Latex Lecture-2

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5) Different options for new project
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1. Introduction:

- LaTeX (pronounced LAY-tek) is a higher layer of the TeX programming language specifically designed to create ***professionally formatted documents*** that include ***complex mathematical expressions***. Such documents include:
  - ✓ Academic Journals
  - ✓ Book
  - ✓ Formal Letters
  - ✓ Homework Assignment
  - ✓ Poster
  - ✓ Presentation
  - ✓ Project/Lab Report
  - ✓ Resume/CV
- LaTeX can be installed on your PC but most users now use cloud based applications e.g. www.overleaf.com (free).
- Overleaf gives instant access to the LaTeX programming language and has an extensive help environment.
- A LaTeX program has two parts: The ***Preamble*** containing packages or modules of Tex code and the ***Body***.
- All keyword commands begin with a ***backslash*** (\ ) and parameters or arguments are passed using ***curly brackets*** ({}).
- Comments can be added using the **%** character. The program example below contains ***two statements*** in the ***Preamble*** and ***three*** in the ***Body***:

```
\documentclass[a4paper,12pt]{article}     % Preamble section
\title{Hello world!}
```

```
\begin{document}                                % Body section
\maketitle
\end{document}
```

2. **Registration:**
    - To start using Overleaf go to www.overleaf.com.
    - If you don't have an account enter your e-mail address and set a password in the corresponding boxes below ***Get started now***, click ***Register*** and that's it, you will be redirected to the project management page where you will be guided into how to create a new project.
    - If you already have an account, click **Login** in the upper right corner, then type in your ***email*** and ***password*** and click the Login button (Figure 1).

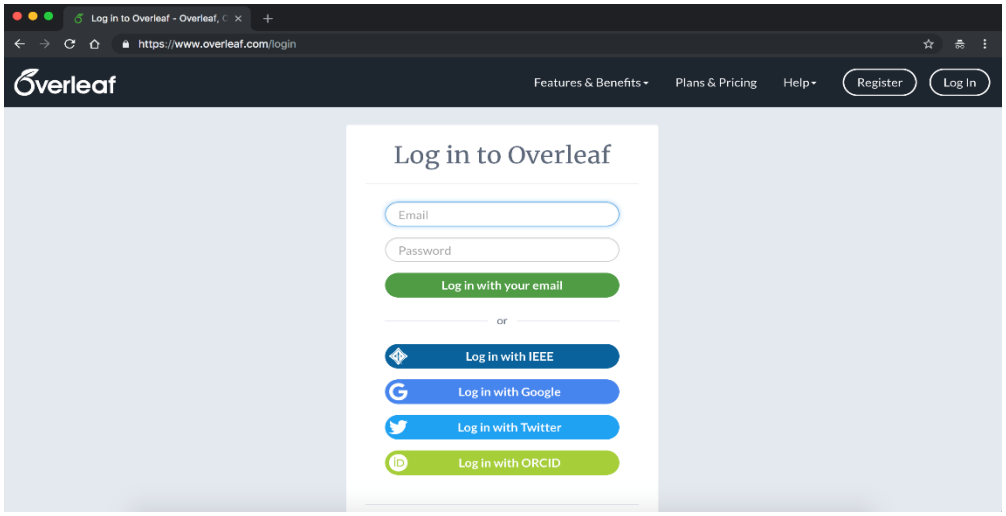


Figure 1. Registering to overleaf

- Once you are logged in, you should see the Overleaf Project Management page it will look like the Figure 2.

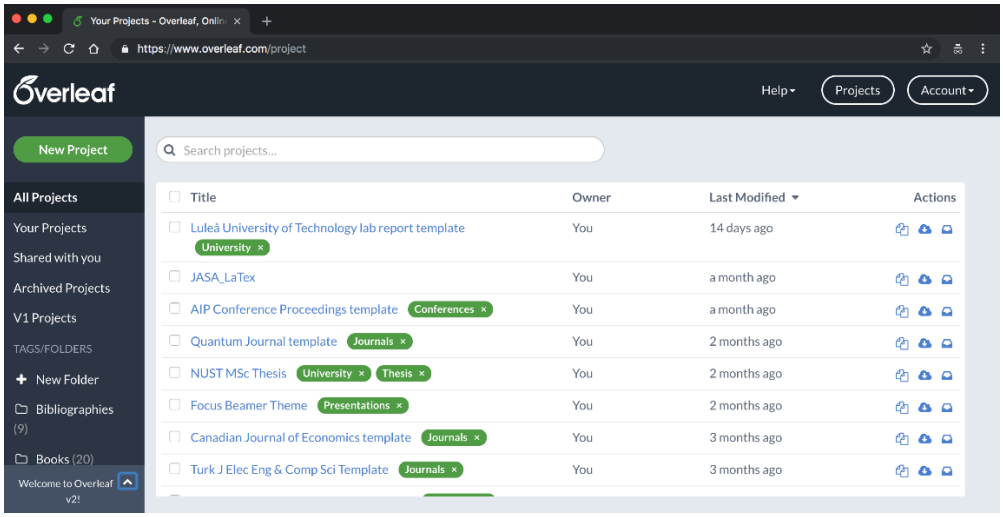


Figure 2. Overleaf Project Management

3. **Starting a new project:**
   - To start a project, click on ***New Project***. There are ***several option*** to start a new project. The ***first two options*** are for creating a project from scratch, with a basic setting.
     - ✓ Blank Project
     - ✓ Example Project
     - ✓ Upload Project
     - ✓ Import from GitHub
   - Click on the Blank Project and you will see a ***text box*** where you should enter the ***name of your new project***

4. **Components of overleaf editor:**

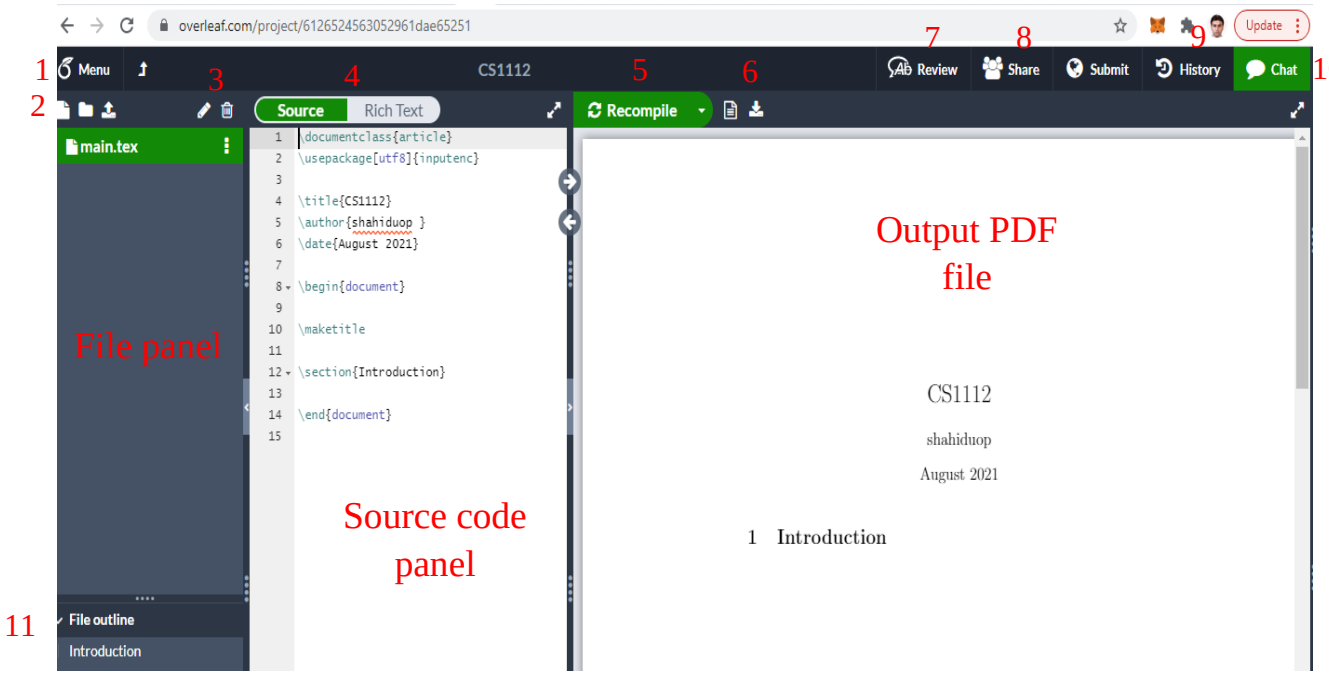


Figure 3. An overview of the overleaf editor

1. **Menu:** The menu has the following main sections.
   - ✓ Download (Source code (zip) and PDF files)
   - ✓ Action (Copy and ***word count***)
   - ✓ Syn (Dropbox, Git, GitHub)
   - ✓ Setting (Compiler, version, document name, version…., etc.)
   - ✓ Help
2. **Three icons:**
   - ✓ Create file: For creating a new file.
   - ✓ Create folder: For creating a new folder
   - ✓ Upload file: For uploading files (i.e., template, file, image, etc.)
3. **Rename and delete project or file**
4. **View options:** Latex format or rich text format
5. **Recompile:** The recompile results in an updated output
6. **Download icon:** This option allows you to download the PDF file.
7. **Review:** This option allows others (i.e., experts) to review a documents and give feedback.
8. **Share:** This option let you to share your documents with other team members for working in a common document.
9. **Submit:** This option let you to submit your article (. i.e., to the journal/conference, etc.)
10. **Chat:** When sharing with other colleagues, you can chat and discuss using the chat option.
11. **Sections/Caption:** This option shows the main sections/label/caption of your article/document, such as Introduction/Related work/Proposed work etc.

5. **Different options for new project:**
   A. **Blank project:** This option creates a project from the scratch with a basic layout as shown (Source code) in the following Figure 3.

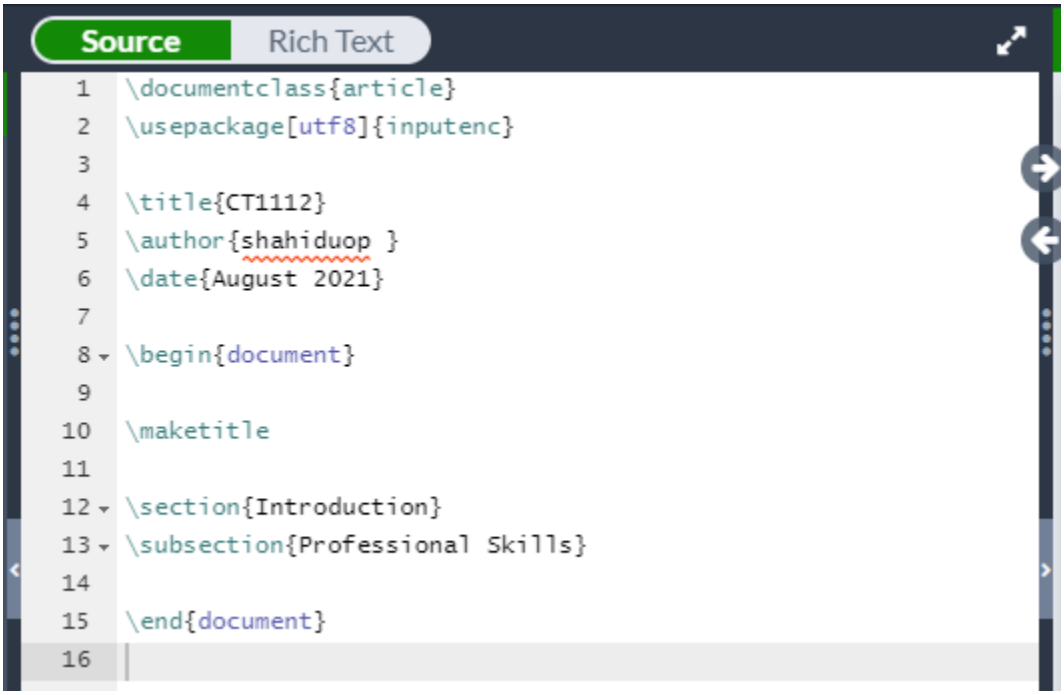


Figure 4. An overview of source code for a ***Blank Project***

   B. **Example project:** This option creates a new project with examples for different sections. You need to change/edit the sections according to your needs. The layout looks like shown in Figure 5.

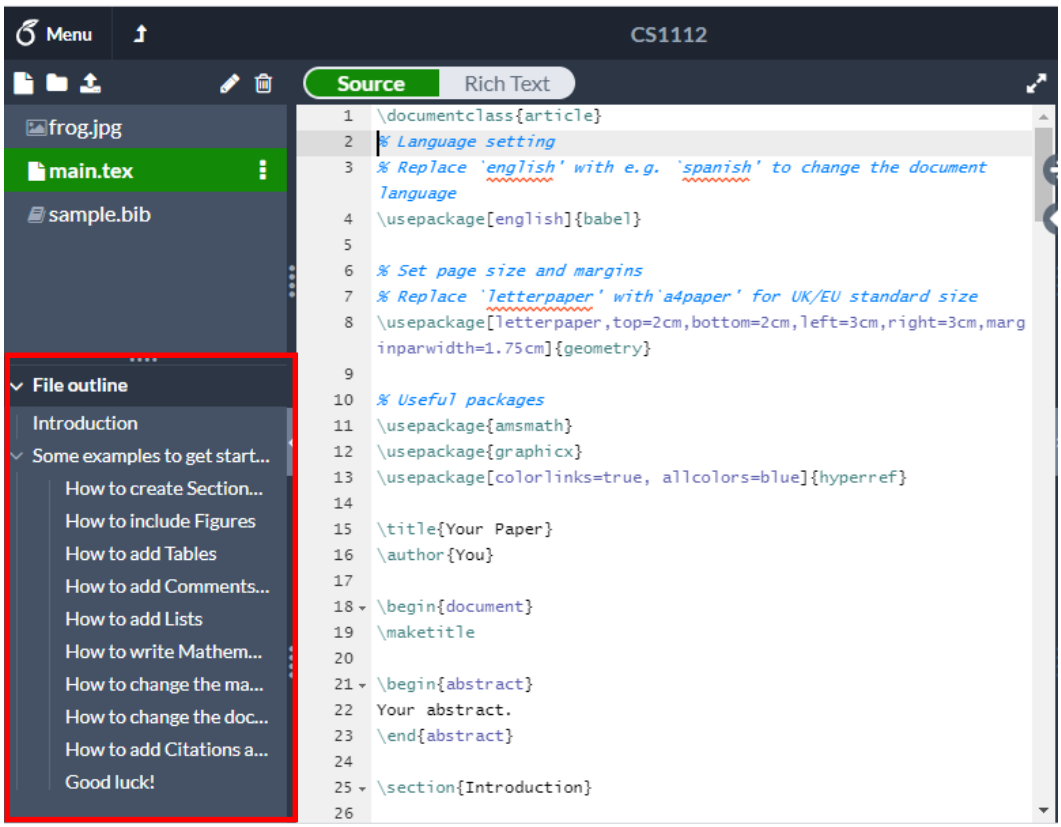


Figure 5. An overview of source code for ***Example Project***

C. **Upload project:** Most of the academic journals have specific format and they provide a latex template (set of classes etc.). This option is for uploading the project with specific layout. The following simple steps are used.

1) Search the specific template and download the latex package for the specific journal. For example, considering the IEEE ACCESS journal, you can find the latex template in their submission guideline. Click on the ***Latex*** to download the template.

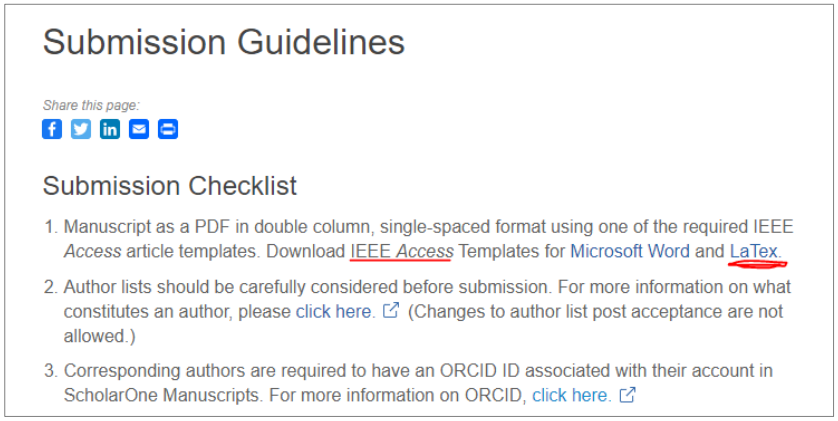


Figure 6. Latex template for IEEE ACCESS (An example)

2) Click on the ***upload project*** and upload the ***zip file,*** that you just downloaded. The uploading window will look like Figure 7.

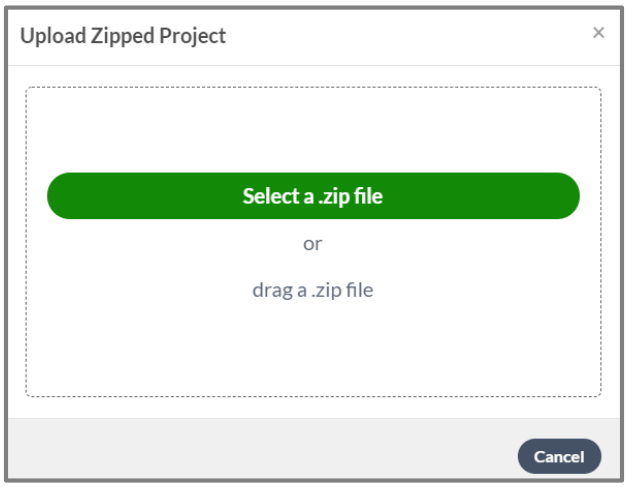


Figure 7. Upload Zip file of Latex template

Once you upload, you will see the designated template, for example in the case of IEEE ACCESS, you will see the following layout.

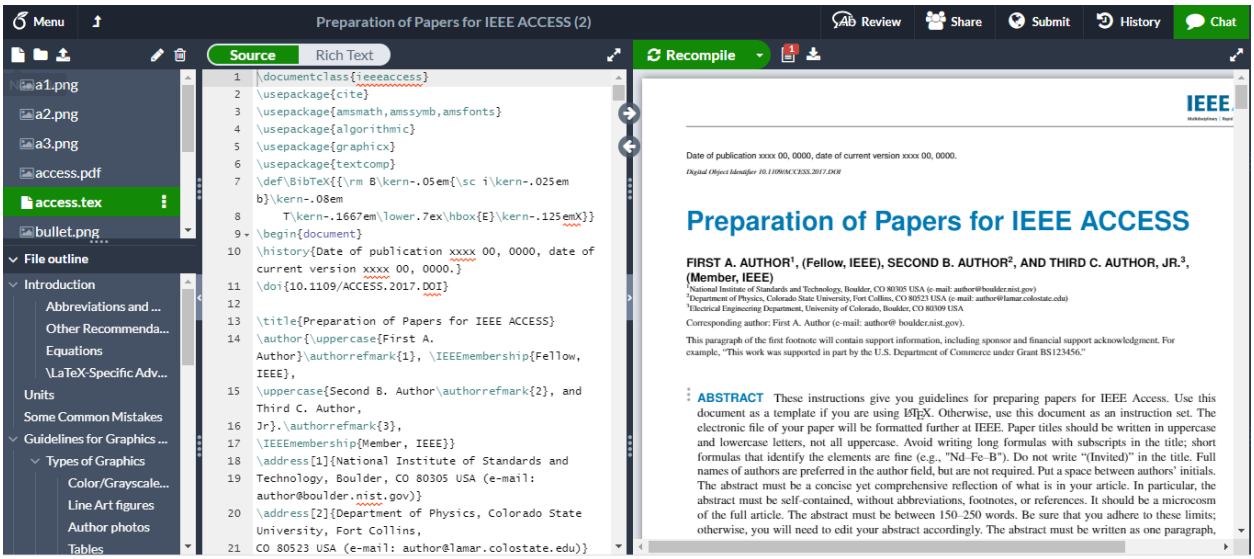


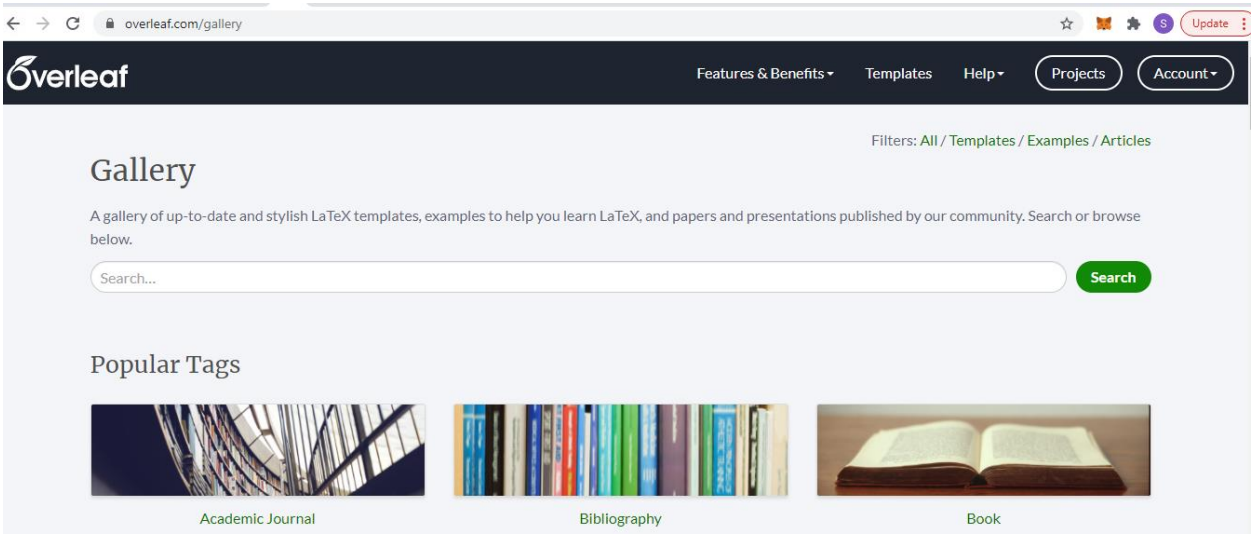
Figure 8. Example of IEEE ACCESS template in latex

D. Import from GitHub project: You can import a project from GitHub repository. But it's a premium feature and would work for a trail with limited accessibility. This option result in the following output message.

Figure 9. Importing a project from GitHub (output window)

E. **Template:** The template option let you to search online for specific templates and use them. The template includes:
   - ✓ Academic Journals
   - ✓ Book
   - ✓ Formal Letters
   - ✓ Homework Assignment
   - ✓ Poster
   - ✓ Presentation
   - ✓ Project/Lab Report
   - ✓ Resume/CV

Click on any of the template and then click on the ***Show all Gallery Items***, this will lead you to the search option.



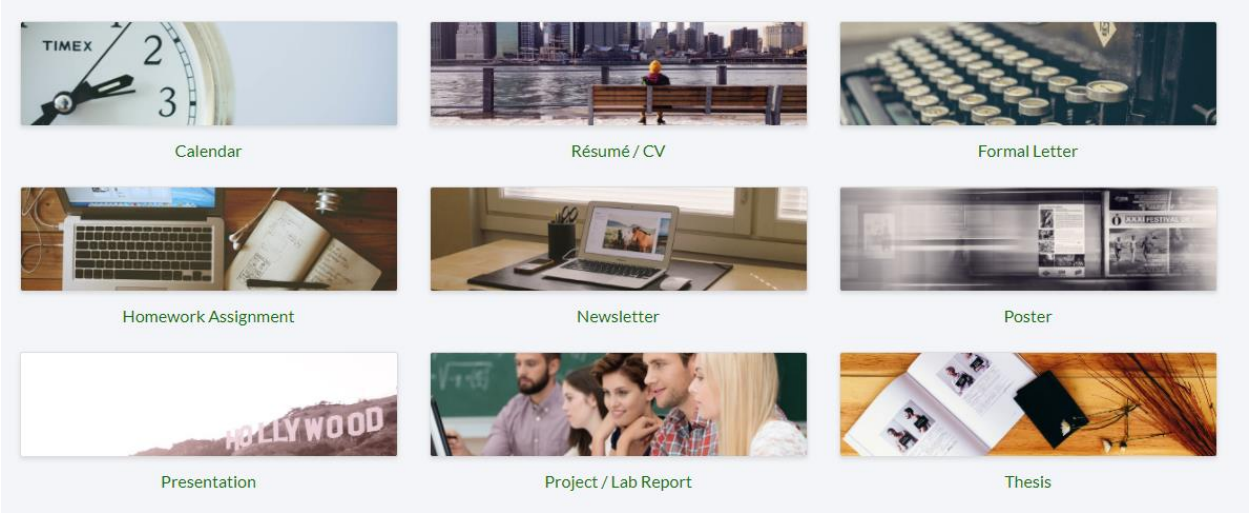
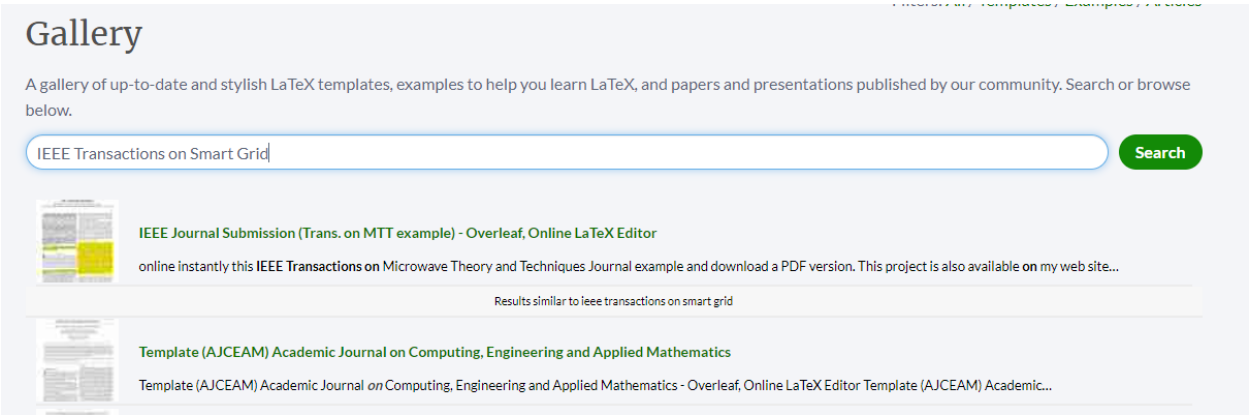
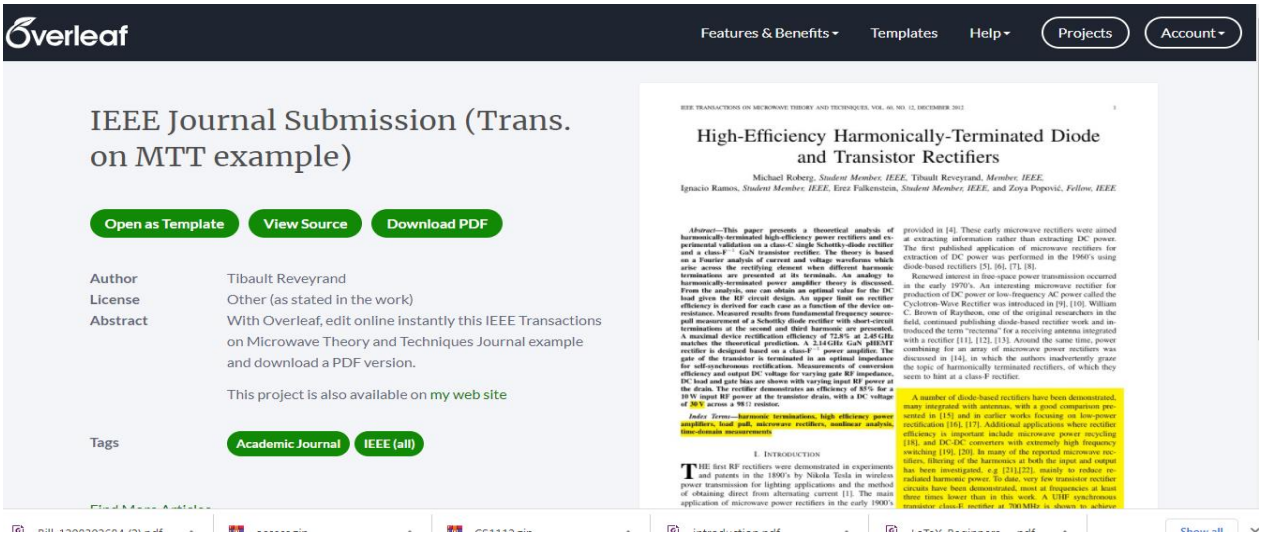


Figure 10. Illustration of searching options

For example, we want to search for **IEEE Transactions on Smart Grid.** It gives a bunch of options for different transactions templates. Scroll down to find the desired the templates.





6. **Searching in latex file:** You can search both in ***latex*** file and in the ***PDF*** file using the ***Crtl+F*** key. For example, searching the abstract result the following output.

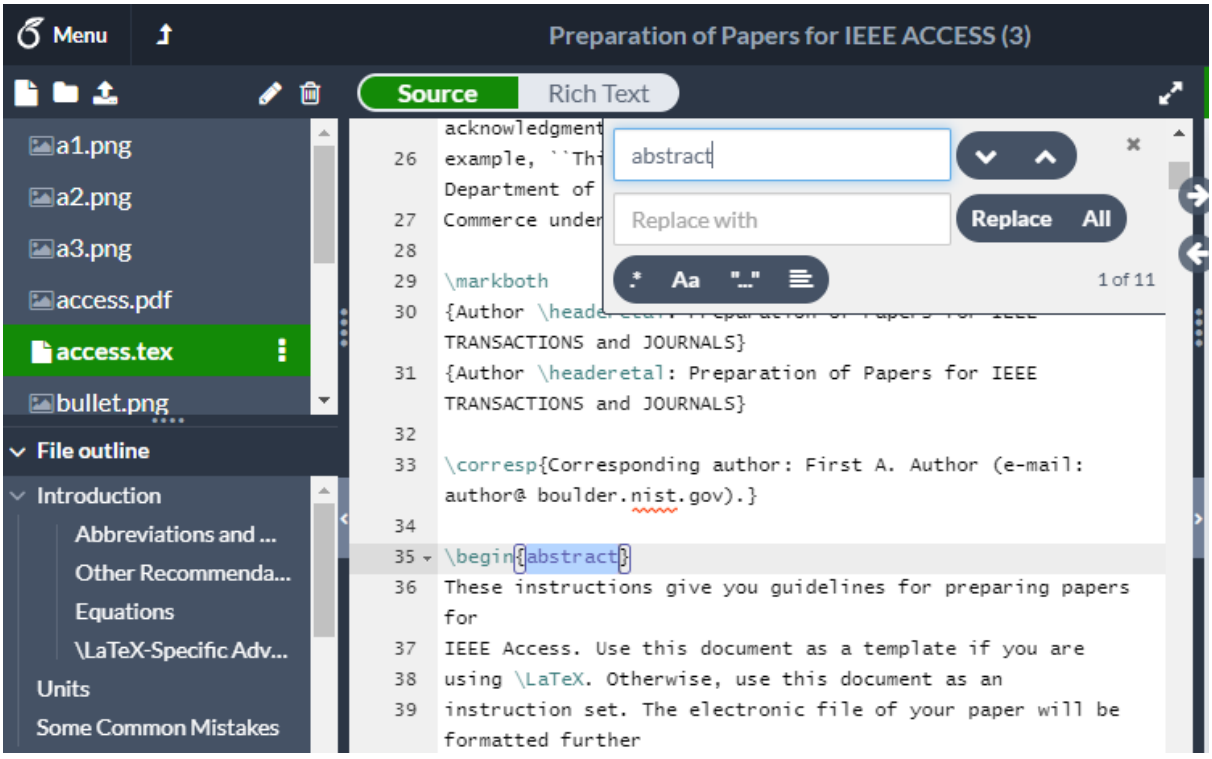


Figure 11. Searching in latex

7. **Best practice for article management:**
   - The best practice for managing article is to maintain the files (latex and bibliography) and figures separately as shown in the Figure below.

- Keep the original version by remaining the article. This will help to get the original version back; in case you need it.
- If you are using several images, a high resolution images may cause time-out error. For images PDF files are recommended instead of PNG image.

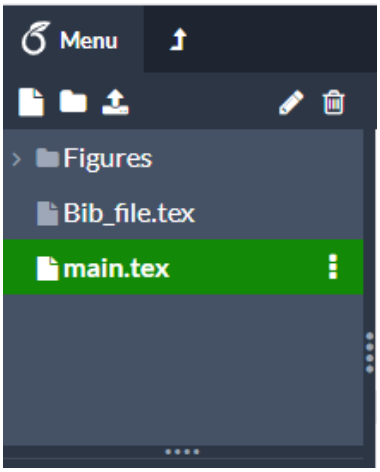


Figure 12. Managing files (example)

8. Reserved characters: The following (Figure 13) shows the list of reserved characters and how to print them if needed.

Character	Function	How to print it
#	Macro parameter	\#
$	Math mode	$
%	Comment	\%
^	Superscript (in math mode)	\^{} or \textasciicircum
&	Separate column entries in tables	\&
_	Subscript (in math mode)	_
{ }	Processing block	\{ \}
~	Unbreakable space, use it whenever you want to leave a space which is unbreakable	\textasciitilde or \~{}
\	Starting commands, which extend until the first non-alphanumerical character	\textbackslash or \

Figure 13. List of reserved words

9. Hot/shortcut keys: The hot/shortcut keys save the time, a list of such keys with detailed description is given in Figure 14.

Figure 14. List of hot/shortcut keys with detailed description

10. Preamble: The preamble defines the ***type of document*** you are writing, the ***spoken language*** you are writing in and the ***packages (modules)*** of Tex code you would like to use. Keywords are case sensitive e.g. writing "***Documentclass***" below will return a syntax error.

```
\documentclass{article}              % package for formatting articles
\usepackage[utf8]{inputenc}          % package for character encoding
\usepackage[margin=25mm]{geometry}   % package for formatting margins
\usepackage{natbib}                  % …formatting citations and
                                     bibliographies
\usepackage{graphicx}                % …formatting and numbering figures
\usepackage{amsmath}                 % …formatting equations
\usepackage{xcolor}                  % …text colours red, green, etc
```

```
\title{Report Title}
\author{Connor Adams, ID: 20379631}
\date{October 2020}
```

11. **Body:** The body of the program contains all of the printable text in addition to various formatting commands.

```
\begin{document}                % begin the printable document
\maketitle{title_CS1112}        % place title here (title, author,date,…)
\tableofcontents                % place "table of contents" here
\pagebreak                      % place a page break here
```

12. **Real-time tracking feature: K**eep an up-to-date list of all of the things you need to work through, without having to sift through out-of-date notes or dig out old emails.
It is a premium feature and need a payment; however, you can try a trail. A tracking example with ***accept/reject*** option is shown in Figure 15.

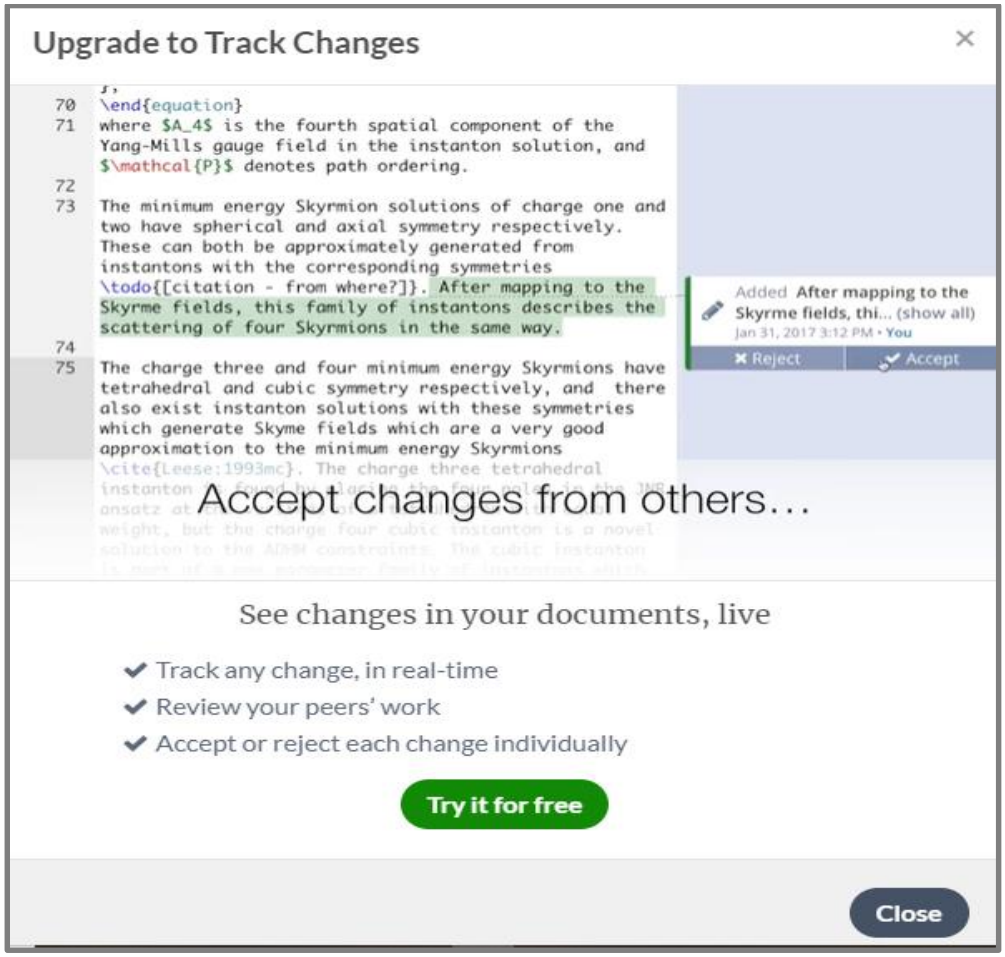


Figure 15. Real-time tracking feature

13. **Compile timeout error:** Sometime the users experience the compile timeout error message as shown in Figure 16. A default recompilation time for free version is set to 1 minute. If your document takes more than a minute, overleaf will result in ***Time out*** error.

Possible reasons: There are several possible reasons for the ***Time out*** error; however, the most common is the use of having ***many images with high resolutions***. A list of the possible reasons is as follows.

1. Large, High-resolution images: ***600dpi/1200dpi etc.***
2. Complicated TikZ or pgfplots drawings: ***TikZ*** (visualization tool) ***pgfplots*** package
3. mhchem: A ***package*** for ***chemical molecular formulas and equations***
4. biblatex: Package that ***re-implement the bibliographic***
5. Tracing/debugging calls: Records lots and lots of lines
6. Infinite loops: A package calling itself (recursion) causes the time out
7. Fatal compile errors blocking the compilation: Block the ***latexmk*** build process
8. Fair Use limits: Time out limit is 1 and 4 minutes for free and paid versions
9. Still stuck? Other system related issues or network traffic issue

Please visit the following URL to find more about the possible reasons for the Time out error.

https://www.overleaf.com/learn/how to/Why_do_I_keep_getting_the_compile_timeout_error_message%3F

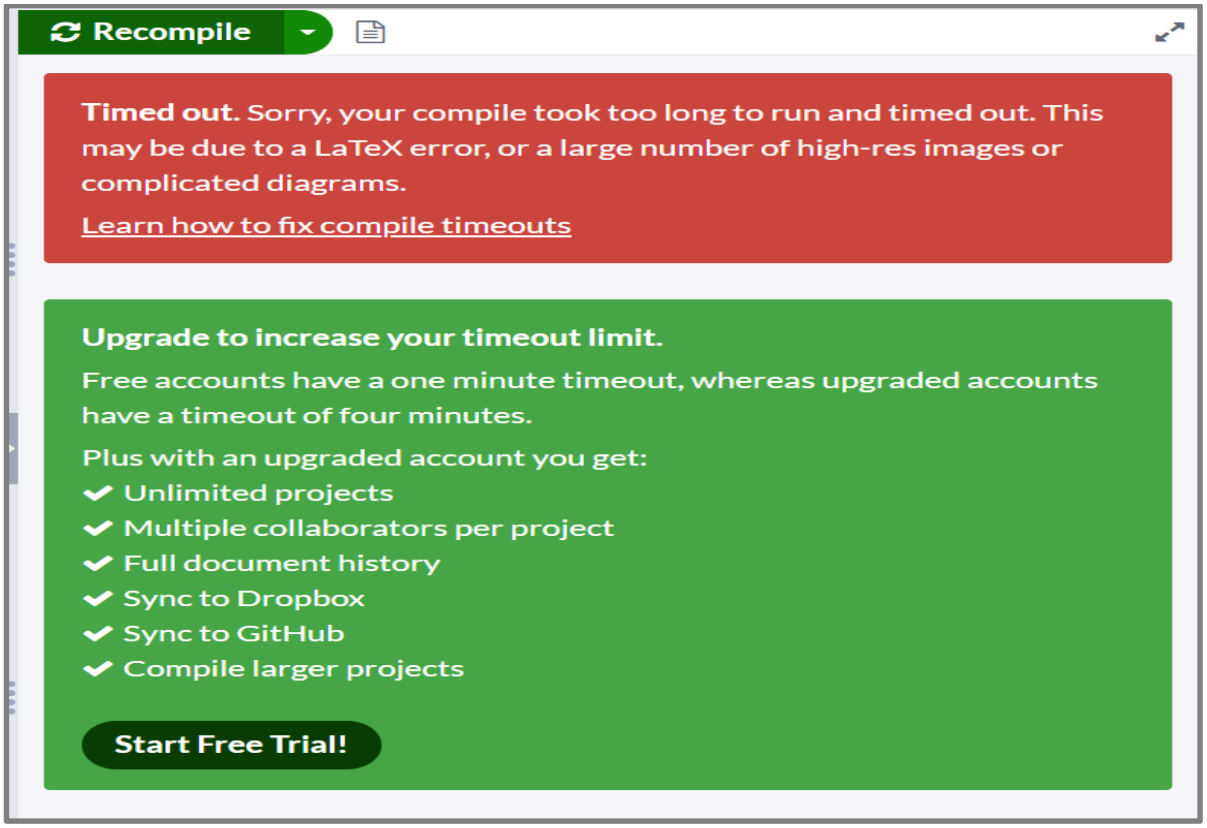


Figure 16. Example of compile time out error message

Exercise: Register to overleaf and practice the different options, discussed in the lecture.