CS261L Data Structures and Algorithms (Pr)

Lab Manual (Week 5)

Instructor:

- Mr. Samyan Qayyum Wahla

Registration No._____

Name: _____

Guide Lines/Instructions:

You may talk with your fellow CS261-ers about the problems. However:

- Try the problems on your own *before* collaborating.
- Write up your answers yourself, in your own words. You should never share your typed-up solutions with your collaborators.
- If you collaborated, list the names of the students you collaborated with at the beginning of each problem.

Today's Task:

- CRUD operations in Python
- Learn to write formal reports.

Part 1: CRUD using PyQT in Python

Installation Guide:

- First Install PyQT5 by running the following command in the cmd.

- To check if PyQT5 is installed, you can run the command '**pip show pyqt5**' in the cmd.
- Secondly to install QT Designer to designing GUI for python, you need to run following command and after complete installation you can find the QT Designer in the following path of your PC:
  <Base Path to user folder>\AppData\Local\Programs\Python\Python310\Lib\site-packages

- In case of error in installation process, you can also download it directly from *https://build-system.fman.io/static/public/files/Qt%20Designer%20Setup.exe*
- After completing the installation, download the sample project containing from the following link: https://bit.ly/3e1qDok
  This project contain a basic program illustrating the CRUD Operations using Graphical User Interface (GUI) in python.
- Play with the provided code and have fun.

Your Turn:

- Create a group of two members to complete the following task.
- Create a new Gitlab repository. Add samyan.uet@gmail.com as collaborator
- Replicate the following page UI, and save the data in a csv file https://bit.ly/3SuMKTh
  You have your choice how to create functions and save the data in csv file.
- Create an Index page which shows all form submissions, and an option to edit and delete the form submission.
- When application reloads, all the changes should persist in the system.

Part 2: Learning Latex

LaTeX is a software for typesetting documents. In other words, it's a document preparation system. For now, let's continue by looking at how we can make the best use of it.

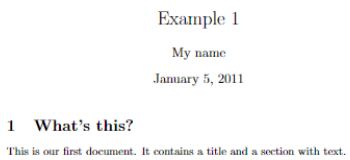
To learn more about LaTeX: https://www.overleaf.com/learn/latex/Learn_LaTeX_in_30_minutes

We will take the first example and insert some commands that will produce a nice-looking title.

Titling your document

We will take the first example and insert some commands that will produce a nice-looking title.
Type the following code in the editor.

Document	View

`\documentclass{article}`
`\begin{document}`
`\title{Example 1}`
`\author{My name}`
`\date{January 5, 2011}`
`\maketitle`
`\section{What's this?}`
`This is our first document. It contains a title and a section with text.`
	

Let's have a closer look at what each part of our code does.

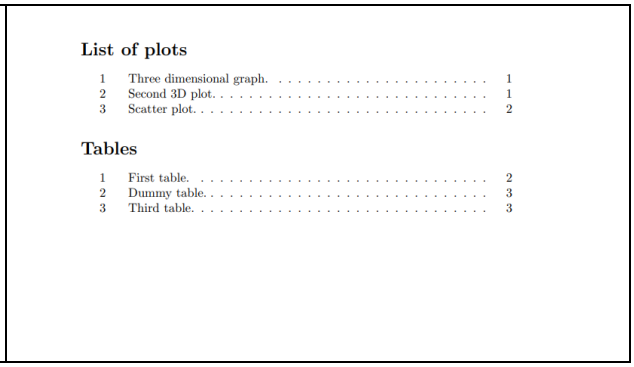
The first line of code, \documentclass{article}, declares the document type as its class, which controls the overall appearance of the document. After setting the document class, our content known as the body of the document, is written between the \begin{document} and end{document} tags.

we've used the command \maketitle that prints the title, author, and date in a nicely formatted manner. By the \section command, we produced a heading, bigger and bolder than normal text. Then we let some text follow.

Lists of tables and figures

A list of tables and figures keep the information organized and provide easy access to a specific element.
Let's start with a basic example:

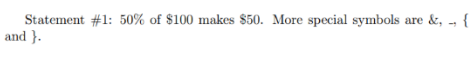
Document	View

The below package is used to make the contents clickable \usepackage[hidelinks]{hyperref} \begin{document} \listoffigures \listoftables \clearpage	

Writing special characters in our text

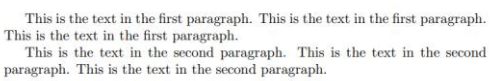
By putting a backslash before such a special symbol, we turned it into a LaTeX command.

Enter the following line in your document:

Document	View
\documentclass{article} \begin{document} Statement \#1: 50\% of \$100 makes \$50. More special symbols are \&, _, \{ and \}. \end{document}	

Paragraphs and New Lines

To start a new paragraph in LaTeX, look at the following code below.

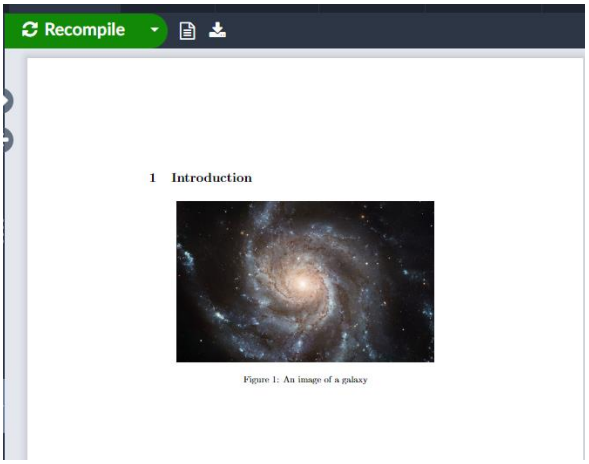
Document	View
\documentclass{article} \begin{document} This is the text in the first paragraph. This is the text in the first paragraph. This is the text in the first paragraph. \par This is the text in the second paragraph. This is the text in the second paragraph. This is the text in the second paragraph. \end{document}	

\par command starts a new paragraph. You can align the paragraphs using commands **\centering**, **\raggedleft**, **\raggedright** and **\justifying** present in the ragged2e package.

\newline command breaks the line right after where it is. It can be used only in paragraph mode. Latex also provides many other commands like **\newpage** requests a new page, \\ start a new paragraph or line. To learn more about the paragraph's alignment, latex line and page breaking, check latex documentation.

Including Images

Including images in your LaTeX document requires adding package: \usepackage{graphicx} before the beginning of your document.

Document	View
\documentclass{article} \usepackage{graphicx} \begin{document} \section{Introduction} \begin{figure}[!ht] \centering \includegraphics[width=4cm]{check} \caption{An image of a galaxy} \label{fig:galaxy} \end{figure} \end{document}	

Including Tables

Creating a simple table in latex:

Document	View
\begin{center} \begin{tabular}{ |c|c|c| } \hline cell1 & cell2 & cell3 \\ cell4 & cell5 & cell6 \\ cell7 & cell8 & cell9 \\ \hline \end{tabular} \end{center}	cell1 cell2 cell3 cell4 cell5 cell6 cell7 cell8 cell9

The tabular environment is the default LATEX method to create tables. You must specify a parameter to this environment; here we use {c c c} which tells LaTeX that there are three columns and the text inside each one of them must be centered.

To learn more about the Tables, check latex documentation

Your Turn(Individual Task):

Download the following template
https://www.overleaf.com/read/sgzpmxsyjqfd

using this template submit the document which contains the following Text

- Problem 1-1 of CLRS
- Problem 4-6 of CLRS
- Problem 13-1 of CLRS

What to Submit:

1. For Part 1, submit Gitlab repository of eduko
2. For Part 2, Submit Tex files and pdf file on eduko.