Notes about

LaTeX

(Based on the HSE course)

1. Purpose of this document and last revision of this document

These notes are mostly based on the Latex Course from the High School of Economics [1]. To create these notes other materials [2],[3],[4] have also been used . But the most important inspiration have been obtained from [1].

Date and author	Comment
04-APR-2020, Konstantin Burlachenko	Initial draft
04-APR-2020, Konstantin Burlachenko	Fix English grammar
30-APR-2020, Konstantin Burlachenko	Some updates with new commands
16-MAY-2020, Konstantin Burlachenko	Update reference section

2. Why Latex is useful

The main ideology of Latex is “Think more about the content”.

LaTeX is a high-quality typesetting system.

LaTeX is the de facto standard for the communication and publication of scientific documents.

Due to a huge number of open-source packages and customizing, the possibilities with LaTeX are endless. The people from the computer science background can be considering Latex as *Domain Specific Language* for typographic work.

3. Document structure

3.1 Content structure

In term of sections information in the Latex, the document is structured typically in the following way. The concepts are listed from bigger concepts to a more detailed one.

Structural part of document	Meaning
Part	Parts of books, like volume. “Article” does not have such a concept. **\part{Part Name} -** Command creates an enumerated part **\part*{name}** - Command creates not enumerated part
Chapter	Such a concept is presented in books and reports, an article does not have such a concept. **\chapter{Chapter Name} -** Command creates enumerated chapter **\chapter*{name}** - Command creates not enumerated chapter
Section	It’s the main concept of the article to start new sections in the document **\section {Section Name} -** Command creates an enumerated section **\section*{Section Name not enumerated} –** Command creates not enumerated section Rule of thumb if you don’t want to numerate section use extra *.
Subsection	Part of the section if you want to layout text conceptually in finer granularity **\subsection{Subsection Name}**

SubSubSection	Name of sub-sub section. \subsubsection{Sub-sub section name}
Paragraph	\paragraph \paragraph*
SubParagraph	\subparagraph \subparagraph*

3.2 Tex File structure

File which store instructions to create a final document (presentation, article, book, etc.) has extension *.tex and from point of view of filesystem are text (not binary) files.

From birds-eye-view *.tex files have the following structure.

```
\documentclass{...} % Declares document type
```

Commands placed here are called the preamble. They contain commands which affect all document.

Some examples:

% Include some popular *American Math Society* packages.

\usepackage{amsmath,amssymb,amsfonts,amsthm}

% This is the encoding for the document text file.

\usepackage[utf8]{inputenc}

```
\begin{document}
```

From this place you insert commands relative to document content.

```
\end{document}
```

You can store comments or temporary text underneath \end{document} command. They don't have implications in the result document from the point of view of final generated PDF document.

4. Common aspects for all Latex commands

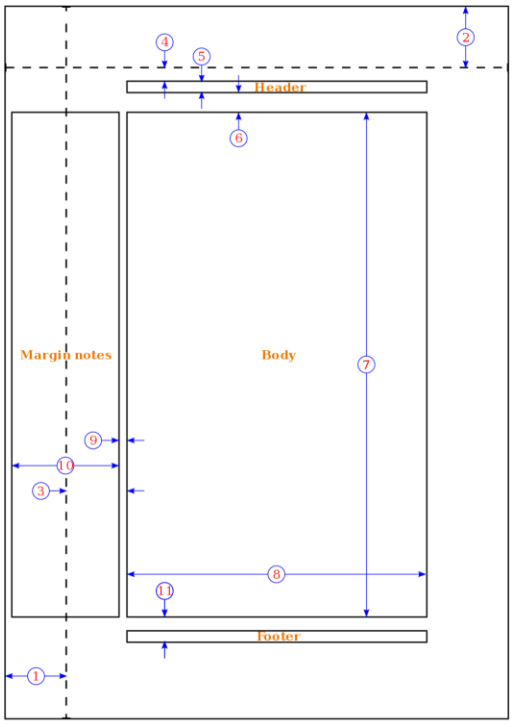
When you use Latex you create text content and also provide Latex system with commands which are intermixed with content. You need special commands, for example, for the purpose of creating tables or formulas. There are a lot of commands in Latex. But there are common aspects of all commands which I have found for myself while looking into the course [1]. And let's start from them.

Aspect	Description
\command	Notation to write command

{}	Curly braces are used to separate arguments in commands
\{ \}	You should use backslashes if you really want to output curly braces
\sim	Tilda symbol ~ is reserved in TEX, so it's more easier to use this command.
\command_name {argument-1} {argument-2}	The notation to write command with several arguments
How include Greek letters?	Option-1: Have a keyboard with Greek letters Option-2: Use specific commands like \alpha
New Line	A newline is treated as a space symbol. "Space symbols" inside math equations are ignored. Several "Space symbols" inside text are reduced to a single space.
\\	Forcing the movement of text to a new line without creating a new paragraph. The double new line in source *.tex file (via typing "Enter" two times) creates a new line but also starts a new paragraph.
\command*	Very often in Latex, each command has alternative command notation, but with star "*" The * notation removes counting. The reference to the object can be created via \label{unique name}. You can reference only to numerating objects. Reference to the labeled object can be created via \eqref, \ref, \pageref commands.
mm,cm,in	Absolute units for size Definition of sizes in millimeters, centimeters, and inches. This is the absolute size which does not depend on paper size or scales.
em, ex	Relative units for size em - Width of letter "M" in current font. ex – Height of letter "X" in current font.

\pagewidth \textheight \textwidth	Width of page. Height of text. Width of text

Another page metric concepts can be checked here:
https://en.wikibooks.org/wiki/LaTeX/Page_Layout



1. one inch + `\hoffset`
2. one inch + `\voffset`
3. `\oddsidemargin` = 31pt
4. `\topmargin` = 20pt
5. `\headheight` = 12pt
6. `\headsep` = 25pt
7. `\textheight` = 592pt
8. `\textwidth` = 390pt
9. `\marginparsep` = 10pt
10. `\marginparwidth` = 35pt
11. `\footskip` = 30pt

- `\marginparpush` = 7pt (not shown)
- `\hoffset` = 0pt
- `\voffset` = 0pt
- `\paperwidth` = 597pt
- `\paperheight` = 845pt

% This is a single line comment	Single comment line
% Environment block \begin{env.name} % Some text and commands \end{env.name}	Latex includes separate commands which are intermixed with text content, but also allow to have special "environment blocks" dedicated to tables, formulas, etc.
\,	Small space between nearby letters. Useful during typing title of the work.

5. TexStudio useful Features

Here I will list some features of TexStudio which are useful during create Latex documents in it. TexStudio can be considered as IDE for Latex.

Action	Implication
Wizard->Quick Tabular	Creating a table via using the graphical wizard
Latex->Manipulate Tables	Wizard provides the functionality to add row or column into the table and things like that
Bibliography->Article	Generate bibliographic description which should be saved in a file with extension *.bip
Latex->List Environments	Latex code generation for lists
Hovering the cursor over the starting symbol of inline math mode	Hovering the cursor over the starting symbol of inline math mode, $, or over \begin{equation}. TexStudio gives a preview of a math equation.
Select Latex Test with mouse and type F7	It's a shortcut for ***"Go to PDF"***. This command highlight part in final PDF document which is correspond for this command.
F5	Compile Latex to PDF and update preview
F6	Compile Latex to PDF
CTRL+T	Comment/Uncomment selected lines
CTRL+B	Insert "**\textbf**" command to make selected text as **bold**
CTRL+I	Insert "**\textit**" command to make selected text as *italic*
CTRL+Z	Undo previous command
CTRL+K	Remove current line with latex commands
CTRL+F	One CTRL+F is standard search in document. If you will press CTRL+F, then will input search text, and then you will press CTRL+F one more time then it will bring to search all occurrences of search word in *tex* file.
Options->Configure->Build->Default Bibliogrpahic Tool ->Biber	More better bibliography tool which works with Unicode fine
File->New From Template	Create a Latex document from one of the templates which are provided by TexStudio.

“Latex” in main menu	Contains a lot of useful commands for Latex
Wizard->QuickStart Wizard->QuickBeamer	Create default article, book, etc. via selecting specific options in the wizard
Wizard->MathAssistant	Allow draw formula with mouse and generate Latex code for it
Symbols in the left panel	There is a big pallet of special symbols from which it’s possible to select
Open PDF in PDF Viewer	There is just button to open PDF, not in previewer with built-in zoom, But in PDF Reader
CTRL+Space	Auto-completion feature, like in programming IDE.
Options->Configure TexStudio->ShortCuts	Observe different shortcuts for different wizards, etc. And ability to setup own shortcuts
Help->Latex Reference	Usefull one big page reference with different Latex commands, grouped into categories. *“LaTeX2e unofficial reference manual”*

6. Some Preamble Examples

Preamble contains command to turn on specific packages, provide meta-information about document, setup various layout and anything relative to specific book style, journal, etc.

Command	Description
\mathtoolsset(showonlyrefs=true)	Show only formulas numbers for which we have reference via \eqref
\documentclass[a4paper, 12pt, leqno]{article}	Numerate equations and make numerations from the left
\documentclass[a4paper, 12pt, leqno,twocolumn]{article}	Create two column article
\usepackage{graphicx}	Include package related to work with graphics features
\usepackage{amsmath,amssymb,amsfonts,amsthm}	Packages related to mathematics into *.tex document
\title{First doc}	This is the title.
\author{Jane}	The name of the Author(s)

\thanks{extra credits}	Useful if you need to thank an institution in your article.
\date{February 2014} \usepackage{extsizes}	Allow use non-standard font sizes
\usepackage{geometry} \geometry{top=25mm} \geometry{bottom=35mm} \geometry{left=35mm} \geometry{right=20mm}	Simple way to setup margins
\ usepackage {fancyhdr} \ pagestyle {fancy} \ renewcommand {\ headrulewidth} {0mm} \ lfoot {Bottom Left} \ rfoot {Lower right} \ rhead {Top Right} \ chead {Top in the center} \ lhead {upper left} % \ cfoot {Lower in the center} % By default, here is the page number	Headers and footers. Thickness of the ruler that marks out the header
\usepackage{setspace} % inter line distance %\onehalfspacing % x1.5 %\doublespacing % x2 %\singlespacing % x1	Specify inter line distance. It's a distance between adjacent lines in final document
\usepackage{lastpage}	Obtain number of pages in document
\usepackage{hyperref}	Create real hyper-reference inside document. Now you can click into various references created with \ref like commands. \hypersetup{} allow to setup colors for different links mode used in hyper-links
\renewcommand{\familydefault}{\sdefault}	Setup default font without serifs (Like Arial)
\usepackage{cmap} % Search in PDF \usepackage{mathtext} % Allow Russian letters in equations \usepackage[utf8]{inputenc} % Source file encoding \usepackage[T2A]{fontenc} % Encoding \usepackage[english,russian]{babel} % Localization	Turn on Russian letters processing inside TEX document (Encoded in UTF-8 format)

\frenchspacing	

7. Commands

There are a lot of commands in Latex. The classification used below is only my classification to easily navigate between different commands in future.

7.1 General Content Commands

Command	Description
\documentclass {class}	Article - Usual article Report - Usual report Book - Template for book Beamer - Presentation slides
\label{name}	Attach label to any part of document
\ref{name}	Reference to label
\pageref{name}	Reference to the page with the label
\eqref{name}	Reference to equation
% single line comment	Comment for the whole line, ending with newline
Spaces in single line.	Several spaces equivalent to single space
New Paragraph	Please leave one or more single lines to make new paragraph.
\begin{center} Images, Tables, formulas here will be aligned to center \end{center}	center - alignment horizontally by the center of the page flushleft - alignment horizontally by the left part of the page flushright - alignment horizontally by the right part of the page
\textbf{This is bold text} \\ \underline{This is underline text} \\ \textit{This is italic text} \\ \textbf{\textit{This is bold and italic text}}	Commands to make text bold, underline, italic.
\begin{itemize} \item First item in non-numerated list \item Second item in non-numerated list \end{itemize}	Non-numerated list (or unordered list) of items. Each item should be started with \item command.
\begin{enumerate} \item First item in enumerated list	Numerated list (or unordered list) of items. Each item should be started with \item command.

\item Second item in enumerated list \end{enumerate}	
\newpage	Move to the next page

Command to print size of different fonts

```
\begin{table}[h!]
    \caption{Font Sizes}
    \centering
    \begin{tabular}{|c|c|}
        \hline  \verb|\tiny|          & \tiny       extremely tiny \\
        \hline  \verb|\scriptsize|    & \scriptsize   very tiny\\
        \hline \verb|\footnotesize|  & \footnotesize relative small \\
        \hline \verb|\small|         & \small      small \\
        \hline \verb|\normalsize|    & \normalsize   normal and default size \\
        \hline \verb|\large|         & \large      big \\
        \hline \verb|\Large|         & \Large      more bigger \\[5pt]
        \hline \verb|\LARGE|         & \LARGE       very big \\[5pt]
        \hline \verb|\huge|          & \huge       large \\[5pt]
        \hline \verb|\Huge|          & \Huge       exremely large \\ \hline
    \end{tabular}
\end{table}
```

\Large	This command in fact change the size of the font and it does not accept any arguments. Everything after this command will be in Large font.
\begin{Large} Large text \end{Large}	Alternative to change the font size. Place text in environment block with Large markers

7.2 Math Content Commands

Command	Description
$2+2=4$	Mathematical formula **inline** mode is injected into main text. Alternative syntax to $$ pair are: 1) \(\) pair 2) \begin{math} \end{math} pair
\[2+2+x_3=4\]	This mathematical formula obtain own separate line. This math formula mode is called **displayed mode**, opposite to previously mentioned **inline mode**.

	Alternative writing style use the following environment block: \begin{displaymath} 2+2+x_3=4 \end{displaymath} This is unnumbered display mode
$ \displaystyle $	Use displaymode inside inline math mode. It affects the height of symbols in math formula.
\begin{equation}\label{my_equation} x_1=2+2 \end{equation}	The equation in "environment block" in \begin \end block. The formula is shown in displayed mode and obtains its own number. Formulas are numbered in display mode
\eqref{my_equation} \pageref{my_equation}	Reference to the equation. Reference to the page with equation..
\left(\right) \left\{ \right\}	Parenthesis with automatic height selection. It can be used to create parenthesis for a system of equations.
\left. \right.	Phantom bracket. Sometimes you should create unbalanced parenthesis, but from a syntax point of view, Latex does not like unbalanced brackets. To mitigate this problem you should use "phantom bracket feature"
\begin{multline} 1+2+3+\\ 4+5+6+\\ 7+8+9 \end{multline}	Special formatting used for print long formulas. "multiline" automatically brings us to math mode. \\ is a newline. The equation in this block obtains one single number.
\begin{align} 2+3&=5 & 66+8&=74\\ 3+33&=6 & 7+5000&=5007 \end{align}	Each equation obtains its own number. "align" automatically brings us to math mode. \\ - is newline & sign - in the odd position used as a marker for alignment with each equation. & sign - in even position used as a marker for a new column.

\begin{align*} 2+3=5\\ 3+3=6 \end{align*}	Similar to **\begin{align}** "align" automatically bring us to math mode. But "align*" means turn-off formulas counting.
\begin{equation} \begin{aligned} 2+3&=5 & 66+8&=74\\ 3+33&=6 & 7+5000&=5007 \end{aligned} \end{equation}	Similar to "**\begin{align}**", but all formulas obtain single number for block of formulas. "**\begin{aligned}**" do not automatically bring us to math mode. So there is a need in us "\begin{equation}"
\text{my text}	Command used to inject text into place where math formula is typing
\[|x|=\begin{cases} x, &\text{if } x \ge 0\\ -x,&\text{if } x < 0 \end{cases} \]	Function partially defined for different domains parts
\[\begin{pmatrix} a_{11} & a_{12} & a_{13}\\ a_{21} & a_{22} & a_{23} \end{pmatrix} \]	Define matrix. You should not define shapes, parenthesis. Only necessary thing to type items and separate them with **&** in one row, and separate two matrix rows with **** **pmatrix** – parenthesis are used to define matrix **vmatrix** – vertical lines are used to define matrix **bmatrix** – square brackets are used to define matrix
\tag{S}	Instead of counting formulas use tag "S"
\\|	Two parallel vertical lines. See another symbols here.

7.3 Specific Letters and Math Operators

Command	Description
\frac{numerator}{denominator}	Fraction. If you use equation inside $ $, then numerator and denominator will be typed in small font size. If you type formulas inside \[and \], then size will be fine.
\dfrac{numerator}{denominator}	Fraction with the same size of numerator and denominator as the main text.

\times	One possible command to create multiplication.
$b=\sin x$	\In \sin and other standard math functions are well-known to Latex and Latex can type them nice. You only should write them in math mode with using backslashes. Even more, you can declare your own math operator via using \DeclareMathOperator command in the preamble of the document.
\ne	Math sign: Not equal
\ge	Math sign: Greater or equal
\cap	Math sign: Sets intersection
\cup	Math sign: Sets union
\bar	Diacritic sign: Append bar on top of math expression
\tilde	Diacritic sign: Append tilde sign on top of math expression
\overline	Long line over symbols
\widetilde	Long tilde
\phi \varphi	Small Greek phi letter Small Greek phi letter in alternative style
\Phi	Big Greek letter Phi
\epsilon \varepsilon	Small Greek epsilon letter in alternative style Small Greek epsilon letter in alternative style
\dots	…

7.4 Graphics and Tables Latex Operators

Command	Description
\includegraphics [width=200px, height=200px, keepaspectratio=true] {img.png}	Include image in Raster format (*.jpg, *.png) or Vector format (*.pdf) Please append into preamble \usepackage{graphicx} \graphicspath{{my_image_path_1}{my_image_path_2}}
\begin{tabular}{|c|cc|} \hline 1 & 2 & 3 \\ \hline	Table with 2 rows and 3 columns. |c|cc| - encode center alignment in each column and places of vertical lines \hline – is horizontal line between adjacent rows

4 & 5 & 6 \\ \hline \end{tabular}	\\ - is new row & - delimiter between adjacent items
\begin{tabular}{|l|cr|p{10cm}|} \hline row1,col1 & row1,col2 & row1,col3 & row1,col4 \\ \hline $\displaystyle \frac{2}{3}$ & row2,col2 & row2,col3 & row2,col4 \\[10mm] \hline \end{tabular}	Append Table. Table contains 4 columns – first column align to left, 2nd column aligned to center, 3rd is aligned to right, 4th column has specific fix width. There is no vertical border between 2nd and 3rd column. \hline - command will draw horizontal line & - is column delimiter, similar to delimiter used in typing matrices. Inside the table in this example it have been shown how to include math formulas in inline mode. \\[10mm] – make newline and append extra spaces. Another alternatives for draw tables and environment blocks with tabularx, tabulary
\begin{table}[h] \begin{center} \caption{My table} \label{my_table} \begin{tabular}{|c||cc|} \hline 1 & 2 & 3 \\ \hline 4 & \multicolumn{2}{c}{5,6} \\ \hline \cline{1-2} \end{tabular} \end{center} \end{table}	Align table to center. Create a caption for table and number. Create a reference for the table. Create a table with all columns aligned to center, after the first column, there are double lines down. \multicolumn creates a column from two nearby cells, align by the center, and type text “5,6”. For combine several rows there is a command \multirow \hline create complete horizontal line, which spans all columns. \cline here creates horizontal line spans columns: 1-2
Long table. % To append support of long-table append following in preamble \usepackage{multirow} \usepackage{array} \usepackage{longtable} \begin{longtable}{|c|c|} \caption{Long Table} \\	

```
        \hline
        \textbf{Column A} & \textbf{Column B} % Page head with bold text
        \endfirsthead                   % Marker for end of first head (main header)
        \hline
        Column A & Column B          % Automatic column names text in new pages
        \endhead                        % Marker for end of the extra headers duplicated in each page
        \hline
        \hline                          % Foot note on first page
        \endfoot
        \hline                          % Last foot in the last page
        a & b \\
        a & b \\
\end{longtable}
```

```
\usepackage{tikz}

% Create numerated image
\begin{figure}
\begin{center}
% Draw Picture with tikz
\begin{tikzpicture} [scale = 2.0]           % Start draw picture with specifying optional scale parameter
\draw[help lines] (0,0) grid (2,3);         % Draw grid
\draw[<->]      (0,3.5) -- (0,0) -- (2.5,0); % Draw axis via drawing polyline started and ended with arrows
\draw[red]      (0,0)--(0,1)--(2,3);        % Polyline in red line, default units are sentimeters
\draw[green,
            fill=yellow](0,0) circle [radius=0.5];   % Draw filled circle
  \draw[domain=-2:2] plot (\x, \x*\x+2);        % Draw graphic of functions
  \node[below] at (1,1) {\tiny Circle};         % Text node
\end{tikzpicture}

\caption{Test Image}
\end{center}
\end{figure}
```

7.4 Automatic Content Generation Command

Command	Description
\listoffigures \listoftables	Generate list of figure and tables which contains "\caption"
\maketitle	Generate Title for document
\tableofcontents	Generate Table of content
\hrulefill	

7.5 Special Commands for Articles

Command	Description
\begin{abstract} A brief introduction about the subject. \end{abstract}	Special dedicated environment block for writing abstract.
% In preamble \theoremstyle{plain} \newtheorem{theorem}{Theorem naming in final doc}[section] \newtheorem{proposition}[theorem]{Statement in Latex} % In main content \begin{theorem} [Simple Theorem] \label{theorem1} Text of theorem. \end{theorem}	Define "Theorem" - special numerating user-defined object. One possible example of usage is use it for math theorems numeration. Arg 1 - latex name (latex) Arg 2 - human name in final document. Arg 3 - numeration is scope of "section" Proposition or statement. A proposition is a mathematical statement such as "7 is prime." An axiom is a proposition that is assumed to be true. Proposition use share counter with theorems
\vspace{10ex}	Insert vertical space 10 times higher than the height of letter X.
\vfill It will be locating in the bottom part of page	Insert vertical space, so that the text after that will be located at the end of the page.
\usepackage{hyperref} \url{https://www.google.com/} \href{https://www.google.com/} {Google Site}	Insert URL for external resource in the internet
\usepackage{multicol} \begin{multicols}{2} ..... \end{multicols}	Create two column environment to type in two columns mode.
\usepackage{cite} *% Work with bibliography* *\usepackage{csquotes}* *% Extra tools to work with references* *We used derivation from* *\cite{my_latex_reference}*	Simple way to work with bibliography. **\addcontentsline** – append Reference into **\tableofcontents** {2} – used to provide number of references that you are using. Bibliographies description can be taken for example from: https://scholar.google.com/

It's possible use several reference in one citing command \cite{ref1, ref2} *Also it seems that this notation allow to reference to specific page of another document* *\cite[p.78]{my_latex_reference}* *\begin{thebibliography}{2}* *%\addcontentsline{toc}{section}{\refname}* *\bibitem[Nice substitute name in doc instead number]{my_latex_reference}* *Long bibliographics description* *\end{thebibliography}*	
\usepackage[backend=biber,bibencoding=utf8]{biblatex} *\addbibresource{bib_db_1.bip}* *\addbibresource{bib_db_2.bip}*	BibLatex usage for citing things https://ctan.org/pkg/biblatex And add bibliographies databases in text format BibLatex
\printbibliography	Generate complete list of literature for which we have references or which we marked with \nocite
\cite{id}	\nocite{id} - ask generate it in final bibliography \footcite{id} - small reference \textcite{id} – reference with name of author and year \cite{id} – usual bibliographic format

7.6 Special Commands for Presentations

Command	Description
\documentclass{beamer} *\documentclass[handout]{beamer}* *\documentclass[aspectratio=169]{beamer}*	Presentation for PDF with different simple animations Presentation with no animations for handout Create presentation for monitors with aspect ratio 16:9
\usetheme{Berkley} *\usecolortheme{beaver}* *\begin{document}* *\begin{frame} \label{frame_1}* *\maketitle* *\end{frame}*	Theme for presentation from https://hartwork.org/beamer-theme-matrix/ Begin document Slide for presentation with title. Slide for presentation with a table of content.

\begin{frame} \label{frame_2} *\tableofcontents* *\end{frame}* *\begin{frame}* *\frametitle{My Title}* *\framesubtitle{My Sub Title}* *\end{frame}* *\begin{document}*	Slide for presentation. Content of frame is usual latex code which contain formulas, images, tables, etc.
\begin{frame} *\frametitle{\insertsection}* *\framesubtitle{\insertsubsection}* *\end{frame}*	Create slide for presentation. Automatically generate section and subsection title for slide based on current \section and \subsection
\begin{frame} *\alert{Important Text}* *\pause % Not working in handout mode* *\uncover* *\only* *\... <1-5>* *\... <2->* *\end{frame}*	Insert important text into the slide. Insert pause, can be inserted in any place in frame. Text took place Text do not take place Command is valid during 1-5 click, after 6 click command is ignored. Show item from second click and up to the end of the document.
\includeonlylecture{lec2} *\lecture{Lecture One}{lec1}* *…* *\lecture{Lecture Two}{lec2}* *…*	Include only materials for lecture 2 into final PDF Lecture One materials. Lecture Two materials.
\input{preamble} *\include{file}*	Take “preamble” file and include text like it’s doing in C-preprocessor. \input is not doing transferring to new page. Include file from other TEX source file like #include for C-preprocessor. \include is forcing transferring to a new page.

8. References

8.1 Learning materials

[1] https://www.coursera.org/learn/latex/ - course locating in Coursera educational platform “Documents and presentation in Latex” created in Higher School of Economics (HSE) National Research University by Danil Fedorovykh

[2] https://en.wikibooks.org/wiki/LaTeX/Document_Structure - Wiki book about Latex

[3] https://www.latex-project.org/ - Web-page for Latex project

[4] https://www.overleaf.com/learn/latex/Learn_LaTeX_in_30_minutes - Fast introduction

[5] https://www.mccme.ru/free-books/llang/newllang.pdf - Russian book in the subject about Latex.

8.2 IDE for Latex markup language

[8] https://miktex.org/about - One implementation of TEX/Latex called MikTex. Worked fine for me.

[9] https://www.tug.org/texlive/acquire-netinstall.html - Another implementation of Latex called MikTex

[10] https://www.texstudio.org/ - Integrated environment to work with Latex documents

[11] https://www.overleaf.com/ - Online Latex editor

[12] **https://www.lyx.org/ -** WYSIWYG LaTeX System. (Recommended by Sergey Morozov)

[13] http://www.bakoma-tex.com/menu/about.php - WYSIWYG LaTeX System

8.2 Auxiliary Tools and Software

[14] https://www.mendeley.com/ - is a bibliographic manager tool. Possible to export to latex bibtex entry into text file with format **.bip*.

[15] https://www.geogebra.org/ - tool to draw images like Paint, but which allow export to TIKZ.

8.3 Reference tables

[16] http://wch.github.io/latexsheet/latexsheet.pdf - Latex Cheat - Sheet.

[17] http://tug.ctan.org/info/symbols/comprehensive/symbols-a4.pdf - Big table with Latex symbols

[18] https://en.wikibooks.org/wiki/LaTeX/Colors#Predefined_colors – Predefined colors for Latex

[19] https://www.overleaf.com/latex/templates - Latex Templates

[20] https://hartwork.org/beamer-theme-matrix/ - Theme Matrix for Beamer (Latex Presentation class)

[21] https://oeis.org/wiki/List_of_LaTeX_mathematical_symbols#Geometry

[22] https://www.overleaf.com/latex/templates - Page Layout in Latex