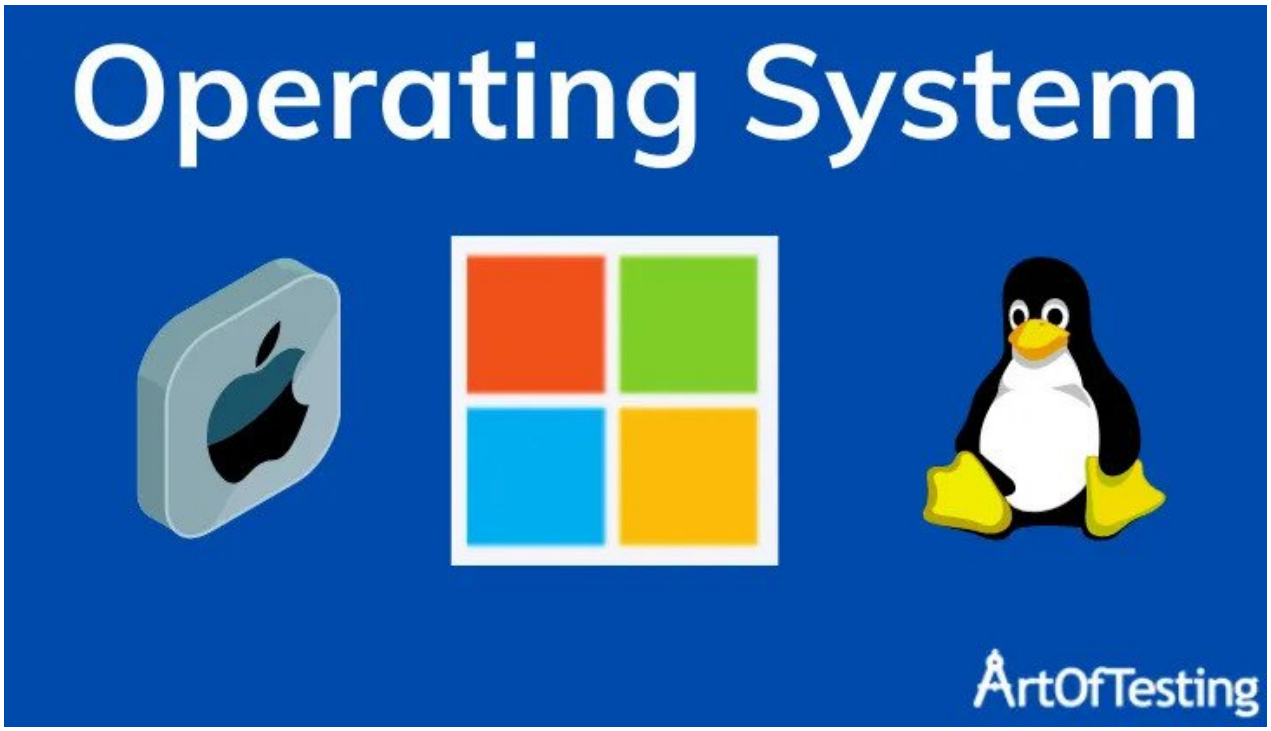


1 Introduction To GitHub

GitHub is similar to a programming forum, where over 100 million developers shape the future of software, together. GitHub enables software developers to contribute software engineering codes/works, build version controls on software projects, use git commands to upload and download projects and discuss possible further developments.

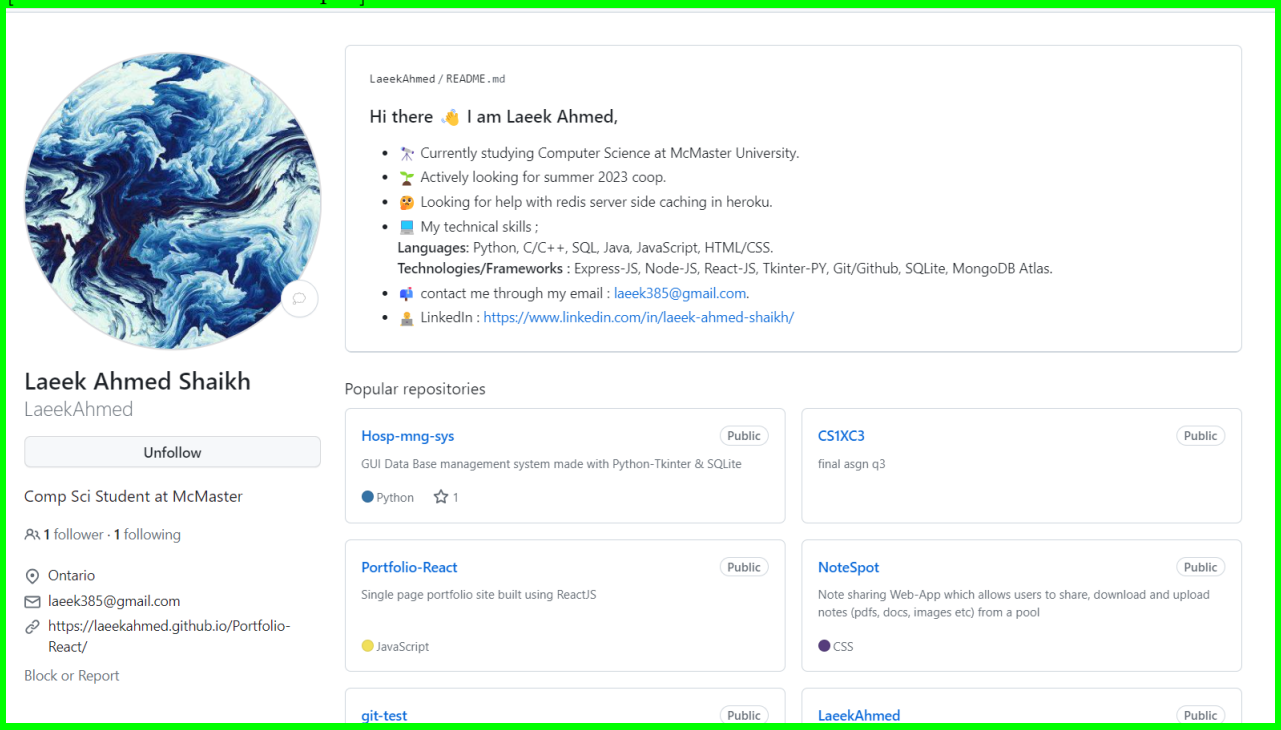
GitHub supports most programming languages, libraries, and external tools. Developers can publish their software applications and websites for free.

1.1 GitHub user guidance

Creating a GitHub Account

[Step 1] Open your computer, go to `https://github.com/`
[Step 2] Click the "Sign Up" button on the top-right side of page. You only need to have an individual email address. Having an account enables you to
[Step 3] After registration, you can click your cover photo in the top-right corner, and you need to go to "Your profile", where you can see all of your existing projects.

[Here is the Successful Output]



1.2 Markdown: write "README" files

Almost every GitHub repository has a README file. A README file is a text file that introduces and explains a project. It contains information that is commonly required to understand what the project is about. README files can have multiple different forms, including **.md** and **.txt** extensions.

Drawing README file components (for example, writing graphs, inserting images and links, drawing tables and diagrams) requires using Markdown commands.

Markdown is a lightweight markup language with plain text formatting syntax designed so that it can be converted to HTML and many other formats using a tool by the same name.

Markdown Effect	Command Syntax
Italic	*Your Text*
Bold	**Your Text**
Incline Link	[Your Link Text](Your Url)
Headings (H1 - H6)	#, ##, ###, ####, #####, ###### Your Text
Paragraph	Your Text
Unordered Lists	*Your Text 1 *Your Text 2
Ordered Lists	1.Your Text 1 2.Your Text 2
Code	‘Your Code‘
Code Block/Syntax Highlighting	“‘Your Code“‘

2 Introduction to Latex

Latex is a file-preparation system. Instead of using word processors, Latex uses markdown languages to determine its layering and contents. Its file extension is **.tex**, and it is compatible with PDF file formats.

LaTeX offers numerous advantages, including precise control over document layout, scientific expressions of professional equations, tables, and figures, the ability to accurately display document objects, and excellent support for generating bibliographies and citations using BibTeX or BibLaTeX.

2.1 Setting Up Latex

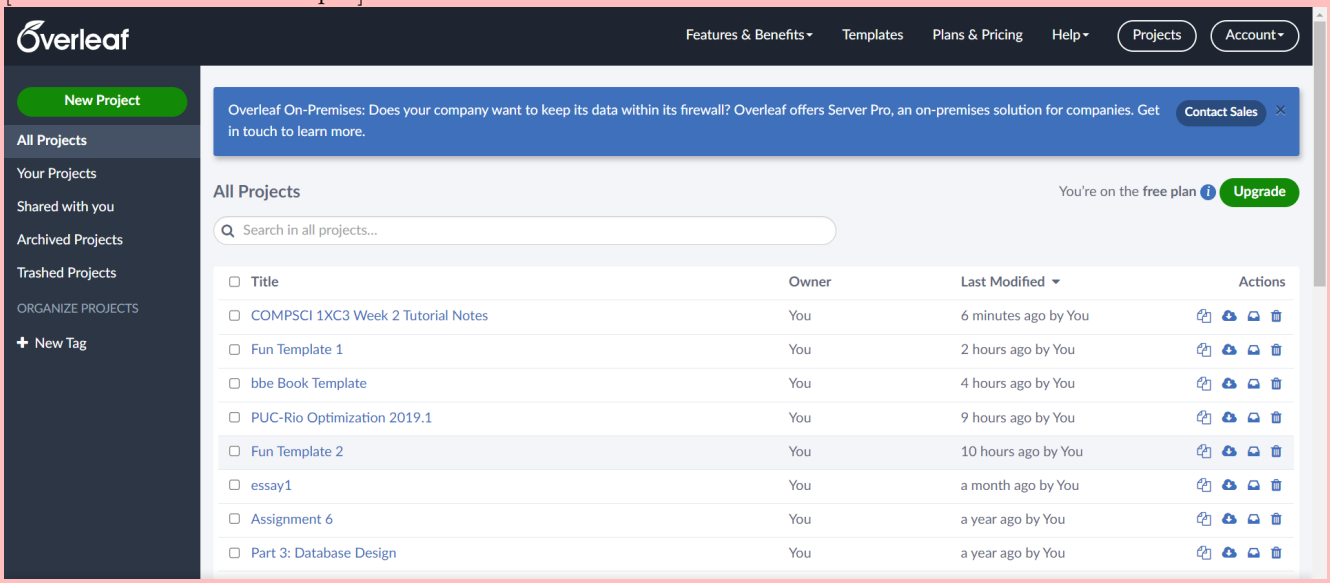
Markdown Obsidian and Overleaf are two useful tools for editing Latex.
Obsidian Installation: `https://help.obsidian.md/Getting+started/Download+and+install+Obsidian`
Latex Syntax: `https://help.obsidian.md/Editing+and+formatting/Basic+formatting+syntax`

2.2 Latex Markdown Commands

Using Overleaf

[Step 1] Open your computer, go to `https://www.overleaf.com/`
[Step 2] Login and you will see the list of projects (Do not worry about logging in, this website allows Gmail accounts to login)
[Reminder] Overleaf does not need any installation, and it is compatible in almost all environments

[Here is the Successful Output]



3 C programming Basic Syntax

3.1 Switch to a new line

```c
#include <stdio.h>

int main() {
  printf("Hello World!\n");
  printf("I am learning C.");
  return 0;
}
// OutPut:
// Hello World!
// I am learning C.
```

In this program, the command "\n" is after the string "Hello World!", which terminates the first line. As a result, the later output has to go to the second line.

3.2 C Data Types

There are four basic data types: **int, float, double, char**

Data Type	Size	Storing Description
int	2 or 4 bytes	Stores whole numbers, without decimals
float	4 bytes	fractional numbers, containing one or more decimals. Sufficient for storing 6-7 decimal digits
double	8 bytes	fractional numbers, containing one or more decimals. Sufficient for storing 15 decimal digits
char	1 byte	Stores a single character/letter/number, or ASCII values

Each basic data type has its own format specifier, which is commonly used in the print function calling:

Data Type	Format Specifier
int	%d or %i
float	%f
double	%lf
char	%c
strings (list of chat)	%s

3.3 Type Conversion

```
#include <stdio.h>

int main() {
  int x = 7;
  int y = 3;
  int division = x / y;

  printf("%d", division);
  return 0;
}
//Output: 2
```

In this program, 7/3 has a result 2.333333.... However, the variable "division" is an integer. So its value is converted to 2. Integers can be converted to Double and float,

3.4 C Booleans

C has two boolean values: true (equivalent to 1) and false (equivalent to 0).

```
// Create boolean variables
bool isProgrammingFun = true;
bool isFishTasty = false;

// Return boolean values
printf("%d", isProgrammingFun);   // Returns 1 (true)
printf("%d", isFishTasty);        // Returns 0 (false)
```

A Bonus Material

Stack Overflow - the programming discussion forum:
`https://stackoverflow.com/`

Complete Scientific Documentations for C Programming:
`https://learn.microsoft.com/en-us/cpp/c-language/?view=msvc-170`